

Terra Energy Partners

Sample Delivery Group: L1557479
Samples Received: 11/10/2022
Project Number: API# 05-045-06686
Description: Terra Energy Partners-GV 79-35 P&A
Site: TEP-GV 79-35 P&A
Report To: Mike Gardner
1058 County Road 215
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

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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 L1557479-01 Solid

Collected by
Kris Rowe

Collected date/time
11/09/22 12:00

Received date/time
11/10/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1960437	1	11/21/22 18:23	11/21/22 18:23	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1960250	1	11/17/22 02:00	11/17/22 23:57	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1961489	1	11/19/22 09:06	11/19/22 11:06	KAD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1960758	1	11/17/22 12:10	11/17/22 16:30	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1961457	1	11/17/22 18:10	11/18/22 18:07	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1959038	1	11/15/22 10:11	12/01/22 15:17	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1961442	5	11/17/22 17:32	11/18/22 14:37	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1960889	1	11/15/22 08:49	11/17/22 12:11	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1959948	1	11/15/22 08:49	11/15/22 18:34	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1960325	1	11/16/22 12:01	11/17/22 10:57	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1960248	1	11/16/22 05:14	11/16/22 15:07	AED	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

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	4.90		1	11/21/2022 18:23	WG1960437

Wet Chemistry by Method 3060A/7196A

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Chromium,Hexavalent	U		0.640	2.00	1	11/17/2022 23:57	WG1960250

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	8.47	T8	1	11/19/2022 11:06	WG1961489

Sample Narrative:

L1557479-01 WG1961489: 8.47 at 19.4C

Wet Chemistry by Method 9050AMod

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	umhos/cm		umhos/cm			
Specific Conductance	1330		10.0	1	11/17/2022 16:30	WG1960758

Sample Narrative:

L1557479-01 WG1960758: at 25C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	496		0.0852	0.500	1	11/18/2022 18:07	WG1961457
Cadmium	0.684		0.0471	0.500	1	11/18/2022 18:07	WG1961457
Copper	14.1		0.400	2.00	1	11/18/2022 18:07	WG1961457
Lead	12.5		0.208	0.500	1	11/18/2022 18:07	WG1961457
Nickel	18.3		0.132	2.00	1	11/18/2022 18:07	WG1961457
Selenium	1.30	J	0.764	2.00	1	11/18/2022 18:07	WG1961457
Silver	U		0.127	1.00	1	11/18/2022 18:07	WG1961457
Zinc	59.0		0.832	5.00	1	11/18/2022 18:07	WG1961457

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

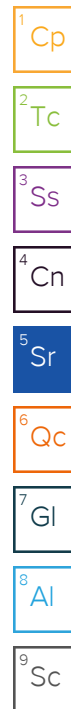
	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/l		mg/l	mg/l			
Hot Water Sol. Boron	0.567		0.0167	0.200	1	12/01/2022 15:17	WG1959038

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	5.10		0.100	1.00	5	11/18/2022 14:37	WG1961442

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	0.939		0.0217	0.100	1	11/17/2022 12:11	WG1960889
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	95.0			77.0-120		11/17/2022 12:11	WG1960889



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	11/15/2022 18:34	WG1959948
Toluene	0.00155	U	0.00130	0.00500	1	11/15/2022 18:34	WG1959948
Ethylbenzene	0.00130	B	0.000737	0.00250	1	11/15/2022 18:34	WG1959948
Xylenes, Total	0.00413	U	0.000880	0.00650	1	11/15/2022 18:34	WG1959948
1,2,4-Trimethylbenzene	0.00282	U	0.00158	0.00500	1	11/15/2022 18:34	WG1959948
1,3,5-Trimethylbenzene	0.00265	U	0.00200	0.00500	1	11/15/2022 18:34	WG1959948
(S) Toluene-d8	117			75.0-131		11/15/2022 18:34	WG1959948
(S) 4-Bromofluorobenzene	96.6			67.0-138		11/15/2022 18:34	WG1959948
(S) 1,2-Dichloroethane-d4	82.7			70.0-130		11/15/2022 18:34	WG1959948

