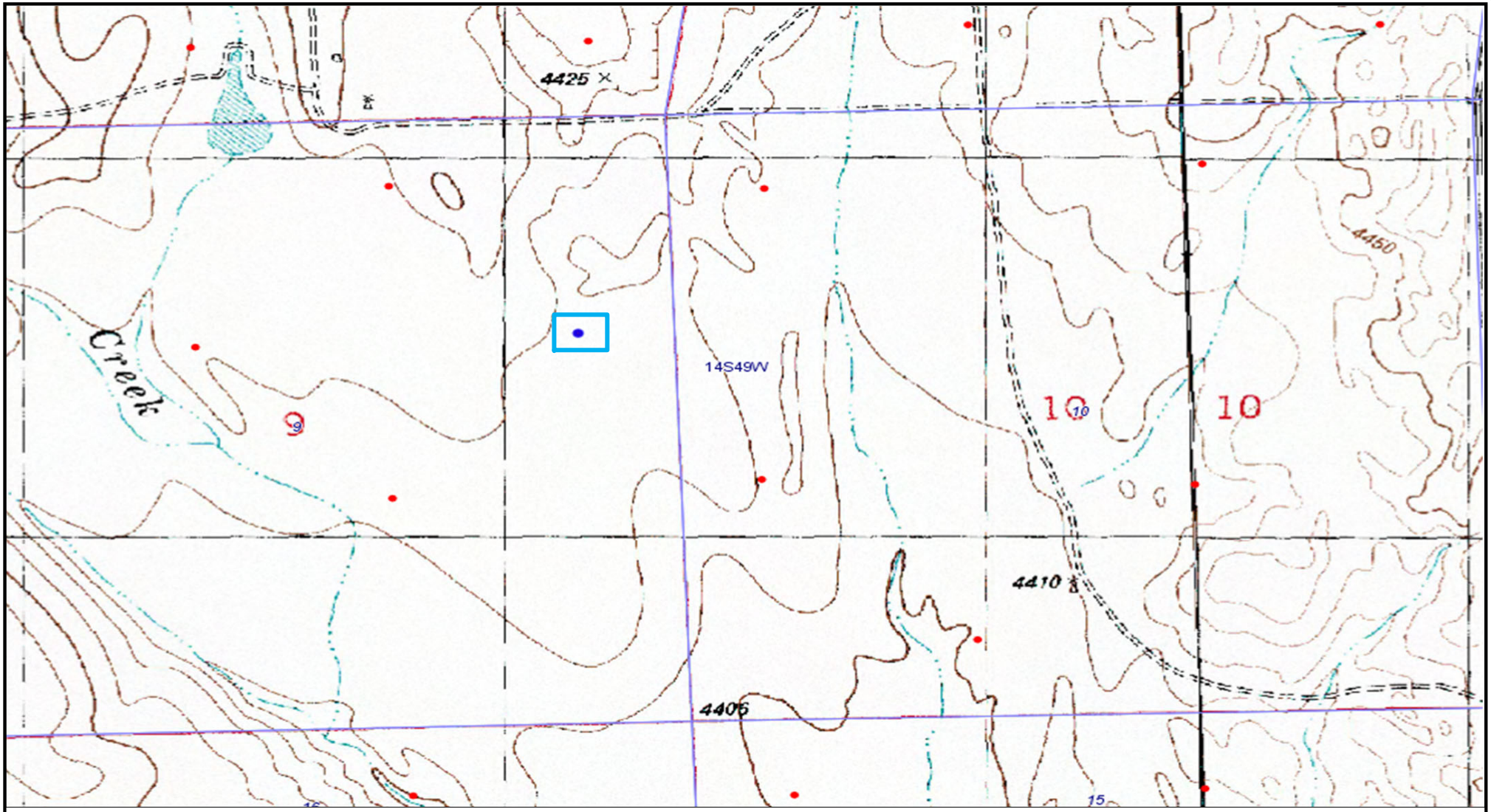
FIGURES

Figure 1: Topographic Site Location Map

Figure 2: Soil Sample Location Map



MULL DRILLING COMPANY, INC.
MULL UNIT #20
API 05-017-06274
SENE S9, T14S R49W, CHEYENNE COUNTY
TOPOGRAPHIC MAP

Legend

Location Boundary

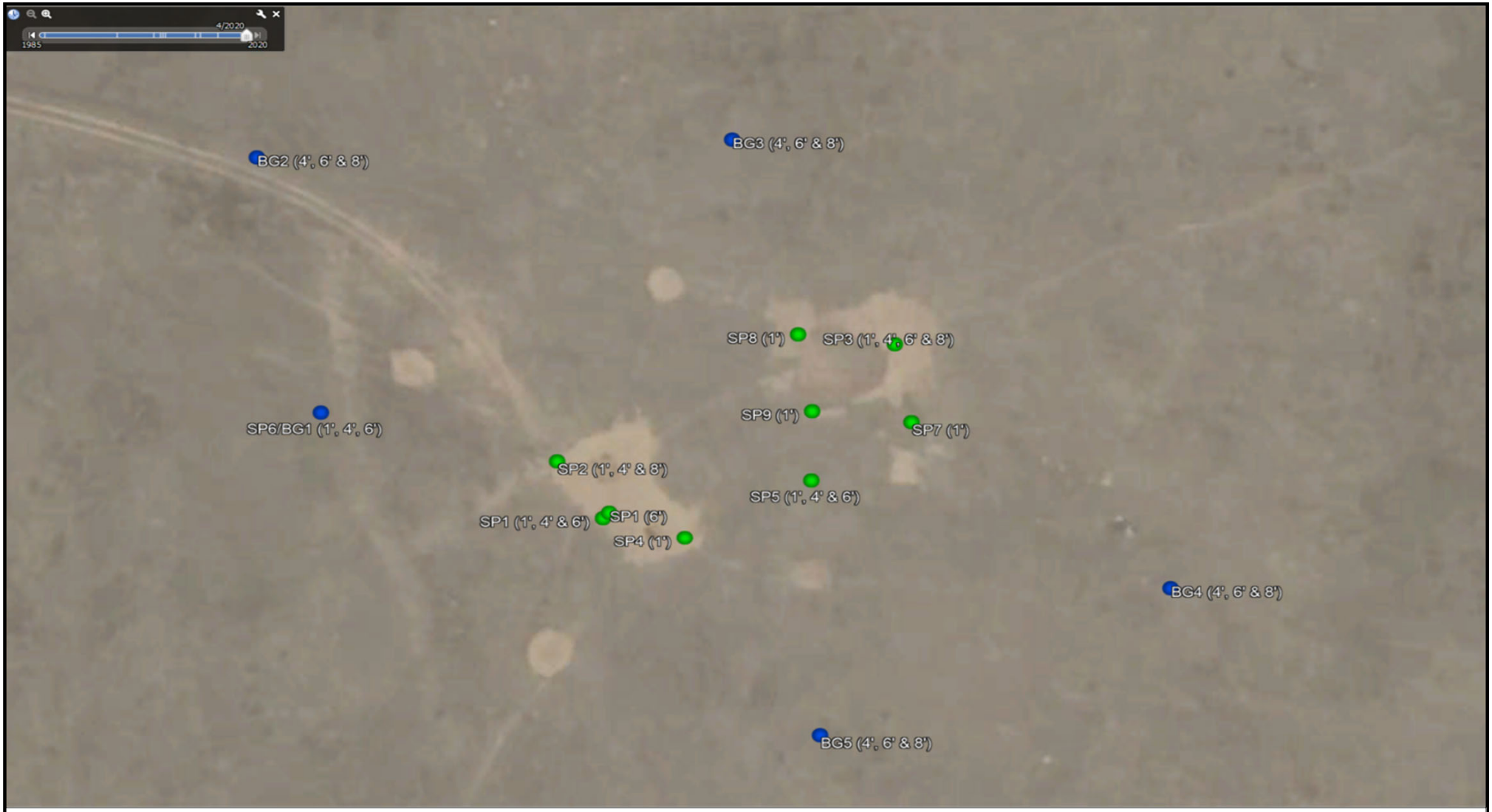
N

0 ft 350 ft 700 ft

ARDOR

Prepared By:
Ardor Environmental LLC

December 26, 2023



MULL DRILLING COMPANY, INC.
MULL UNIT #20
API 05-017-06274
SENE S9, T14S R49W, CHEYENNE COUNTY
SOIL SAMPLE LOCATIONS

Legend

Soil Samples Below Table 915-1 Levels or within Background levels

Background Samples

N

0 ft 65 ft

ARDOR

Prepared By:
Ardor Environmental LLC

October 30, 2024

TABLES

Table 1: Analytical Results Summary

MUSF 20 Table 915-1			4/13/2023							10/24/2023				2/28/2024						10/7/2024															
CLEANUP CONCENTRATIONS	Sample Point		SP1	SP1	SP2	SP3	SP4	SP5	SP6 (BG1)	SP3	SP7	SP8	SP9	SP1	SP2	SP3	SP5	BG1	BG1	SP1	SP2	SP3	SP5	BG2			BG3			BG4			BG5		
	Depth		1'	4'	1'	1'	1'	1'	1'	4'	1'	1'	1'	6'	4'	6'	4'	4'	6'	6'	8'	8'	6'	4'	6'	8'	4'	6'	8'	4'	6'	8'	4'	6'	8'
Contaminant of Concern	Concentrations		38.845399; -102.890035	38.845399; -102.890035	38.845438; -102.890148	38.845617; 102.889595	38.845349; 102.889941	38.845426; 102.889735	38.845532; -102.890538	38.845617, -102.889595	38.845518, -102.889569	38.845648, -102.889755	38.845534, -102.889732	38.845399, -102.890035	38.845438, -102.890148	38.845617, -102.889595	38.845426, -102.889735	38.845532; -102.890538		38.845386, -102.890065	38.845438, -102.890148	38.845617; -102.889595	38.845426; -102.889735	38.845904, -102.890643			38.845930, -102.889863			38.845275, -102.889144			38.845061, -102.889719		
Soil TPH (total volatile [C6-C10] and extractable [C10-C36] hydrocarbons)	500mg/kg		6.9J	ND	5.7J	7.7J	49	72.1	21.6	ERO 6.7 GRO U	ERO 4.9 GRO U	ERO 34 GRO U	ERO 12 GRO U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PID Reading			0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	0.3 ppm	0.1 ppm	0.0 ppm	0.0 ppm	0.0 ppm	0.0 ppm	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soil Suitability for Reclamation																																			
Electrical conductivity (EC) (by saturated paste method)	<4mmhos/cm		0.163	0.141	0.114	2.7	0.133	0.203	0.16	1.4	0.8	11	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium adsorption ratio (SAR) (by saturated paste method)	<6		0.3	0.399	0.108	2.55	0.118	0.0763	0.0756	6.1	0.25	4.2	1.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH (by saturated paste method)	6–8.3		**8.44**	**8.4**	8.23	7.69	7.92	7.83	7.86	**8.35**	8.1	7.29	7.22	**8.51**	**8.46**	**8.5**	**8.54**	**8.38**	**8.5**	8.27	8.31	**8.5**	8.27	**8.4**	**8.65**	**8.48**	**8.39**	**8.38**	**8.47**	8.15	**8.89**	**8.66**	8.3	8.29	**8.33**
boron (hot water soluble soil extract)	2mg/l		0.176J	0.195J	0.195J	0.418	0.252	0.322	0.201	0.35	0.71	0.47	0.48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Organic Compounds in Groundwater																																			
benzene	5µg/l		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
toluene	560 to 1,000µg/l		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ethylbenzene	700µg/l		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
xylenes (sum of o-, m- and p- isomers = total xylenes)	1,400 to 10,000µg/l		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
naphthalene	140µg/l		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-trimethylbenzene	67µg/l		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-trimethylbenzene	67µg/l		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Groundwater Inorganic Parameters																																			
total dissolved solids (TDS)	<1.25 X local background		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
chloride ion	250mg/l or <1.25 X local background		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sulfate ion	250mg/l or <1.25 X local background		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Soils	Residential Soil Screening Level Concentrations (mg/kg)	Protection of Groundwater Soil Screening Level Concentrations (mg/kg)	SP1	SP1	SP2	SP3	SP4	SP5	SP6 (BG1)	SP3	SP7	SP8	SP9	SP1	SP2	SP3	SP5	BG1	BG1	SP1	SP2	SP3	SP5	BG2			BG3			BG4			BG5		
