Nicholson GeoSolutions LLC
3433 East Lake Drive
Centennial, CO 80121

September 20, 2017

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

Subject: I-11 (J-13) Landfarm Screening Soil Sample Results

Dear Derek:

Nicholson GeoSolutions LLC collected a screening level soil sample from the landfarm on the I-11 well pad (the former J-13 spoils) in the Garden Gulch area, Garfield County, Colorado on September 10th, 2017. The sample was composited from 16 subsamples collected at depths of about 12-18 inches across the surface of the portions of the landfarm that did not previously pass the final discrete sample testing.

The sample was 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) and PAHs to evaluate compliance with the COGCC Table 910-1 standards and further treatment needs. Inorganic parameters (SAR, pH, conductivity, and metals) were not analyzed for this sample since these parameters have been previously well characterized. The laboratory report is attached.

Benzo(a)pyrene was reported at 0.0945 mg/kg and dibenz(a,h)anthracene was reported at 0.0411 mg/kg, above the standard of 0.022 mg/kg for both compounds. All other results were below the standards.

Further treatment of this landfarm should be conducted.

Nicholson GeoSolutions LLC

DK Nicholson

David K. Nicholson, P.G.
Principal Geologist

APPENDIX A
Laboratory Report

ANALYTICAL REPORT

September 19, 2017

Berry Petroleum - Denver, CO

Sample Delivery Group:	L935558
Samples Received:	09/12/2017
Project Number:	
Description:	Pit Reclamation
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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O-36B L935558-01 Solid

Collected by	Collected date/time	Received date/time
DK Nicholson	09/09/17 16:20	09/12/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1019615	1	09/12/17 14:59	09/13/17 14:56	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1021639	10	09/18/17 19:47	09/19/17 11:45	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1020498	1	09/14/17 21:51	09/15/17 18:10	KMP

J-13 L935558-02 Solid

Collected by	Collected date/time	Received date/time
DK Nicholson	09/09/17 16:30	09/12/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1019615	1	09/12/17 14:59	09/13/17 15:18	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1021639	10	09/18/17 19:47	09/19/17 11:59	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1020498	1	09/14/17 21:51	09/15/17 18:31	KMP

LATHAM I-02 L935558-03 Solid

Collected by	Collected date/time	Received date/time
DK Nicholson	09/10/17 13:00	09/12/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1019615	1	09/12/17 14:59	09/13/17 15:41	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1021639	10	09/18/17 19:47	09/19/17 12:41	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1020498	1	09/14/17 21:51	09/15/17 17:29	KMP

F-01 L935558-04 Solid

Collected by	Collected date/time	Received date/time
DK Nicholson	09/10/17 13:10	09/12/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1019615	1	09/12/17 14:59	09/13/17 16:03	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1021639	10	09/18/17 19:47	09/19/17 12:55	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1020498	1	09/14/17 21:51	09/15/17 17:50	KMP

I-31 L935558-05 Solid

Collected by	Collected date/time	Received date/time
DK Nicholson	09/10/17 11:15	09/12/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1019615	1	09/12/17 14:59	09/13/17 16:25	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1021639	10	09/18/17 19:47	09/19/17 13:09	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1020498	1	09/14/17 21:51	09/15/17 16:06	KMP

O-29 L935558-06 Solid

Collected by	Collected date/time	Received date/time
DK Nicholson	09/10/17 11:35	09/12/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1019615	1	09/12/17 14:59	09/13/17 16:48	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1021639	10	09/18/17 19:47	09/19/17 13:23	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1020498	1	09/14/17 21:51	09/15/17 16:27	KMP

F-06 L935558-07 Solid

Collected by	Collected date/time	Received date/time
DK Nicholson	09/10/17 13:30	09/12/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1019615	1	09/12/17 14:59	09/13/17 17:10	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1021639	10	09/18/17 19:47	09/19/17 13:37	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1020498	1	09/14/17 21:51	09/15/17 16:47	KMP

O-06 L935558-08 Solid

Collected by	Collected date/time	Received date/time
DK Nicholson	09/10/17 13:50	09/12/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1019615	1	09/12/17 14:59	09/13/17 17:33	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1021639	10	09/18/17 19:47	09/19/17 13:50	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1020498	1	09/14/17 21:51	09/15/17 17:08	KMP

I-11 L935558-09 Solid

Collected by	Collected date/time	Received date/time
DK Nicholson	09/10/17 14:00	09/12/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC) by Method 8015/8021	WG1019615	1	09/12/17 14:59	09/13/17 17:56	LRL
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1021639	10	09/18/17 19:47	09/19/17 14:04	ACM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1020498	1	09/14/17 21:51	09/15/17 18:52	KMP