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	2.45	U	1.61	4.00	1	11/17/2022 10:57	WG1960325
C28-C36 Motor Oil Range	7.29		0.274	4.00	1	11/17/2022 10:57	WG1960325
(S) o-Terphenyl	62.9			18.0-148		11/17/2022 10:57	WG1960325

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	11/16/2022 15:07	WG1960248
Acenaphthene	U		0.00209	0.00600	1	11/16/2022 15:07	WG1960248
Acenaphthylene	U		0.00216	0.00600	1	11/16/2022 15:07	WG1960248
Benzo(a)anthracene	U		0.00173	0.00600	1	11/16/2022 15:07	WG1960248
Benzo(a)pyrene	U		0.00179	0.00600	1	11/16/2022 15:07	WG1960248
Benzo(b)fluoranthene	U		0.00153	0.00600	1	11/16/2022 15:07	WG1960248
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	11/16/2022 15:07	WG1960248
Benzo(k)fluoranthene	U		0.00215	0.00600	1	11/16/2022 15:07	WG1960248
Chrysene	U		0.00232	0.00600	1	11/16/2022 15:07	WG1960248
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	11/16/2022 15:07	WG1960248
Fluoranthene	U		0.00227	0.00600	1	11/16/2022 15:07	WG1960248
Fluorene	U		0.00205	0.00600	1	11/16/2022 15:07	WG1960248
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	11/16/2022 15:07	WG1960248
Naphthalene	U		0.00408	0.0200	1	11/16/2022 15:07	WG1960248
Phenanthrene	U		0.00231	0.00600	1	11/16/2022 15:07	WG1960248
Pyrene	U		0.00200	0.00600	1	11/16/2022 15:07	WG1960248
1-Methylnaphthalene	U		0.00449	0.0200	1	11/16/2022 15:07	WG1960248
2-Methylnaphthalene	0.00696	U	0.00427	0.0200	1	11/16/2022 15:07	WG1960248
2-Chloronaphthalene	U		0.00466	0.0200	1	11/16/2022 15:07	WG1960248
(S) p-Terphenyl-d14	99.0			23.0-120		11/16/2022 15:07	WG1960248
(S) Nitrobenzene-d5	80.0			14.0-149		11/16/2022 15:07	WG1960248
(S) 2-Fluorobiphenyl	92.7			34.0-125		11/16/2022 15:07	WG1960248

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3862500-1 11/17/22 23:55

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

L1557476-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1557476-01 11/17/22 23:56 • (DUP) R3862500-3 11/17/22 23:56

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

Laboratory Control Sample (LCS)

(LCS) R3862500-2 11/17/22 23:55

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Chromium,Hexavalent	24.0	23.1	96.2	80.0-120	

L1557603-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1557603-02 11/17/22 23:59 • (MS) R3862500-4 11/17/22 23:59 • (MSD) R3862500-5 11/17/22 23:59

	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	%	%		%			%	%
Chromium,Hexavalent	20.0	U	3.56	2.85	17.8	14.2	1	75.0-125	J6	J3 J6	22.4	20

Sample Narrative:

OS: Sample is a reducer.

L1557603-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1557603-02 11/17/22 23:59 • (MS) R3862500-6 11/18/22 00:00

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Chromium,Hexavalent	638	U	684	107	50	75.0-125	

Sample Narrative:

OS: Sample is a reducer.

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3863025-1 11/19/22 11:06

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
	su	su	%	%	
pH	10.0	9.90	99.0	99.0-101	

Sample Narrative:

LCS: 9.9 at 19.6C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3862388-1 11/17/22 16:30

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

L1557479-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1557479-01 11/17/22 16:30 • (DUP) R3862388-3 11/17/22 16:30

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1330	1320	1	0.151		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1558281-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1558281-04 11/17/22 16:30 • (DUP) R3862388-4 11/17/22 16:30

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	265	264	1	0.453		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3862388-2 11/17/22 16:30

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1050	93.8	85.0-115	

Sample Narrative:

LCS: at 25C

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3863482-1 11/21/22 09:57

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3863482-2 11/21/22 10:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	105	105	80.0-120	
Cadmium	100	98.8	98.8	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	97.9	97.9	80.0-120	
Nickel	100	99.4	99.4	80.0-120	
Selenium	100	101	101	80.0-120	
Silver	20.0	18.7	93.5	80.0-120	
Zinc	100	97.8	97.8	80.0-120	

