



Nicholson GeoSolutions LLC

3433 East Lake Drive
Centennial, CO 80121

October 21, 2017

Mr. Derek Johnson
Berry Petroleum Company
235 Callahan Avenue
Parachute, Colorado 81635

Subject: O-06 Final Landfarm Sampling Results

Dear Derek:

Nicholson GeoSolutions LLC was retained by Berry Petroleum Company (Berry) to conduct soil sampling of the landfarm on the O-06 well pad in the Garden Gulch area, Garfield County, Colorado. GPS mapping showed that the landfarm covers about 1.35 acres and contains an estimated 5,161 yards of material. The landfarm material has been recently spread out and averages about 15 inches deep.

Sampling was conducted on September 26th, 2017. A total of nine composite soil samples were collected. Each composite sample was combined from six subsamples. All subsamples were collected from a depth of about 8-12 inches. The locations of the samples are shown on Figure 1.

All samples were analyzed for Total Volatile Petroleum Hydrocarbons (TVPH – gasoline range), Total Extractable Petroleum Hydrocarbons (TEPH – diesel and motor oil range), BTEX (benzene, toluene, ethylbenzene, and xylenes), sodium adsorption ratio (SAR), pH, conductivity, metals, and PAHs to evaluate compliance with the COGCC Table 910-1 standards and further treatment needs.

Table 1 provides a summary of the analytical results for the nine composite samples. The laboratory report is contained in Appendix A. All results were below the COGCC standards except for benzo(a)pyrene and arsenic for all samples. Benzo(a)pyrene ranged from 0.0449 mg/kg to 0.0533 mg/kg for the nine samples. Arsenic ranged from 6.15 mg/kg to 11.7 mg/kg, within the range of natural background concentrations for the Garden Gulch area.

Based on the sample results, further treatment of the landfarm is necessary.



David K. Nicholson, P.G.
Principal Geologist

Table 1 O-06 Landfarm Sample Results – September 26, 2017

	Table 910-1 Standards	O-06 LF-1	O-06 LF-2	O-06 LF-3	O-06 LF-4	O-06 LF-5
sp. conductance (mmhos/cm)	<4	0.645	0.506	0.529	0.626	0.541
pH (standard units)	6-9	7.35	7.81	7.78	7.93	8.25
SAR (ratio)	<12	2.55	2.61	2.72	2.52	2.96
TVPH – gasoline range	500 ¹	<0.1	<0.1	<0.1	<0.1	<0.1
TEPH – diesel/motor oil range		229.4 J	169.8 J	192.4 J	219.3 J	209.3 J
benzene	0.17	0.00151	0.00162	0.00159	0.00149	0.00171
toluene	85	<0.005	<0.005	<0.005	<0.005	<0.005
ethylbenzene	100	0.00135	0.00114	0.00106	0.00118	0.00114
xylene	175	0.0023	0.00205	0.00184	0.00197	0.00211
benzo(a)pyrene	0.022	0.048	0.0533	0.0453	0.0519	0.051
arsenic	0.39	6.15	7.46	7.71	10.1	7.09

	Table 910-1 Standards	O-06 LF-6	O-06 LF-7	O-06 LF-8	O-06 LF-9
sp. conductance (mmhos/cm)	<4	0.65	0.536	0.496	0.714
pH (standard units)	6-9	7.83	7.86	7.87	7.54
SAR (ratio)	<12	2.41	2.47	2.49	2.55
TVPH – gasoline range	500 ¹	<0.1	<0.1	<0.1	<0.1
TEPH – diesel/motor oil range		181.8 J	230.3	32.2	171.3
benzene	0.17	0.00129	0.00201	0.00158	0.00162
toluene	85	<0.005	<0.005	<0.005	<0.005
ethylbenzene	100	0.000805	0.00105	0.00114	0.00111
xylene	175	<0.0015	0.00155	0.00187	0.00184
benzo(a)pyrene	0.022	0.0449	0.0484	0.0526	0.0449
arsenic	0.39	7.36	10.5	11.7	11.4

¹The standard is 500 for the combined total of TVPH and TEPH

Values in bold type exceed standards

All units in mg/kg except where indicated

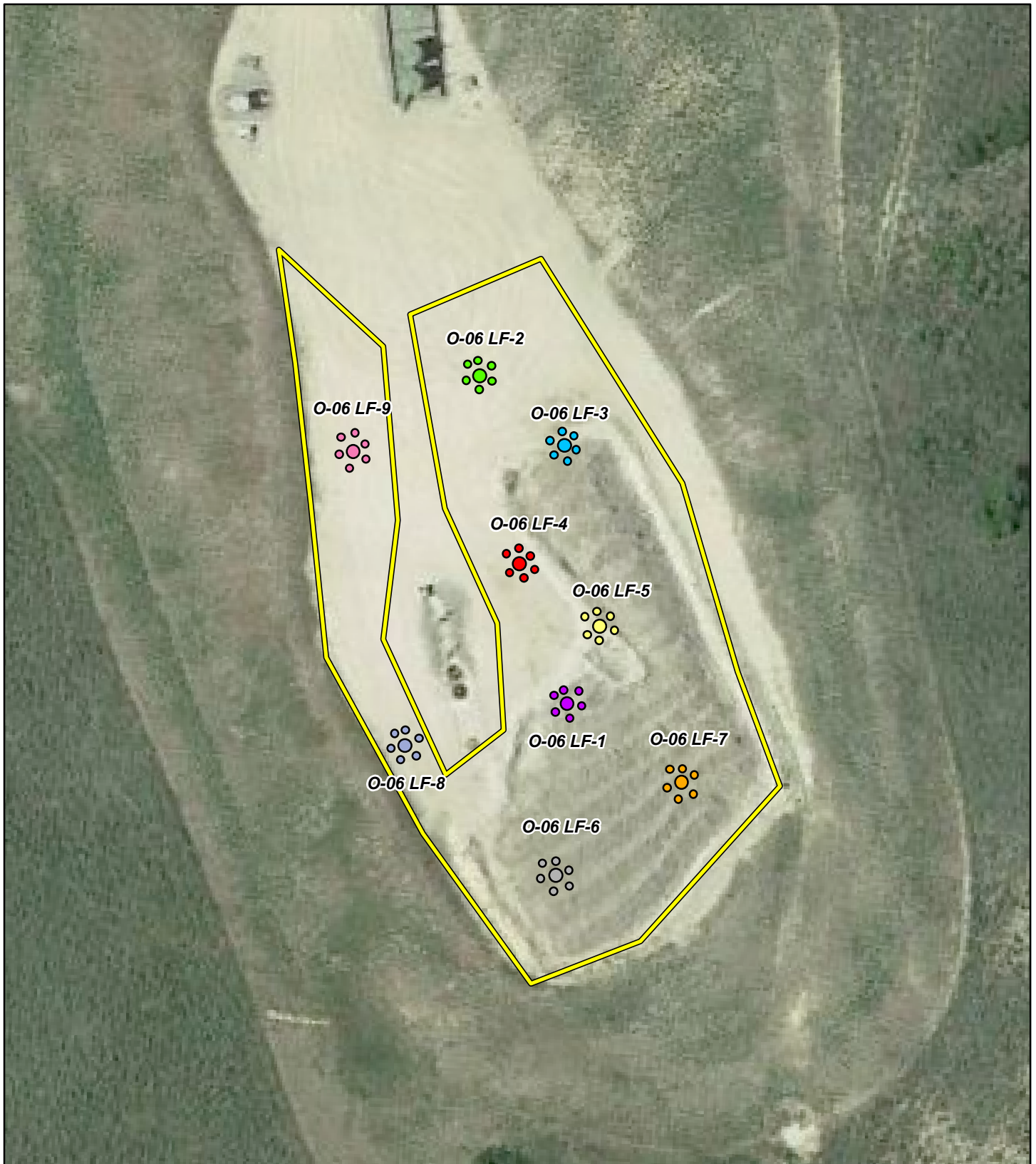


Figure 1

October
2017

GeoSolutions
NICHOLSON

Legend

- Sub Sample
- Land Farm Perimeter (1.35 Acres)

0 37.5 75 150 Feet 1" = 75'

Berry Petroleum Company

O-06
Landfarm Final
Composite Soil Samples

APPENDIX A
Laboratory Report

October 09, 2017

Berry Petroleum - Denver, CO

Sample Delivery Group: L939723

Samples Received: 09/28/2017

Project Number:

Description: O-06

Report To: Dave Nicholson
1999 Broadway, Suite 3700
Denver, CO 80202

Entire Report Reviewed By:



Mark W. Beasley
Technical Service Representative

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



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SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



O06-LF-1 L939723-01 Solid

Collected by
DK Nicholson

Collected date/time
09/26/17 12:10

Received date/time
09/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1027732	1	10/04/17 15:31	10/05/17 16:36	ST
Wet Chemistry by Method 3060A/7196A	WG1023639	1	09/29/17 10:58	09/29/17 14:55	GB
Wet Chemistry by Method 9045D	WG1025724	1	09/29/17 18:04	09/30/17 14:39	ER
Wet Chemistry by Method 9050AMod	WG1026281	1	10/02/17 11:51	10/02/17 11:51	KK
Mercury by Method 7471A	WG1026798	1	10/03/17 08:58	10/05/17 09:45	ABL
Metals (ICP) by Method 6010B	WG1027057	1	10/04/17 11:25	10/05/17 17:46	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG1026225	1	09/28/17 16:38	10/04/17 00:39	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1026638	5	10/03/17 11:05	10/04/17 07:22	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1026649	1	10/03/17 12:15	10/04/17 17:56	KM