	Depth		1'	4'	1'	1'	1'	1'	1'	4'	1'	1'	1'	6'	4'	6'	4'	4'	6'	8'	8'	8'	6'	4'	6'	8'	4'	6'	8'	4'	6'	8'	4'	6'	8'
Organic Compounds in Soils																																			
benzene	1.2	0.0026 (M)	ND	ND	ND	ND	ND	ND	ND	U	0.0022 J	0.0027 J	0.0016 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
toluene	490	0.69 (M)	ND	ND	ND	ND	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ethylbenzene	5.8	0.78 (M)	ND	ND	ND	0.0011J	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
xylenes (sum of o-, m- and p- isomers = total xylenes)	58	9.9 (M)	ND	ND	ND	0.0061J	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-trimethylbenzene	30	0.0081 (R)	ND	ND	ND	0.0019J	ND	0.0010J	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-trimethylbenzene	27	0.0087 (R)	ND	ND	ND	0.0064J	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
acenaphthene	360	0.55 (R)	ND	ND	ND	ND	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
anthracene	1800	5.8 (R)	ND	ND	ND	ND	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
benz(a)anthracene	1.1	0.011 (R)	ND	ND	ND	ND	ND	0.0034J	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
benzo(b)fluoranthene	1.1	0.3 (R)	ND	ND	ND	0.0031J	ND	0.0027J	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
benzo(k)fluoranthene	11	2.9 (R)	ND	ND	ND	ND	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
benzo(a)pyrene	0.11	0.24 (M)	ND	ND	ND	ND	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
chrysene	110	9 (R)	ND	ND	ND	0.0041	ND	0.0039	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
dibenzo(a,h)anthracene	0.11	0.096 (R)	ND	ND	ND	ND	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
fluoranthene	240	8.9 (R)	ND	ND	ND	ND	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
fluorene	240	0.54 (R)	ND	ND	ND	ND	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
indeno(1,2,3-cd)pyrene	1.1	0.98 (R)	ND	ND	ND	ND	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	ND	ND	ND	ND	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-methylnaphthalene	24	0.019 (R)	ND	ND	ND	ND	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
naphthalene	2	0.0038 (R)	ND	ND	ND	ND	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
pyrene	180	1.3 (R)	ND	ND	ND	ND	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals in Soils																																			
arsenic	0.68	0.29 (M)	**5.1**	**3**	**4.3**	**5.6**	**3.3**	**3.3**	**2.7**	**3.4**	**3.1**	**3.2**	**3.3**	**5.12**	**3.18**	**5.33**	**3.02**	**3.18**	**3.91**	**3.1**	**4.36**	**3.25**	**3.16**	**4.96**	**3.73**	**4.2**	**3.3**	**3.56**	**3.99**	**4.25**	**2.68**	**4.31**	**4.01**	**4.5**	**4.55**
barium	15000	82 (M)	75.6	64	111	97.7	57.6	57.6	59.8	130	100	93	95	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cadmium	71	0.38 (M)	0.26J	0.29J	0.42	0.59	0.26J	0.26J	0.28J	0.044	0.21	0.19	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
chromium (VI)	0.3	0.00067 (R)	ND	ND	ND	1.4	ND	0.672J	ND	U	U	U	U	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
copper	3100	46 (M)	4.5	4.7	7.3	9.2	4.9	11.2	4.5	5.7	7.3	7.2	8.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
lead	400	14 (M)	8	4.6	7.1	19.4	21.7	27.3	4.8	7.8	26	21	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
nickel	1500	26 (R)	4	5	7.7	9.5	3.7	10.7	4.4	7.1	7.7	7.8	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
selenium	390	0.26 (M)	ND	ND	ND	0.75J	ND	1.1J	ND	0.28	0.51	0.63	0.43	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
silver	390	0.8 (R)	ND	ND	ND	ND	ND	ND	ND	U	U	U	U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
zinc	23000	370 (R)	20.4	19.2	27.8	29.8	21.1	34.6	21	22	24	24	24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

*The letter "(**R**)" following a protection of Groundwater soil screening level indicates the concentration is derived from a risk-based approach. The letter "(**M**)" following a protection of Groundwater soil screening level indicates the concentration is derived from the drinking water MCL.*

Quantifier "J" indicated analyte is present at an estimated concentration between the MDL and Reporting Limit.

