

July 26, 2023

Terra Energy Partners

Sample Delivery Group: L1635621
Samples Received: 07/14/2023
Project Number: API 05-045-06612 P&A
Description: Terra Energy Partners-Clough W-86-29 P&A
Site: CLOUGH W-86-29
Report To: Mike Gardner, Kris Rowe
1058 County Road 215
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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Pace Analytical National

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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

WELLHEAD L1635621-01 Solid

Collected by
Kris Rowe

Collected date/time
07/13/23 13:00

Received date/time
07/14/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2095326	1	07/25/23 16:09	07/25/23 16:09	SPL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2095916	1	07/17/23 00:46	07/18/23 03:36	VSS	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2096058	1	07/17/23 09:05	07/17/23 12:00	SJA	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2096073	1	07/17/23 10:32	07/17/23 14:32	MCC	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2095334	1	07/20/23 17:19	07/25/23 16:00	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2098801	5	07/24/23 16:33	07/24/23 20:16	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2096934	1	07/18/23 14:38	07/18/23 21:14	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2097567	1	07/18/23 14:38	07/19/23 10:47	KSD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2098203	1	07/21/23 09:04	07/21/23 15:02	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2098221	1	07/20/23 19:31	07/21/23 09:09	MBE	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.208		1	07/25/2023 16:09	WG2095326

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	07/18/2023 03:36	WG2095916

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.86	T8	1	07/17/2023 12:00	WG2096058

Sample Narrative:

L1635621-01 WG2096058: 7.86 at 22.9C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	350		10.0	1	07/17/2023 14:32	WG2096073

Sample Narrative:

L1635621-01 WG2096073: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.663		0.0167	0.200	1	07/25/2023 16:00	WG2095334

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.11		0.100	1.00	5	07/24/2023 20:16	WG2098801
Barium	251	J5	0.152	2.50	5	07/24/2023 20:16	WG2098801
Cadmium	0.464	J	0.0855	1.00	5	07/24/2023 20:16	WG2098801
Copper	9.33	O1	0.132	5.00	5	07/24/2023 20:16	WG2098801
Lead	12.0		0.0990	2.00	5	07/24/2023 20:16	WG2098801
Nickel	10.0	B O1	0.197	2.50	5	07/24/2023 20:16	WG2098801
Selenium	0.425	J	0.180	2.50	5	07/24/2023 20:16	WG2098801
Silver	U		0.0865	0.500	5	07/24/2023 20:16	WG2098801
Zinc	50.6		0.740	25.0	5	07/24/2023 20:16	WG2098801

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.241		0.0217	0.100	1	07/18/2023 21:14	WG2096934
(S) a,a,a-Trifluorotoluene(FID)	94.8			77.0-120		07/18/2023 21:14	WG2096934

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	07/19/2023 10:47	WG2097567
Toluene	U		0.00130	0.00500	1	07/19/2023 10:47	WG2097567
Ethylbenzene	U		0.000737	0.00250	1	07/19/2023 10:47	WG2097567
Xylenes, Total	0.00101	U	0.000880	0.00650	1	07/19/2023 10:47	WG2097567
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	07/19/2023 10:47	WG2097567
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	07/19/2023 10:47	WG2097567
(S) Toluene-d8	106			75.0-131		07/19/2023 10:47	WG2097567
(S) 4-Bromofluorobenzene	102			67.0-138		07/19/2023 10:47	WG2097567
(S) 1,2-Dichloroethane-d4	91.8			70.0-130		07/19/2023 10:47	WG2097567

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	20.1		1.61	4.00	1	07/21/2023 15:02	WG2098203
C28-C36 Motor Oil Range	93.8		0.274	4.00	1	07/21/2023 15:02	WG2098203
(S) o-Terphenyl	53.6			18.0-148		07/21/2023 15:02	WG2098203