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

O06-LF-2 L939723-02 Solid

Collected by
DK Nicholson

Collected date/time
09/26/17 12:15

Received date/time
09/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1027732	1	10/04/17 15:31	10/05/17 16:38	ST
Wet Chemistry by Method 3060A/7196A	WG1023639	1	09/29/17 10:58	09/29/17 14:57	GB
Wet Chemistry by Method 9045D	WG1025724	1	09/29/17 18:04	09/30/17 14:39	ER
Wet Chemistry by Method 9050AMod	WG1026281	1	10/02/17 11:51	10/02/17 11:51	KK
Mercury by Method 7471A	WG1026798	1	10/03/17 08:58	10/05/17 10:02	ABL
Metals (ICP) by Method 6010B	WG1027057	1	10/04/17 11:25	10/05/17 17:49	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG1026225	1	09/28/17 16:38	10/04/17 01:02	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1026638	5	10/03/17 11:05	10/04/17 07:36	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1026649	1	10/03/17 12:15	10/04/17 18:17	KM

⁷ Gl

⁸ Al

⁹ Sc

O06-LF-3 L939723-03 Solid

Collected by
DK Nicholson

Collected date/time
09/26/17 12:20

Received date/time
09/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1027732	1	10/04/17 15:31	10/05/17 16:41	ST
Wet Chemistry by Method 3060A/7196A	WG1023639	1	09/29/17 10:58	09/29/17 14:57	GB
Wet Chemistry by Method 9045D	WG1025724	1	09/29/17 18:04	09/30/17 14:39	ER
Wet Chemistry by Method 9050AMod	WG1026281	1	10/02/17 11:51	10/02/17 11:51	KK
Mercury by Method 7471A	WG1026798	1	10/03/17 08:58	10/05/17 10:04	ABL
Metals (ICP) by Method 6010B	WG1027057	1	10/04/17 11:25	10/05/17 17:53	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG1026225	1	09/28/17 16:38	10/04/17 01:24	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1026638	5	10/03/17 11:05	10/04/17 07:50	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1026649	1	10/03/17 12:15	10/04/17 18:38	KM

O06-LF-4 L939723-04 Solid

Collected by
DK Nicholson

Collected date/time
09/26/17 12:25

Received date/time
09/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1027732	1	10/04/17 15:31	10/05/17 16:44	ST
Wet Chemistry by Method 3060A/7196A	WG1023639	1	09/29/17 10:58	09/29/17 14:57	GB
Wet Chemistry by Method 9045D	WG1025724	1	09/29/17 18:04	09/30/17 14:39	ER
Wet Chemistry by Method 9050AMod	WG1026281	1	10/02/17 11:51	10/02/17 11:51	KK
Mercury by Method 7471A	WG1026798	1	10/03/17 08:58	10/05/17 10:06	ABL
Metals (ICP) by Method 6010B	WG1027057	1	10/04/17 11:25	10/05/17 17:56	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG1026225	1	09/28/17 16:38	10/04/17 01:46	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1026638	5	10/03/17 11:05	10/04/17 08:04	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1026649	1	10/03/17 12:15	10/04/17 18:59	KM

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



O06-LF-5 L939723-05 Solid

Collected by
DK Nicholson

Collected date/time
09/26/17 12:30

Received date/time
09/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1027732	1	10/04/17 15:31	10/05/17 16:46	ST
Wet Chemistry by Method 3060A/7196A	WG1023639	1	09/29/17 10:58	09/29/17 14:58	GB
Wet Chemistry by Method 9045D	WG1025724	1	09/29/17 18:04	09/30/17 14:39	ER
Wet Chemistry by Method 9050AMod	WG1026281	1	10/02/17 11:51	10/02/17 11:51	KK
Mercury by Method 7471A	WG1026798	1	10/03/17 08:58	10/05/17 10:09	ABL
Metals (ICP) by Method 6010B	WG1027057	1	10/04/17 11:25	10/05/17 17:59	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG1026225	1	09/28/17 16:38	10/04/17 02:08	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1026638	5	10/03/17 11:05	10/04/17 08:18	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1026649	1	10/03/17 12:15	10/04/17 19:19	KM

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

O06-LF-6 L939723-06 Solid

Collected by
DK Nicholson

Collected date/time
09/26/17 12:35

Received date/time
09/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1027732	1	10/04/17 15:31	10/05/17 16:49	ST
Wet Chemistry by Method 3060A/7196A	WG1023639	1	09/29/17 10:58	09/29/17 14:59	GB
Wet Chemistry by Method 9045D	WG1025724	1	09/29/17 18:04	09/30/17 14:39	ER
Wet Chemistry by Method 9050AMod	WG1026281	1	10/02/17 11:51	10/02/17 11:51	KK
Mercury by Method 7471A	WG1026798	1	10/03/17 08:58	10/05/17 10:11	ABL
Metals (ICP) by Method 6010B	WG1027057	1	10/04/17 11:25	10/05/17 18:03	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG1026225	1	09/28/17 16:38	10/04/17 02:30	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1026638	5	10/03/17 11:05	10/04/17 08:32	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1026649	1	10/03/17 12:15	10/04/17 19:40	KM

O06-LF-7 L939723-07 Solid

Collected by
DK Nicholson

Collected date/time
09/26/17 12:40

Received date/time
09/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1027732	1	10/04/17 15:31	10/05/17 16:52	ST
Wet Chemistry by Method 3060A/7196A	WG1023639	1	09/29/17 10:58	09/29/17 15:00	GB
Wet Chemistry by Method 9045D	WG1025724	1	09/29/17 18:04	09/30/17 14:39	ER
Wet Chemistry by Method 9050AMod	WG1026281	1	10/02/17 11:51	10/02/17 11:51	KK
Mercury by Method 7471A	WG1026798	1	10/03/17 08:58	10/05/17 10:13	ABL
Metals (ICP) by Method 6010B	WG1027057	1	10/04/17 11:25	10/05/17 18:06	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG1026225	1	09/28/17 16:38	10/04/17 02:53	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1026638	5	10/03/17 11:05	10/04/17 08:46	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1026649	1	10/03/17 12:15	10/04/17 20:01	KM

O06-LF-8 L939723-08 Solid

Collected by
DK Nicholson

Collected date/time
09/26/17 12:45

Received date/time
09/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1027732	1	10/04/17 15:31	10/05/17 16:54	ST
Wet Chemistry by Method 3060A/7196A	WG1023639	1	09/29/17 10:58	09/29/17 15:00	GB
Wet Chemistry by Method 9045D	WG1025724	1	09/29/17 18:04	09/30/17 14:39	ER
Wet Chemistry by Method 9050AMod	WG1026281	1	10/02/17 11:51	10/02/17 11:51	KK
Mercury by Method 7471A	WG1026798	1	10/03/17 08:58	10/05/17 10:16	ABL
Metals (ICP) by Method 6010B	WG1027057	1	10/04/17 11:25	10/05/17 18:09	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG1026225	1	09/28/17 16:38	10/04/17 03:15	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1027431	5	10/04/17 14:04	10/05/17 17:53	DMG
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1026649	1	10/03/17 12:15	10/04/17 21:03	KM

ACCOUNT:

Berry Petroleum - Denver, CO

PROJECT:

SDG:

L939723

DATE/TIME:

10/09/17 09:25

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SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



O06-LF-9 L939723-09 Solid

Collected by
DK Nicholson

Collected date/time
09/26/17 12:50

Received date/time
09/28/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1027732	1	10/04/17 15:31	10/05/17 16:57	ST
Wet Chemistry by Method 3060A/7196A	WG1023639	1	09/29/17 10:58	09/29/17 15:01	GB
Wet Chemistry by Method 9045D	WG1025724	1	09/29/17 18:04	09/30/17 14:39	ER
Wet Chemistry by Method 9050AMod	WG1026281	1	10/02/17 11:51	10/02/17 11:51	KK
Mercury by Method 7471A	WG1026798	1	10/03/17 08:58	10/05/17 10:18	ABL
Metals (ICP) by Method 6010B	WG1027057	1	10/04/17 11:25	10/05/17 18:12	ST
Volatile Organic Compounds (GC) by Method 8015/8021	WG1026225	1	09/28/17 16:38	10/04/17 03:37	ACG
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1027431	5	10/04/17 14:04	10/05/17 18:37	DMG
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1026649	1	10/03/17 12:15	10/04/17 21:24	KM

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCOUNT:

Berry Petroleum - Denver, CO

PROJECT:

SDG:

L939723

DATE/TIME:

10/09/17 09:25

PAGE:

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All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Technical Service Representative

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.55		1	10/05/2017 16:36	WG1027732

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	09/29/2017 14:55	WG1023639

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.35	T8	1	09/30/2017 14:39	WG1025724

Sample Narrative:

L939723-01 WG1025724: 7.35 at 19.2c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	645		1	10/02/2017 11:51	WG1026281

Mercury by Method 7471A

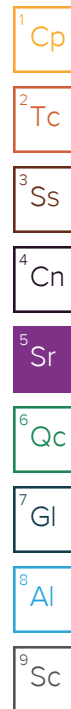
Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0232		0.0200	1	10/05/2017 09:45	WG1026798

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.15		2.00	1	10/05/2017 17:46	WG1027057
Barium	531		0.500	1	10/05/2017 17:46	WG1027057
Boron	ND		10.0	1	10/05/2017 17:46	WG1027057
Cadmium	ND		0.500	1	10/05/2017 17:46	WG1027057
Chromium	27.4		1.00	1	10/05/2017 17:46	WG1027057
Copper	19.8		2.00	1	10/05/2017 17:46	WG1027057
Lead	10.9		0.500	1	10/05/2017 17:46	WG1027057
Nickel	19.8		2.00	1	10/05/2017 17:46	WG1027057
Selenium	ND		2.00	1	10/05/2017 17:46	WG1027057
Silver	ND		1.00	1	10/05/2017 17:46	WG1027057
Zinc	60.1		5.00	1	10/05/2017 17:46	WG1027057