Quantifier "U" indicates analyzed but not detected above the MDL.

Values presented in **BOLD** contained concentrations exceeding ECMC Table 915-1 Residential Soil Screening Level limits, but are within Background results.

Values presented in **BOLD** contained concentrations exceeding ECMC Table 915-1 Residential Soil Screening Level limits, and Background results.

*Arsenic is naturally occurring in Colorado at concentrations above ECMC Table 915-1; Local Clean-Up Level for Arsenic is 6.2 (1.25 x 4.96)

ATTACHMENT A

Laboratory Analytical Reports

ORIGINS LABORATORY

Mull Drilling
Kendall Pelton
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

October 30, 2024

Project Name - MUSF 20 **Project Number - [none]**

Attached are your analytical results for MUSF 20 received by Origins Laboratory October 09, 2024. This project is associated with Origins project number E410295-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory
303.433.1322
projectmanager@originslab.com

THE NELAC INSTITUTE

ACCREDITED
TESTING CERT # 3494.01

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SP-2 8'	E410295-01	Soil	October 9, 2024 2:30	10/09/2024 10:50
SP-1 6'	E410295-02	Soil	October 9, 2024 2:40	10/09/2024 10:50
SP-5 6'	E410295-03	Soil	October 9, 2024 2:50	10/09/2024 10:50
SP-3 8'	E410295-04	Soil	October 9, 2024 3:10	10/09/2024 10:50
BG 5 4'	E410295-05	Soil	October 9, 2024 9:10	10/09/2024 10:50
BG 5 6'	E410295-06	Soil	October 9, 2024 9:15	10/09/2024 10:50
BG 5 8'	E410295-07	Soil	October 9, 2024 9:20	10/09/2024 10:50
BG 4 4'	E410295-08	Soil	October 9, 2024 9:35	10/09/2024 10:50
BG 4 6'	E410295-09	Soil	October 9, 2024 9:40	10/09/2024 10:50
BG 4 8'	E410295-10	Soil	October 9, 2024 9:45	10/09/2024 10:50
BG 3 4'	E410295-11	Soil	October 9, 2024 10:05	10/09/2024 10:50
BF 3 6'	E410295-12	Soil	October 9, 2024 10:10	10/09/2024 10:50
BG 3 8'	E410295-13	Soil	October 9, 2024 10:15	10/09/2024 10:50
BG 2 4'	E410295-14	Soil	October 9, 2024 10:30	10/09/2024 10:50

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BG 2 6'	E410295-15	Soil	October 9, 2024 10:35	10/09/2024 10:50
BG 2 8'	E410295-16	Soil	October 9, 2024 10:40	10/09/2024 10:50

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

ORIGINS LABORATORY, INC

1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

www.originslaboratory.com

E410295

page 1 of 2

Client: Mull Drilling
Address: 1700 N Waterfront Pkwy, Wichita KS 67206
Telephone Number: 316 265 6826
Email Address: kpelton@mulldrilling.com

Project Manager: Kendall Pelton
Project Name: MUSF #20
Project Number:
Samples Collected By: Kendall Pelton

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative: Unpreserved	HCl	HNO_3	Other	Matrix: Groundwater	Soil	Air Summa Canister #	Other	Analysis: pH	Arsenic	Sample Instructions
SP-2	10/9/24	2:30	2	X					X			X	X	1
SP-1	10/9/24	2:40	2	X					X			X	X	2
SP-5	10/9/24	2:50	2	X					X			X	X	3
SP-3	10/9/24	3:10	2	X					X			X	X	4
BG-5	10/8/24	9:10	2	X					X			X	X	5
BG-5	10/8/24	9:15	2	X					X			X	X	6
BG-5	10/8/24	9:20	2	X					X			X	X	7
BG-4	10/8/24	9:30	2	X					X			X	X	8
BG-4	10/8/24	9:40	2	X					X			X	X	9
BG-4	10/8/24	9:45	2	X					X			X	X	10

Relinquished By: [signature] Date: 10/9/24 Time: 10:50
Received By: [signature] Date: 10/9/24 Time: 10:50
Relinquished By: Date: Time:
Received By: Date: Time:
Relinquished By: Date: Time:
Received By: Date: Time:

Turnaround Time: Same Day ☐ 24 Hr ☐ 48 Hr ☐ 72 Hr ☐ Standard ☒

Temp Received- 3.3

Date Results Needed

Origins Laboratory

[signature]

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

ORIGINS LABORATORY, INC

www.originslaboratory.com

E410295

page 2 of 2

Client: Mull Drilling
Address:
Telephone Number:
Email Address:

Project Manager:
Project Name: MUSF # 20
Project Number:
Samples Collected By:

1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

	Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative: Unpreserved	HCl	HNO_3	Other	Matrix: Groundwater	Soil	Air Summa Canister #	Other	Analysis: pH	Arsenic	Sample Instructions
1	BG 3 4'	10/8/24	10:05	2	X					X			X	X	
2	BG 3 6'	10/8/24	10:10	2	X					X			X	X	
3	BG 3 8'	10/8/24	10:15	2	X					X			X	X	
4	BG 2 4'	10/8/24	10:30	2	X					X			X	X	
5	BG 2 6'	10/8/24	10:35	2	X					X			X	X	
6	BG 2 8'	10/8/24	10:40	2	X					X			X	X	
7															
8															
9															
10															

Relinquished By: [signature] Date: 10/9/24 Time: 10:15
Received By: [signature] Date: 10/9/24 Time: 1050

Relinquished By: Date: Time:
Received By: Date: Time:

Temp Received- 3.3

Turnaround Time: Same Day [ ] 24 Hr [ ] 48 Hr [ ] 72 Hr [ ] Standard [✓]

Date Results Needed

Origins Laboratory

[signature]

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: E410295

Client: Mull Drilling
Client Project ID: MUSF #20

Checklist Completed by: WS /
Date/time completed: 10/10 /24

Shipped Via: (UPS, FedEx, Hand Delivered, Pick-up, etc.)
Airbill #: N/A

Matrix(s) Received: (Check all that apply): / Soil/Solid ____ Water ____ Other: ____

Cooler Number/Temperature: 1 / 3.3 °C ____/____ °C ____/____ °C (Describe) ____/____ °C

Thermometer ID: T004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C(1)?	/			
Is there ice present (document if blue ice is used)	/			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		/		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		/		
Were all samples received intact(1)?	/			
Was adequate sample volume provided(1)?	/			
Are short holding time analytes or samples with HTs due within 48 hours present(1)?		/		
Is a chain-of-custody (COC) present and filled out completely(1)?	/			
Does the COC agree with the number and type of sample bottles received(1)?	/			
Do the sample IDs on the bottle labels match the COC(1)?	/			
Is the COC properly relinquished by the client with date and time recorded(1)?	/			
For volatiles in water – is there headspace (> ¼ inch bubble) present? **If yes, contact client and note in narrative.**			/	
Are samples preserved that require preservation and was it checked (1)? *(note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)*			/	

Additional Comments (if any):

(1)If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) ____ Date/Time Reviewed 10/11 /24

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

SP-2 8'
10/9/2024 2:30:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-01 (Soil)									
pH in Soil by 9045D									
pH	**8.31**			pH Units	1	B4J1749	10/17/2024	10/19/2024	
Table 915 metals by EPA 6020B									
Arsenic	**4.36**		0.255	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

SP-1 6'
10/9/2024 2:40:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-02 (Soil)									
pH in Soil by 9045D									
pH	**8.27**			pH Units	1	B4J1749	10/17/2024	10/19/2024	
Table 915 metals by EPA 6020B									
Arsenic	**3.10**		0.279	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

SP-5 6'
10/9/2024 2:50:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-03 (Soil)									
pH in Soil by 9045D									
pH	**8.27**			pH Units	1	B4J1749	10/17/2024	10/19/2024	
Table 915 metals by EPA 6020B									
Arsenic	**3.16**		0.251	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

