

## HilCorp-Farmington, NM

Sample Delivery Group: L1170385  
Samples Received: 12/13/2019  
Project Number:  
Description: Abeyta 17-1  
Site: ABEYTA 17-1  
Report To: Jennifer Deal  
382 Road 3100  
Aztec, NM 87401

Entire Report Reviewed By:



Olivia Studebaker  
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 Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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# SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



SPILL AREA L1170385-01 Solid

Collected by  
K Hoekstra

Collected date/time  
12/12/19 12:05

Received date/time  
12/13/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1397073	1	12/17/19 14:01	12/17/19 14:01	EL	Mt. Juliet, TN
Calculated Results	WG1396558	1	12/14/19 13:04	12/16/19 18:52	JIC	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1397045	1	12/16/19 11:00	12/16/19 18:52	JIC	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1395945	1	12/13/19 15:23	12/13/19 16:10	JIC	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1396956	1	12/15/19 13:00	12/15/19 15:25	BAM	Mt. Juliet, TN
Mercury by Method 7471A	WG1396619	1	12/14/19 20:20	12/16/19 18:59	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1396558	1	12/14/19 13:04	12/16/19 00:03	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015/8021	WG1396311	1	12/13/19 12:25	12/14/19 13:07	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1396656	1	12/14/19 15:02	12/15/19 08:26	CLG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1399120	1	12/19/19 09:47	12/19/19 15:19	AAT	Mt. Juliet, TN

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



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.

Olivia Studebaker  
Project Manager

### Report Revision History

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Version 1: 12/19/19 16:24

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

## SPILL AREA

Collected date/time: 12/12/19 12:05

## SAMPLE RESULTS - 01

L1170385

ONE LAB. NATIONWIDE.



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	11.2		1	12/17/2019 14:01	WG1397073

## Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium, Trivalent	5.21		1.00	1	12/16/2019 18:52	<a href="#">WG1396558</a>

## 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	12/16/2019 18:52	<a href="#">WG1397045</a>

## Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.60	<a href="#">T8</a>	1	12/13/2019 16:10	<a href="#">WG1395945</a>

## Sample Narrative:

L1170385-01 WG1395945: 7.6 at 19.8C

## Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	2610		10.0	1	12/15/2019 15:25	<a href="#">WG1396956</a>

## Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0300	1	12/16/2019 18:59	<a href="#">WG1396619</a>

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	ND		2.00	1	12/16/2019 00:03	<a href="#">WG1396558</a>
Barium	151		0.500	1	12/16/2019 00:03	<a href="#">WG1396558</a>
Boron	ND		10.0	1	12/16/2019 00:03	<a href="#">WG1396558</a>
Cadmium	ND		0.500	1	12/16/2019 00:03	<a href="#">WG1396558</a>
Chromium	5.21		1.00	1	12/16/2019 00:03	<a href="#">WG1396558</a>
Copper	4.23		2.00	1	12/16/2019 00:03	<a href="#">WG1396558</a>
Lead	3.32		0.500	1	12/16/2019 00:03	<a href="#">WG1396558</a>
Nickel	6.88		2.00	1	12/16/2019 00:03	<a href="#">WG1396558</a>
Selenium	ND		2.00	1	12/16/2019 00:03	<a href="#">WG1396558</a>
Silver	ND		1.00	1	12/16/2019 00:03	<a href="#">WG1396558</a>
Zinc	12.2		5.00	1	12/16/2019 00:03	<a href="#">WG1396558</a>

## Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.000500	1	12/14/2019 13:07	<a href="#">WG1396311</a>
Toluene	ND		0.00500	1	12/14/2019 13:07	<a href="#">WG1396311</a>
Ethylbenzene	ND		0.000500	1	12/14/2019 13:07	<a href="#">WG1396311</a>
Total Xylene	ND		0.00150	1	12/14/2019 13:07	<a href="#">WG1396311</a>

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

## SPILL AREA

Collected date/time: 12/12/19 12:05

## SAMPLE RESULTS - 01

L1170385

ONE LAB. NATIONWIDE.



## Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	12/14/2019 13:07	<a href="#">WG1396311</a>
(S) a,a,a-Trifluorotoluene(FID)	107		77.0-120		12/14/2019 13:07	<a href="#">WG1396311</a>
(S) a,a,a-Trifluorotoluene(PID)	93.8		72.0-128		12/14/2019 13:07	<a href="#">WG1396311</a>

## 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	ND		4.00	1	12/15/2019 08:26	<a href="#">WG1396656</a>
C28-C40 Oil Range	ND		4.00	1	12/15/2019 08:26	<a href="#">WG1396656</a>
(S) o-Terphenyl	72.4		18.0-148		12/15/2019 08:26	<a href="#">WG1396656</a>

## 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	12/19/2019 15:19	<a href="#">WG1399120</a>
Acenaphthene	ND		0.00600	1	12/19/2019 15:19	<a href="#">WG1399120</a>
Acenaphthylene	ND		0.00600	1	12/19/2019 15:19	<a href="#">WG1399120</a>
Benzo(a)anthracene	ND		0.00600	1	12/19/2019 15:19	<a href="#">WG1399120</a>
Benzo(a)pyrene	ND		0.00600	1	12/19/2019 15:19	<a href="#">WG1399120</a>
Benzo(b)fluoranthene	ND		0.00600	1	12/19/2019 15:19	<a href="#">WG1399120</a>
Benzo(g,h,i)perylene	ND		0.00600	1	12/19/2019 15:19	<a href="#">WG1399120</a>
Benzo(k)fluoranthene	ND		0.00600	1	12/19/2019 15:19	<a href="#">WG1399120</a>
Chrysene	ND		0.00600	1	12/19/2019 15:19	<a href="#">WG1399120</a>
Dibenz(a,h)anthracene	ND		0.00600	1	12/19/2019 15:19	<a href="#">WG1399120</a>
Fluoranthene	ND		0.00600	1	12/19/2019 15:19	<a href="#">WG1399120</a>
Fluorene	ND		0.00600	1	12/19/2019 15:19	<a href="#">WG1399120</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/19/2019 15:19	<a href="#">WG1399120</a>
Naphthalene	ND		0.0200	1	12/19/2019 15:19	<a href="#">WG1399120</a>
Phenanthrene	ND		0.00600	1	12/19/2019 15:19	<a href="#">WG1399120</a>
Pyrene	ND		0.00600	1	12/19/2019 15:19	<a href="#">WG1399120</a>
1-Methylnaphthalene	ND		0.0200	1	12/19/2019 15:19	<a href="#">WG1399120</a>
2-Methylnaphthalene	ND		0.0200	1	12/19/2019 15:19	<a href="#">WG1399120</a>
2-Chloronaphthalene	ND		0.0200	1	12/19/2019 15:19	<a href="#">WG1399120</a>
(S) p-Terphenyl-d14	98.0		23.0-120		12/19/2019 15:19	<a href="#">WG1399120</a>
(S) Nitrobenzene-d5	100		14.0-149		12/19/2019 15:19	<a href="#">WG1399120</a>
(S) 2-Fluorobiphenyl	90.2		34.0-125		12/19/2019 15:19	<a href="#">WG1399120</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3482913-1 12/16/19 18:46

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

L1170385-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1170385-01 12/16/19 18:52 • (DUP) R3482913-3 12/16/19 18:52

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

L1170911-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1170911-04 12/16/19 19:00 • (DUP) R3482913-4 12/16/19 19:00

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

Laboratory Control Sample (LCS)

(LCS) R3482913-2 12/16/19 18:47

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Chromium,Hexavalent	24.0	25.1	105	80.0-120	

L1170990-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1170990-02 12/16/19 19:01 • (MS) R3482913-5 12/16/19 19:01 • (MSD) R3482913-6 12/16/19 19:01

	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	ND	19.1	18.8	95.4	94.0	1	75.0-125			1.47	20

L1170990-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1170990-02 12/16/19 19:01 • (MS) R3482913-7 12/16/19 19:02

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Chromium,Hexavalent	638	ND	624	97.8	50	75.0-125	

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

L1169970-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1169970-01 12/13/19 16:10 • (DUP) R3482256-2 12/13/19 16:10

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.13	7.14	1	0.140		1

Sample Narrative:  
OS: 7.13 at 20.9C  
DUP: 7.14 at 20.4C

L1170260-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1170260-02 12/13/19 16:10 • (DUP) R3482256-3 12/13/19 16:10