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00151		0.000500	1	10/04/2017 00:39	WG1026225
Toluene	ND		0.00500	1	10/04/2017 00:39	WG1026225
Ethylbenzene	0.00135	B	0.000500	1	10/04/2017 00:39	WG1026225
Total Xylene	0.00230	B	0.00150	1	10/04/2017 00:39	WG1026225
TPH (GC/FID) Low Fraction	ND		0.100	1	10/04/2017 00:39	WG1026225
(S) a,a,a-Trifluorotoluene(FID)	91.3		77.0-120		10/04/2017 00:39	WG1026225
(S) a,a,a-Trifluorotoluene(PID)	98.1		75.0-128		10/04/2017 00:39	WG1026225





Collected date/time: 09/26/17 12:10

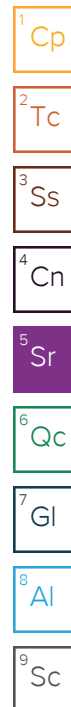
L939723

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	190		20.0	5	10/04/2017 07:22	WG1026638
C28-C40 Oil Range	39.4		20.0	5	10/04/2017 07:22	WG1026638
(S) o-Terphenyl	87.0		18.0-148		10/04/2017 07:22	WG1026638

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.00768		0.00600	1	10/04/2017 17:56	WG1026649
Acenaphthene	ND		0.00600	1	10/04/2017 17:56	WG1026649
Acenaphthylene	ND		0.00600	1	10/04/2017 17:56	WG1026649
Benzo(a)anthracene	0.0225		0.00600	1	10/04/2017 17:56	WG1026649
Benzo(a)pyrene	0.0480		0.00600	1	10/04/2017 17:56	WG1026649
Benzo(b)fluoranthene	0.0881		0.00600	1	10/04/2017 17:56	WG1026649
Benzo(g,h,i)perylene	0.0791		0.00600	1	10/04/2017 17:56	WG1026649
Benzo(k)fluoranthene	0.0197		0.00600	1	10/04/2017 17:56	WG1026649
Chrysene	0.0222		0.00600	1	10/04/2017 17:56	WG1026649
Dibenz(a,h)anthracene	0.0164		0.00600	1	10/04/2017 17:56	WG1026649
Fluoranthene	0.0278		0.00600	1	10/04/2017 17:56	WG1026649
Fluorene	0.0103		0.00600	1	10/04/2017 17:56	WG1026649
Indeno(1,2,3-cd)pyrene	0.0524		0.00600	1	10/04/2017 17:56	WG1026649
Naphthalene	0.118		0.0200	1	10/04/2017 17:56	WG1026649
Phenanthrene	0.0435		0.00600	1	10/04/2017 17:56	WG1026649
Pyrene	0.0427		0.00600	1	10/04/2017 17:56	WG1026649
1-Methylnaphthalene	0.106		0.0200	1	10/04/2017 17:56	WG1026649
2-Methylnaphthalene	0.214		0.0200	1	10/04/2017 17:56	WG1026649
2-Chloronaphthalene	ND		0.0200	1	10/04/2017 17:56	WG1026649
(S) p-Terphenyl-d14	76.6		23.0-120		10/04/2017 17:56	WG1026649
(S) Nitrobenzene-d5	92.6		14.0-149		10/04/2017 17:56	WG1026649
(S) 2-Fluorobiphenyl	76.7		34.0-125		10/04/2017 17:56	WG1026649





Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.61		1	10/05/2017 16:38	WG1027732

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	09/29/2017 14:57	WG1023639

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.81	<u>T8</u>	1	09/30/2017 14:39	WG1025724

Sample Narrative:

L939723-02 WG1025724: 7.81 at 19.1c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	506		1	10/02/2017 11:51	WG1026281

Mercury by Method 7471A

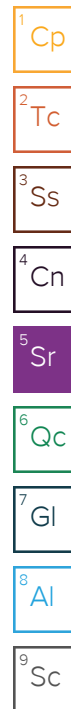
Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	10/05/2017 10:02	WG1026798

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.46		2.00	1	10/05/2017 17:49	WG1027057
Barium	590		0.500	1	10/05/2017 17:49	WG1027057
Boron	ND		10.0	1	10/05/2017 17:49	WG1027057
Cadmium	ND		0.500	1	10/05/2017 17:49	WG1027057
Chromium	30.9		1.00	1	10/05/2017 17:49	WG1027057
Copper	24.1		2.00	1	10/05/2017 17:49	WG1027057
Lead	12.2		0.500	1	10/05/2017 17:49	WG1027057
Nickel	19.0		2.00	1	10/05/2017 17:49	WG1027057
Selenium	ND		2.00	1	10/05/2017 17:49	WG1027057
Silver	ND		1.00	1	10/05/2017 17:49	WG1027057
Zinc	48.3		5.00	1	10/05/2017 17:49	WG1027057

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00162		0.000500	1	10/04/2017 01:02	WG1026225
Toluene	ND		0.00500	1	10/04/2017 01:02	WG1026225
Ethylbenzene	0.00114	<u>B</u>	0.000500	1	10/04/2017 01:02	WG1026225
Total Xylene	0.00205	<u>B</u>	0.00150	1	10/04/2017 01:02	WG1026225
TPH (GC/FID) Low Fraction	ND		0.100	1	10/04/2017 01:02	WG1026225
(S) a,a,a-Trifluorotoluene(FID)	90.1		77.0-120		10/04/2017 01:02	WG1026225
(S) a,a,a-Trifluorotoluene(PID)	96.8		75.0-128		10/04/2017 01:02	WG1026225





Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	139		20.0	5	10/04/2017 07:36	WG1026638
C28-C40 Oil Range	30.8		20.0	5	10/04/2017 07:36	WG1026638
(S) o-Terphenyl	85.0		18.0-148		10/04/2017 07:36	WG1026638

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.00834		0.00600	1	10/04/2017 18:17	WG1026649
Acenaphthene	ND		0.00600	1	10/04/2017 18:17	WG1026649
Acenaphthylene	ND		0.00600	1	10/04/2017 18:17	WG1026649
Benzo(a)anthracene	0.0247		0.00600	1	10/04/2017 18:17	WG1026649
Benzo(a)pyrene	0.0533		0.00600	1	10/04/2017 18:17	WG1026649
Benzo(b)fluoranthene	0.104		0.00600	1	10/04/2017 18:17	WG1026649
Benzo(g,h,i)perylene	0.0954		0.00600	1	10/04/2017 18:17	WG1026649
Benzo(k)fluoranthene	0.0193		0.00600	1	10/04/2017 18:17	WG1026649
Chrysene	0.0263		0.00600	1	10/04/2017 18:17	WG1026649
Dibenz(a,h)anthracene	0.0201		0.00600	1	10/04/2017 18:17	WG1026649
Fluoranthene	0.0282		0.00600	1	10/04/2017 18:17	WG1026649
Fluorene	0.0104		0.00600	1	10/04/2017 18:17	WG1026649
Indeno(1,2,3-cd)pyrene	0.0638		0.00600	1	10/04/2017 18:17	WG1026649
Naphthalene	0.110		0.0200	1	10/04/2017 18:17	WG1026649
Phenanthrene	0.0454		0.00600	1	10/04/2017 18:17	WG1026649
Pyrene	0.0444		0.00600	1	10/04/2017 18:17	WG1026649
1-Methylnaphthalene	0.101		0.0200	1	10/04/2017 18:17	WG1026649
2-Methylnaphthalene	0.193		0.0200	1	10/04/2017 18:17	WG1026649
2-Chloronaphthalene	ND		0.0200	1	10/04/2017 18:17	WG1026649
(S) p-Terphenyl-d14	76.6		23.0-120		10/04/2017 18:17	WG1026649
(S) Nitrobenzene-d5	94.5		14.0-149		10/04/2017 18:17	WG1026649
(S) 2-Fluorobiphenyl	76.6		34.0-125		10/04/2017 18:17	WG1026649

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	2.72		1	10/05/2017 16:41	WG1027732

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	09/29/2017 14:57	WG1023639

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.78	T8	1	09/30/2017 14:39	WG1025724

Sample Narrative:

L939723-03 WG1025724: 7.78 at 19.1c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	529		1	10/02/2017 11:51	WG1026281

Mercury by Method 7471A

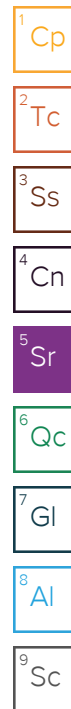
Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0212		0.0200	1	10/05/2017 10:04	WG1026798

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.71		2.00	1	10/05/2017 17:53	WG1027057
Barium	567		0.500	1	10/05/2017 17:53	WG1027057
Boron	ND		10.0	1	10/05/2017 17:53	WG1027057
Cadmium	ND		0.500	1	10/05/2017 17:53	WG1027057
Chromium	28.9		1.00	1	10/05/2017 17:53	WG1027057
Copper	22.7		2.00	1	10/05/2017 17:53	WG1027057
Lead	13.2		0.500	1	10/05/2017 17:53	WG1027057
Nickel	24.1		2.00	1	10/05/2017 17:53	WG1027057
Selenium	ND		2.00	1	10/05/2017 17:53	WG1027057
Silver	ND		1.00	1	10/05/2017 17:53	WG1027057
Zinc	57.8		5.00	1	10/05/2017 17:53	WG1027057

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00159		0.000500	1	10/04/2017 01:24	WG1026225
Toluene	ND		0.00500	1	10/04/2017 01:24	WG1026225
Ethylbenzene	0.00106	B	0.000500	1	10/04/2017 01:24	WG1026225
Total Xylene	0.00184	B	0.00150	1	10/04/2017 01:24	WG1026225
TPH (GC/FID) Low Fraction	ND		0.100	1	10/04/2017 01:24	WG1026225
(S) a,a,a-Trifluorotoluene(FID)	90.9		77.0-120		10/04/2017 01:24	WG1026225
(S) a,a,a-Trifluorotoluene(PID)	97.3		75.0-128		10/04/2017 01:24	WG1026225





Collected date/time: 09/26/17 12:20

L939723

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	158		20.0	5	10/04/2017 07:50	WG1026638
C28-C40 Oil Range	34.4		20.0	5	10/04/2017 07:50	WG1026638
(S) o-Terphenyl	76.5		18.0-148		10/04/2017 07:50	WG1026638