SP-3 8'
10/9/2024 3:10:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-04 (Soil)									
pH in Soil by 9045D									
pH	**8.50**			pH Units	1	B4J1749	10/17/2024	10/19/2024	
Table 915 metals by EPA 6020B									
Arsenic	**3.25**		0.288	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

BG 5 4'
10/9/2024 9:10:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-05 (Soil)									
pH in Soil by 9045D									
pH	**8.30**			pH Units	1	B4J1749	10/17/2024	10/19/2024	
Table 915 metals by EPA 6020B									
Arsenic	**4.01**		0.276	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

BG 5 6'
10/9/2024 9:15:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-06 (Soil)									
pH in Soil by 9045D									
pH	**8.29**			pH Units	1	B4J1749	10/17/2024	10/19/2024	
Table 915 metals by EPA 6020B									
Arsenic	**4.50**		0.248	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

BG 5 8'
10/9/2024 9:20:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-07 (Soil)									
pH in Soil by 9045D									
pH	**8.33**			pH Units	1	B4J1749	10/17/2024	10/19/2024	
Table 915 metals by EPA 6020B									
Arsenic	**4.55**		0.243	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

BG 4 4'
10/9/2024 9:35:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-08 (Soil)									
pH in Soil by 9045D									
pH	**8.15**			pH Units	1	B4J1749	10/17/2024	10/19/2024	
Table 915 metals by EPA 6020B									
Arsenic	**4.25**		0.256	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

BG 4 6'
10/9/2024 9:40:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-09 (Soil)									
pH in Soil by 9045D									
pH	**8.89**			pH Units	1	B4J1750	10/17/2024	10/21/2024	
Table 915 metals by EPA 6020B									
Arsenic	**2.68**		0.243	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

BG 4 8'
10/9/2024 9:45:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-10 (Soil)									
pH in Soil by 9045D									
pH	**8.66**			pH Units	1	B4J1750	10/17/2024	10/21/2024	
Table 915 metals by EPA 6020B									
Arsenic	**4.31**		0.266	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

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Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

BG 3 4'
10/9/2024 10:05:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-11 (Soil)									
pH in Soil by 9045D									
pH	**8.39**			pH Units	1	B4J1750	10/17/2024	10/21/2024	
Table 915 metals by EPA 6020B									
Arsenic	**3.30**		0.258	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

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Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

BF 3 6'
10/9/2024 10:10:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-12 (Soil)									
pH in Soil by 9045D									
pH	**8.38**			pH Units	1	B4J1750	10/17/2024	10/21/2024	
Table 915 metals by EPA 6020B									
Arsenic	**3.56**		0.286	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

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Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

BG 3 8'
10/9/2024 10:15:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-13 (Soil)									
pH in Soil by 9045D									
pH	**8.47**			pH Units	1	B4J1750	10/17/2024	10/21/2024	
Table 915 metals by EPA 6020B									
Arsenic	**3.99**		0.274	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

BG 2 4'
10/9/2024 10:30:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-14 (Soil)									
pH in Soil by 9045D									
pH	**8.40**			pH Units	1	B4J1750	10/17/2024	10/21/2024	
Table 915 metals by EPA 6020B									
Arsenic	**4.96**		0.268	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

BG 2 6'
10/9/2024 10:35:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-15 (Soil)									
pH in Soil by 9045D									
pH	**8.65**			pH Units	1	B4J1750	10/17/2024	10/21/2024	
Table 915 metals by EPA 6020B									
Arsenic	**3.73**		0.266	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

BG 2 8'
10/9/2024 10:40:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory									
E410295-16 (Soil)									
pH in Soil by 9045D									
pH	**8.48**			pH Units	1	B4J1750	10/17/2024	10/21/2024	
Table 915 metals by EPA 6020B									
Arsenic	**4.20**		0.266	mg/kg	10	B4J1031	10/10/2024	10/14/2024	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

Metals by EPA 6000/7000 Series Methods - Quality Control
Origins Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4J1031 - EPA 3050B										
Blank (B4J1031-BLK1)					Prepared: 10/10/2024 Analyzed: 10/14/2024					
Arsenic	ND	0.290	mg/kg							
LCS (B4J1031-BS1)					Prepared: 10/10/2024 Analyzed: 10/14/2024					
Arsenic	5.38	0.290	mg/kg	5.00		108	80-120			
Matrix Spike (B4J1031-MS1)		**Source: E410295-01**			Prepared: 10/10/2024 Analyzed: 10/14/2024					
Arsenic	8.88	0.259	mg/kg	4.47	4.36	101	75-125			
Matrix Spike Dup (B4J1031-MSD1)		**Source: E410295-01**			Prepared: 10/10/2024 Analyzed: 10/14/2024					
Arsenic	8.41	0.259	mg/kg	4.46	4.36	90.7	75-125	5.46	20	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

Saturated Paste - Quality Control
Origins Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4J1749 - Saturated Paste pH/EC										
Duplicate (B4J1749-DUP1)		**Source: E410017-01**			Prepared: 10/17/2024 Analyzed: 10/19/2024					
pH	7.77		pH Units		7.90			1.66	25	
Batch B4J1750 - Saturated Paste pH/EC										
Duplicate (B4J1750-DUP1)		**Source: E410295-09**			Prepared: 10/17/2024 Analyzed: 10/21/2024					
pH	8.89		pH Units		8.89			0.00	25	

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Kendall Pelton
Project Number: [none]
Project: MUSF 20

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

Origins Laboratory

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

March 25, 2024

Mull Drilling

Trisha Fanning

1700 N Waterfront Pkway Bldg #1200

Wichita KS 67206

Project Name - MUSF 20 **Project Number - [none]**

Attached are your analytical results for MUSF 20 received by Origins Laboratory, Inc. March 01, 2024. This project is associated with Origins project number Y403013-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com

THE NELAC INSTITUTE

ACCREDITED
TESTING CERT # 3494.01

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF 20

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SP1@6'	Y403013-01	Soil	February 28, 2024 9:06	03/01/2024 11:30
SP2@4'	Y403013-02	Soil	February 28, 2024 11:21	03/01/2024 11:30
SP3@6'	Y403013-03	Soil	February 28, 2024 11:39	03/01/2024 11:30
SP5@4'	Y403013-04	Soil	February 28, 2024 11:58	03/01/2024 11:30

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF 20

ORIGINS LABORATORY, INC

www.originslaboratory.com

page 1 of 1

Client: Mull Drilling
Address: 1700 N Waterfront Pkwy, Bldg #1200 Wichita, KS 67206
Project Manager: Taylor Coratz
Project Name: MUSF 20
Project Number:
Samples Collected By: Taylor Coratz
Telephone Number: 303 522 6041
Email Address: tcoratz@origenvironmental.com

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative: Unpreserved	Preservative: HCl	Preservative: HNO_3	Preservative: Other	Matrix: Groundwater	Matrix: Soil	Matrix: Air Summa Canister #	Matrix: Other	Analysis: pH	Analysis: Arsenic	Analysis: CrVI	Sample Instructions
SP1 W4	2/28/24	0906	2	X					X			X	X	X	
SP2 W41	↓	1121	↓	↓					↓			↓	↓	↓	
SP3 W6	↓	1139	↓	↓					↓			↓	↓	↓	
SP5 W4	↓	1158	↓	↓					↓			↓	↓	↓	

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[illegible]	3/1/24	1130	[illegible]	3/1/24	1130
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

Temp Received- 2

Date Results Needed

Turnaround Time: Same Day ☐ 24 Hr ☐ 48 Hr ☐ 72 Hr ☐ Standard ☒

1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Origins Laboratory, Inc.