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

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. 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

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00189	J3	0.000500	1	09/13/2017 17:56	WG1019615
Toluene	ND	J3	0.00500	1	09/13/2017 17:56	WG1019615
Ethylbenzene	0.00144	J3	0.000500	1	09/13/2017 17:56	WG1019615
Total Xylene	0.00219	J3 J6	0.00150	1	09/13/2017 17:56	WG1019615
TPH (GC/FID) Low Fraction	ND	J3	0.100	1	09/13/2017 17:56	WG1019615
(S) a,a,a-Trifluorotoluene(FID)	*89.9*		*77.0-120*		*09/13/2017 17:56*	WG1019615
(S) a,a,a-Trifluorotoluene(PID)	*96.3*		*75.0-128*		*09/13/2017 17:56*	WG1019615

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	77.2		40.0	10	09/19/2017 14:04	WG1021639
C28-C40 Oil Range	ND		40.0	10	09/19/2017 14:04	WG1021639
(S) o-Terphenyl	*89.3*		*18.0-148*		*09/19/2017 14:04*	WG1021639

Sample Narrative:

L935558-09 WG1021639: Dilution due to matrix impact during extraction procedure

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.0161		0.00600	1	09/15/2017 18:52	WG1020498
Acenaphthene	0.0114		0.00600	1	09/15/2017 18:52	WG1020498
Acenaphthylene	ND		0.00600	1	09/15/2017 18:52	WG1020498
Benzo(a)anthracene	0.0649		0.00600	1	09/15/2017 18:52	WG1020498
Benzo(a)pyrene	0.0945		0.00600	1	09/15/2017 18:52	WG1020498
Benzo(b)fluoranthene	0.223		0.00600	1	09/15/2017 18:52	WG1020498
Benzo(g,h,i)perylene	0.140		0.00600	1	09/15/2017 18:52	WG1020498
Benzo(k)fluoranthene	0.0451		0.00600	1	09/15/2017 18:52	WG1020498
Chrysene	0.111		0.00600	1	09/15/2017 18:52	WG1020498
Dibenz(a,h)anthracene	0.0411		0.00600	1	09/15/2017 18:52	WG1020498
Fluoranthene	0.0806		0.00600	1	09/15/2017 18:52	WG1020498
Fluorene	0.0293		0.00600	1	09/15/2017 18:52	WG1020498
Indeno(1,2,3-cd)pyrene	0.108		0.00600	1	09/15/2017 18:52	WG1020498
Naphthalene	0.187		0.0200	1	09/15/2017 18:52	WG1020498
Phenanthrene	0.107		0.00600	1	09/15/2017 18:52	WG1020498
Pyrene	0.0710		0.00600	1	09/15/2017 18:52	WG1020498
1-Methylnaphthalene	0.199		0.0200	1	09/15/2017 18:52	WG1020498
2-Methylnaphthalene	0.339		0.0200	1	09/15/2017 18:52	WG1020498
2-Chloronaphthalene	ND		0.0200	1	09/15/2017 18:52	WG1020498
(S) p-Terphenyl-d14	*79.9*		*23.0-120*		*09/15/2017 18:52*	WG1020498
(S) Nitrobenzene-d5	*82.3*		*14.0-149*		*09/15/2017 18:52*	WG1020498
(S) 2-Fluorobiphenyl	*82.7*		*34.0-125*		*09/15/2017 18:52*	WG1020498

Method Blank (MB)

(MB) R3249649-5 09/13/17 11:28

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	U		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)	*98.6*			*77.0-120*
(S) a,a,a-Trifluorotoluene(PID)	*105*			*75.0-128*

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

(LCS) R3249649-1 09/13/17 09:15 • (LCSD) R3249649-2 09/13/17 09:59

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	0.0466	0.0484	93.2	96.7	71.0-121			3.67	20
Toluene	0.0500	0.0486	0.0498	97.1	99.6	72.0-120			2.48	20
Ethylbenzene	0.0500	0.0507	0.0520	101	104	76.0-121			2.50	20
Total Xylene	0.150	0.154	0.158	103	105	75.0-124			2.18	20
(S) a,a,a-Trifluorotoluene(FID)				*98.7*	*99.0*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*104*	*104*	*75.0-128*				

