

September 16, 2024

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Caerus Oil and Gas

Sample Delivery Group: L1773153
Samples Received: 08/30/2024
Project Number:
Description: D23A 596 8" Lateral
Site: D23A 596
Report To: Jake J. / Brett M. / Blair R. / Andy V.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace 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.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 mydata.pacelabs.com

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

SAMPLE SUMMARY

20240828-D23A 596-(POR)@6.5 L1773153-01 Solid

Collected by
Alex Slorby

Collected date/time
08/28/24 15:50

Received date/time
08/30/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2358894	1	09/11/24 17:51	09/11/24 17:51	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2355461	1	09/10/24 15:54	09/11/24 03:37	EKB	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2360602	1	09/11/24 15:03	09/12/24 10:51	KA	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2360624	1	09/11/24 15:43	09/11/24 16:05	BJM	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2358898	1	09/11/24 20:27	09/12/24 00:29	MAP	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2359873	2000	09/04/24 23:15	09/10/24 19:40	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2358689	100	09/04/24 23:15	09/09/24 15:14	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2358501	20	09/09/24 09:20	09/10/24 05:39	KKS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2359321	1	09/10/24 13:37	09/11/24 05:06	ALM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2359321	10	09/10/24 13:37	09/12/24 00:33	JCH	Mt. Juliet, TN
Subcontracted Analyses	WG2356714	1	09/13/24 00:00	09/13/24 00:00	-	Minneapolis, MN 55414

¹Cp

²Tc

³Ss

⁴Cn

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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

Project Narrative

L1773153 -01 contains subout data that is included after the chain of custody.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	36.5		1	09/11/2024 17:51	WG2358894

1
Cp

2
Tc

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	09/11/2024 03:37	WG2355461

3
Ss

4
Cn

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.88	T8	1	09/12/2024 10:51	WG2360602

5
Sr

6
Qc

Sample Narrative:

L1773153-01 WG2360602: 7.88 at 20.7C

7
Gl

8
Al

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	3850		10.0	1	09/11/2024 16:05	WG2360624

9
Sc

Sample Narrative:

L1773153-01 WG2360624: 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	2.04		0.0167	0.200	1	09/12/2024 00:29	WG2358898

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	3550		43.4	200	2000	09/10/2024 19:40	WG2359873
(S) a,a,a-Trifluorotoluene(FID)	99.3			77.0-120		09/10/2024 19:40	WG2359873

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	9.54		0.0467	0.100	100	09/09/2024 15:14	WG2358689
Toluene	112		0.130	0.500	100	09/09/2024 15:14	WG2358689
Ethylbenzene	16.6		0.0737	0.250	100	09/09/2024 15:14	WG2358689
Xylenes, Total	318		0.0880	0.650	100	09/09/2024 15:14	WG2358689
1,2,4-Trimethylbenzene	61.8		0.158	0.500	100	09/09/2024 15:14	WG2358689
1,3,5-Trimethylbenzene	71.7		0.200	0.500	100	09/09/2024 15:14	WG2358689
(S) Toluene-d8	89.3			75.0-131		09/09/2024 15:14	WG2358689
(S) 4-Bromofluorobenzene	104			67.0-138		09/09/2024 15:14	WG2358689
(S) 1,2-Dichloroethane-d4	92.3			70.0-130		09/09/2024 15:14	WG2358689

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	2740		32.2	80.0	20	09/10/2024 05:39	WG2358501
C28-C36 Motor Oil Range	39.3	J	5.48	80.0	20	09/10/2024 05:39	WG2358501
(S) o-Terphenyl	70.8	J7		18.0-148		09/10/2024 05:39	WG2358501

Sample Narrative:

L1773153-01 WG2358501: Cannot run at lower dilution due to viscosity of extract

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
Acenaphthene	0.0869		0.00209	0.00600	1	09/11/2024 05:06	WG2359321
Anthracene	U		0.00230	0.00600	1	09/11/2024 05:06	WG2359321
Benzo(a)anthracene	U		0.00173	0.00600	1	09/11/2024 05:06	WG2359321
Benzo(b)fluoranthene	U		0.00153	0.00600	1	09/11/2024 05:06	WG2359321
Benzo(k)fluoranthene	U		0.00215	0.00600	1	09/11/2024 05:06	WG2359321
Benzo(a)pyrene	U		0.00179	0.00600	1	09/11/2024 05:06	WG2359321
Chrysene	U		0.00232	0.00600	1	09/11/2024 05:06	WG2359321
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	09/11/2024 05:06	WG2359321
Fluoranthene	0.00282	J	0.00227	0.00600	1	09/11/2024 05:06	WG2359321
Fluorene	0.233		0.00205	0.00600	1	09/11/2024 05:06	WG2359321
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	09/11/2024 05:06	WG2359321
1-Methylnaphthalene	1.77		0.00449	0.0200	1	09/11/2024 05:06	WG2359321
2-Methylnaphthalene	5.58		0.0427	0.200	10	09/12/2024 00:33	WG2359321
Naphthalene	2.73		0.00408	0.0200	1	09/11/2024 05:06	WG2359321
Pyrene	0.00338	J	0.00200	0.00600	1	09/11/2024 05:06	WG2359321
(S) p-Terphenyl-d14	70.8			23.0-120		09/11/2024 05:06	WG2359321
(S) p-Terphenyl-d14	64.2			23.0-120		09/12/2024 00:33	WG2359321
(S) Nitrobenzene-d5	1200	J1		14.0-149		09/12/2024 00:33	WG2359321
(S) Nitrobenzene-d5	0.000	J2		14.0-149		09/11/2024 05:06	WG2359321
(S) 2-Fluorobiphenyl	79.6			34.0-125		09/12/2024 00:33	WG2359321
(S) 2-Fluorobiphenyl	83.1			34.0-125		09/11/2024 05:06	WG2359321

Sample Narrative:

L1773153-01 WG2359321: Surrogate failure due to matrix interference

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4118155-1 09/11/24 02:25

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

L1773137-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1773137-04 09/11/24 03:19 • (DUP) R4118155-3 09/11/24 03:28

	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

L1773441-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1773441-09 09/11/24 06:54 • (DUP) R4118155-8 09/11/24 07:03

	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) R4118155-2 09/11/24 02:33

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	8.37	83.7	80.0-120	

L1773441-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1773441-02 09/11/24 04:58 • (MS) R4118155-5 09/11/24 05:16 • (MSD) R4118155-6 09/11/24 05:25

	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	16.3	19.3	81.7	96.6	1	75.0-125			16.7	20

L1773441-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1773441-02 09/11/24 04:58 • (MS) R4118155-7 09/11/24 05:34

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	643	U	499	77.6	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1773104-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1773104-02 09/12/24 10:51 • (DUP) R4118945-2 09/12/24 10:51

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.46	8.46	1	0.000		1

Sample Narrative:

OS: 8.46 at 20.8C

DUP: 8.46 at 20.9C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1773460-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1773460-05 09/12/24 10:51 • (DUP) R4118945-3 09/12/24 10:51

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	7.63	7.63	1	0.000		1

Sample Narrative:

OS: 7.63 at 21.2C

DUP: 7.63 at 21.1C

Laboratory Control Sample (LCS)

(LCS) R4118945-1 09/12/24 10:51

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

Sample Narrative:

LCS: 10.01 at 20.5C

Method Blank (MB)

(MB) R4118613-1 09/11/24 16:05

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

L1773104-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1773104-01 09/11/24 16:05 • (DUP) R4118613-3 09/11/24 16:05

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1520	1520	1	0.132		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1773459-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1773459-01 09/11/24 16:05 • (DUP) R4118613-4 09/11/24 16:05

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	55.3	55.3	1	0.000		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R4118613-2 09/11/24 16:05

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	733	762	104	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) R4118747-1 09/12/24 00:13

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) R4118747-2 09/12/24 00:15 • (LCSD) R4118747-3 09/12/24 00:16

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	1.04	1.06	104	106	80.0-120			2.33	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R4118181-2 09/10/24 17:59

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	105			77.0-120

Laboratory Control Sample (LCS)

(LCS) R4118181-1 09/10/24 16:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.00	4.82	96.4	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			103	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4117358-3 09/09/24 10:57

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	92.1			75.0-131
(S) 4-Bromofluorobenzene	97.1			67.0-138
(S) 1,2-Dichloroethane-d4	95.3			70.0-130