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	07/21/2023 09:09	WG2098221
Acenaphthene	U		0.00209	0.00600	1	07/21/2023 09:09	WG2098221
Acenaphthylene	U		0.00216	0.00600	1	07/21/2023 09:09	WG2098221
Benzo(a)anthracene	U		0.00173	0.00600	1	07/21/2023 09:09	WG2098221
Benzo(a)pyrene	0.00205	U	0.00179	0.00600	1	07/21/2023 09:09	WG2098221
Benzo(b)fluoranthene	0.00519	U	0.00153	0.00600	1	07/21/2023 09:09	WG2098221
Benzo(g,h,i)perylene	0.00508	U	0.00177	0.00600	1	07/21/2023 09:09	WG2098221
Benzo(k)fluoranthene	U		0.00215	0.00600	1	07/21/2023 09:09	WG2098221
Chrysene	0.00441	U	0.00232	0.00600	1	07/21/2023 09:09	WG2098221
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	07/21/2023 09:09	WG2098221
Fluoranthene	0.00466	U	0.00227	0.00600	1	07/21/2023 09:09	WG2098221
Fluorene	U		0.00205	0.00600	1	07/21/2023 09:09	WG2098221
Indeno(1,2,3-cd)pyrene	0.00289	U	0.00181	0.00600	1	07/21/2023 09:09	WG2098221
Naphthalene	U		0.00408	0.0200	1	07/21/2023 09:09	WG2098221
Phenanthrene	0.00476	U	0.00231	0.00600	1	07/21/2023 09:09	WG2098221
Pyrene	0.00458	U	0.00200	0.00600	1	07/21/2023 09:09	WG2098221
1-Methylnaphthalene	0.00529	U	0.00449	0.0200	1	07/21/2023 09:09	WG2098221
2-Methylnaphthalene	0.00794	U	0.00427	0.0200	1	07/21/2023 09:09	WG2098221
2-Chloronaphthalene	U		0.00466	0.0200	1	07/21/2023 09:09	WG2098221
(S) p-Terphenyl-d14	67.2			23.0-120		07/21/2023 09:09	WG2098221
(S) Nitrobenzene-d5	57.1			14.0-149		07/21/2023 09:09	WG2098221
(S) 2-Fluorobiphenyl	66.2			34.0-125		07/21/2023 09:09	WG2098221

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3949528-1 07/18/23 00:58

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Hexavalent Chromium	U		0.255	1.00

L1635500-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1635500-01 07/18/23 02:03 • (DUP) R3949528-7 07/18/23 02:08

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

L1635511-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1635511-08 07/18/23 03:20 • (DUP) R3949528-8 07/18/23 03:26

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

Laboratory Control Sample (LCS)

(LCS) R3949528-2 07/18/23 01:05

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.0	100	80.0-120	

L1635414-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1635414-02 07/18/23 01:16 • (MS) R3949528-4 07/18/23 01:26 • (MSD) R3949528-5 07/18/23 01:31

	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	%	%		%			%	%
Hexavalent Chromium	20.0	U	15.8	15.4	79.1	76.9	1	75.0-125			2.88	20

L1635414-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1635414-02 07/18/23 01:16 • (MS) R3949528-6 07/18/23 01:37

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	654	U	359	54.9	50	75.0-125	J6

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1635599-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1635599-14 07/17/23 12:00 • (DUP) R3949332-2 07/17/23 12:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.93	7.92	1	0.126		1

Sample Narrative:
OS: 7.93 at 22.8C
DUP: 7.92 at 22.6C

L1635621-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1635621-01 07/17/23 12:00 • (DUP) R3949332-3 07/17/23 12:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.86	7.89	1	0.381		1

Sample Narrative:
OS: 7.86 at 22.9C
DUP: 7.89 at 22.8C

Laboratory Control Sample (LCS)

(LCS) R3949332-1 07/17/23 12:00

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

Sample Narrative:
LCS: 9.99 at 22.9C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3949387-1 07/17/23 14:32

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

Sample Narrative:

BLANK: at 25C

L1635618-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1635618-01 07/17/23 14:32 • (DUP) R3949387-3 07/17/23 14:32

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	443	444	1	0.225		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1635618-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1635618-02 07/17/23 14:32 • (DUP) R3949387-4 07/17/23 14:32

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	214	213	1	0.328		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3949387-2 07/17/23 14:32

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	732	743	102	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3952782-1 07/25/23 15:23

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

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

(LCS) R3952782-2 07/25/23 15:26 • (LCSD) R3952782-3 07/25/23 15:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.09	1.10	109	110	80.0-120			0.675	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3952151-1 07/24/23 20:09

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50
Cadmium	U		0.0855	1.00
Copper	U		0.133	5.00
Lead	U		0.0990	2.00
Nickel	2.48	J	0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

Laboratory Control Sample (LCS)

(LCS) R3952151-2 07/24/23 20:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	85.8	85.8	80.0-120	
Barium	100	83.2	83.2	80.0-120	
Cadmium	100	89.9	89.9	80.0-120	
Copper	100	83.1	83.1	80.0-120	
Lead	100	83.7	83.7	80.0-120	
Nickel	100	86.2	86.2	80.0-120	
Selenium	100	89.1	89.1	80.0-120	
Silver	20.0	17.9	89.4	80.0-120	
Zinc	100	82.0	82.0	80.0-120	

L1635621-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1635621-01 07/24/23 20:16 • (MS) R3952151-5 07/24/23 20:26 • (MSD) R3952151-6 07/24/23 20:29