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

(LCS) R3249649-3 09/13/17 10:21 • (LCSD) R3249649-4 09/13/17 10:43

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 %
TPH (GC/FID) Low Fraction	5.50	6.23	6.31	113	115	70.0-136			1.31	20
(S) a,a,a-Trifluorotoluene(FID)				*107*	*107*	*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)				*119*	*119*	*75.0-128*				

L935558-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L935558-09 09/13/17 17:56 • (MS) R3249649-6 09/13/17 18:18 • (MSD) R3249649-7 09/13/17 18:40

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	0.00189	0.0139	0.0255	24.1	47.2	1	10.0-146		J3	58.7	29
Toluene	0.0500	ND	0.0125	0.0199	18.3	33.1	1	10.0-143		J3	45.5	30
Ethylbenzene	0.0500	0.00144	0.00970	0.0154	16.5	27.8	1	10.0-147		J3	45.1	31
Total Xylene	0.150	0.00219	0.0264	0.0411	16.1	25.9	1	10.0-149	J6	J3 J6	43.5	30
(S) a,a,a-Trifluorotoluene(FID)					*91.4*	*93.9*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*97.0*	*99.0*		*75.0-128*				

L935558-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L935558-09 09/13/17 17:56 • (MS) R3249649-8 09/13/17 19:02 • (MSD) R3249649-9 09/13/17 19:24

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	ND	2.34	1.71	42.5	31.1	1	10.0-147		J3	31.1	30
(S) a,a,a-Trifluorotoluene(FID)					*94.3*	*93.2*		*77.0-120*				
(S) a,a,a-Trifluorotoluene(PID)					*103*	*101*		*75.0-128*				

Method Blank (MB)

(MB) R3250308-1 09/19/17 09:26

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	*86.8*			*18.0-148*

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

(LCS) R3250308-2 09/19/17 09:40 • (LCSD) R3250308-3 09/19/17 09:54

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	57.6	55.0	96.0	91.7	50.0-150			4.64	20
(S) o-Terphenyl				*94.2*	*85.9*	*18.0-148*				

L935558-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L935558-02 09/19/17 11:59 • (MS) R3250308-4 09/19/17 12:13 • (MSD) R3250308-5 09/19/17 12:27

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	6.00	92.4	185	164	154	120	10	50.0-150	J5		12.0	20
(S) o-Terphenyl					*87.7*	*88.0*		*18.0-148*				

Method Blank (MB)

(MB) R3249935-3 09/15/17 15:24

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	*72.7*			*14.0-149*
(S) 2-Fluorobiphenyl	*83.6*			*34.0-125*
(S) p-Terphenyl-d14	*74.6*			*23.0-120*

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

(LCS) R3249935-1 09/15/17 14:43 • (LCSD) R3249935-2 09/15/17 15:03

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	0.0656	0.0623	82.1	77.9	50.0-125			5.25	20
Acenaphthene	0.0800	0.0649	0.0681	81.1	85.2	52.0-120			4.92	20
Acenaphthylene	0.0800	0.0646	0.0681	80.7	85.1	51.0-120			5.32	20
Benzo(a)anthracene	0.0800	0.0580	0.0611	72.5	76.3	46.0-121			5.21	20
Benzo(a)pyrene	0.0800	0.0557	0.0582	69.6	72.8	42.0-121			4.43	20
Benzo(b)fluoranthene	0.0800	0.0522	0.0555	65.2	69.4	42.0-123			6.24	20
Benzo(g,h,i)perylene	0.0800	0.0619	0.0648	77.4	81.0	43.0-128			4.59	20
Benzo(k)fluoranthene	0.0800	0.0683	0.0719	85.4	89.9	45.0-128			5.10	20
Chrysene	0.0800	0.0657	0.0695	82.1	86.9	48.0-127			5.63	20
Dibenz(a,h)anthracene	0.0800	0.0627	0.0660	78.3	82.5	43.0-132			5.23	20
Fluoranthene	0.0800	0.0688	0.0726	86.0	90.7	49.0-129			5.40	20