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.00709		0.00600	1	10/04/2017 18:38	WG1026649
Acenaphthene	0.00789		0.00600	1	10/04/2017 18:38	WG1026649
Acenaphthylene	ND		0.00600	1	10/04/2017 18:38	WG1026649
Benzo(a)anthracene	0.0215		0.00600	1	10/04/2017 18:38	WG1026649
Benzo(a)pyrene	0.0453		0.00600	1	10/04/2017 18:38	WG1026649
Benzo(b)fluoranthene	0.0794		0.00600	1	10/04/2017 18:38	WG1026649
Benzo(g,h,i)perylene	0.0722		0.00600	1	10/04/2017 18:38	WG1026649
Benzo(k)fluoranthene	0.0218		0.00600	1	10/04/2017 18:38	WG1026649
Chrysene	0.0222		0.00600	1	10/04/2017 18:38	WG1026649
Dibenz(a,h)anthracene	0.0154		0.00600	1	10/04/2017 18:38	WG1026649
Fluoranthene	0.0270		0.00600	1	10/04/2017 18:38	WG1026649
Fluorene	0.00852		0.00600	1	10/04/2017 18:38	WG1026649
Indeno(1,2,3-cd)pyrene	0.0488		0.00600	1	10/04/2017 18:38	WG1026649
Naphthalene	0.103		0.0200	1	10/04/2017 18:38	WG1026649
Phenanthrene	0.0372		0.00600	1	10/04/2017 18:38	WG1026649
Pyrene	0.0416		0.00600	1	10/04/2017 18:38	WG1026649
1-Methylnaphthalene	0.0852		0.0200	1	10/04/2017 18:38	WG1026649
2-Methylnaphthalene	0.171		0.0200	1	10/04/2017 18:38	WG1026649
2-Chloronaphthalene	ND		0.0200	1	10/04/2017 18:38	WG1026649
(S) p-Terphenyl-d14	71.1		23.0-120		10/04/2017 18:38	WG1026649
(S) Nitrobenzene-d5	86.4		14.0-149		10/04/2017 18:38	WG1026649
(S) 2-Fluorobiphenyl	72.4		34.0-125		10/04/2017 18:38	WG1026649

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	2.52		1	10/05/2017 16:44	WG1027732

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	09/29/2017 14:57	WG1023639

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.93	T8	1	09/30/2017 14:39	WG1025724

Sample Narrative:

L939723-04 WG1025724: 7.93 at 19.1c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	626		1	10/02/2017 11:51	WG1026281

Mercury by Method 7471A

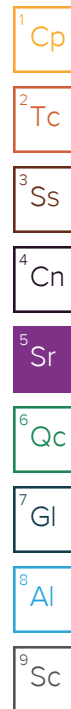
Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0210		0.0200	1	10/05/2017 10:06	WG1026798

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.1		2.00	1	10/05/2017 17:56	WG1027057
Barium	731		0.500	1	10/05/2017 17:56	WG1027057
Boron	ND		10.0	1	10/05/2017 17:56	WG1027057
Cadmium	ND		0.500	1	10/05/2017 17:56	WG1027057
Chromium	29.1		1.00	1	10/05/2017 17:56	WG1027057
Copper	22.1		2.00	1	10/05/2017 17:56	WG1027057
Lead	12.9		0.500	1	10/05/2017 17:56	WG1027057
Nickel	21.9		2.00	1	10/05/2017 17:56	WG1027057
Selenium	ND		2.00	1	10/05/2017 17:56	WG1027057
Silver	ND		1.00	1	10/05/2017 17:56	WG1027057
Zinc	55.4		5.00	1	10/05/2017 17:56	WG1027057

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00149		0.000500	1	10/04/2017 01:46	WG1026225
Toluene	ND		0.00500	1	10/04/2017 01:46	WG1026225
Ethylbenzene	0.00118	B	0.000500	1	10/04/2017 01:46	WG1026225
Total Xylene	0.00197	B	0.00150	1	10/04/2017 01:46	WG1026225
TPH (GC/FID) Low Fraction	ND		0.100	1	10/04/2017 01:46	WG1026225
(S) a,a,a-Trifluorotoluene(FID)	90.5		77.0-120		10/04/2017 01:46	WG1026225
(S) a,a,a-Trifluorotoluene(PID)	97.3		75.0-128		10/04/2017 01:46	WG1026225





Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	178		20.0	5	10/04/2017 08:04	WG1026638
C28-C40 Oil Range	41.3		20.0	5	10/04/2017 08:04	WG1026638
(S) o-Terphenyl	87.0		18.0-148		10/04/2017 08:04	WG1026638

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.00829		0.00600	1	10/04/2017 18:59	WG1026649
Acenaphthene	ND		0.00600	1	10/04/2017 18:59	WG1026649
Acenaphthylene	ND		0.00600	1	10/04/2017 18:59	WG1026649
Benzo(a)anthracene	0.0254		0.00600	1	10/04/2017 18:59	WG1026649
Benzo(a)pyrene	0.0519		0.00600	1	10/04/2017 18:59	WG1026649
Benzo(b)fluoranthene	0.0915		0.00600	1	10/04/2017 18:59	WG1026649
Benzo(g,h,i)perylene	0.0825		0.00600	1	10/04/2017 18:59	WG1026649
Benzo(k)fluoranthene	0.0236		0.00600	1	10/04/2017 18:59	WG1026649
Chrysene	0.0256		0.00600	1	10/04/2017 18:59	WG1026649
Dibenz(a,h)anthracene	0.0178		0.00600	1	10/04/2017 18:59	WG1026649
Fluoranthene	0.0293		0.00600	1	10/04/2017 18:59	WG1026649
Fluorene	0.0107		0.00600	1	10/04/2017 18:59	WG1026649
Indeno(1,2,3-cd)pyrene	0.0553		0.00600	1	10/04/2017 18:59	WG1026649
Naphthalene	0.128		0.0200	1	10/04/2017 18:59	WG1026649
Phenanthrene	0.0466		0.00600	1	10/04/2017 18:59	WG1026649
Pyrene	0.0429		0.00600	1	10/04/2017 18:59	WG1026649
1-Methylnaphthalene	0.114		0.0200	1	10/04/2017 18:59	WG1026649
2-Methylnaphthalene	0.223		0.0200	1	10/04/2017 18:59	WG1026649
2-Chloronaphthalene	ND		0.0200	1	10/04/2017 18:59	WG1026649
(S) p-Terphenyl-d14	77.7		23.0-120		10/04/2017 18:59	WG1026649
(S) Nitrobenzene-d5	93.8		14.0-149		10/04/2017 18:59	WG1026649
(S) 2-Fluorobiphenyl	80.9		34.0-125		10/04/2017 18:59	WG1026649

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	2.96		1	10/05/2017 16:46	WG1027732

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	09/29/2017 14:58	WG1023639

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.25	T8	1	09/30/2017 14:39	WG1025724

Sample Narrative:

L939723-05 WG1025724: 8.25 at 19.1c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	541		1	10/02/2017 11:51	WG1026281

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	10/05/2017 10:09	WG1026798

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.09		2.00	1	10/05/2017 17:59	WG1027057
Barium	430		0.500	1	10/05/2017 17:59	WG1027057
Boron	ND		10.0	1	10/05/2017 17:59	WG1027057
Cadmium	ND		0.500	1	10/05/2017 17:59	WG1027057
Chromium	22.8		1.00	1	10/05/2017 17:59	WG1027057
Copper	18.7		2.00	1	10/05/2017 17:59	WG1027057
Lead	11.3		0.500	1	10/05/2017 17:59	WG1027057
Nickel	17.8		2.00	1	10/05/2017 17:59	WG1027057
Selenium	ND		2.00	1	10/05/2017 17:59	WG1027057
Silver	ND		1.00	1	10/05/2017 17:59	WG1027057
Zinc	54.2		5.00	1	10/05/2017 17:59	WG1027057

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00171		0.000500	1	10/04/2017 02:08	WG1026225
Toluene	ND		0.00500	1	10/04/2017 02:08	WG1026225
Ethylbenzene	0.00114	B	0.000500	1	10/04/2017 02:08	WG1026225
Total Xylene	0.00211	B	0.00150	1	10/04/2017 02:08	WG1026225
TPH (GC/FID) Low Fraction	ND		0.100	1	10/04/2017 02:08	WG1026225
(S) a,a,a-Trifluorotoluene(FID)	92.1		77.0-120		10/04/2017 02:08	WG1026225
(S) a,a,a-Trifluorotoluene(PID)	98.8		75.0-128		10/04/2017 02:08	WG1026225

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



Collected date/time: 09/26/17 12:30

L939723

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	165		20.0	5	10/04/2017 08:18	WG1026638
C28-C40 Oil Range	44.3		20.0	5	10/04/2017 08:18	WG1026638
(S) o-Terphenyl	96.0		18.0-148		10/04/2017 08:18	WG1026638

