

ANALYTICAL REPORT

January 03, 2019

5/20/2019

REM # 13560

Doc #1313019

sample results

mentioned in

inspection doc

685100577

Colorado Oil & Gas Conservation

Sample Delivery Group: L1055576

Samples Received: 12/21/2018

Project Number:

Description: peakview overburden

Site: 312913

Report To: Kris Neidel

707 Wapiti Court, Ste 204

Rifle, CO 81650

Entire Report Reviewed By:



Chris Ward

Project Manager

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



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SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



PEAKVIEW 001 L1055576-01 Solid

Collected by
Kris Neidel

Collected date/time
12/20/18 11:30

Received date/time
12/21/18 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1216167	1	12/30/18 16:07	12/30/18 16:07	CCE
Calculated Results	WG1215362	1	12/26/18 14:32	12/28/18 12:06	MLW
Wet Chemistry by Method 3060A/7196A	WG1216556	1	12/27/18 17:15	12/28/18 12:06	MLW
Wet Chemistry by Method 9045D	WG1215304	1	12/23/18 17:00	12/23/18 18:34	TH
Wet Chemistry by Method 9050AMod	WG1215300	1	12/24/18 10:00	12/24/18 11:28	BAM
Mercury by Method 7471A	WG1215509	1	12/24/18 08:23	12/26/18 12:57	EL
Metals (ICP) by Method 6010B	WG1215362	1	12/26/18 14:32	12/27/18 12:38	CCE
Volatile Organic Compounds (GC) by Method 8015/8021	WG1215851	1	12/22/18 15:02	12/26/18 19:05	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1216802	20	12/28/18 23:55	12/29/18 17:32	MTJ
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1216911	1	12/28/18 20:56	12/29/18 15:57	CJR

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCOUNT:

Colorado Oil & Gas Conservation

PROJECT:

SDG:

L1055576

DATE/TIME:

01/03/19 09:31

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, 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	1.03		1	12/30/2018 16:07	WG1216167

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	19.6		1.00	1	12/28/2018 12:06	WG1215362

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	12/28/2018 12:06	WG1216556

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	6.82	T8	1	12/23/2018 18:34	WG1215304

Sample Narrative:

L1055576-01 WG1215304: 6.82 at 18.9C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	210		10.0	1	12/24/2018 11:28	WG1215300

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	12/26/2018 12:57	WG1215509

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.79		2.00	1	12/27/2018 12:38	WG1215362
Barium	169		0.500	1	12/27/2018 12:38	WG1215362
Cadmium	0.630		0.500	1	12/27/2018 12:38	WG1215362
Chromium	19.6		1.00	1	12/27/2018 12:38	WG1215362
Copper	22.6		2.00	1	12/27/2018 12:38	WG1215362
Lead	17.0		0.500	1	12/27/2018 12:38	WG1215362
Nickel	18.0		2.00	1	12/27/2018 12:38	WG1215362
Selenium	ND		2.00	1	12/27/2018 12:38	WG1215362
Silver	ND		1.00	1	12/27/2018 12:38	WG1215362
Zinc	103		5.00	1	12/27/2018 12:38	WG1215362

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00167		0.000500	1	12/26/2018 19:05	WG1215851
Toluene	ND	J3	0.00500	1	12/26/2018 19:05	WG1215851
Ethylbenzene	ND	J3	0.000500	1	12/26/2018 19:05	WG1215851
Total Xylene	ND	J3 J6	0.00150	1	12/26/2018 19:05	WG1215851
TPH (GC/FID) Low Fraction	ND		0.100	1	12/26/2018 19:05	WG1215851



Volatile Organic Compounds (GC) by Method 8015/8021

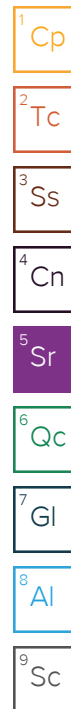
Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	94.1		77.0-120		12/26/2018 19:05	WG1215851
(S) a,a,a-Trifluorotoluene(PID)	95.5		72.0-128		12/26/2018 19:05	WG1215851

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	251		80.0	20	12/29/2018 17:32	WG1216802
(S) o-Terphenyl	80.0	J7	18.0-148		12/29/2018 17:32	WG1216802