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

(LCS) R3249935-1 09/15/17 14:43 • (LCSD) R3249935-2 09/15/17 15:03

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 %
Fluorene	0.0800	0.0652	0.0683	81.5	85.3	50.0-120			4.57	20
Indeno(1,2,3-cd)pyrene	0.0800	0.0628	0.0660	78.5	82.4	44.0-131			4.94	20
Naphthalene	0.0800	0.0638	0.0676	79.7	84.5	50.0-120			5.79	20
Phenanthrene	0.0800	0.0634	0.0670	79.2	83.7	48.0-120			5.52	20
Pyrene	0.0800	0.0578	0.0611	72.2	76.3	48.0-135			5.51	20
1-Methylnaphthalene	0.0800	0.0689	0.0737	86.2	92.1	52.0-122			6.68	20
2-Methylnaphthalene	0.0800	0.0652	0.0689	81.5	86.1	52.0-120			5.48	20
2-Chloronaphthalene	0.0800	0.0654	0.0693	81.8	86.6	50.0-120			5.77	20
(S) Nitrobenzene-d5				*75.6*	*75.0*	*14.0-149*				
(S) 2-Fluorobiphenyl				*83.7*	*86.4*	*34.0-125*				
(S) p-Terphenyl-d14				*73.2*	*76.1*	*23.0-120*				

L933861-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L933861-03 09/15/17 20:36 • (MS) R3249935-4 09/15/17 20:57 • (MSD) R3249935-5 09/15/17 21:17

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 %
Anthracene	0.100	U	0.0556	0.0593	55.5	59.2	1	20.0-136			6.43	24
Acenaphthene	0.100	U	0.0657	0.0684	65.6	68.3	1	29.0-124			4.14	20
Acenaphthylene	0.100	U	0.0663	0.0688	66.1	68.7	1	35.0-120			3.80	20
Benzo(a)anthracene	0.100	U	0.0500	0.0538	49.9	53.7	1	13.0-132			7.23	27
Benzo(a)pyrene	0.100	U	0.0523	0.0556	52.2	55.5	1	14.0-138			6.02	27
Benzo(b)fluoranthene	0.100	U	0.0440	0.0468	44.0	46.7	1	10.0-129			6.10	31
Benzo(g,h,i)perylene	0.100	U	0.0463	0.0506	46.2	50.5	1	10.0-133			8.82	30
Benzo(k)fluoranthene	0.100	U	0.0572	0.0593	57.1	59.1	1	15.0-131			3.58	27
Chrysene	0.100	U	0.0572	0.0619	57.1	61.8	1	15.0-137			7.99	25
Dibenz(a,h)anthracene	0.100	U	0.0522	0.0563	52.1	56.2	1	15.0-132			7.46	27
Fluoranthene	0.100	U	0.0652	0.0701	65.0	70.0	1	13.0-139			7.30	28
Fluorene	0.100	U	0.0640	0.0669	63.9	66.8	1	27.0-122			4.47	22
Indeno(1,2,3-cd)pyrene	0.100	U	0.0499	0.0538	49.8	53.8	1	11.0-133			7.54	29
Naphthalene	0.100	U	0.0740	0.0730	73.8	72.9	1	18.0-136			1.29	21
Phenanthrene	0.100	0.00152	0.0595	0.0637	57.9	62.1	1	15.0-133			6.88	25
Pyrene	0.100	U	0.0531	0.0563	53.0	56.2	1	11.0-146			5.86	29
1-Methylnaphthalene	0.100	U	0.0741	0.0753	74.0	75.1	1	24.0-137			1.55	22
2-Methylnaphthalene	0.100	U	0.0707	0.0718	70.6	71.7	1	23.0-136			1.54	22
2-Chloronaphthalene	0.100	U	0.0694	0.0716	69.3	71.5	1	36.0-120			3.06	20
(S) Nitrobenzene-d5					*66.4*	*70.1*		*14.0-149*				
(S) 2-Fluorobiphenyl					*68.9*	*72.4*		*34.0-125*				
(S) p-Terphenyl-d14					*53.1*	*57.2*		*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
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.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

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
Alaska	UST-080
Arizona	AZ0612
Arkansas	88-0469
California	01157CA
Colorado	TN00003
Conneticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia [1]	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky [1]	90010
Kentucky [2]	16
Louisiana	AI30792
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086
Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey–NELAP	TN002
New Mexico	TN00003
New York	11742
North Carolina	Env375
North Carolina [1]	DW21704
North Carolina [2]	41
North Dakota	R-140
Ohio–VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	221
South Carolina	84004
South Dakota	n/a
Tennessee [1 4]	2006
Texas	T 104704245-07-TX
Texas [5]	LAB0152
Utah	6157585858
Vermont	VT2006
Virginia	109
Washington	C1915
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