JBynon

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF 20

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: YLW3013

Client: Mull Drilling
Client Project ID: MUSF 20

Checklist Completed by: TUT/EHS
Date/time completed: 3/01/24

Shipped Via: HAND
(UPS, FedEx, Hand Delivered, Pick-up, etc.)
Airbill #: N/A

Matrix(s) Received: (Check all that apply): X Soil/Solid ____ Water ____ Other: ____ (Describe)

Cooler Number/Temperature: 1 / 2 °C ____/____ °C ____/____ °C ____/____ °C

Thermometer ID: T004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C[1]?	✓			
Is there ice present (document if blue ice is used)	✓			
Are custody seals present on cooler? (If so, document in comments if they are signed and dated, broken or intact)		✓		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		✓		
Were all samples received intact[1]?	✓			
Was adequate sample volume provided[1]?	✓			
Are short holding time analytes or samples with HTs due within 48 hours present[1]?		✓		
Is a chain-of-custody (COC) present and filled out completely[1]?	✓			
Does the COC agree with the number and type of sample bottles received[1]?	✓			
Do the sample IDs on the bottle labels match the COC[1]?	✓			
Is the COC properly relinquished by the client with date and time recorded[1]?	✓			
For volatiles in water – is there headspace (> ¼ inch bubble) present? **If yes, contact client and note in narrative.**			✓	
Are samples preserved that require preservation and was it checked [1]? *(note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)*			✓	

Additional Comments (if any):

[1] *If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.*

Reviewed by (Project Manager) ____ Date/Time Reviewed 3/4/24

Origins Laboratory, Inc.

JByron

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF 20

SP1@6'
2/28/2024 9:06:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory, Inc.									
Y403013-01 (Soil)									
pH in Soil by 9045D									
pH	**8.51**			pH Units	1	B4C0216	03/02/2024	03/03/2024	
Table 915 metals by EPA 6020B									
Arsenic	**5.12**		0.249	mg/kg	10	B4C0125	03/01/2024	03/08/2024	
Total Metals by 7196A									
Chromium, Hexavalent	ND	0.244	0.5	mg/Kg	1	L739852	02/28/2024	03/22/2024	

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF 20

SP2@4'
2/28/2024 11:21:00AM

Origins Laboratory, Inc.

Y403013-02 (Soil)

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
pH in Soil by 9045D									
pH	**8.46**			pH Units	1	B4C0216	03/02/2024	03/03/2024	
Table 915 metals by EPA 6020B									
Arsenic	**3.18**		0.264	mg/kg	10	B4C0125	03/01/2024	03/08/2024	
Total Metals by 7196A									
Chromium, Hexavalent	ND	0.244	0.5	mg/Kg	1	L739852	02/28/2024	03/22/2024	

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF 20

SP3@6'
2/28/2024 11:39:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory, Inc.									
Y403013-03 (Soil)									
pH in Soil by 9045D									
pH	**8.50**			pH Units	1	B4C0216	03/02/2024	03/03/2024	
Table 915 metals by EPA 6020B									
Arsenic	**5.33**		0.249	mg/kg	10	B4C0125	03/01/2024	03/08/2024	
Total Metals by 7196A									
Chromium, Hexavalent	ND	0.244	0.5	mg/Kg	1	L739852	02/28/2024	03/22/2024	

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF 20

SP5@4'
2/28/2024 11:58:00AM

Origins Laboratory, Inc.

Y403013-04 (Soil)

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
pH in Soil by 9045D									
pH	**8.54**			pH Units	1	B4C0216	03/02/2024	03/03/2024	
Table 915 metals by EPA 6020B									
Arsenic	**3.02**		0.278	mg/kg	10	B4C0125	03/01/2024	03/08/2024	
Total Metals by 7196A									
Chromium, Hexavalent	ND	0.244	0.5	mg/Kg	1	L739852	02/28/2024	03/22/2024	

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF 20

Metals by EPA 6000/7000 Series Methods - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0125 - EPA 3050B										
Blank (B4C0125-BLK1)					Prepared: 03/01/2024 Analyzed: 03/08/2024					
Arsenic	ND	0.290	mg/kg							
LCS (B4C0125-BS1)					Prepared: 03/01/2024 Analyzed: 03/08/2024					
Arsenic	5.56	0.290	mg/kg	5.00		111	80-120			
Matrix Spike (B4C0125-MS1)		**Source: Y403011-02**			Prepared: 03/01/2024 Analyzed: 03/08/2024					
Arsenic	19.5	0.265	mg/kg	4.57	15.0	99.8	75-125			
Matrix Spike Dup (B4C0125-MSD1)		**Source: Y403011-02**			Prepared: 03/01/2024 Analyzed: 03/08/2024					
Arsenic	19.4	0.255	mg/kg	4.39	15.0	101	75-125	0.690	20	

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF 20

Saturated Paste - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0216 - Saturated Paste pH/EC										
Duplicate (B4C0216-DUP1)		**Source: Y402713-21**			Prepared: 03/02/2024 Analyzed: 03/03/2024					
pH	8.48		pH Units		8.47			0.118	25	

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF 20

Total Metals by 7196A - Quality Control
Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch L739852 -										
DUP (L 85856-DUP)		**Source: 85856**			Prepared:	Analyzed: 03/22/2024				
Chromium, Hexavalent	ND	0.5	mg/Kg		<0.500		-	0	20	
MS (L 85856-MS)		**Source: 85856**			Prepared:	Analyzed: 03/22/2024				
Chromium, Hexavalent	33.1	2.5	mg/Kg	39.6	< 0.244	84	75-125			
LCS (LCS)					Prepared:	Analyzed: 03/22/2024				
Chromium, Hexavalent	6.8	0.5	mg/Kg	8		85	75-125			
LRB (LRB)					Prepared:	Analyzed: 03/22/2024				
Chromium, Hexavalent	ND	0.5	mg/Kg				-			

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF 20

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

Calculated results may use J-flag data (instead of reported "ND") as part of calculation to provide a more accurate result.

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

March 25, 2024

Mull Drilling

Trisha Fanning

1700 N Waterfront Pkway Bldg #1200

Wichita KS 67206

Project Name - MUSF BG **Project Number - [none]**

Attached are your analytical results for MUSF BG received by Origins Laboratory, Inc. March 01, 2024. This project is associated with Origins project number Y403015-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com

THE NELAC INSTITUTE

ACCREDITED
TESTING CERT # 3494.01

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF BG

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BG-01@4'	Y403015-01	Soil	March 28, 2024 10:50	03/01/2024 11:30
BG-01@6'	Y403015-02	Soil	March 28, 2024 11:10	03/01/2024 11:30

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF BG

ORIGINS LABORATORY, INC

www.originslaboratory.com

page 1 of 1

Client: Mull Drilling
Address: 1700 N Waterfront Pkwy, Bldg #1200
Wichita, KS 67206
Telephone Number: 303-522-6041
Email Address: tracy@aardvarkenvironmental.com

Project Manager: Taylor Coatts
Project Name: MUSF BG
Project Number:
Samples Collected By: Taylor Coatts

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative: Unpreserved	HCl	HNO_3	Other	Matrix: Groundwater	Soil	Air Summa Canister #	Other	Analysis: PH, Arsenic Cr IV				Sample Instructions
BG-01@4'	2/28/24	1050	2	X					X			X				
BG-01@6'	2/28/24	1110	2	X					X			X				

Relinquished By: [signature] Date: 3/1/24 Time: 1130 Received By: [signature] Date: 3/1/24 Time: 1130

Relinquished By: Date: Time: Received By: Date: Time:

Turnaround Time: Same Day ☐ 24 Hr ☐ 48 Hr ☐ 72 Hr ☐ Standard ☒

Temp Received- 2 Date Results Needed

1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Origins Laboratory, Inc.

JBynon

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF BG

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: 4403015

Client: Mull Drilling
Client Project ID: MUSF BG

Checklist Completed by: TGH/EHS
Date/time completed: 3/01/24

Shipped Via: HD (UPS, FedEx, Hand Delivered, Pick-up, etc.)
Airbill #: N/A

Matrix(s) Received: (Check all that apply): X Soil/Solid ____ Water ____ Other: ____ (Describe)

Cooler Number/Temperature: 1 / 2 °C ____/____ °C ____/____ °C ____/____ °C

Thermometer ID: 7004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C[1]?	✓			
Is there ice present (document if blue ice is used)	✓			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		✓		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		✓		
Were all samples received intact[1]?	✓			
Was adequate sample volume provided[1]?	✓			
Are short holding time analytes or samples with HTs due within 48 hours present[1]?		✓		
Is a chain-of-custody (COC) present and filled out completely[1]?	✓			
Does the COC agree with the number and type of sample bottles received[1]?	✓			
Do the sample IDs on the bottle labels match the COC[1]?	✓			
Is the COC properly relinquished by the client with date and time recorded[1]?	✓			
For volatiles in water – is there headspace (> ¼ inch bubble) present? **If yes, contact client and note in narrative.**			✓	
Are samples preserved that require preservation and was it checked [1]? *(note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)(pH <2 for samples preserved with HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)*			✓	

Additional Comments (if any):

[1] *If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.*

Reviewed by (Project Manager) — Date/Time Reviewed: 3/4/24

Origins Laboratory, Inc.