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.00863		0.00600	1	10/04/2017 19:19	WG1026649
Acenaphthene	ND		0.00600	1	10/04/2017 19:19	WG1026649
Acenaphthylene	ND		0.00600	1	10/04/2017 19:19	WG1026649
Benzo(a)anthracene	0.0245		0.00600	1	10/04/2017 19:19	WG1026649
Benzo(a)pyrene	0.0510		0.00600	1	10/04/2017 19:19	WG1026649
Benzo(b)fluoranthene	0.0914		0.00600	1	10/04/2017 19:19	WG1026649
Benzo(g,h,i)perylene	0.0809		0.00600	1	10/04/2017 19:19	WG1026649
Benzo(k)fluoranthene	0.0197		0.00600	1	10/04/2017 19:19	WG1026649
Chrysene	0.0261		0.00600	1	10/04/2017 19:19	WG1026649
Dibenz(a,h)anthracene	0.0175		0.00600	1	10/04/2017 19:19	WG1026649
Fluoranthene	0.0294		0.00600	1	10/04/2017 19:19	WG1026649
Fluorene	0.0112		0.00600	1	10/04/2017 19:19	WG1026649
Indeno(1,2,3-cd)pyrene	0.0541		0.00600	1	10/04/2017 19:19	WG1026649
Naphthalene	0.131		0.0200	1	10/04/2017 19:19	WG1026649
Phenanthrene	0.0486		0.00600	1	10/04/2017 19:19	WG1026649
Pyrene	0.0440		0.00600	1	10/04/2017 19:19	WG1026649
1-Methylnaphthalene	0.116		0.0200	1	10/04/2017 19:19	WG1026649
2-Methylnaphthalene	0.230		0.0200	1	10/04/2017 19:19	WG1026649
2-Chloronaphthalene	ND		0.0200	1	10/04/2017 19:19	WG1026649
(S) p-Terphenyl-d14	78.2		23.0-120		10/04/2017 19:19	WG1026649
(S) Nitrobenzene-d5	94.4		14.0-149		10/04/2017 19:19	WG1026649
(S) 2-Fluorobiphenyl	79.6		34.0-125		10/04/2017 19:19	WG1026649

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	2.41		1	10/05/2017 16:49	WG1027732

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	09/29/2017 14:59	WG1023639

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.83	T8	1	09/30/2017 14:39	WG1025724

Sample Narrative:

L939723-06 WG1025724: 7.83 at 19.3c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	650		1	10/02/2017 11:51	WG1026281

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0200		0.0200	1	10/05/2017 10:11	WG1026798

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	7.36		2.00	1	10/05/2017 18:03	WG1027057
Barium	569		0.500	1	10/05/2017 18:03	WG1027057
Boron	ND		10.0	1	10/05/2017 18:03	WG1027057
Cadmium	ND		0.500	1	10/05/2017 18:03	WG1027057
Chromium	26.4		1.00	1	10/05/2017 18:03	WG1027057
Copper	20.2		2.00	1	10/05/2017 18:03	WG1027057
Lead	11.2		0.500	1	10/05/2017 18:03	WG1027057
Nickel	18.5		2.00	1	10/05/2017 18:03	WG1027057
Selenium	ND		2.00	1	10/05/2017 18:03	WG1027057
Silver	ND		1.00	1	10/05/2017 18:03	WG1027057
Zinc	48.9		5.00	1	10/05/2017 18:03	WG1027057

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00129		0.000500	1	10/04/2017 02:30	WG1026225
Toluene	ND		0.00500	1	10/04/2017 02:30	WG1026225
Ethylbenzene	0.000805	B	0.000500	1	10/04/2017 02:30	WG1026225
Total Xylene	ND		0.00150	1	10/04/2017 02:30	WG1026225
TPH (GC/FID) Low Fraction	ND		0.100	1	10/04/2017 02:30	WG1026225
(S) a,a,a-Trifluorotoluene(FID)	94.7		77.0-120		10/04/2017 02:30	WG1026225
(S) a,a,a-Trifluorotoluene(PID)	101		75.0-128		10/04/2017 02:30	WG1026225

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	146		20.0	5	10/04/2017 08:32	WG1026638
C28-C40 Oil Range	35.8		20.0	5	10/04/2017 08:32	WG1026638
(S) o-Terphenyl	68.0		18.0-148		10/04/2017 08:32	WG1026638

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.00750		0.00600	1	10/04/2017 19:40	WG1026649
Acenaphthene	ND		0.00600	1	10/04/2017 19:40	WG1026649
Acenaphthylene	ND		0.00600	1	10/04/2017 19:40	WG1026649
Benzo(a)anthracene	0.0230		0.00600	1	10/04/2017 19:40	WG1026649
Benzo(a)pyrene	0.0449		0.00600	1	10/04/2017 19:40	WG1026649
Benzo(b)fluoranthene	0.0839		0.00600	1	10/04/2017 19:40	WG1026649
Benzo(g,h,i)perylene	0.0681		0.00600	1	10/04/2017 19:40	WG1026649
Benzo(k)fluoranthene	0.0223		0.00600	1	10/04/2017 19:40	WG1026649
Chrysene	0.0234		0.00600	1	10/04/2017 19:40	WG1026649
Dibenz(a,h)anthracene	0.0157		0.00600	1	10/04/2017 19:40	WG1026649
Fluoranthene	0.0262		0.00600	1	10/04/2017 19:40	WG1026649
Fluorene	0.00893		0.00600	1	10/04/2017 19:40	WG1026649
Indeno(1,2,3-cd)pyrene	0.0472		0.00600	1	10/04/2017 19:40	WG1026649
Naphthalene	0.112		0.0200	1	10/04/2017 19:40	WG1026649
Phenanthrene	0.0385		0.00600	1	10/04/2017 19:40	WG1026649
Pyrene	0.0398		0.00600	1	10/04/2017 19:40	WG1026649
1-Methylnaphthalene	0.0964		0.0200	1	10/04/2017 19:40	WG1026649
2-Methylnaphthalene	0.191		0.0200	1	10/04/2017 19:40	WG1026649
2-Chloronaphthalene	ND		0.0200	1	10/04/2017 19:40	WG1026649
(S) p-Terphenyl-d14	79.8		23.0-120		10/04/2017 19:40	WG1026649
(S) Nitrobenzene-d5	92.1		14.0-149		10/04/2017 19:40	WG1026649
(S) 2-Fluorobiphenyl	80.7		34.0-125		10/04/2017 19:40	WG1026649

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	2.47		1	10/05/2017 16:52	WG1027732

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	09/29/2017 15:00	WG1023639

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.86	T8	1	09/30/2017 14:39	WG1025724

Sample Narrative:

L939723-07 WG1025724: 7.86 at 19.2c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	536		1	10/02/2017 11:51	WG1026281

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0234		0.0200	1	10/05/2017 10:13	WG1026798

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	10.5		2.00	1	10/05/2017 18:06	WG1027057
Barium	713		0.500	1	10/05/2017 18:06	WG1027057
Boron	ND		10.0	1	10/05/2017 18:06	WG1027057
Cadmium	ND		0.500	1	10/05/2017 18:06	WG1027057
Chromium	30.9		1.00	1	10/05/2017 18:06	WG1027057
Copper	22.7		2.00	1	10/05/2017 18:06	WG1027057
Lead	13.1		0.500	1	10/05/2017 18:06	WG1027057
Nickel	22.3		2.00	1	10/05/2017 18:06	WG1027057
Selenium	ND		2.00	1	10/05/2017 18:06	WG1027057
Silver	ND		1.00	1	10/05/2017 18:06	WG1027057
Zinc	59.1		5.00	1	10/05/2017 18:06	WG1027057

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00201		0.000500	1	10/04/2017 02:53	WG1026225
Toluene	ND		0.00500	1	10/04/2017 02:53	WG1026225
Ethylbenzene	0.00105	B	0.000500	1	10/04/2017 02:53	WG1026225
Total Xylene	0.00155	B	0.00150	1	10/04/2017 02:53	WG1026225
TPH (GC/FID) Low Fraction	ND		0.100	1	10/04/2017 02:53	WG1026225
(S) a,a,a-Trifluorotoluene(FID)	92.7		77.0-120		10/04/2017 02:53	WG1026225
(S) a,a,a-Trifluorotoluene(PID)	99.6		75.0-128		10/04/2017 02:53	WG1026225



Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	187	<u>J6</u>	20.0	5	10/04/2017 08:46	WG1026638
C28-C40 Oil Range	43.3		20.0	5	10/04/2017 08:46	WG1026638
(S) o-Terphenyl	78.0		18.0-148		10/04/2017 08:46	WG1026638

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.00751		0.00600	1	10/04/2017 20:01	WG1026649
Acenaphthene	ND		0.00600	1	10/04/2017 20:01	WG1026649
Acenaphthylene	ND		0.00600	1	10/04/2017 20:01	WG1026649
Benzo(a)anthracene	0.0207		0.00600	1	10/04/2017 20:01	WG1026649
Benzo(a)pyrene	0.0484		0.00600	1	10/04/2017 20:01	WG1026649
Benzo(b)fluoranthene	0.0913		0.00600	1	10/04/2017 20:01	WG1026649
Benzo(g,h,i)perylene	0.0765		0.00600	1	10/04/2017 20:01	WG1026649
Benzo(k)fluoranthene	0.0207		0.00600	1	10/04/2017 20:01	WG1026649
Chrysene	0.0222		0.00600	1	10/04/2017 20:01	WG1026649
Dibenz(a,h)anthracene	0.0168		0.00600	1	10/04/2017 20:01	WG1026649
Fluoranthene	0.0244		0.00600	1	10/04/2017 20:01	WG1026649
Fluorene	0.00976		0.00600	1	10/04/2017 20:01	WG1026649
Indeno(1,2,3-cd)pyrene	0.0528		0.00600	1	10/04/2017 20:01	WG1026649
Naphthalene	0.121		0.0200	1	10/04/2017 20:01	WG1026649
Phenanthrene	0.0418		0.00600	1	10/04/2017 20:01	WG1026649
Pyrene	0.0381		0.00600	1	10/04/2017 20:01	WG1026649
1-Methylnaphthalene	0.104		0.0200	1	10/04/2017 20:01	WG1026649
2-Methylnaphthalene	0.210		0.0200	1	10/04/2017 20:01	WG1026649
2-Chloronaphthalene	ND		0.0200	1	10/04/2017 20:01	WG1026649
(S) p-Terphenyl-d14	77.5		23.0-120		10/04/2017 20:01	WG1026649
(S) Nitrobenzene-d5	91.2		14.0-149		10/04/2017 20:01	WG1026649
(S) 2-Fluorobiphenyl	78.0		34.0-125		10/04/2017 20:01	WG1026649

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	2.49		1	10/05/2017 16:54	WG1027732