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

(LCS) R4117358-1 09/09/24 09:18 • (LCSD) R4117358-2 09/09/24 09:38

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	0.126	0.128	101	102	70.0-123			1.57	20
Toluene	0.125	0.121	0.110	96.8	88.0	75.0-121			9.52	20
Ethylbenzene	0.125	0.114	0.117	91.2	93.6	74.0-126			2.60	20
Xylenes, Total	0.375	0.361	0.352	96.3	93.9	72.0-127			2.52	20
1,2,4-Trimethylbenzene	0.125	0.115	0.112	92.0	89.6	70.0-126			2.64	20
1,3,5-Trimethylbenzene	0.125	0.110	0.109	88.0	87.2	73.0-127			0.913	20
(S) Toluene-d8				89.6	88.7	75.0-131				
(S) 4-Bromofluorobenzene				97.2	97.9	67.0-138				
(S) 1,2-Dichloroethane-d4				96.4	102	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R4117424-1 09/09/24 17:31

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	55.9			18.0-148

Laboratory Control Sample (LCS)

(LCS) R4117424-2 09/09/24 17:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	34.1	68.2	50.0-150	
(S) o-Terphenyl			71.9	18.0-148	

L1773242-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1773242-01 09/10/24 03:42 • (MS) R4117424-3 09/10/24 03:55 • (MSD) R4117424-4 09/10/24 04:08

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	49.4	U	23.4	32.1	47.4	65.8	1	50.0-150	J6	J3	31.4	20
(S) o-Terphenyl					51.8	60.0		18.0-148				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R4118446-2 09/10/24 22:48

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00209	0.00600
Anthracene	U		0.00230	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Benzo(a)pyrene	U		0.00179	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
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	86.9			23.0-120
(S) Nitrobenzene-d5	90.5			14.0-149
(S) 2-Fluorobiphenyl	81.5			34.0-125

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R4118446-1 09/10/24 22:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0703	87.9	50.0-120	
Anthracene	0.0800	0.0768	96.0	50.0-126	
Benzo(a)anthracene	0.0800	0.0799	99.9	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0863	108	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0795	99.4	49.0-125	
Benzo(a)pyrene	0.0800	0.0793	99.1	42.0-120	
Chrysene	0.0800	0.0845	106	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0841	105	47.0-125	
Fluoranthene	0.0800	0.0775	96.9	49.0-129	
Fluorene	0.0800	0.0753	94.1	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0813	102	46.0-125	
1-Methylnaphthalene	0.0800	0.0661	82.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0636	79.5	50.0-120	
Naphthalene	0.0800	0.0627	78.4	50.0-120	
Pyrene	0.0800	0.0906	113	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R4118446-1 09/10/24 22:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
(S) p-Terphenyl-d14			83.2	23.0-120	
(S) Nitrobenzene-d5			93.0	14.0-149	
(S) 2-Fluorobiphenyl			81.8	34.0-125	

L1773273-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1773273-01 09/11/24 03:06 • (MS) R4118446-3 09/11/24 03:23 • (MSD) R4118446-4 09/11/24 03:40

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Acenaphthene	0.0796	0.0180	0.101	0.0918	104	93.2	1	14.0-127			9.54	27
Anthracene	0.0796	0.0173	0.107	0.0997	113	104	1	10.0-145			7.06	30
Benzo(a)anthracene	0.0796	0.00580	0.0869	0.0839	102	98.6	1	10.0-139			3.51	30
Benzo(b)fluoranthene	0.0796	U	0.0895	0.0872	112	110	1	10.0-140			2.60	36
Benzo(k)fluoranthene	0.0796	U	0.0860	0.0839	108	106	1	10.0-137			2.47	31
Benzo(a)pyrene	0.0796	0.00340	0.0856	0.0835	103	101	1	10.0-141			2.48	31
Chrysene	0.0796	0.00307	0.0865	0.0881	105	107	1	10.0-145			1.83	30
Dibenz(a,h)anthracene	0.0796	U	0.0844	0.0830	106	105	1	10.0-132			1.67	31
Fluoranthene	0.0796	0.00738	0.0874	0.0873	101	101	1	10.0-153			0.114	33
Fluorene	0.0796	0.0234	0.111	0.0983	110	94.6	1	11.0-130			12.1	29
Indeno(1,2,3-cd)pyrene	0.0796	U	0.0827	0.0830	104	105	1	10.0-137			0.362	32
1-Methylnaphthalene	0.0796	1.55	3.25	2.42	2140	1100	1	10.0-142	V	J3 V	29.3	28
2-Methylnaphthalene	0.0796	2.94	6.16	4.56	4050	2050	1	10.0-137	E V	E J3 V	29.9	28
Naphthalene	0.0796	2.06	5.31	3.93	4080	2360	1	10.0-135	E V	J3 V	29.9	27
Pyrene	0.0796	0.0123	0.112	0.106	125	118	1	10.0-148			5.50	35
(S) p-Terphenyl-d14					82.3	78.1		23.0-120				
(S) Nitrobenzene-d5					186	155		14.0-149	J1	J1		
(S) 2-Fluorobiphenyl					73.7	71.3		34.0-125				