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/29/2018 15:57	WG1216911
Acenaphthene	ND		0.00600	1	12/29/2018 15:57	WG1216911
Acenaphthylene	ND		0.00600	1	12/29/2018 15:57	WG1216911
Benzo(a)anthracene	ND		0.00600	1	12/29/2018 15:57	WG1216911
Benzo(a)pyrene	ND		0.00600	1	12/29/2018 15:57	WG1216911
Benzo(b)fluoranthene	0.0138		0.00600	1	12/29/2018 15:57	WG1216911
Benzo(g,h,i)perylene	0.00747		0.00600	1	12/29/2018 15:57	WG1216911
Benzo(k)fluoranthene	ND		0.00600	1	12/29/2018 15:57	WG1216911
Chrysene	0.00833		0.00600	1	12/29/2018 15:57	WG1216911
Dibenz(a,h)anthracene	ND		0.00600	1	12/29/2018 15:57	WG1216911
Fluoranthene	0.0127		0.00600	1	12/29/2018 15:57	WG1216911
Fluorene	ND		0.00600	1	12/29/2018 15:57	WG1216911
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/29/2018 15:57	WG1216911
Naphthalene	ND		0.0200	1	12/29/2018 15:57	WG1216911
Phenanthrene	ND		0.00600	1	12/29/2018 15:57	WG1216911
Pyrene	0.0137		0.00600	1	12/29/2018 15:57	WG1216911
1-Methylnaphthalene	ND		0.0200	1	12/29/2018 15:57	WG1216911
2-Methylnaphthalene	ND		0.0200	1	12/29/2018 15:57	WG1216911
2-Chloronaphthalene	ND		0.0200	1	12/29/2018 15:57	WG1216911
(S) p-Terphenyl-d14	48.0		23.0-120		12/29/2018 15:57	WG1216911
(S) Nitrobenzene-d5	65.1		14.0-149		12/29/2018 15:57	WG1216911
(S) 2-Fluorobiphenyl	47.7		34.0-125		12/29/2018 15:57	WG1216911



Method Blank (MB)

(MB) R3371884-1 12/28/18 11:57

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

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

L1055528-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1055528-03 12/28/18 12:02 • (DUP) R3371884-7 12/28/18 12:05

	Original Result (dry)	DUP Result (dry)	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Chromium,Hexavalent	1.40	1.56	1	10.8	⌵	20

L1055995-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1055995-09 12/28/18 12:12 • (DUP) R3371884-8 12/28/18 12:13

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

Laboratory Control Sample (LCS)

(LCS) R3371884-2 12/28/18 11:57

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Chromium,Hexavalent	24.0	23.4	97.7	80.0-120	

L1055528-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1055528-01 12/28/18 11:58 • (MS) R3371884-3 12/28/18 12:00 • (MSD) R3371884-4 12/28/18 12:00

	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,Hexavalent	22.8	1.55	21.5	22.3	87.6	91.2	1	75.0-125			3.74	20



L1055528-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1055528-01 12/28/18 11:58 • (MS) R3371884-5 12/28/18 12:01

	Spike Amount (dry)	Original Result (dry)	MS Result (dry)	MS Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Chromium,Hexavalent	807	1.55	859	106	50	75.0-125	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1055576-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1055576-01 12/23/18 18:34 • (DUP) R3370791-2 12/23/18 18:34

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	6.82	6.83	1	0.147		1

Sample Narrative:
OS: 6.82 at 18.9C
DUP: 6.83 at 18.9C

L1055822-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1055822-09 12/23/18 18:34 • (DUP) R3370791-3 12/23/18 18:34

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	3.60	3.59	1	0.278		1

Sample Narrative:
OS: 3.6 at 18.3C
DUP: 3.59 at 18.3C

Laboratory Control Sample (LCS)

(LCS) R3370791-1 12/23/18 18:34

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

Sample Narrative:
LCS: 10.01 at 19.1C

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3370951-1 12/24/18 11:28

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

L1055515-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1055515-01 12/24/18 11:28 • (DUP) R3370951-3 12/24/18 11:28

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	<u>DUP Qualifier</u>	DUP RPD Limits %
Specific Conductance	271	271	1	0.0739		20

Laboratory Control Sample (LCS)

(LCS) R3370951-2 12/24/18 11:28

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Specific Conductance	877	870	99.2	90.0-110	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3371271-1 12/26/18 11:58

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Mercury	U		0.00280	0.0200

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

(LCS) R3371271-2 12/26/18 12:01 • (LCSD) R3371271-3 12/26/18 12:03

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Mercury	0.300	0.279	0.272	92.9	90.7	80.0-120			2.42	20

L1055846-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1055846-01 12/26/18 12:06 • (MS) R3371271-4 12/26/18 12:08 • (MSD) R3371271-5 12/26/18 12:18