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	5.91	5.86	1	0.850		1

Sample Narrative:  
OS: 5.91 at 19.9C  
DUP: 5.86 at 19.8C

Laboratory Control Sample (LCS)

(LCS) R3482256-1 12/13/19 16:10

	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 at 18.7C

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc



Method Blank (MB)

(MB) R3482516-1 12/15/19 15:25

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

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

L1170385-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1170385-01 12/15/19 15:25 • (DUP) R3482516-3 12/15/19 15:25

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	2610	2610	1	0.345		20

L1170990-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1170990-05 12/15/19 15:25 • (DUP) R3482516-4 12/15/19 15:25

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	4020	4030	1	0.273		20

Laboratory Control Sample (LCS)

(LCS) R3482516-2 12/15/19 15:25

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	475	498	105	85.0-115	



Method Blank (MB)

(MB) R3482958-1 12/16/19 18:52

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Mercury	U		0.00280	0.0300

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

(LCS) R3482958-2 12/16/19 18:54 • (LCSD) R3482958-3 12/16/19 18:57

	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	0.500	0.455	0.475	91.0	95.0	80.0-120			4.30	20

L1170385-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1170385-01 12/16/19 18:59 • (MS) R3482958-4 12/16/19 19:01 • (MSD) R3482958-5 12/16/19 19:03

	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	0.500	ND	0.453	0.430	86.9	82.1	1	75.0-125			5.33	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3482633-1 12/15/19 23:20

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
Boron	U		1.26	10.0
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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

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

(LCS) R3482633-2 12/15/19 23:22 • (LCSD) R3482633-3 12/15/19 23:25

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	96.4	94.4	96.4	94.4	80.0-120			2.05	20
Barium	100	104	101	104	101	80.0-120			2.57	20
Boron	100	97.3	95.6	97.3	95.6	80.0-120			1.81	20
Cadmium	100	98.1	95.9	98.1	95.9	80.0-120			2.28	20
Chromium	100	98.5	95.8	98.5	95.8	80.0-120			2.74	20
Copper	100	99.4	96.9	99.4	96.9	80.0-120			2.58	20
Lead	100	97.4	94.8	97.4	94.8	80.0-120			2.70	20
Nickel	100	99.1	97.0	99.1	97.0	80.0-120			2.11	20
Selenium	100	98.6	96.5	98.6	96.5	80.0-120			2.20	20
Silver	20.0	17.9	17.4	89.5	87.1	80.0-120			2.82	20
Zinc	100	97.8	95.5	97.8	95.5	80.0-120			2.41	20

L1170481-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1170481-01 12/15/19 23:28 • (MS) R3482633-6 12/15/19 23:35 • (MSD) R3482633-7 12/15/19 23:38

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 %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	104	U	89.1	93.4	85.3	89.4	1	75.0-125			4.64	20
Barium	104	4.48	101	111	92.7	102	1	75.0-125			9.57	20
Boron	104	U	93.3	96.6	89.3	92.4	1	75.0-125			3.42	20
Cadmium	104	U	91.4	96.3	87.5	92.2	1	75.0-125			5.26	20



L1170481-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1170481-01 12/15/19 23:28 • (MS) R3482633-6 12/15/19 23:35 • (MSD) R3482633-7 12/15/19 23:38

	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	104	2.02	93.6	99.7	87.7	93.5	1	75.0-125			6.33	20
Copper	104	0.907	94.7	101	89.8	95.5	1	75.0-125			6.14	20
Lead	104	7.99	101	105	89.0	93.2	1	75.0-125			4.29	20
Nickel	104	0.729	94.8	100	90.1	95.0	1	75.0-125			5.33	20
Selenium	104	U	91.1	96.8	87.2	92.7	1	75.0-125			6.06	20
Silver	20.9	U	16.7	17.7	79.9	84.7	1	75.0-125			5.81	20
Zinc	104	3.59	93.8	100	86.4	92.3	1	75.0-125			6.37	20

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc



Method Blank (MB)