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

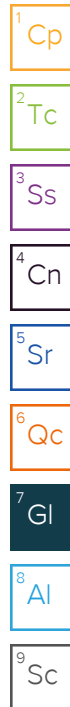
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.



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.



CHAIN-OF-CUSTODY Analytical Request Document

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubfs/pas-standard-terms.pdf>
Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

Company: Caerus Oil and Gas LLC		Billing Information:
Address: Info on file		Info on file
Report To: Jake Janicek, Brett Middleton, Blair Rollings, Andrew Verbonitz		Email To: Info on file
Copy To: NA		Site Collection Info/Address: NA
Customer Project Name/Number: D23A 596 8" Lateral		State: County/City: Time Zone Collected: CO / Garfield [] PT [X] MT [] CT [] ET
Phone: (701) 721-5415	Site/Facility ID #: D23A 596	Compliance Monitoring? [] Yes [X] No
Email: alex.slorby@confluence-cc.com	Purchase Order # : NA	DW PWS ID #: NA
Collected By (print): Alex Slorby	Quote #: NA	DW Location Code: NA
Collected By (signature): <i>Alex Slorby</i>	Turnaround Date Required: Standard Turnaround	Immediately Packed on Ice: [X] Yes [] No
Sample Disposal: [X] Dispose as appropriate [] Return [] Archive: _____ [] Hold:	Rush: (Expedite Charges Apply) [] Same Day [] Next Day [] 2 Day [X] 3 Day [] 14 Day [] 5 Day	Field Filtered (if applicable): [] Yes [] No Analysis: NA

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

[illegible]

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or
MTJL Log-in Number Here

ALL BOLD OUTLINED AREAS are for LAB USE ONLY

** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Analyses				Lab Profile/Line:
1-1 VOC's O. GRO, DRO) 1-1 Metals 1-1 PAHs R at Water Soluble Soil)				Lab Sample Receipt Checklist:
				Custody Seals Present/Intact
				Custody Signatures Present
				Collector Signature Present
				Bottles Intact
				Correct Bottles
				Sufficient Volume
				Samples Received on Ice
				VOR - Headspace Acceptable
				USDA Regulated Soils
				Samples in Holding Time
				Residual Chlorine Present
			CL Strips:	
			Sample pH Acceptable	
			pH Strips:	
			Sulfide Present	
			Lead Acetate Strips:	

LAB USE ONLY:
Lab Sample # / Comments:

b Sample # / Comments:
LN73153
-a1

Customer Remarks / Special Conditions / Possible Hazards:		Type of Ice Used: Wet Blue Dry None		SHORT HOLDS PRESENT (<72 hours): Y N N/A		LAB Sample Temperature Info:	
		Packing Material Used:		Lab Tracking #: 6426 83069101		Temp Blank Received: Y N NA	
		Radchem sample(s) screened (<500 cpm): Y N NA		Samples received via: FEDEX UPS Client Courier Pace Courier		Therm ID#: _____ Cooler 1 Temp Upon Receipt: ____oC Cooler 1 Therm Corr. Factor: ____oC Cooler 1 Corrected Temp: ____oC Comments:	
Relinquished by/Company: (Signature) Alex Staby	Date/Time: 8/29/2024 1200	Received by/Company: (Signature) [Signature]	Date/Time: L-182 Y	Accum: _____ Template: _____ Prelogin: _____		Trip Blank Received: Y N NA HCL MeOH TSP Other	
Relinquished by/Company: (Signature) [Signature]	Date/Time: 8/29/24 1230	Received by/Company: (Signature) [Signature]	Date/Time: 08-30-24 0900	PM: _____ PB: _____		Non Conformance(s): _____ YES / NO	
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature) C. Roberts	Date/Time:			Page: 1 of: 1	