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Mercury	0.300	ND	0.279	0.276	86.7	85.9	1	75.0-125			0.817	20



Method Blank (MB)

(MB) R3371575-1 12/27/18 12:03

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.460	2.00
Barium	U		0.170	0.500
Cadmium	U		0.0700	0.500
Chromium	U		0.140	1.00
Copper	U		0.530	2.00
Lead	U		0.190	0.500
Nickel	U		0.490	2.00
Selenium	U		0.620	2.00
Silver	U		0.120	1.00
Zinc	U		0.590	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

(LCS) R3371575-2 12/27/18 12:06 • (LCSD) R3371575-3 12/27/18 12:09

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	99.2	99.5	99.2	99.5	80.0-120			0.253	20
Barium	100	103	103	103	103	80.0-120			0.401	20
Cadmium	100	96.2	96.8	96.2	96.8	80.0-120			0.657	20
Chromium	100	99.0	98.6	99.0	98.6	80.0-120			0.406	20
Copper	100	101	101	101	101	80.0-120			0.286	20
Lead	100	97.8	97.9	97.8	97.9	80.0-120			0.117	20
Nickel	100	99.6	99.6	99.6	99.6	80.0-120			0.0149	20
Selenium	100	97.2	98.5	97.2	98.5	80.0-120			1.34	20
Silver	20.0	18.7	18.7	93.5	93.7	80.0-120			0.203	20
Zinc	100	96.7	96.6	96.7	96.6	80.0-120			0.0794	20

L1055573-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1055573-01 12/27/18 12:11 • (MS) R3371575-6 12/27/18 12:19 • (MSD) R3371575-7 12/27/18 12:22

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	3.49	97.9	99.8	94.5	96.3	1	75.0-125			1.88	20
Barium	100	126	225	239	98.2	113	1	75.0-125			6.25	20
Cadmium	100	0.253	92.4	94.1	92.1	93.8	1	75.0-125			1.82	20
Chromium	100	12.5	103	104	90.4	91.2	1	75.0-125			0.767	20
Copper	100	15.5	111	113	95.4	98.0	1	75.0-125			2.27	20
Lead	100	9.02	103	107	94.2	97.6	1	75.0-125			3.26	20
Nickel	100	16.3	112	118	96.1	102	1	75.0-125			4.95	20



L1055573-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1055573-01 12/27/18 12:11 • (MS) R3371575-6 12/27/18 12:19 • (MSD) R3371575-7 12/27/18 12:22

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 %
Selenium	100	U	90.9	90.8	90.9	90.8	1	75.0-125			0.136	20
Silver	20.0	U	17.8	18.2	89.2	90.9	1	75.0-125			1.88	20
Zinc	100	40.2	125	125	84.6	84.3	1	75.0-125			0.239	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3371451-5 12/26/18 12:10

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000608	J	0.000150	0.00500
Ethylbenzene	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)	103			77.0-120
(S) a,a,a-Trifluorotoluene(PID)	97.7			72.0-128

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

(LCS) R3371451-1 12/26/18 10:22 • (LCSD) R3371451-2 12/26/18 10:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0493	0.0477	98.6	95.4	76.0-121			3.30	20
Toluene	0.0500	0.0518	0.0497	104	99.5	80.0-120			4.05	20
Ethylbenzene	0.0500	0.0525	0.0506	105	101	80.0-124			3.77	20
Total Xylene	0.150	0.156	0.150	104	100	37.0-160			3.85	20
(S) a,a,a-Trifluorotoluene(FID)				99.9	100	77.0-120				
(S) a,a,a-Trifluorotoluene(PID)				98.0	98.2	72.0-128				

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

(LCS) R3371451-3 12/26/18 11:05 • (LCSD) R3371451-4 12/26/18 11:27

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 %
TPH (GC/FID) Low Fraction	5.50	5.60	5.59	102	102	72.0-127			0.144	20
(S) a,a,a-Trifluorotoluene(FID)				91.5	90.9	77.0-120				
(S) a,a,a-Trifluorotoluene(PID)				105	105	72.0-128				



L1055576-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1055576-01 12/26/18 19:05 • (MS) R3371451-6 12/26/18 21:13 • (MSD) R3371451-7 12/26/18 21:43