L1557479-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1557479-01 11/18/22 18:07 • (MS) R3863500-3 11/18/22 18:15 • (MSD) R3863500-4 11/18/22 18:17

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	496	567	546	70.4	49.4	1	75.0-125	V	V	3.79	20
Cadmium	100	0.684	95.9	90.3	95.2	89.6	1	75.0-125			6.00	20
Copper	100	14.1	105	102	90.8	87.5	1	75.0-125			3.20	20
Lead	100	12.5	105	103	92.8	90.5	1	75.0-125			2.25	20
Nickel	100	18.3	112	111	93.6	92.8	1	75.0-125			0.723	20
Selenium	100	1.30	95.9	90.0	94.6	88.7	1	75.0-125			6.43	20
Silver	20.0	U	18.9	17.5	94.3	87.6	1	75.0-125			7.35	20
Zinc	100	59.0	143	146	83.6	86.8	1	75.0-125			2.20	20

Method Blank (MB)

(MB) R3867215-1 12/01/22 13:18

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) R3867215-2 12/01/22 14:00 • (LCSD) R3867215-3 12/01/22 14:03

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	1.01	1.00	101	100	80.0-120			0.0303	20

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3862825-1 11/18/22 14:31

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

Laboratory Control Sample (LCS)

(LCS) R3862825-2 11/18/22 14:34

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	97.4	97.4	80.0-120	

L1557479-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1557479-01 11/18/22 14:37 • (MS) R3862825-5 11/18/22 14:47 • (MSD) R3862825-6 11/18/22 14:50

	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	%	%		%			%	%
Arsenic	100	5.10	95.3	83.8	90.2	78.7	5	75.0-125			12.8	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3863289-2 11/17/22 11:26

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	97.6			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3863289-1 11/17/22 10:04

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.50	100	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			107	77.0-120	

L1556885-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1556885-03 11/17/22 13:42 • (MS) R3863289-3 11/17/22 20:32 • (MSD) R3863289-4 11/17/22 20:55

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	0.0373	2.50	1.71	44.8	30.4	1	10.0-151		J3	37.5	28
(S) a,a,a-Trifluorotoluene(FID)					99.2	96.5		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3861355-3 11/15/22 11:31

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	0.000900	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	117			75.0-131
(S) 4-Bromofluorobenzene	101			67.0-138
(S) 1,2-Dichloroethane-d4	83.8			70.0-130

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

(LCS) R3861355-1 11/15/22 10:15 • (LCSD) R3861355-2 11/15/22 10:34

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	0.109	0.109	87.2	87.2	70.0-123			0.000	20
Toluene	0.125	0.123	0.120	98.4	96.0	75.0-121			2.47	20
Ethylbenzene	0.125	0.128	0.128	102	102	74.0-126			0.000	20
Xylenes, Total	0.375	0.419	0.429	112	114	72.0-127			2.36	20
1,2,4-Trimethylbenzene	0.125	0.131	0.134	105	107	70.0-126			2.26	20
1,3,5-Trimethylbenzene	0.125	0.135	0.134	108	107	73.0-127			0.743	20
(S) Toluene-d8				110	107	75.0-131				
(S) 4-Bromofluorobenzene				107	107	67.0-138				
(S) 1,2-Dichloroethane-d4				89.6	92.1	70.0-130				

1
Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

Method Blank (MB)

(MB) R3862325-1 11/17/22 08:04

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	72.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3862325-2 11/17/22 08:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	33.9	67.8	50.0-150	
(S) o-Terphenyl			87.1	18.0-148	

L1556476-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1556476-04 11/17/22 08:34 • (MS) R3862325-3 11/17/22 08:47 • (MSD) R3862325-4 11/17/22 09:00

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	49.7	2.58	34.7	33.3	64.6	62.4	1	50.0-150			4.12	20
(S) o-Terphenyl					73.9	71.2		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3862049-2 11/16/22 09:30

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	111			23.0-120
(S) Nitrobenzene-d5	97.6			14.0-149
(S) 2-Fluorobiphenyl	108			34.0-125