September 16, 2024

Client Services
Pace National
12065 Lebanon Rd
Mt. Juliet, TN 37122

RE: Project: L1773153 WG2356714
Pace Project No.: 10707003

Dear Client Services:

Enclosed are the analytical results for sample(s) received by the laboratory on September 07, 2024. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Minneapolis

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Yeng Ozawa'.

Yeng Ozawa
yeng.ozawa@pacelabs.com
(612)607-1700
Project Manager

Enclosures

cc: Jimmy Huckaba, Pace Analytical National Center for
Testing & Innovation



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: L1773153 WG2356714

Pace Project No.: 10707003

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE, Minneapolis, MN 55414

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

DoD Certification via A2LA #: 2926.01

EPA Region 8 Tribal Water Systems+Wyoming DW
Certification #: via MN 027-053-137

Florida Certification #: E87605

Georgia Certification #: 959

GMP+ Certification #: GMP050884

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

ISO/IEC 17025 Certification via A2LA #: 2926.01

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: AI-03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Approval: via MN 027-053-137

Minnesota Petrofund Registration #: 1240

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification (A2LA) #: R-036

North Dakota Certification (MN) #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification (1700) #: CL101

Oklahoma Certification #: 9507

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Vermont Certification #: VT-027053137

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification via A2LA #: 2926.01

USDA Permit #: P330-19-00208

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SAMPLE SUMMARY

Project: L1773153 WG2356714

Pace Project No.: 10707003

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10707003001	20240828-D23A 596-(POR)@6.5	Solid	08/28/24 15:50	09/07/24 09:40

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SAMPLE ANALYTE COUNT

Project: L1773153 WG2356714

Pace Project No.: 10707003

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10707003001	20240828-D23A 596-(POR)@6.5	EPA 6020B	IMB	9	PASI-M

PASI-M = Pace Analytical Services - Minneapolis

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ANALYTICAL RESULTS

Project: L1773153 WG2356714

Pace Project No.: 10707003

Sample: 20240828-D23A 596-
(POR)@6.5 **Lab ID:** 10707003001 **Collected:** 08/28/24 15:50 **Received:** 09/07/24 09:40 **Matrix:** Solid**Results reported on a "wet-weight" basis**

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS									
Analytical Method: EPA 6020B Preparation Method: EPA 3050B									
Pace Analytical Services - Minneapolis									
Arsenic	13.3	mg/kg	0.46	0.13	20	09/10/24 17:37	09/12/24 19:51	7440-38-2	
Barium	623	mg/kg	1.4	0.41	100	09/10/24 17:37	09/16/24 10:10	7440-39-3	
Cadmium	0.41	mg/kg	0.074	0.027	20	09/10/24 17:37	09/12/24 19:51	7440-43-9	
Copper	20.2	mg/kg	0.93	0.28	20	09/10/24 17:37	09/12/24 19:51	7440-50-8	
Lead	12.6	mg/kg	0.46	0.16	20	09/10/24 17:37	09/12/24 19:51	7439-92-1	
Nickel	15.9	mg/kg	0.46	0.22	20	09/10/24 17:37	09/12/24 19:51	7440-02-0	
Selenium	0.41J	mg/kg	0.46	0.097	20	09/10/24 17:37	09/12/24 19:51	7782-49-2	
Silver	<0.19	mg/kg	0.46	0.19	20	09/10/24 17:37	09/12/24 19:51	7440-22-4	
Zinc	59.5	mg/kg	4.6	1.3	20	09/10/24 17:37	09/12/24 19:51	7440-66-6	