(MB) R3482764-4 12/14/19 08:36

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000120	0.000500
Toluene	0.000289	⌵	0.000150	0.00500
Ethylbenzene	U		0.000110	0.000500
Total Xylene	U		0.000460	0.00150
TPH (GC/FID) Low Fraction	0.0381	⌵	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	104			77.0-120
(S) a,a,a-Trifluorotoluene(PID)	97.8			72.0-128

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Laboratory Control Sample (LCS)

(LCS) R3482764-1 12/14/19 07:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0500	0.0589	118	76.0-121	
Toluene	0.0500	0.0536	107	80.0-120	
Ethylbenzene	0.0500	0.0551	110	80.0-124	
Total Xylene	0.150	0.152	101	37.0-160	
(S) a,a,a-Trifluorotoluene(FID)			103	77.0-120	
(S) a,a,a-Trifluorotoluene(PID)			106	72.0-128	

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

(LCS) R3482764-2 12/14/19 07:35 • (LCSD) R3482764-3 12/14/19 07:55

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	5.47	5.55	99.5	101	72.0-127			1.45	20
(S) a,a,a-Trifluorotoluene(FID)				114	114	77.0-120				
(S) a,a,a-Trifluorotoluene(PID)				128	128	72.0-128				



L1170237-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1170237-02 12/14/19 16:52 • (MS) R3482764-5 12/14/19 17:12 • (MSD) R3482764-6 12/14/19 17:33

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	5.00	0.581	6.97	7.01	128	129	100	10.0-155			0.572	32
Toluene	5.00	ND	5.64	5.73	113	115	100	10.0-160			1.58	34
Ethylbenzene	5.00	5.02	10.7	10.7	114	114	100	10.0-160			0.000	32
Total Xylene	15.0	1.37	18.4	18.4	114	114	100	10.0-160			0.000	32
(S) a,a,a-Trifluorotoluene(FID)					101	105		77.0-120				
(S) a,a,a-Trifluorotoluene(PID)					113	113		72.0-128				

L1168529-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1168529-01 12/14/19 14:50 • (MS) R3482764-7 12/14/19 17:53 • (MSD) R3482764-8 12/14/19 18:29

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 %
TPH (GC/FID) Low Fraction	142	115	250	254	94.9	97.4	25	10.0-151			1.45	28
(S) a,a,a-Trifluorotoluene(FID)					117	119		77.0-120				
(S) a,a,a-Trifluorotoluene(PID)					128	128		72.0-128				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3482486-1 12/15/19 07:36

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	73.0			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3482486-2 12/15/19 07:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	40.2	80.4	50.0-150	
(S) o-Terphenyl			61.6	18.0-148	

L1170385-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1170385-01 12/15/19 08:26 • (MS) R3482486-3 12/15/19 08:39 • (MSD) R3482486-4 12/15/19 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 %
C10-C28 Diesel Range	50.0	ND	42.6	48.8	85.2	97.6	1	50.0-150			13.6	20
(S) o-Terphenyl					62.6	68.2		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3484228-2 12/19/19 14:57

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	99.0			14.0-149
(S) 2-Fluorobiphenyl	92.7			34.0-125
(S) p-Terphenyl-d14	109			23.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3484228-1 12/19/19 14:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0739	92.4	50.0-126	
Acenaphthene	0.0800	0.0773	96.6	50.0-120	
Acenaphthylene	0.0800	0.0775	96.9	50.0-120	
Benzo(a)anthracene	0.0800	0.0781	97.6	45.0-120	
Benzo(a)pyrene	0.0800	0.0604	75.5	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0733	91.6	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0721	90.1	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0750	93.8	49.0-125	
Chrysene	0.0800	0.0755	94.4	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0714	89.3	47.0-125	
Fluoranthene	0.0800	0.0647	80.9	49.0-129	





Laboratory Control Sample (LCS)

(LCS) R3484228-1 12/19/19 14:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0771	96.4	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0720	90.0	46.0-125	
Naphthalene	0.0800	0.0784	98.0	50.0-120	
Phenanthrene	0.0800	0.0735	91.9	47.0-120	
Pyrene	0.0800	0.0724	90.5	43.0-123	
1-Methylnaphthalene	0.0800	0.0787	98.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0766	95.8	50.0-120	
2-Chloronaphthalene	0.0800	0.0732	91.5	50.0-120	
(S) Nitrobenzene-d5			111	14.0-149	
(S) 2-Fluorobiphenyl			102	34.0-125	
(S) p-Terphenyl-d14			116	23.0-120	