JBynon

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF BG

BG-01@4'
3/28/2024 10:50:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
Origins Laboratory, Inc.									
Y403015-01 (Soil)									
pH in Soil by 9045D									
pH	**8.38**			pH Units	1	B4C0216	03/02/2024	03/03/2024	
Table 915 metals by EPA 6020B									
Arsenic	**3.18**		0.258	mg/kg	10	B4C0125	03/01/2024	03/08/2024	
Total Metals by 7196A									
Chromium, Hexavalent	ND	0.244	0.5	mg/Kg	1	L739852	02/28/2024	03/22/2024	

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF BG

BG-01@6'
3/28/2024 11:10:00AM

Origins Laboratory, Inc.
Y403015-02 (Soil)

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
pH in Soil by 9045D									
pH	**8.50**			pH Units	1	B4C0216	03/02/2024	03/03/2024	
Table 915 metals by EPA 6020B									
Arsenic	**3.91**		0.249	mg/kg	10	B4C0125	03/01/2024	03/08/2024	
Total Metals by 7196A									
Chromium, Hexavalent	ND	0.244	0.5	mg/Kg	1	L739852	02/28/2024	03/22/2024	

Origins Laboratory, Inc.

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Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF BG

Metals by EPA 6000/7000 Series Methods - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0125 - EPA 3050B										
Blank (B4C0125-BLK1)					Prepared: 03/01/2024 Analyzed: 03/08/2024					
Arsenic	ND	0.290	mg/kg							
LCS (B4C0125-BS1)					Prepared: 03/01/2024 Analyzed: 03/08/2024					
Arsenic	5.56	0.290	mg/kg	5.00		111	80-120			
Matrix Spike (B4C0125-MS1)		**Source: Y403011-02**			Prepared: 03/01/2024 Analyzed: 03/08/2024					
Arsenic	19.5	0.265	mg/kg	4.57	15.0	99.8	75-125			
Matrix Spike Dup (B4C0125-MSD1)		**Source: Y403011-02**			Prepared: 03/01/2024 Analyzed: 03/08/2024					
Arsenic	19.4	0.255	mg/kg	4.39	15.0	101	75-125	0.690	20	

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF BG

Saturated Paste - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B4C0216 - Saturated Paste pH/EC										
Duplicate (B4C0216-DUP1)		**Source: Y402713-21**			Prepared: 03/02/2024 Analyzed: 03/03/2024					
pH	8.48		pH Units		8.47			0.118	25	

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

ORIGINS LABORATORY, INC

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF BG

Total Metals by 7196A - Quality Control
Waypoint Analytical, LLC.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch L739852 -										
DUP (L 85856-DUP)		**Source: 85856**			Prepared:	Analyzed: 03/22/2024				
Chromium, Hexavalent	ND	0.5	mg/Kg		<0.500		-	0	20	
MS (L 85856-MS)		**Source: 85856**			Prepared:	Analyzed: 03/22/2024				
Chromium, Hexavalent	33.1	2.5	mg/Kg	39.6	< 0.244	84	75-125			
LCS (LCS)					Prepared:	Analyzed: 03/22/2024				
Chromium, Hexavalent	6.8	0.5	mg/Kg	8		85	75-125			
LRB (LRB)					Prepared:	Analyzed: 03/22/2024				
Chromium, Hexavalent	ND	0.5	mg/Kg				-			

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Mull Drilling
1700 N Waterfront Pkway Bldg #1200
Wichita KS 67206

Trisha Fanning
Project Number: [none]
Project: MUSF BG

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

Calculated results may use J-flag data (instead of reported "ND") as part of calculation to provide a more accurate result.

Origins Laboratory, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jordan A. Bynon For Jen Pellegrini, Project Manager

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

May 02, 2023

James Beilman
Mull Drilling Company
1700 N Waterfront Pkwy
Bld. 1200
Wichita, KS 67206

RE: Project: MUSF 20
Pace Project No.: 60426357

Dear James Beilman:

Enclosed are the analytical results for sample(s) received by the laboratory on April 15, 2023. 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 National - Mt. Juliet
- Pace Analytical Services - Kansas City

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: MUSF 20
Pace Project No.: 60426357

Pace Analytical Services Kansas

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 22-031-0
Illinois Certification #: 2000302021-3
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212023-1
Oklahoma Certification #: 2022-057
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-21-15
Utah Certification #: KS000212022-12
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

Pace Analytical Services National

12065 Lebanon Road, Mt. Juliet, TN 37122
Alabama Certification #: 40660
Alaska Certification 17-026
Arizona Certification #: AZ0612
Arkansas Certification #: 88-0469
California Certification #: 2932
Canada Certification #: 1461.01
Colorado Certification #: TN00003
Connecticut Certification #: PH-0197
DOD Certification: #1461.01
EPA# TN00003
Florida Certification #: E87487
Georgia DW Certification #: 923
Georgia Certification: NELAP
Idaho Certification #: TN00003
Illinois Certification #: 200008
Indiana Certification #: C-TN-01
Iowa Certification #: 364
Kansas Certification #: E-10277
Kentucky UST Certification #: 16
Kentucky Certification #: 90010
Louisiana Certification #: AI30792
Louisiana DW Certification #: LA180010
Maine Certification #: TN0002
Maryland Certification #: 324
Massachusetts Certification #: M-TN003
Michigan Certification #: 9958
Minnesota Certification #: 047-999-395
Mississippi Certification #: TN00003
Missouri Certification #: 340
Montana Certification #: CERT0086
Nebraska Certification #: NE-OS-15-05
Nevada Certification #: TN-03-2002-34
New Hampshire Certification #: 2975
New Jersey Certification #: TN002
New Mexico DW Certification
New York Certification #: 11742
North Carolina Aquatic Toxicity Certification #: 41
North Carolina Drinking Water Certification #: 21704
North Carolina Environmental Certificate #: 375
North Dakota Certification #: R-140
Ohio VAP Certification #: CL0069
Oklahoma Certification #: 9915
Oregon Certification #: TN200002
Pennsylvania Certification #: 68-02979
Rhode Island Certification #: LAO00356
South Carolina Certification #: 84004
South Dakota Certification
Tennessee DW/Chem/Micro Certification #: 2006
Texas Certification #: T 104704245-17-14
Texas Mold Certification #: LAB0152
USDA Soil Permit #: P330-15-00234
Utah Certification #: TN00003
Vermont Dept. of Health: ID# VT-2006
Virginia Certification #: VT2006
Virginia Certification #: 460132
Washington Certification #: C847
West Virginia Certification #: 233
Wisconsin Certification #: 998093910
Wyoming UST Certification #: via A2LA 2926.01
A2LA-ISO 17025 Certification #: 1461.01
A2LA-ISO 17025 Certification #: 1461.02
AIHA-LAP/LLC EMLAP Certification #:100789

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SAMPLE SUMMARY

Project: MUSF 20
Pace Project No.: 60426357

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60426357001	**SP 1**	Solid	04/13/23 13:00	04/15/23 10:31
60426357002	**SP 1 4'**	Solid	04/13/23 13:10	04/15/23 10:31
60426357003	**SP 2**	Solid	04/13/23 13:15	04/15/23 10:31
60426357004	**SP 3**	Solid	04/13/23 13:25	04/15/23 10:31
60426357005	**SP 4**	Solid	04/13/23 13:30	04/15/23 10:31
60426357006	**SP 5**	Solid	04/13/23 13:40	04/15/23 10:31
60426357007	**SP 6**	Solid	04/13/23 13:50	04/15/23 10:31