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QUALITY CONTROL DATA

Project: L1773153 WG2356714

Pace Project No.: 10707003

QC Batch: 967093

Analysis Method: EPA 6020B

QC Batch Method: EPA 3050B

Analysis Description: 6020B Solids UPD5

Laboratory: Pace Analytical Services - Minneapolis

Associated Lab Samples: 10707003001

METHOD BLANK: 5053846

Matrix: Solid

Associated Lab Samples: 10707003001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/kg	<0.14	0.47	0.14	09/12/24 18:34	
Barium	mg/kg	<0.083	0.28	0.083	09/12/24 18:34	
Cadmium	mg/kg	<0.028	0.076	0.028	09/12/24 18:34	
Copper	mg/kg	<0.29	0.95	0.29	09/12/24 18:34	
Lead	mg/kg	<0.17	0.47	0.17	09/12/24 18:34	
Nickel	mg/kg	<0.22	0.47	0.22	09/12/24 18:34	
Selenium	mg/kg	<0.10	0.47	0.10	09/12/24 18:34	
Silver	mg/kg	<0.19	0.47	0.19	09/12/24 18:34	
Zinc	mg/kg	<1.3	4.7	1.3	09/12/24 18:34	

LABORATORY CONTROL SAMPLE: 5053847

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	49.4	50.6	102	80-120	
Barium	mg/kg	49.4	48.3	98	80-120	
Cadmium	mg/kg	49.4	50.3	102	80-120	
Copper	mg/kg	49.4	52.9	107	80-120	
Lead	mg/kg	49.4	50.2	102	80-120	
Nickel	mg/kg	49.4	51.5	104	80-120	
Selenium	mg/kg	49.4	48.2	98	80-120	
Silver	mg/kg	24.7	26.4	107	80-120	
Zinc	mg/kg	49.4	52.6	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 5053848 5053849

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	Max	
		10706954001 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	% Rec	% Rec			RPD	RPD
Arsenic	mg/kg	5.2	47	47.8	50.5	50.2	96	94	75-125	1	20	
Barium	mg/kg	207	47	47.8	256	306	105	209	75-125	18	20	M1
Cadmium	mg/kg	0.34	47	47.8	46.5	47.0	98	98	75-125	1	20	
Copper	mg/kg	18.3	47	47.8	67.5	60.9	104	89	75-125	10	20	
Lead	mg/kg	8.8	47	47.8	55.8	55.3	100	97	75-125	1	20	
Nickel	mg/kg	23.2	47	47.8	71.6	64.1	103	85	75-125	11	20	
Selenium	mg/kg	0.32J	47	47.8	44.8	44.0	95	92	75-125	2	20	
Silver	mg/kg	<0.19	23.5	23.9	19.9	21.8	84	91	75-125	9	20	
Zinc	mg/kg	52.2	47	47.8	105	93.4	112	86	75-125	11	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: L1773153 WG2356714

Pace Project No.: 10707003

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: L1773153 WG2356714
Pace Project No.: 10707003

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10707003001	20240828-D23A 596-(POR)@6.5	EPA 3050B	967093	EPA 6020B	967557

REPORT OF LABORATORY ANALYSIS

Sub-Contract Chain of Custody

Batch Date/Time: 09/05/24 11:17
 Sub-Contract Lab: PACEMN
 Address: 1700 Elm Street Suite 200
 SE

City/State: Minneapolis, MN 55414

Contact: tong.lee@pacelabs.com

Owner Lab: PACEMTJL

Address: 12065 Lebanon Rd.

City/State: Mt. Juliet, TN 37122

Phone: (615) 773-9756

Fax: (615) 758-5859

WO: WG2356714

Email: MTJLSuboutTeam@pacelabs.com

Results Due Date: 09/13/24

ESC Purchase Order #: L1773153

Send Reports to: James C Huckaba



12065 Lebanon Rd.
 Mt. Juliet, TN 37122
 Phone: (615) 773-9756
 Fax: (615) 758-5859

Sample ID Container ID	Matrix	State	Collect Date	Description	Sample Number Lab Use Only	Sample Comments Lab Use Only
20240828-D23A 596- (POR)@6.5	SS	CO	08/28/24 15:50	Metals	1. L1773153-01	6020 Ag As Ba Cd Cu Ni Pb Se Zn Report MDL/RDL