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium, Hexavalent	ND		2.00	1	09/29/2017 15:00	WG1023639

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.87	T8	1	09/30/2017 14:39	WG1025724

Sample Narrative:

L939723-08 WG1025724: 7.87 at 19.1c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	496		1	10/02/2017 11:51	WG1026281

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0246		0.0200	1	10/05/2017 10:16	WG1026798

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	11.7		2.00	1	10/05/2017 18:09	WG1027057
Barium	599		0.500	1	10/05/2017 18:09	WG1027057
Boron	ND		10.0	1	10/05/2017 18:09	WG1027057
Cadmium	ND		0.500	1	10/05/2017 18:09	WG1027057
Chromium	31.2		1.00	1	10/05/2017 18:09	WG1027057
Copper	20.7		2.00	1	10/05/2017 18:09	WG1027057
Lead	15.2		0.500	1	10/05/2017 18:09	WG1027057
Nickel	23.2		2.00	1	10/05/2017 18:09	WG1027057
Selenium	ND		2.00	1	10/05/2017 18:09	WG1027057
Silver	ND		1.00	1	10/05/2017 18:09	WG1027057
Zinc	61.6		5.00	1	10/05/2017 18:09	WG1027057

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00158		0.000500	1	10/04/2017 03:15	WG1026225
Toluene	ND		0.00500	1	10/04/2017 03:15	WG1026225
Ethylbenzene	0.00114	B	0.000500	1	10/04/2017 03:15	WG1026225
Total Xylene	0.00187	B	0.00150	1	10/04/2017 03:15	WG1026225
TPH (GC/FID) Low Fraction	ND		0.100	1	10/04/2017 03:15	WG1026225
(S) a,a,a-Trifluorotoluene(FID)	92.6		77.0-120		10/04/2017 03:15	WG1026225
(S) a,a,a-Trifluorotoluene(PID)	99.2		75.0-128		10/04/2017 03:15	WG1026225

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	32.2		20.0	5	10/05/2017 17:53	WG1027431
C28-C40 Oil Range	ND		20.0	5	10/05/2017 17:53	WG1027431
(S) o-Terphenyl	68.5		18.0-148		10/05/2017 17:53	WG1027431

Sample Narrative:

L939723-08 WG1027431: Cannot run at lower dilution due to viscosity of extract

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.00875		0.00600	1	10/04/2017 21:03	WG1026649
Acenaphthene	ND		0.00600	1	10/04/2017 21:03	WG1026649
Acenaphthylene	ND		0.00600	1	10/04/2017 21:03	WG1026649
Benzo(a)anthracene	0.0243		0.00600	1	10/04/2017 21:03	WG1026649
Benzo(a)pyrene	0.0526		0.00600	1	10/04/2017 21:03	WG1026649
Benzo(b)fluoranthene	0.0953		0.00600	1	10/04/2017 21:03	WG1026649
Benzo(g,h,i)perylene	0.0750		0.00600	1	10/04/2017 21:03	WG1026649
Benzo(k)fluoranthene	0.0260		0.00600	1	10/04/2017 21:03	WG1026649
Chrysene	0.0267		0.00600	1	10/04/2017 21:03	WG1026649
Dibenz(a,h)anthracene	0.0174		0.00600	1	10/04/2017 21:03	WG1026649
Fluoranthene	0.0286		0.00600	1	10/04/2017 21:03	WG1026649
Fluorene	0.0129		0.00600	1	10/04/2017 21:03	WG1026649
Indeno(1,2,3-cd)pyrene	0.0536		0.00600	1	10/04/2017 21:03	WG1026649
Naphthalene	0.179		0.0200	1	10/04/2017 21:03	WG1026649
Phenanthrene	0.0618		0.00600	1	10/04/2017 21:03	WG1026649
Pyrene	0.0428		0.00600	1	10/04/2017 21:03	WG1026649
1-Methylnaphthalene	0.186		0.0200	1	10/04/2017 21:03	WG1026649
2-Methylnaphthalene	0.314		0.0200	1	10/04/2017 21:03	WG1026649
2-Chloronaphthalene	ND		0.0200	1	10/04/2017 21:03	WG1026649
(S) p-Terphenyl-d14	80.5		23.0-120		10/04/2017 21:03	WG1026649
(S) Nitrobenzene-d5	100		14.0-149		10/04/2017 21:03	WG1026649
(S) 2-Fluorobiphenyl	81.1		34.0-125		10/04/2017 21:03	WG1026649

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	2.55		1	10/05/2017 16:57	WG1027732

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND	J6 Q1	2.00	1	09/29/2017 15:01	WG1023639

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.54	T8	1	09/30/2017 14:39	WG1025724

Sample Narrative:

L939723-09 WG1025724: 7.54 at 19.2c

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	714		1	10/02/2017 11:51	WG1026281

Mercury by Method 7471A

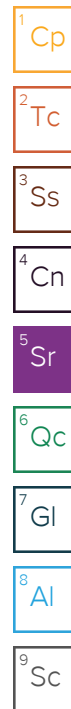
Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0212		0.0200	1	10/05/2017 10:18	WG1026798

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	11.4		2.00	1	10/05/2017 18:12	WG1027057
Barium	644		0.500	1	10/05/2017 18:12	WG1027057
Boron	ND		10.0	1	10/05/2017 18:12	WG1027057
Cadmium	ND		0.500	1	10/05/2017 18:12	WG1027057
Chromium	27.2		1.00	1	10/05/2017 18:12	WG1027057
Copper	19.9		2.00	1	10/05/2017 18:12	WG1027057
Lead	11.7		0.500	1	10/05/2017 18:12	WG1027057
Nickel	20.7		2.00	1	10/05/2017 18:12	WG1027057
Selenium	ND		2.00	1	10/05/2017 18:12	WG1027057
Silver	ND		1.00	1	10/05/2017 18:12	WG1027057
Zinc	50.9		5.00	1	10/05/2017 18:12	WG1027057

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00162		0.000500	1	10/04/2017 03:37	WG1026225
Toluene	ND		0.00500	1	10/04/2017 03:37	WG1026225
Ethylbenzene	0.00111	B	0.000500	1	10/04/2017 03:37	WG1026225
Total Xylene	0.00184	B	0.00150	1	10/04/2017 03:37	WG1026225
TPH (GC/FID) Low Fraction	ND		0.100	1	10/04/2017 03:37	WG1026225
(S) a,a,a-Trifluorotoluene(FID)	92.2		77.0-120		10/04/2017 03:37	WG1026225
(S) a,a,a-Trifluorotoluene(PID)	98.8		75.0-128		10/04/2017 03:37	WG1026225





Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	134		20.0	5	10/05/2017 18:37	WG1027431
C28-C40 Oil Range	37.3		20.0	5	10/05/2017 18:37	WG1027431
(S) o-Terphenyl	82.5		18.0-148		10/05/2017 18:37	WG1027431

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.00845		0.00600	1	10/04/2017 21:24	WG1026649
Acenaphthene	ND		0.00600	1	10/04/2017 21:24	WG1026649
Acenaphthylene	ND		0.00600	1	10/04/2017 21:24	WG1026649
Benzo(a)anthracene	0.0222		0.00600	1	10/04/2017 21:24	WG1026649
Benzo(a)pyrene	0.0449		0.00600	1	10/04/2017 21:24	WG1026649
Benzo(b)fluoranthene	0.0840		0.00600	1	10/04/2017 21:24	WG1026649
Benzo(g,h,i)perylene	0.0593		0.00600	1	10/04/2017 21:24	WG1026649
Benzo(k)fluoranthene	0.0171		0.00600	1	10/04/2017 21:24	WG1026649
Chrysene	0.0240		0.00600	1	10/04/2017 21:24	WG1026649
Dibenz(a,h)anthracene	0.0140		0.00600	1	10/04/2017 21:24	WG1026649
Fluoranthene	0.0263		0.00600	1	10/04/2017 21:24	WG1026649
Fluorene	0.0132		0.00600	1	10/04/2017 21:24	WG1026649
Indeno(1,2,3-cd)pyrene	0.0429		0.00600	1	10/04/2017 21:24	WG1026649
Naphthalene	0.211		0.0200	1	10/04/2017 21:24	WG1026649
Phenanthrene	0.0542		0.00600	1	10/04/2017 21:24	WG1026649
Pyrene	0.0398		0.00600	1	10/04/2017 21:24	WG1026649
1-Methylnaphthalene	0.168		0.0200	1	10/04/2017 21:24	WG1026649
2-Methylnaphthalene	0.323		0.0200	1	10/04/2017 21:24	WG1026649
2-Chloronaphthalene	ND		0.0200	1	10/04/2017 21:24	WG1026649
(S) p-Terphenyl-d14	77.5		23.0-120		10/04/2017 21:24	WG1026649
(S) Nitrobenzene-d5	95.1		14.0-149		10/04/2017 21:24	WG1026649
(S) 2-Fluorobiphenyl	78.6		34.0-125		10/04/2017 21:24	WG1026649

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3253504-1 09/29/17 14:41				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Chromium,Hexavalent	U		0.64	2.00

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

L939723-01 Original Sample (OS) • Duplicate (DUP)

(OS) L939723-01 09/29/17 14:55 • (DUP) R3253504-4 09/29/17 14:56						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Chromium,Hexavalent	ND	1.64	1	0		20

L939723-09 Original Sample (OS) • Duplicate (DUP)

(OS) L939723-09 09/29/17 15:01 • (DUP) R3253504-5 09/29/17 15:01						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Chromium,Hexavalent	ND	1.76	1	0		20

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

(LCS) R3253504-2 09/29/17 14:41 • (LCSD) R3253504-3 09/29/17 14:41										
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Chromium,Hexavalent	56.9	46.0	42.6	81	75	30-170			8	20