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SAMPLE ANALYTE COUNT

Project: MUSF 20
Pace Project No.: 60426357

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60426357001	**SP 1**	EPA 8015B	YGR	4	PASI-K
		EPA 8015B	JLO	2	PASI-K
		6010B-NE493 Ch 2	SPL	1	PAN
		EPA 6010	MA1	8	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 8270 by SIM	SJJ	17	PASI-K
		EPA 8260C	RAD	9	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	CMK	1	PAN
		EPA 7199	VSS	1	PAN
		EPA 9045D	KAD	1	PAN
		EPA 9050	NTG	1	PAN
		Calculated	ZSA	1	PAN
60426357002	**SP 1 4'**	EPA 8015B	YGR	4	PASI-K
		EPA 8015B	JLO	2	PASI-K
		6010B-NE493 Ch 2	SPL	1	PAN
		EPA 6010	MA1	8	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 8270 by SIM	SJJ	17	PASI-K
		EPA 8260C	RAD	9	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	CMK	1	PAN
		EPA 7199	VSS	1	PAN
		EPA 9045D	KAD	1	PAN
		EPA 9050	NTG	1	PAN
		Calculated	ZSA	1	PAN
60426357003	**SP 2**	EPA 8015B	YGR	4	PASI-K
		EPA 8015B	JLO	2	PASI-K
		6010B-NE493 Ch 2	SPL	1	PAN
		EPA 6010	MA1	8	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 8270 by SIM	SJJ	17	PASI-K
		EPA 8260C	RAD	9	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	CMK	1	PAN
		EPA 7199	VSS	1	PAN
		EPA 9045D	KAD	1	PAN

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SAMPLE ANALYTE COUNT

Project: MUSF 20
Pace Project No.: 60426357

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 9050	NTG	1	PAN
		Calculated	ZSA	1	PAN
60426357004	**SP 3**	EPA 8015B	YGR	4	PASI-K
		EPA 8015B	JLO	2	PASI-K
		6010B-NE493 Ch 2	SPL	1	PAN
		EPA 6010	MA1	8	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 8270 by SIM	SJJ	17	PASI-K
		EPA 8260C	RAD	9	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	CMK	1	PAN
		EPA 7199	VSS	1	PAN
		EPA 9045D	KAD	1	PAN
		EPA 9050	NTG	1	PAN
		Calculated	ZSA	1	PAN
60426357005	**SP 4**	EPA 8015B	YGR	4	PASI-K
		EPA 8015B	JLO	2	PASI-K
		6010B-NE493 Ch 2	SPL	1	PAN
		EPA 6010	MA1	8	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 8270 by SIM	SJJ	17	PASI-K
		EPA 8260C	RAD	9	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	CMK	1	PAN
		EPA 7199	VSS	1	PAN
		EPA 9045D	KAD	1	PAN
		EPA 9050	NTG	1	PAN
		Calculated	ZSA	1	PAN
60426357006	**SP 5**	EPA 8015B	YGR	4	PASI-K
		EPA 8015B	JLO	2	PASI-K
		6010B-NE493 Ch 2	SPL	1	PAN
		EPA 6010	MA1	8	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 8270 by SIM	SJJ	17	PASI-K
		EPA 8260C	RAD	9	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	CMK	1	PAN

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SAMPLE ANALYTE COUNT

Project: MUSF 20
Pace Project No.: 60426357

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7199	VSS	1	PAN
		EPA 9045D	KAD	1	PAN
		EPA 9050	NTG	1	PAN
		Calculated	ZSA	1	PAN
60426357007	**SP 6**	EPA 8015B	YGR	4	PASI-K
		EPA 8015B	JLO	2	PASI-K
		6010B-NE493 Ch 2	SPL	1	PAN
		EPA 6010	MA1	8	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 8270 by SIM	SJJ	17	PASI-K
		EPA 8260C	RAD	9	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	CMK	1	PAN
		EPA 7199	SET	1	PAN
		EPA 9045D	KAD	1	PAN
		EPA 9050	NTG	1	PAN
		Calculated	ZSA	1	PAN