Relinquished by: [Signature] Date: 9-5-24

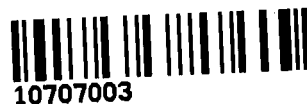
Recieved by: Sabby Bledgett/Pac Date: 9-7-24 940 19.5°C

Relinquished by: _____ Date: _____

Recieved by: _____ Date: _____

No Ice

WO#: 10707003



10707003

ENV-FRM-MIN4-0150 v17_Sample Condition Upon Receipt

CLIENT NAME: Pace Mt Juliet

PROJECT #:

WO#: 10707003

COURIER: ☐ Client ☐ Commercial ☒ FedEx ☐ Pace
☐ SpeedDee ☐ UPS ☐ USPS

PM: Y01 Due Date: 09/23/24

CLIENT: PASI-TN

TRACKING NUMBER: 46410486 4675 ☐ See Exceptions form
ENV-FRM-MIN4-0142Custody Seal on Cooler/Box Present: ☒ YES ☐ NO Seals Intact: ☒ YES ☐ NO Biological Tissue Frozen: ☐ YES ☐ NO ☒ N/APacking Material: ☒ Bubble Bags ☒ Bubble Wrap ☐ None ☐ Other Temp Blank: ☐ YES ☒ NO Type of Ice: ☐ Blue ☐ Dry ☐ WetThermometer: ☒ T1 (0461) ☐ T2 (0436) ☐ T3 (0459) ☐ T4 (0402) ☐ T5 (0178) ☐ T6 (0235)
☐ T7 (0042) ☐ T8 (0775) ☐ T9 (0727) ☐ 01339252 (1710)☐ Melted ☒ None

Did Samples Originate in West Virginia: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	Were All Container Temps taken: <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> N/A
Correction Factor: <u>-0.4</u> Cooler Temp Read w/Temp Blank: _____ °C	Average Corrected Temp (no Temp Blank Only): <u>19.5</u> °C
Cooler Temp Corrected w/Temp Blank: _____ °C	<input type="checkbox"/> See Exceptions Form ENV-FRM-MIN4-0142 <input type="checkbox"/> 1 Container

USDA Regulated Soil: ☐ N/A - Water Sample/Other (describe): _____Initials & Date of Person Examining Contents: MM 9/7/24Did Samples originate from one of the following states (check maps) - AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA: ☐ YES ☒ NODid samples originate from a foreign source (international, including Hawaii and Puerto Rico): ☐ YES ☒ NO

NOTE: If YES to either question, fill out a Regulated Soil Checklist (ENV-FRM-MIN4-0154) and include with SCUR/COC paperwork.

LOCATION (check one): <input type="checkbox"/> DULUTH <input checked="" type="checkbox"/> MINNEAPOLIS <input type="checkbox"/> VIRGINIA	YES	NO	N/A	COMMENT(S)								
Chain of Custody Present and Filled Out?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		1.								
Chain of Custody Relinquished?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		2.								
Sampler Name and/or Signature on COC?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3.								
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		4. If Fecal: <input type="checkbox"/> <8 hrs <input type="checkbox"/> >8 hr, <24 hr <input type="checkbox"/> No								
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		5. <input type="checkbox"/> BOD / cBOD <input type="checkbox"/> Fecal coliform <input type="checkbox"/> Hex Chrom <input type="checkbox"/> HPC <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Ortho Phos <input type="checkbox"/> Total coliform/E. coli <input type="checkbox"/> Other: _____								
Rush Turn Around Time Requested?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		6. <u>9/13/24</u>								
Sufficient Sample Volume?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		7.								
Correct Containers Used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8.								
- Pace Containers Used?	<input type="checkbox"/>	<input checked="" type="checkbox"/>										
Containers Intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>		9.								
Field Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	10. Is sediment visible in the dissolved container: <input type="checkbox"/> YES <input type="checkbox"/> NO								
Is sufficient information available to reconcile the samples to the COC? NOTE: If ID/Date/Time don't match fill out section 11. Matrix: <input type="checkbox"/> Oil <input checked="" type="checkbox"/> Soil <input type="checkbox"/> Water <input type="checkbox"/> Other	<input checked="" type="checkbox"/>	<input type="checkbox"/>		11. If NO, write ID/Date/Time of container below: <input type="checkbox"/> See Exceptions form ENV-FRM-MIN4-0142								
All containers needing acid/base preservation have been checked? All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , < 2 pH, NaOH > 9 Sulfide, NaOH > 10 Cyanide) Exceptions: VOA, Coliform, TOC/DOC, Oil & Grease, DRO/8015 (water) and Dioxins/PFAS NOTE: If adding preservation to the container, verify with the PM first. Clients may require adding preservative to the field and equipment blanks when this occurs.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12. Sample #: <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH <input type="checkbox"/> Zinc Acetate Positive for Residual Chlorine: <input type="checkbox"/> YES <input type="checkbox"/> NO pH Paper Lot # <table border="1"> <tr> <th>Residual Chlorine</th> <th>0-6 Roll</th> <th>0-6 Strip</th> <th>0-14 Strip</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table> <input type="checkbox"/> See Exceptions form ENV-FRM-MIN4-0142	Residual Chlorine	0-6 Roll	0-6 Strip	0-14 Strip				
Residual Chlorine	0-6 Roll	0-6 Strip	0-14 Strip									
Headspace in Methyl Mercury Container?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13.								
Extra labels present on soil VOA or WIDRO containers?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.								
Headspace in VOA Vials (greater than 6mm)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> See Exceptions form ENV-FRM-MIN4-0140								
Trip Blanks Present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	15.								
Trip Blank Custody Seals Present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Pace Trip Blank Lot # (if purchased): _____								