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3862049-1 11/16/22 09:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0729	91.1	50.0-126	
Acenaphthene	0.0800	0.0676	84.5	50.0-120	
Acenaphthylene	0.0800	0.0743	92.9	50.0-120	
Benzo(a)anthracene	0.0800	0.0732	91.5	45.0-120	
Benzo(a)pyrene	0.0800	0.0662	82.8	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0615	76.9	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0661	82.6	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0636	79.5	49.0-125	
Chrysene	0.0800	0.0723	90.4	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0670	83.8	47.0-125	
Fluoranthene	0.0800	0.0730	91.3	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3862049-1 11/16/22 09:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0726	90.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0688	86.0	46.0-125	
Naphthalene	0.0800	0.0687	85.9	50.0-120	
Phenanthrene	0.0800	0.0674	84.3	47.0-120	
Pyrene	0.0800	0.0649	81.1	43.0-123	
1-Methylnaphthalene	0.0800	0.0682	85.3	51.0-121	
2-Methylnaphthalene	0.0800	0.0693	86.6	50.0-120	
2-Chloronaphthalene	0.0800	0.0681	85.1	50.0-120	
(S) p-Terphenyl-d14			105	23.0-120	
(S) Nitrobenzene-d5			95.3	14.0-149	
(S) 2-Fluorobiphenyl			105	34.0-125	

L1556464-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1556464-04 11/16/22 09:50 • (MS) R3862049-3 11/16/22 10:10 • (MSD) R3862049-4 11/16/22 10:30

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0788	U	0.0556	0.0586	70.6	74.4	1	10.0-145			5.25	30
Acenaphthene	0.0788	U	0.0551	0.0561	69.9	71.2	1	14.0-127			1.80	27
Acenaphthylene	0.0788	U	0.0597	0.0614	75.8	77.9	1	21.0-124			2.81	25
Benzo(a)anthracene	0.0788	U	0.0518	0.0573	65.7	72.7	1	10.0-139			10.1	30
Benzo(a)pyrene	0.0788	U	0.0503	0.0568	63.8	72.1	1	10.0-141			12.1	31
Benzo(b)fluoranthene	0.0788	U	0.0413	0.0454	52.4	57.6	1	10.0-140			9.46	36
Benzo(g,h,i)perylene	0.0788	U	0.0429	0.0493	54.4	62.6	1	10.0-140			13.9	33
Benzo(k)fluoranthene	0.0788	U	0.0475	0.0535	60.3	67.9	1	10.0-137			11.9	31
Chrysene	0.0788	U	0.0561	0.0631	71.2	80.1	1	10.0-145			11.7	30
Dibenz(a,h)anthracene	0.0788	U	0.0466	0.0545	59.1	69.2	1	10.0-132			15.6	31
Fluoranthene	0.0788	U	0.0522	0.0541	66.2	68.7	1	10.0-153			3.57	33
Fluorene	0.0788	U	0.0565	0.0600	71.7	76.1	1	11.0-130			6.01	29
Indeno(1,2,3-cd)pyrene	0.0788	U	0.0428	0.0501	54.3	63.6	1	10.0-137			15.7	32
Naphthalene	0.0788	U	0.0596	0.0621	75.6	78.8	1	10.0-135			4.11	27
Phenanthrene	0.0788	U	0.0503	0.0529	63.8	67.1	1	10.0-144			5.04	31
Pyrene	0.0788	U	0.0466	0.0497	59.1	63.1	1	10.0-148			6.44	35
1-Methylnaphthalene	0.0788	U	0.0569	0.0540	72.2	68.5	1	10.0-142			5.23	28
2-Methylnaphthalene	0.0788	U	0.0574	0.0574	72.8	72.8	1	10.0-137			0.000	28
2-Chloronaphthalene	0.0788	U	0.0565	0.0593	71.6	75.2	1	29.0-120			4.84	24
(S) p-Terphenyl-d14					95.9	101		23.0-120				
(S) Nitrobenzene-d5					95.6	101		14.0-149				
(S) 2-Fluorobiphenyl					99.8	108		34.0-125				

1Cp

2Tc

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GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