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.00167	0.0262	0.0311	49.1	58.9	1	10.0-155			17.1	32
Toluene	0.0500	ND	0.0191	0.0295	35.8	56.6	1	10.0-160		J3	42.9	34
Ethylbenzene	0.0500	ND	0.0132	0.0257	25.6	50.6	1	10.0-160		J3	64.3	32
Total Xylene	0.150	ND	0.0349	0.0747	22.5	49.0	1	10.0-160	J6	J3 J6	72.6	32
(S) a,a,a-Trifluorotoluene(FID)					92.5	102		77.0-120				
(S) a,a,a-Trifluorotoluene(PID)					90.8	101		72.0-128				

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Cp

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Method Blank (MB)

(MB) R3372215-1 12/29/18 13:49

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
(S) o-Terphenyl	81.5			18.0-148

1Cp

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8Al

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

(LCS) R3372215-2 12/29/18 14:01 • (LCSD) R3372215-3 12/29/18 14:13

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) High Fraction	50.0	44.3	44.9	88.6	89.8	50.0-150			1.35	20
(S) o-Terphenyl				104	102	18.0-148				

L1055841-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1055841-03 12/29/18 15:46 • (MS) R3372215-4 12/29/18 15:58 • (MSD) R3372215-5 12/29/18 16:10

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	49.5	ND	43.4	45.3	87.7	90.6	1	50.0-150			4.28	20
(S) o-Terphenyl					78.5	83.3		18.0-148				

Method Blank (MB)

(MB) R3372383-3 12/29/18 08:36

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	69.4			14.0-149
(S) 2-Fluorobiphenyl	75.3			34.0-125
(S) p-Terphenyl-d14	83.7			23.0-120

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

(LCS) R3372383-1 12/29/18 07:54 • (LCSD) R3372383-2 12/29/18 08:15

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	0.0557	0.0562	69.6	70.3	50.0-126			0.894	20
Acenaphthene	0.0800	0.0571	0.0572	71.4	71.5	50.0-120			0.175	20
Acenaphthylene	0.0800	0.0568	0.0571	71.0	71.4	50.0-120			0.527	20
Benzo(a)anthracene	0.0800	0.0514	0.0505	64.3	63.1	45.0-120			1.77	20
Benzo(a)pyrene	0.0800	0.0535	0.0509	66.9	63.6	42.0-120			4.98	20
Benzo(b)fluoranthene	0.0800	0.0546	0.0536	68.3	67.0	42.0-121			1.85	20
Benzo(g,h,i)perylene	0.0800	0.0532	0.0529	66.5	66.1	45.0-125			0.565	20
Benzo(k)fluoranthene	0.0800	0.0553	0.0568	69.1	71.0	49.0-125			2.68	20
Chrysene	0.0800	0.0557	0.0556	69.6	69.5	49.0-122			0.180	20
Dibenz(a,h)anthracene	0.0800	0.0527	0.0518	65.9	64.8	47.0-125			1.72	20
Fluoranthene	0.0800	0.0578	0.0581	72.3	72.6	49.0-129			0.518	20

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

(LCS) R3372383-1 12/29/18 07:54 • (LCSD) R3372383-2 12/29/18 08:15

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	0.0569	0.0573	71.1	71.6	49.0-120			0.701	20
Indeno(1,2,3-cd)pyrene	0.0800	0.0542	0.0531	67.8	66.4	46.0-125			2.05	20
Naphthalene	0.0800	0.0555	0.0555	69.4	69.4	50.0-120			0.000	20
Phenanthrene	0.0800	0.0558	0.0563	69.8	70.4	47.0-120			0.892	20
Pyrene	0.0800	0.0576	0.0576	72.0	72.0	43.0-123			0.000	20
1-Methylnaphthalene	0.0800	0.0570	0.0568	71.3	71.0	51.0-121			0.351	20
2-Methylnaphthalene	0.0800	0.0542	0.0539	67.8	67.4	50.0-120			0.555	20
2-Chloronaphthalene	0.0800	0.0566	0.0568	70.8	71.0	50.0-120			0.353	20
(S) Nitrobenzene-d5				79.3	78.1	14.0-149				
(S) 2-Fluorobiphenyl				76.7	77.3	34.0-125				
(S) p-Terphenyl-d14				80.3	80.0	23.0-120				

L1055462-20 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1055462-20 12/29/18 08:57 • (MS) R3372383-4 12/29/18 09:17 • (MSD) R3372383-5 12/29/18 09:38