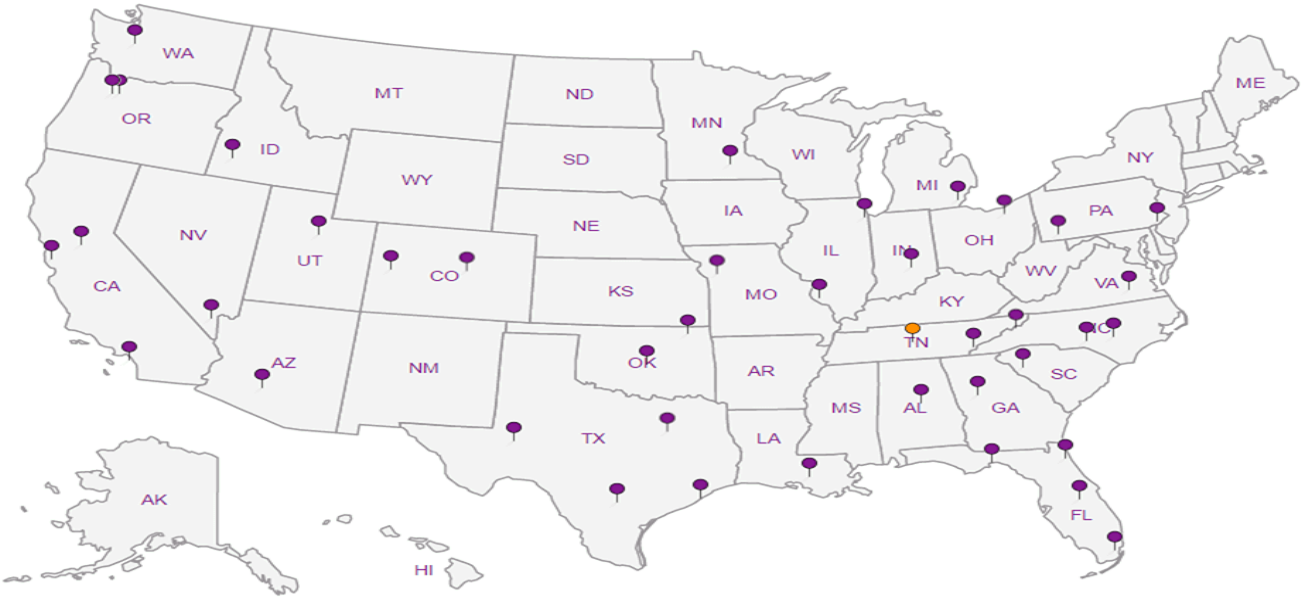
Third Party & Federal Accreditations

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

[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 81635

Report to: Dave Nicholson
Email To: dknicholson@q.com

Project Description: Pit Reclamation
City/State Collected:

Phone: 303-601-2023
Fax:
Client Project #
Lab Project # BERPETDCO030615S

Collected by (print):
Site/Facility ID #
P.O. #

Collected by (signature): DKNicholson
Immediately Packed on Ice N ___ Y (✓)

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
X Three Day 25%

Date Results Needed
Email? ___No X Yes
FAX? X No ___Yes

Chain of Custody Page 1 of 1

ESC LAB SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L935588
F103
Acctnum: BERPETDCO
Template:
Prelogin:
TSR:
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	~~SAR, Metals, Cr6 (1) 4oz Clear - No Pres~~	BTEX/TVPH (1) 4oz Clear - No Pres	TEPH(8015)Diesel & Oil Range (1) 4oz Clear-No Pres	~~SPCON, pH (1) 4oz Clear - No Pres~~	PAHs by 8270 SIM					Rem./Contaminant	Sample # (lab only)
O-36B		SS		9/9	1620	3		X	X		X						-01
J-13		SS		9/9	1630	3		X	X		X						02
Latham I-02		SS		9/10	1300	3		X	X		X						03
F-01		SS			1310	4		X	X		X						04
I-31		SS			1115	4		X	X		X						05
O-29		SS			1135	4		X	X		X						06
F-06		SS			1330	4		X	X		X						07
O-06		SS			1350	4		X	X		X						08
I-11		SS			1400	3											09
		SS				4											

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

1594 pH ___ Temp ___

Remarks: ~~As, Ba, B, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Zn, Cr6~~ 7176 9007 1609

Flow ___ Other ___

Hold #

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ___	Condition: (lab use only)
DKNicholson	9/10/17	1700			OK
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.6 °C Bottles Received: 27-4oz	COC Seal Intact: ___Y ___N ✓NA
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 9/12/17 Time: 0845	pH Checked: NCF:

ESC LAB SCIENCES
Cooler Receipt Form

Client: BERPETDCO	SDG#	L935558	
Cooler Received/Opened On: 9 / 12 / 17	Temperature:	3.6°C	
Received by: David Riggin			
Signature:			

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?			