L1171694-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1171694-01 12/19/19 17:41 • (MS) R3484228-3 12/19/19 18:03 • (MSD) R3484228-4 12/19/19 18:26

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	0.0796	ND	0.0748	0.0737	94.0	92.6	1	10.0-145			1.48	30
Acenaphthene	0.0796	ND	0.0752	0.0726	94.5	91.2	1	14.0-127			3.52	27
Acenaphthylene	0.0796	ND	0.0781	0.0720	98.1	90.5	1	21.0-124			8.13	25
Benzo(a)anthracene	0.0796	ND	0.0755	0.0713	94.8	89.6	1	10.0-139			5.72	30
Benzo(a)pyrene	0.0796	ND	0.0717	0.0690	90.1	86.7	1	10.0-141			3.84	31
Benzo(b)fluoranthene	0.0796	ND	0.0703	0.0685	88.3	86.1	1	10.0-140			2.59	36
Benzo(g,h,i)perylene	0.0796	ND	0.0720	0.0689	90.5	86.6	1	10.0-140			4.40	33
Benzo(k)fluoranthene	0.0796	ND	0.0742	0.0699	93.2	87.8	1	10.0-137			5.97	31
Chrysene	0.0796	ND	0.0741	0.0706	93.1	88.7	1	10.0-145			4.84	30
Dibenz(a,h)anthracene	0.0796	ND	0.0714	0.0678	89.7	85.2	1	10.0-132			5.17	31
Fluoranthene	0.0796	ND	0.0732	0.0719	92.0	90.3	1	10.0-153			1.79	33
Fluorene	0.0796	ND	0.0722	0.0730	90.7	91.7	1	11.0-130			1.10	29
Indeno(1,2,3-cd)pyrene	0.0796	ND	0.0717	0.0685	90.1	86.1	1	10.0-137			4.56	32
Naphthalene	0.0796	ND	0.0769	0.0743	96.6	93.3	1	10.0-135			3.44	27
Phenanthrene	0.0796	ND	0.0703	0.0688	88.3	86.4	1	10.0-144			2.16	31
Pyrene	0.0796	ND	0.0710	0.0673	89.2	84.5	1	10.0-148			5.35	35
1-Methylnaphthalene	0.0796	ND	0.0784	0.0744	98.5	93.5	1	10.0-142			5.24	28
2-Methylnaphthalene	0.0796	ND	0.0763	0.0722	95.9	90.7	1	10.0-137			5.52	28
2-Chloronaphthalene	0.0796	ND	0.0683	0.0723	85.8	90.8	1	29.0-120			5.69	24
(S) Nitrobenzene-d5					108	111		14.0-149				
(S) 2-Fluorobiphenyl					99.8	103		34.0-125				
(S) p-Terphenyl-d14					114	105		23.0-120				

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc



## 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

(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.
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 <sup>1</sup>	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	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 <sup>1 6</sup>	90010	South Carolina	84004
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1 4</sup>	2006
Louisiana <sup>1</sup>	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas <sup>5</sup>	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 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> 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.