CLIENT NOTIFICATION / RESOLUTION

FIELD DATA REQUIRED: ☐ YES ☐ NO

Person Contacted: _____

Date & Time: _____

Comments / Resolution: _____

Project Manager Review: Yeng OzawaDate: 9/9/24

NOTE: When there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEQ Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled By: MMLine: B

⑦

Workorder #: _____

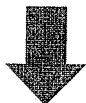
No Temp Blank		
Read Temp	Corrected Temp	Average temp
19.6	TTL	19.5
19.9		
19.5		
18.8		

PM Notified of Out of Temp Cooler? ☐ YES ☐ NO

If yes, indicate who was contacted, date and time.
If no, indicate reason why.

Multiple Cooler Project? ☐ YES ☐ NO

If anything is OVER 6.0°C, you **MUST** document containers in this section HERE



Tracking Number	Temperature



Out of Temp Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type Of Preserve	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance After Addition?		Initials
								YES	NO	
								<input type="checkbox"/>	<input type="checkbox"/>	
								<input type="checkbox"/>	<input type="checkbox"/>	
								<input type="checkbox"/>	<input type="checkbox"/>	
								<input type="checkbox"/>	<input type="checkbox"/>	
								<input type="checkbox"/>	<input type="checkbox"/>	
								<input type="checkbox"/>	<input type="checkbox"/>	
								<input type="checkbox"/>	<input type="checkbox"/>	
								<input type="checkbox"/>	<input type="checkbox"/>	

Comments:

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A
Required Client Information:

Section B
Required Project Information:

Section C
Invoice Information:

Page : 1 Of 1

Company: Pace Analytical		Report To: Pace Analytical Subout Team		Attention: Jake J. / Brett M. / Blair R. / Andy V.	
Address: 12065 Lebanon Rd.		Copy To:		Company Name:	
Mt. Juliet, TN 37122				Address:	
Email: MTJLSuboutTeam@pacelabs.com		Purchase Order #: L1773153		Pace Quote:	
Phone: (615) 773-9756	Fax: (615) 758-5859	Project Name: D23A 596 8" Lateral		Pace Project Manager: Tong Lee	
Requested Due Date: 13-Sep		Project #:		Pace Profile #: 38076	

Regulatory Agency

State / Location

CO

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	MATRIX Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Other Tissue	CODE DW WT WW P SL OL WP AR OT TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Y/N	Requested Analysis Filtered (Y/N)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
						START				END		Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3		Methanol	Other	Analyses Test	Metals																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	James C Huckaba	5-Sep	11:21				
Pace Analytical Batch: WG2356714							
Pace Analytical SDGs: L1773153							
Location: Minneapolis, MN 55414							

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER:

DATE Signed:

TEMP in C

Received on Ice (Y/N)

Custody Sealed Cooler (Y/N)

Samples Intact (Y/N)