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 %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Anthracene	0.0931	ND	0.0515	0.0503	55.4	55.1	1	10.0-145			2.51	30
Acenaphthene	0.0931	ND	0.0542	0.0497	58.3	54.5	1	14.0-127			8.73	27
Acenaphthylene	0.0931	ND	0.0552	0.0524	59.3	57.4	1	21.0-124			5.19	25
Benzo(a)anthracene	0.0931	ND	0.0512	0.0500	55.0	54.8	1	10.0-139			2.30	30
Benzo(a)pyrene	0.0931	ND	0.0521	0.0508	56.0	55.7	1	10.0-141			2.49	31
Benzo(b)fluoranthene	0.0931	ND	0.0475	0.0458	51.0	50.3	1	10.0-140			3.49	36
Benzo(g,h,i)perylene	0.0931	ND	0.0499	0.0474	53.6	51.9	1	10.0-140			5.26	33
Benzo(k)fluoranthene	0.0931	ND	0.0520	0.0503	55.9	55.1	1	10.0-137			3.41	31
Chrysene	0.0931	ND	0.0529	0.0518	56.9	56.8	1	10.0-145			2.22	30
Dibenz(a,h)anthracene	0.0931	ND	0.0540	0.0517	58.0	56.6	1	10.0-132			4.41	31
Fluoranthene	0.0931	ND	0.0517	0.0497	55.5	54.5	1	10.0-153			3.90	33
Fluorene	0.0931	ND	0.0531	0.0492	57.0	54.0	1	11.0-130			7.51	29
Indeno(1,2,3-cd)pyrene	0.0931	ND	0.0512	0.0490	55.0	53.7	1	10.0-137			4.41	32
Naphthalene	0.0931	ND	0.0550	0.0524	59.1	57.4	1	10.0-135			4.98	27
Phenanthrene	0.0931	ND	0.0508	0.0482	54.6	52.8	1	10.0-144			5.41	31
Pyrene	0.0931	ND	0.0499	0.0486	53.6	53.3	1	10.0-148			2.60	35
1-Methylnaphthalene	0.0931	ND	0.0553	0.0513	59.4	56.3	1	10.0-142			7.42	28
2-Methylnaphthalene	0.0931	ND	0.0529	0.0488	56.9	53.4	1	10.0-137			8.24	28
2-Chloronaphthalene	0.0931	ND	0.0552	0.0512	59.3	56.1	1	29.0-120			7.44	24
(S) Nitrobenzene-d5					69.9	68.9		14.0-149				
(S) 2-Fluorobiphenyl					56.6	49.9		34.0-125				
(S) p-Terphenyl-d14					60.4	61.3		23.0-120				

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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, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
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



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

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

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T 104704245-17-14
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

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

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

Our Locations

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



COGCC
c/o Kris Neidel
2578 Riverside Dr.
Steamboat Springs, CO 80487

Billing Information:
Colorado Oil & Gas Conservation
Commission
1120 Lincoln Street, Suite 801
Denver, CO 80203

Report to:
Kris Neidel

Email To:
kris.neidel@state.co.us

Project
Description: peakview overburden

City/State
Collected: CO

Phone: 970-871-1963
Fax:

Client Project #

Lab Project #

Collected by (print):
Kris Neidel

Site/Facility ID #
Kowatch 1-9

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

Quote #

Immediately
Packed on Ice N ☐ Y ☒

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

Date Results Needed

No.
of
Cntrs

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

Peakview 001
Peakview 002

Comp

SS

2-5'

12/20/18

11:30

6

TPH (GRO and DRO)

COGCC Table 910-1 Metals

COGCC Table 910-1-Organics (PAH's, BTEX)

Inorganics (EC, SAR PH)

Analysis / Container / Preservative

Chain of Custody Page ____ of ____



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



L# L1055576

F143

Acctnum: COILGASRCO

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Remarks

Sample # (lab only)

-01

RAD SCREEN: <0.5 mR/hr

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

Remarks:

Samples returned via:

UPS ☒ FedEx ☐ Courier ☐

pH _____ Temp _____

Flow _____ Other _____

Tracking # 4510 1667 23 49

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received: Yes ☒ No ☐
HCL/MeOH
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: °C Bottles Received: 6 = 402
1.9 ± 0.1

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: 12/21/18 Time: 1600

Hold:

Condition:
NCF / OK

If preservation required by Login: Date/Time

VOA Zero Headspace: ☒ Y ☐ N
Preservation Correct/Checked: ☒ Y ☐ N

Sample Receipt Checklist
COC Seal Present/Intact: ☒ Y ☐ N
COC Signed/Accurate: ☒ Y ☐ N
Bottles arrive intact: ☒ Y ☐ N
Correct bottles used: ☒ Y ☐ N
Sufficient volume sent: ☒ Y ☐ N