L939723-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L939723-09 09/29/17 15:01 • (MS) R3253504-6 09/29/17 15:02 • (MSD) R3253504-7 09/29/17 15:02												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Chromium,Hexavalent	20.0	ND	3.00	2.88	5	5	1	75-125	<u>J6</u>	<u>J6</u>	4	20

L939723-01 Original Sample (OS) • Duplicate (DUP)

(OS) L939723-01 09/30/17 14:39 • (DUP) WG1025724-3 09/30/17 14:39

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.35	7.35	1	0.000	T8	1

Sample Narrative:
OS: 7.35 at 19.2c
DUP: 7.35 at 19.2c

L939743-04 Original Sample (OS) • Duplicate (DUP)

(OS) L939743-04 09/30/17 14:39 • (DUP) WG1025724-4 09/30/17 14:39

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.61	7.61	1	0.000	T8	1

Sample Narrative:
OS: 7.61 at 19.4c
DUP: 7.61 at 19.5c

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

(LCS) WG1025724-1 09/30/17 14:39 • (LCSD) WG1025724-2 09/30/17 14:39

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	su	su	su	%	%	%			%	%
pH	10.0	9.98	9.98	99.8	99.8	99.0-101			0.000	1

Sample Narrative:
LCS: 9.98 at 19.4c
LCSD: 9.98 at 19.4c

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) WG1026281-1 10/02/17 11:51

Analyte	MB Result umhos/cm	MB Qualifier	MB MDL umhos/cm	MB RDL umhos/cm
Specific Conductance	2.12			

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L938720-01 Original Sample (OS) • Duplicate (DUP)

(OS) L938720-01 10/02/17 11:51 • (DUP) WG1026281-4 10/02/17 11:51

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1530	1540	1	0.326		20

L939729-04 Original Sample (OS) • Duplicate (DUP)

(OS) L939729-04 10/02/17 11:51 • (DUP) WG1026281-5 10/02/17 11:51

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	641	628	1	2.05		20

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

(LCS) WG1026281-2 10/02/17 11:51 • (LCSD) WG1026281-3 10/02/17 11:51

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCSD Result umhos/cm	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Specific Conductance	559	546	536	97.7	95.9	90.0-110			1.85	20



Method Blank (MB)

(MB) R3255023-1 10/05/17 09:38

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

(LCS) R3255023-2 10/05/17 09:41 • (LCSD) R3255023-3 10/05/17 09:43

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 %
Mercury	0.300	0.261	0.279	87	93	80-120			6	20

L939723-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L939723-01 10/05/17 09:45 • (MS) R3255023-4 10/05/17 09:57 • (MSD) R3255023-5 10/05/17 09:59

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 %
Mercury	0.300	0.0232	0.295	0.301	91	93	1	75-125			2	20



L939723-01,02,03,04,05,06,07,08,09

Method Blank (MB)

(MB) R3255101-1 10/05/17 14:20

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.65	2.00
Barium	0.206	J	0.17	0.500
Boron	U		1.26	10.0
Cadmium	U		0.07	0.500
Chromium	U		0.14	1.00
Copper	U		0.53	2.00
Lead	U		0.19	0.500
Nickel	U		0.49	2.00
Selenium	U		0.74	2.00
Silver	U		0.28	1.00
Zinc	3.27	J	0.59	5.00

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

(LCS) R3255101-2 10/05/17 14:23 • (LCSD) R3255101-3 10/05/17 14:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	100	103	100	103	100	80-120			3	20
Barium	100	108	106	108	106	80-120			3	20
Boron	100	109	106	109	106	80-120			4	20
Cadmium	100	104	102	104	102	80-120			2	20
Chromium	100	105	103	105	103	80-120			1	20
Copper	100	107	105	107	105	80-120			1	20
Lead	100	104	102	104	102	80-120			2	20
Nickel	100	105	103	105	103	80-120			2	20
Selenium	100	105	102	105	102	80-120			2	20
Silver	20.0	19.8	19.8	99	99	80-120			0	20
Zinc	100	106	104	106	104	80-120			2	20

L939225-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L939225-01 10/05/17 14:30 • (MS) R3255101-6 10/05/17 14:39 • (MSD) R3255101-7 10/05/17 14:43

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	111	3.31	113	109	99	95	1	75-125			4	20
Barium	111	59.1	185	180	113	109	1	75-125			3	20
Boron	111	ND	121	116	104	100	1	75-125			4	20
Cadmium	111	ND	113	109	102	99	1	75-125			3	20



L939225-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L939225-01 10/05/17 14:30 • (MS) R3255101-6 10/05/17 14:39 • (MSD) R3255101-7 10/05/17 14:43

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MSD Result (dry)	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Chromium	111	52.6	171	162	107	99	1	75-125			5	20
Copper	111	20.8	141	136	108	104	1	75-125			4	20
Lead	111	9.79	126	121	105	100	1	75-125			4	20
Nickel	111	85.4	327	206	218	109	1	75-125	J5	J3	45	20
Selenium	111	ND	111	108	100	97	1	75-125			3	20
Silver	22.2	ND	21.8	21.3	98	96	1	75-125			2	20
Zinc	111	34.8	144	138	98	93	1	75-125			4	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) R3254672-3 10/03/17 21:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000409	U	0.000150	0.00500
Ethylbenzene	0.000244	U	0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	99.5			77.0-120
(S) a,a,a-Trifluorotoluene(PID)	107			75.0-128

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

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

(LCS) R3254672-1 10/03/17 20:25 • (LCSD) R3254672-2 10/03/17 20:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.52	5.48	100	99.7	70.0-136			0.680	20
(S) a,a,a-Trifluorotoluene(FID)				106	106	77.0-120				
(S) a,a,a-Trifluorotoluene(PID)				118	117	75.0-128				

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

(LCS) R3254672-4 10/03/17 22:34 • (LCSD) R3254672-5 10/03/17 22:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0498	0.0511	99.7	102	71.0-121			2.52	20
Toluene	0.0500	0.0513	0.0514	103	103	72.0-120			0.220	20
Ethylbenzene	0.0500	0.0524	0.0533	105	107	76.0-121			1.71	20
Total Xylene	0.150	0.158	0.160	105	107	75.0-124			1.51	20
(S) a,a,a-Trifluorotoluene(FID)				99.3	99.0	77.0-120				
(S) a,a,a-Trifluorotoluene(PID)				104	103	75.0-128				



Method Blank (MB)

(MB) R3254521-1 10/04/17 06:40

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	81.1			18.0-148

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

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

(LCS) R3254521-2 10/04/17 06:54 • (LCSD) R3254521-3 10/04/17 07:08

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 %
C10-C28 Diesel Range	60.0	50.6	46.3	84.4	77.2	50.0-150			8.95	20
(S) o-Terphenyl				101	95.5	18.0-148				

L939723-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L939723-07 10/04/17 08:46 • (MS) R3254521-4 10/04/17 09:00 • (MSD) R3254521-5 10/04/17 09:14

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	12.0	187	220	205	55.4	29.8	5	50.0-150		J6	7.23	20
(S) o-Terphenyl					84.5	77.5		18.0-148				



Method Blank (MB)

(MB) R3255070-1 10/05/17 12:18

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	88.6			18.0-148

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

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

(LCS) R3255070-2 10/05/17 12:33 • (LCSD) R3255070-3 10/05/17 12:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	60.0	39.4	40.3	65.7	67.1	50.0-150			2.04	20
(S) o-Terphenyl				81.3	81.5	18.0-148				

L939723-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L939723-08 10/05/17 17:53 • (MS) R3255070-4 10/05/17 18:07 • (MSD) R3255070-5 10/05/17 18:23

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 %
C10-C28 Diesel Range	12.0	32.2	91.2	82.9	98.2	84.4	5	50.0-150			9.52	20
(S) o-Terphenyl					72.0	71.0		18.0-148				

Sample Narrative:

OS: Cannot run at lower dilution due to viscosity of extract

Method Blank (MB)

(MB) R3254945-3 10/04/17 15:10

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.000600	0.00600
Acenaphthene	U		0.000600	0.00600
Acenaphthylene	U		0.000600	0.00600
Benzo(a)anthracene	U		0.000600	0.00600
Benzo(a)pyrene	U		0.000600	0.00600
Benzo(b)fluoranthene	U		0.000600	0.00600
Benzo(g,h,i)perylene	U		0.000600	0.00600
Benzo(k)fluoranthene	U		0.000600	0.00600
Chrysene	U		0.000600	0.00600
Dibenz(a,h)anthracene	U		0.000600	0.00600
Fluoranthene	U		0.000600	0.00600
Fluorene	U		0.000600	0.00600
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600
Naphthalene	U		0.00200	0.0200
Phenanthrene	U		0.000600	0.00600
Pyrene	U		0.000600	0.00600
1-Methylnaphthalene	U		0.00200	0.0200
2-Methylnaphthalene	U		0.00200	0.0200
2-Chloronaphthalene	U		0.00200	0.0200
(S) Nitrobenzene-d5	94.6			14.0-149
(S) 2-Fluorobiphenyl	90.0			34.0-125
(S) p-Terphenyl-d14	91.6			23.0-120

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

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

(LCS) R3254945-1 10/04/17 14:29 • (LCSD) R3254945-2 10/04/17 14:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0800	0.0729	0.0695	91.2	86.9	50.0-125			4.77	20
Acenaphthene	0.0800	0.0706	0.0706	88.3	88.3	52.0-120			0.0200	20
Acenaphthylene	0.0800	0.0697	0.0690	87.1	86.3	51.0-120			0.990	20
Benzo(a)anthracene	0.0800	0.0684	0.0660	85.5	82.5	46.0-121			3.54	20
Benzo(a)pyrene	0.0800	0.0697	0.0685	87.1	85.6	42.0-121			1.68	20
Benzo(b)fluoranthene	0.0800	0.0659	0.0691	82.3	86.4	42.0-123			4.79	20
Benzo(g,h,i)perylene	0.0800	0.0703	0.0697	87.9	87.1	43.0-128			0.960	20
Benzo(k)fluoranthene	0.0800	0.0769	0.0706	96.2	88.2	45.0-128			8.63	20
Chrysene	0.0800	0.0720	0.0721	89.9	90.1	48.0-127			0.200	20
Dibenz(a,h)anthracene	0.0800	0.0700	0.0681	87.5	85.1	43.0-132			2.73	20
Fluoranthene	0.0800	0.0759	0.0743	94.8	92.8	49.0-129			2.13	20