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	5.11	92.3	88.4	87.2	83.3	5	75.0-125			4.31	20
Barium	100	251	384	329	133	77.9	5	75.0-125	J5		15.4	20
Cadmium	100	0.464	93.6	90.9	93.1	90.5	5	75.0-125			2.90	20
Copper	100	9.33	94.6	93.1	85.3	83.7	5	75.0-125			1.64	20
Lead	100	12.0	99.4	101	87.4	88.7	5	75.0-125			1.27	20
Nickel	100	10.0	94.9	90.5	84.8	80.5	5	75.0-125			4.65	20
Selenium	100	0.425	91.1	86.9	90.7	86.4	5	75.0-125			4.74	20
Silver	20.0	U	18.7	18.2	93.5	91.1	5	75.0-125			2.58	20
Zinc	100	50.6	133	138	82.1	87.0	5	75.0-125			3.61	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3950718-2 07/18/23 11:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0221	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	97.9			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3950718-1 07/18/23 11:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.63	84.2	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3951102-3 07/19/23 09:57

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	107			75.0-131
(S) 4-Bromofluorobenzene	103			67.0-138
(S) 1,2-Dichloroethane-d4	86.1			70.0-130

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

(LCS) R3951102-1 07/19/23 08:22 • (LCSD) R3951102-2 07/19/23 08:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.134	0.129	107	103	70.0-123			3.80	20
Toluene	0.125	0.136	0.133	109	106	75.0-121			2.23	20
Ethylbenzene	0.125	0.122	0.123	97.6	98.4	74.0-126			0.816	20
Xylenes, Total	0.375	0.375	0.355	100	94.7	72.0-127			5.48	20
1,2,4-Trimethylbenzene	0.125	0.107	0.109	85.6	87.2	70.0-126			1.85	20
1,3,5-Trimethylbenzene	0.125	0.111	0.110	88.8	88.0	73.0-127			0.905	20
(S) Toluene-d8				103	104	75.0-131				
(S) 4-Bromofluorobenzene				105	104	67.0-138				
(S) 1,2-Dichloroethane-d4				94.1	92.0	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3951457-1 07/21/23 13:42

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-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	79.3			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3951457-2 07/21/23 13:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	39.3	78.6	50.0-150	
(S) o-Terphenyl			71.6	18.0-148	

L1635599-15 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1635599-15 07/21/23 14:22 • (MS) R3951457-3 07/21/23 14:35 • (MSD) R3951457-4 07/21/23 14:49

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	48.6	3.20	36.3	37.1	68.1	70.3	1	50.0-150			2.18	20
(S) o-Terphenyl					52.2	55.0		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3951179-2 07/21/23 04:49

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) p-Terphenyl-d14	68.0			23.0-120
(S) Nitrobenzene-d5	44.5			14.0-149
(S) 2-Fluorobiphenyl	61.3			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3951179-1 07/21/23 04:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0699	87.4	50.0-126	
Acenaphthene	0.0800	0.0695	86.9	50.0-120	
Acenaphthylene	0.0800	0.0719	89.9	50.0-120	
Benzo(a)anthracene	0.0800	0.0722	90.3	45.0-120	
Benzo(a)pyrene	0.0800	0.0551	68.9	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0659	82.4	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0653	81.6	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0639	79.9	49.0-125	
Chrysene	0.0800	0.0737	92.1	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0663	82.9	47.0-125	
Fluoranthene	0.0800	0.0748	93.5	49.0-129	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3951179-1 07/21/23 04:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0753	94.1	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0670	83.8	46.0-125	
Naphthalene	0.0800	0.0673	84.1	50.0-120	
Phenanthrene	0.0800	0.0700	87.5	47.0-120	
Pyrene	0.0800	0.0762	95.3	43.0-123	
1-Methylnaphthalene	0.0800	0.0699	87.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0712	89.0	50.0-120	
2-Chloronaphthalene	0.0800	0.0707	88.4	50.0-120	
(S) p-Terphenyl-d14			91.2	23.0-120	
(S) Nitrobenzene-d5			63.8	14.0-149	
(S) 2-Fluorobiphenyl			80.0	34.0-125	

L1635658-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1635658-02 07/21/23 08:17 • (MS) R3951179-3 07/21/23 08:35 • (MSD) R3951179-4 07/21/23 08:52