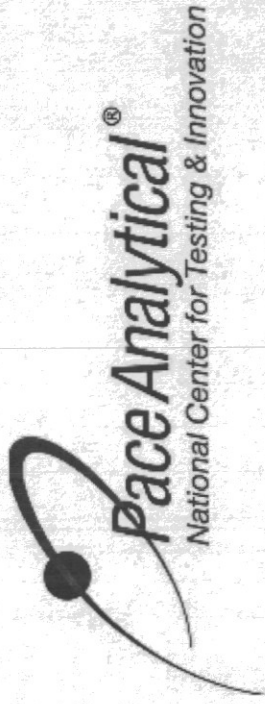


Table 910-1

CONCENTRATION LEVELS <sup>1</sup> Contaminant of Concern		Concentrations	
Organic Compounds in Soil			
TPH (total volatile hydrocarbons)	and extractable petroleum DRO,GRO,MRO	500 mg/kg	
Benzene		0.17 mg/kg <sub>2</sub>	
Toluene		85 mg/kg <sub>2</sub>	
Ethylbenzene		100 mg/kg <sub>2</sub>	
Xylenes (total)		175 mg/kg <sub>2</sub>	
Acenaphthene		1,000 mg/kg <sub>2</sub>	
Anthracene		1,000 mg/kg <sub>2</sub>	
Benzo(A)anthracene		0.22 mg/kg <sub>2</sub>	
Benzo(B)fluoranthene		0.22 mg/kg <sub>2</sub>	
Benzo(K)fluoranthene		2.2 mg/kg <sub>2</sub>	
Benzo(A)pyrene		0.022 mg/kg <sub>2</sub>	
Chrysene		22 mg/kg <sub>2</sub>	
Dibenzo(A,H)anthracene		0.022 mg/kg <sub>2</sub>	
Fluoranthene		1,000 mg/kg <sub>2</sub>	
Fluorene		1,000 mg/kg <sub>2</sub>	
Indeno(1,2,3,C,D)pyrene		0.22 mg/kg <sub>2</sub>	
Napthalene		23 mg/kg <sub>2</sub>	
Pyrene		1,000 mg/kg <sub>2</sub>	
Organic Compounds in Ground Water			
Benzene		5 µg/l <sub>3</sub>	
Toluene		560 to 1,000 µg/l <sub>3</sub>	
Ethylbenzene		700 µg/l <sub>3</sub>	
Xylenes (Total)		1,400 to 10,000 µg/l <sub>3,4</sub>	
Inorganics in Soils			
Electrical Conductivity (EC)		<4 mmhos/cm or 2x background	
Sodium Adsorption Ratio (SAR)		<12 <sub>5</sub>	
pH		6-9	
Inorganics in Ground Water			
Total Dissolved Solids (TDS)		<1.25 x background <sub>3</sub>	
Chlorides		<1.25 x background <sub>3</sub>	
Sulfates		<1.25 x background <sub>3</sub>	
Metals in Soils			
Arsenic		0.39 mg/kg <sub>2</sub>	
Barium (LDNR True Total Barium)		15,000 mg/kg <sub>2</sub>	
Boron (Hot Water Soluble)		2 mg/l <sub>3</sub>	
Cadmium		70 mg/kg <sub>3,6</sub>	
Chromium (III)		120,000 mg/kg <sub>2</sub>	
Chromium (VI)		23 mg/kg <sub>2,6</sub>	
Copper		3,100 mg/kg <sub>2</sub>	
Lead (inorganic)		400 mg/kg <sub>2</sub>	
Mercury		23 mg/kg <sub>2</sub>	
Nickel (soluble salts)		1,600 mg/kg <sub>2,6</sub>	
Selenium		390 mg/kg <sub>2,6</sub>	
Silver		390 mg/kg <sub>2</sub>	
Zinc		23,000 mg/kg <sub>2,6</sub>	
Liquid Hydrocarbons in Soils and Ground Water			
Liquid hydrocarbons including condensate and oil			

1170385

**Kelsey Stephenson**



Login #: L1170385	Client:HILCORANM	Date:12/13	Evaluated by:Kelsey S
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**Non-Conformance (check applicable items)**

Sample Integrity	Chain of Custody Clarification	If Broken Container:
Parameter(s) past holding time	Login Clarification Needed	Insufficient packing material around container
Temperature not in range	Chain of custody is incomplete	Insufficient packing material inside cooler
Improper container type	Please specify Metals requested.	Improper handling by carrier (FedEx / UPS / Courier
pH not in range.	Please specify TCLP requested.	Sample was frozen
Insufficient sample volume.	Received additional samples not listed on coc.	Container lid not intact
Sample is biphasic.	Sample ids on containers do not match ids on coc	<b>If no Chain of Custody:</b>
Vials received with headspace.	Trip Blank not received.	Received by:
Broken container	Client did not "X" analysis.	Date/Time:
Broken container:	Chain of Custody is missing	Temp./Cont. Rec./pH:
Sufficient sample remains		Carrier:
		Tracking#

**Login Comments: No analysis marked on COC. Currently logged for TABLE910**

Client informed by:	Call	Email	Voice Mail	Date:	Time:
TSR Initials: OS	Client Contact:				

**Login Instructions:**

Please proceed with TABLE910 analyses