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

LCS) R3254945-1 10/04/17 14:29 • (LCSD) R3254945-2 10/04/17 14:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Fluorene	0.0800	0.0712	0.0706	88.9	88.3	50.0-120			0.740	20
Indeno(1,2,3-cd)pyrene	0.0800	0.0705	0.0689	88.1	86.2	44.0-131			2.20	20
Naphthalene	0.0800	0.0695	0.0691	86.9	86.4	50.0-120			0.550	20
Phenanthrene	0.0800	0.0716	0.0705	89.5	88.1	48.0-120			1.64	20
Pyrene	0.0800	0.0690	0.0676	86.2	84.5	48.0-135			2.05	20
1-Methylnaphthalene	0.0800	0.0720	0.0728	90.1	91.0	52.0-122			1.01	20
2-Methylnaphthalene	0.0800	0.0699	0.0694	87.4	86.8	52.0-120			0.700	20
2-Chloronaphthalene	0.0800	0.0699	0.0701	87.4	87.6	50.0-120			0.250	20
(S) Nitrobenzene-d5				91.4	89.8	14.0-149				
(S) 2-Fluorobiphenyl				85.5	85.1	34.0-125				
(S) p-Terphenyl-d14				82.4	81.2	23.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L939723-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L939723-07 10/04/17 20:01 • (MS) R3254945-4 10/04/17 20:22 • (MSD) R3254945-5 10/04/17 20:42

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Anthracene	0.0800	0.00751	0.0677	0.0701	75.3	78.3	1	20.0-136			3.45	24
Acenaphthene	0.0800	ND	0.0681	0.0696	83.6	85.4	1	29.0-124			2.09	20
Acenaphthylene	0.0800	ND	0.0630	0.0647	78.7	80.9	1	35.0-120			2.76	20
Benzo(a)anthracene	0.0800	0.0207	0.0828	0.0847	77.6	79.9	1	13.0-132			2.27	27
Benzo(a)pyrene	0.0800	0.0484	0.105	0.107	70.8	73.1	1	14.0-138			1.75	27
Benzo(b)fluoranthene	0.0800	0.0913	0.139	0.140	59.5	61.0	1	10.0-129			0.880	31
Benzo(g,h,i)perylene	0.0800	0.0765	0.122	0.121	56.9	56.2	1	10.0-133			0.440	30
Benzo(k)fluoranthene	0.0800	0.0207	0.0810	0.0849	75.4	80.2	1	15.0-131			4.69	27
Chrysene	0.0800	0.0222	0.0994	0.0997	96.4	96.9	1	15.0-137			0.340	25
Dibenz(a,h)anthracene	0.0800	0.0168	0.0734	0.0744	70.7	72.0	1	15.0-132			1.46	27
Fluoranthene	0.0800	0.0244	0.0916	0.0922	84.0	84.8	1	13.0-139			0.720	28
Fluorene	0.0800	0.00976	0.0714	0.0718	77.1	77.6	1	27.0-122			0.560	22
Indeno(1,2,3-cd)pyrene	0.0800	0.0528	0.107	0.108	67.4	68.6	1	11.0-133			0.920	29
Naphthalene	0.0800	0.121	0.167	0.168	57.5	58.7	1	18.0-136			0.570	21
Phenanthrene	0.0800	0.0418	0.102	0.101	74.7	74.2	1	15.0-133			0.400	25
Pyrene	0.0800	0.0381	0.0977	0.0997	74.5	76.9	1	11.0-146			1.99	29
1-Methylnaphthalene	0.0800	0.104	0.159	0.154	69.3	62.9	1	24.0-137			3.27	22
2-Methylnaphthalene	0.0800	0.210	0.249	0.249	49.0	49.0	1	23.0-136			0.000	22
2-Chloronaphthalene	0.0800	ND	0.0630	0.0644	78.7	80.5	1	36.0-120			2.20	20
(S) Nitrobenzene-d5					88.8	93.5		14.0-149				
(S) 2-Fluorobiphenyl					74.5	77.6		34.0-125				
(S) p-Terphenyl-d14					74.5	77.7		23.0-120				



Guide to Reading and Understanding Your Laboratory Report

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

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
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.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T8	Sample(s) received past/too close to holding time expiration.

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



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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

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

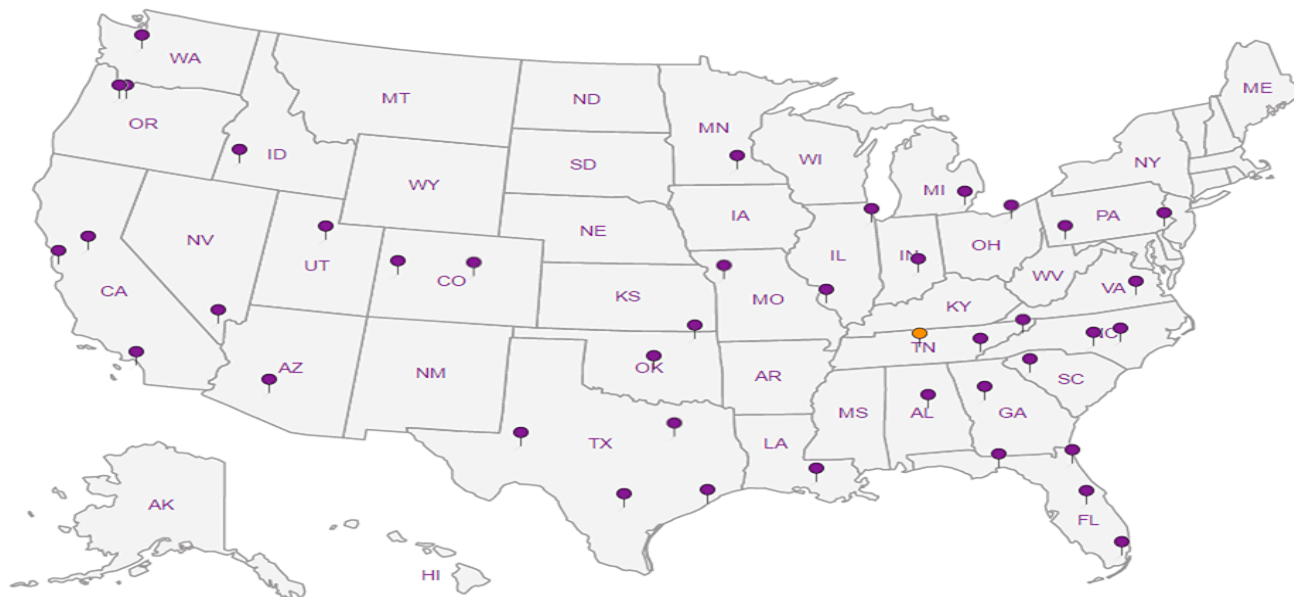
Third Party & Federal Accreditations

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

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

Our Locations

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



Company Name/Address:
Nicholson GeoSolutions, LLC
 3433 E. Lake Dr.
 Centennial, CO 80121

Billing Information:
Tom Hogelin
 Berry Petroleum Company
 235 Callahan Ave
 Parachute, CO 81623

Report to:
Dave Nicholson

Email To:
dknicholson@q.com

Project Description: **O-06**

Phone: **303-601-2023**

Fax:

Collected by (print):

Collected by (signature): *DW Nicholson*
 Immediately Packed on Ice N Y

City/State Collected:

Lab Project #

P.O. #

Date Results Needed

Rush? (Lab MUST Be Notified)
 Same Day200%
 Next Day100%
 Two Day50%
 Three Day25%
 Email? No X Yes
 FAX? No X Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	SAR, metals, Cr VI	BTEX / TPH	TEPH (diesel + motor oil)	pH, SP CON	PAHs by 8270 SIM								
006-LF-1		SS		9/26	1210	5	X	X	X	X	X								01
006-LF-2					1215		X	X	X	X	X								02
006-LF-3					1220		X	X	X	X	X								03
006-LF-4					1225		X	X	X	X	X								04
006-LF-5					1230		X	X	X	X	X								05
006-LF-6					1235		X	X	X	X	X								06
006-LF-7					1240		X	X	X	X	X								07
006-LF-8					1245		X	X	X	X	X								08
006-LF-9					1250		X	X	X	X	X								09

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



YOUR LAB OF CHOICE

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



H155

Acctnum: **BERPETDCO**

Template:

Prelogin:

TSR:

Cooler:

Shipped Via:

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks: **As, Ba, B, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Zn, Cr VI**

Relinquished by: (Signature) <i>DW Nicholson</i>	Date: 9/27/17	Time: 1400	Received by: (Signature) <i>Fedex</i>	Samples returned via: <input checked="" type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/>	Hold #
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 0.9 °C Bottles Received: 45	Condition: (lab use only) <i>mw11</i>
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) <i>Jennifer Skoy</i>	Date: 9-28-17 Time: 8:45	COC Seal Intact: <u>Y</u> <u>N</u> <u>NA</u> pH Checked: NCF:

ESC LAB SCIENCES Cooler Receipt Form

Client:	BERPETDx	SDG#	979723	
Cooler Received/Opened On:	9/28/17	Temperature:	0.9	
Received by:	Jennifer Royal			
Signature:	<i>Jennifer Royal</i>			
Receipt Check List				
	NP	Yes	No	
COC Seal Present / Intact?	/			
COC Signed / Accurate?		/		
Bottles arrive intact?		/		
Correct bottles used?		/		
Sufficient volume sent?		/		
If Applicable				
VOA Zero headspace? ____				
Preservation Correct / Checked?				