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 %
Anthracene	0.0772	0.0189	0.0634	0.0661	57.6	61.1	1	10.0-145			4.17	30
Acenaphthene	0.0772	0.00895	0.0580	0.0618	63.5	68.5	1	14.0-127			6.34	27
Acenaphthylene	0.0772	U	0.0623	0.0654	80.7	84.7	1	21.0-124			4.86	25
Benzo(a)anthracene	0.0772	0.0409	0.0955	0.0893	70.7	62.7	1	10.0-139			6.71	30
Benzo(a)pyrene	0.0772	0.0423	0.103	0.0950	78.6	68.3	1	10.0-141			8.08	31
Benzo(b)fluoranthene	0.0772	0.0554	0.111	0.0991	72.0	56.6	1	10.0-140			11.3	36
Benzo(g,h,i)perylene	0.0772	0.0263	0.0901	0.0831	82.6	73.6	1	10.0-140			8.08	33
Benzo(k)fluoranthene	0.0772	0.0182	0.0777	0.0746	77.1	73.1	1	10.0-137			4.07	31
Chrysene	0.0772	0.0384	0.0967	0.0910	75.5	68.1	1	10.0-145			6.07	30
Dibenz(a,h)anthracene	0.0772	0.00601	0.0672	0.0682	79.3	80.6	1	10.0-132			1.48	31
Fluoranthene	0.0772	0.0887	0.119	0.113	39.2	31.5	1	10.0-153			5.17	33
Fluorene	0.0772	0.00959	0.0644	0.0676	71.0	75.1	1	11.0-130			4.85	29
Indeno(1,2,3-cd)pyrene	0.0772	0.0310	0.0958	0.0886	83.9	74.6	1	10.0-137			7.81	32
Naphthalene	0.0772	U	0.0557	0.0610	72.2	79.0	1	10.0-135			9.08	27
Phenanthrene	0.0772	0.0636	0.0831	0.0847	25.3	27.3	1	10.0-144			1.91	31
Pyrene	0.0772	0.0744	0.119	0.111	57.8	47.4	1	10.0-148			6.96	35
1-Methylnaphthalene	0.0772	U	0.0570	0.0624	71.1	78.1	1	10.0-142			9.05	28
2-Methylnaphthalene	0.0772	U	0.0598	0.0643	77.5	83.3	1	10.0-137			7.25	28
2-Chloronaphthalene	0.0772	U	0.0576	0.0620	74.6	80.3	1	29.0-120			7.36	24
(S) p-Terphenyl-d14					72.3	79.5		23.0-120				
(S) Nitrobenzene-d5					49.4	57.3		14.0-149				
(S) 2-Fluorobiphenyl					64.1	70.9		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

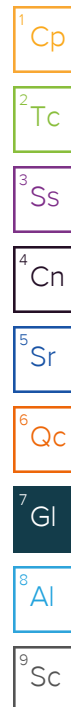
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
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.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122


Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA -- ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA -- ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA--Crypto	TN00003		

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

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

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



Client: Terra Energy Partners 1058 County Road 215 Parachute, CO 81650		Billing Info: Terra Energy Partners Attn: Tammi Gose 1058 County Road 215 Parachute, CO 81650 Acct #: TERENGPCO		Analysis / Container / Preservative										Page 1 of 1  12065 Lebanon Rd Mount Juliet, TN 37122 Ph: 615-758-5858 Ph: 800-767-5859 Fax: 615-758-5859					
Report To: Mike Gardner & Kris Rowe		E-Mail: mgardner@terraep.com krowe@terrep.com		COGCC Table 915-1										L# L-101					
Project Description: Terra Energy Partners - Clough W-86-29 P&A														City/State Collected: COLORADO		Acct #:			
Phone: 970-243-3271 Fax: 970-243-4380		Client Project #: API 05-045-06612 P&A												Lab Project #		Template: L1635621			
Collected By: Kris Rowe		Site/Facility ID: Clough W-86-29												P.O. #		Prelogin: PM: 824 - Chris Ward PB:			
Collected By (Signature):  Immediately Packed on Ice N Y X		Rush ? (lab must be notified) Same Day----- (200%) Next Day----- (100%) Two Day----- (50%) Three Day----- (25%)												Date Results Needed Standard TAT Email? No X Yes Fax? X No Yes		No. Of Cntrs			
Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. Of Cntrs		Rem/Contaminant										Sample #	
Wellhead	Grab	Soil	3'	7/13/2023	13:00	32 X												-61	
<div>6426 8306 6709</div> <div>Sample Receipt Checklist</div> <div>COC Seal Present/Intact: Y N If Applicable</div> <div>COC Signed/Accurate: Y N VOA Zero Headspace: Y N</div> <div>Bottles arrive intact: X N Pres. Correct/Check: Y N</div> <div>Correct bottles used: X N</div> <div>Sufficient volume sent: X N</div> <div>RAD Screen <0.5 mR/hr: Y N</div> <div>GBAC</div> <div>3-7+0=3.7</div>																			
*Matrix SS-Soil GW-Groundwater WW-WasteWater DW-Drinking Water OT-Other																			
Remarks:																			
Relinquished by (Sign)		Date: 7/13/23		Time: 1415		Relinquished by (Sign)		Samples Returned Via UPS FedEx		Condition: (Lab Use)									
Relinquished by (Sign)		Date: 7/13/23		Time: 1600		Relinquished by (Sign)		Temp: °C #Bot		COC Seal Intact Y N									
Relinquished by (Sign)		Date:		Time:		Received for lab by (Sign)		Date: 7/14/23 Time: 09:00		pH Checked		NCF:							