PAN = Pace National - Mt. Juliet
PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 1 **Lab ID: 60426357001** Collected: 04/13/23 13:00 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
TPH-RRO (C28-C36)	ND	mg/kg	19.9	4.5	1	04/19/23 01:59	04/19/23 12:27		
TPH-DRO (C10-C28)	**6.9J**	mg/kg	10	4.5	1	04/19/23 01:59	04/19/23 12:27		
Surrogates									
n-Tetracosane (S)	45	%	31-152		1	04/19/23 01:59	04/19/23 12:27	646-31-1	
p-Terphenyl (S)	46	%	46-130		1	04/19/23 01:59	04/19/23 12:27	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	10.1	1.2	1	04/20/23 13:54	04/21/23 01:36		
Surrogates									
4-Bromofluorobenzene (S)	87	%	66-130		1	04/20/23 13:54	04/21/23 01:36	460-00-4	
Metals (ICP) 6010B-NE493 Ch 2	Analytical Method: 6010B-NE493 Ch 2 Preparation Method: HWS Boron								
	Pace National - Mt. Juliet								
Boron, Hot Water Soluble	**0.176J**	mg/L	0.200	0.0167	1	04/24/23 12:14	04/26/23 11:33	7440-42-8H	J
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Barium	**75.6**	mg/kg	0.48	0.26	1	04/22/23 10:38	05/01/23 18:18	7440-39-3	
Cadmium	**0.26J**	mg/kg	0.48	0.10	1	04/22/23 10:38	05/01/23 18:18	7440-43-9	
Copper	**4.5**	mg/kg	1.9	0.29	1	04/22/23 10:38	05/01/23 18:18	7440-50-8	
Lead	**8.0**	mg/kg	0.96	0.35	1	04/22/23 10:38	05/01/23 18:18	7439-92-1	
Nickel	**4.0**	mg/kg	0.48	0.23	1	04/22/23 10:38	05/01/23 18:18	7440-02-0	
Selenium	ND	mg/kg	1.4	0.72	1	04/22/23 10:38	05/01/23 18:18	7782-49-2	
Silver	ND	mg/kg	0.67	0.17	1	04/22/23 10:38	05/01/23 18:18	7440-22-4	
Zinc	**20.4**	mg/kg	9.6	1.3	1	04/22/23 10:38	05/01/23 18:18	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Arsenic	**5.1**	mg/kg	0.96	0.18	10	04/22/23 10:38	04/25/23 09:31	7440-38-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0033	0.0020	1	04/18/23 16:27	04/26/23 15:24	83-32-9	
Anthracene	ND	mg/kg	0.0033	0.0019	1	04/18/23 16:27	04/26/23 15:24	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.0033	0.0018	1	04/18/23 16:27	04/26/23 15:24	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.0033	0.0013	1	04/18/23 16:27	04/26/23 15:24	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.0033	0.0017	1	04/18/23 16:27	04/26/23 15:24	205-99-2	
Benzo(k)fluoranthene	ND	mg/kg	0.0033	0.0017	1	04/18/23 16:27	04/26/23 15:24	207-08-9	
Chrysene	ND	mg/kg	0.0033	0.0017	1	04/18/23 16:27	04/26/23 15:24	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.0033	0.0018	1	04/18/23 16:27	04/26/23 15:24	53-70-3	
Fluoranthene	ND	mg/kg	0.0033	0.0028	1	04/18/23 16:27	04/26/23 15:24	206-44-0	
Fluorene	ND	mg/kg	0.0033	0.0025	1	04/18/23 16:27	04/26/23 15:24	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0033	0.0017	1	04/18/23 16:27	04/26/23 15:24	193-39-5	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 1 **Lab ID: 60426357001** Collected: 04/13/23 13:00 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
1-Methylnaphthalene	ND	mg/kg	0.0033	0.0016	1	04/18/23 16:27	04/26/23 15:24	90-12-0	
2-Methylnaphthalene	ND	mg/kg	0.0033	0.0023	1	04/18/23 16:27	04/26/23 15:24	91-57-6	
Naphthalene	ND	mg/kg	0.0033	0.0018	1	04/18/23 16:27	04/26/23 15:24	91-20-3	
Pyrene	ND	mg/kg	0.0033	0.0024	1	04/18/23 16:27	04/26/23 15:24	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	55	%	40-120		1	04/18/23 16:27	04/26/23 15:24	321-60-8	
Terphenyl-d14 (S)	51	%	45-130		1	04/18/23 16:27	04/26/23 15:24	1718-51-0	
8260C MSV 5035A Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0051	0.00046	1	04/19/23 11:54	04/19/23 17:20	71-43-2	
Ethylbenzene	ND	mg/kg	0.0051	0.00088	1	04/19/23 11:54	04/19/23 17:20	100-41-4	
Toluene	ND	mg/kg	0.020	0.0045	1	04/19/23 11:54	04/19/23 17:20	108-88-3	
1,2,4-Trimethylbenzene	ND	mg/kg	0.0051	0.00070	1	04/19/23 11:54	04/19/23 17:20	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.0051	0.00044	1	04/19/23 11:54	04/19/23 17:20	108-67-8	
Xylene (Total)	ND	mg/kg	0.015	0.0037	1	04/19/23 11:54	04/19/23 17:20	1330-20-7	
Surrogates									
Toluene-d8 (S)	106	%	80-120		1	04/19/23 11:54	04/19/23 17:20	2037-26-5	
4-Bromofluorobenzene (S)	102	%	83-119		1	04/19/23 11:54	04/19/23 17:20	460-00-4	
1,2-Dichlorobenzene-d4 (S)	97	%	80-120		1	04/19/23 11:54	04/19/23 17:20	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974								
	Pace Analytical Services - Kansas City								
Percent Moisture	**1.6**	%	0.50	0.50	1		04/17/23 16:46		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G								
	Pace National - Mt. Juliet								
Total Solids	**95.1**	%			1	04/22/23 16:51	04/22/23 17:03		
Wet Chemistry 7199	Analytical Method: EPA 7199 Preparation Method: 3060A								
	Pace National - Mt. Juliet								
Chromium, Hexavalent	ND	mg/kg	1.05	0.268	1	04/21/23 11:53	04/24/23 02:51	18540-29-9	
Wet Chemistry 9045D	Analytical Method: EPA 9045D Preparation Method: 9045C/9045D								
	Pace National - Mt. Juliet								
pH	**8.44**	Std. Units		0.10	1	04/21/23 20:00	04/21/23 22:32		H3
Wet Chemistry 9050AMod	Analytical Method: EPA 9050 Preparation Method: 9050A								
	Pace National - Mt. Juliet								
Specific Conductance @ 25 C	**163**	umhos/cm	10.0	10.0	1	04/21/23 13:00	04/21/23 17:08		
Calculated Results	Analytical Method: Calculated Preparation Method: Calc								
	Pace National - Mt. Juliet								
Sodium Adsorption Ratio	**0.300**				1	04/25/23 20:46	04/25/23 20:46	SAR	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 1 4' **Lab ID: 60426357002** Collected: 04/13/23 13:10 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
TPH-RRO (C28-C36)	ND	mg/kg	21.5	4.8	1	04/19/23 01:59	04/19/23 12:35		
TPH-DRO (C10-C28)	ND	mg/kg	10.7	4.8	1	04/19/23 01:59	04/19/23 12:35		
Surrogates									
n-Tetracosane (S)	62	%	31-152		1	04/19/23 01:59	04/19/23 12:35	646-31-1	
p-Terphenyl (S)	64	%	46-130		1	04/19/23 01:59	04/19/23 12:35	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	11.2	1.4	1	04/20/23 13:54	04/21/23 01:51		
Surrogates									
4-Bromofluorobenzene (S)	83	%	66-130		1	04/20/23 13:54	04/21/23 01:51	460-00-4	
Metals (ICP) 6010B-NE493 Ch 2	Analytical Method: 6010B-NE493 Ch 2 Preparation Method: HWS Boron								
	Pace National - Mt. Juliet								
Boron, Hot Water Soluble	**0.153J**	mg/L	0.200	0.0167	1	04/24/23 12:14	04/26/23 11:36	7440-42-8H	J
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Barium	**64.0**	mg/kg	0.44	0.24	1	04/22/23 10:38	05/01/23 18:21	7440-39-3	
Cadmium	**0.29J**	mg/kg	0.44	0.092	1	04/22/23 10:38	05/01/23 18:21	7440-43-9	
Copper	**4.7**	mg/kg	1.7	0.27	1	04/22/23 10:38	05/01/23 18:21	7440-50-8	
Lead	**4.6**	mg/kg	0.87	0.31	1	04/22/23 10:38	05/01/23 18:21	7439-92-1	
Nickel	**5.0**	mg/kg	0.44	0.20	1	04/22/23 10:38	05/01/23 18:21	7440-02-0	
Selenium	ND	mg/kg	1.3	0.66	1	04/22/23 10:38	05/01/23 18:21	7782-49-2	
Silver	ND	mg/kg	0.61	0.15	1	04/22/23 10:38	05/01/23 18:21	7440-22-4	
Zinc	**19.2**	mg/kg	8.7	1.1	1	04/22/23 10:38	05/01/23 18:21	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Arsenic	**3.0**	mg/kg	0.87	0.16	10	04/22/23 10:38	04/25/23 09:34	7440-38-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0035	0.0021	1	04/18/23 16:27	04/26/23 15:42	83-32-9	
Anthracene	ND	mg/kg	0.0035	0.0020	1	04/18/23 16:27	04/26/23 15:42	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.0035	0.0019	1	04/18/23 16:27	04/26/23 15:42	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.0035	0.0014	1	04/18/23 16:27	04/26/23 15:42	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.0035	0.0019	1	04/18/23 16:27	04/26/23 15:42	205-99-2	
Benzo(k)fluoranthene	ND	mg/kg	0.0035	0.0019	1	04/18/23 16:27	04/26/23 15:42	207-08-9	
Chrysene	ND	mg/kg	0.0035	0.0019	1	04/18/23 16:27	04/26/23 15:42	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.0035	0.0019	1	04/18/23 16:27	04/26/23 15:42	53-70-3	
Fluoranthene	ND	mg/kg	0.0035	0.0029	1	04/18/23 16:27	04/26/23 15:42	206-44-0	
Fluorene	ND	mg/kg	0.0035	0.0027	1	04/18/23 16:27	04/26/23 15:42	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0035	0.0019	1	04/18/23 16:27	04/26/23 15:42	193-39-5	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 1 4' **Lab ID: 60426357002** Collected: 04/13/23 13:10 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
1-Methylnaphthalene	ND	mg/kg	0.0035	0.0017	1	04/18/23 16:27	04/26/23 15:42	90-12-0	
2-Methylnaphthalene	ND	mg/kg	0.0035	0.0025	1	04/18/23 16:27	04/26/23 15:42	91-57-6	
Naphthalene	ND	mg/kg	0.0035	0.0019	1	04/18/23 16:27	04/26/23 15:42	91-20-3	
Pyrene	ND	mg/kg	0.0035	0.0026	1	04/18/23 16:27	04/26/23 15:42	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	58	%	40-120		1	04/18/23 16:27	04/26/23 15:42	321-60-8	
Terphenyl-d14 (S)	57	%	45-130		1	04/18/23 16:27	04/26/23 15:42	1718-51-0	
8260C MSV 5035A Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0057	0.00052	1	04/19/23 11:54	04/19/23 17:40	71-43-2	
Ethylbenzene	ND	mg/kg	0.0057	0.00099	1	04/19/23 11:54	04/19/23 17:40	100-41-4	
Toluene	ND	mg/kg	0.023	0.0051	1	04/19/23 11:54	04/19/23 17:40	108-88-3	
1,2,4-Trimethylbenzene	ND	mg/kg	0.0057	0.00079	1	04/19/23 11:54	04/19/23 17:40	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.0057	0.00050	1	04/19/23 11:54	04/19/23 17:40	108-67-8	
Xylene (Total)	ND	mg/kg	0.017	0.0042	1	04/19/23 11:54	04/19/23 17:40	1330-20-7	
Surrogates									
Toluene-d8 (S)	106	%	80-120		1	04/19/23 11:54	04/19/23 17:40	2037-26-5	
4-Bromofluorobenzene (S)	101	%	83-119		1	04/19/23 11:54	04/19/23 17:40	460-00-4	
1,2-Dichlorobenzene-d4 (S)	99	%	80-120		1	04/19/23 11:54	04/19/23 17:40	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974								
	Pace Analytical Services - Kansas City								
Percent Moisture	**7.5**	%	0.50	0.50	1		04/17/23 16:46		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G								
	Pace National - Mt. Juliet								
Total Solids	**94.6**	%			1	04/22/23 16:51	04/22/23 17:03		
Wet Chemistry 7199	Analytical Method: EPA 7199 Preparation Method: 3060A								
	Pace National - Mt. Juliet								
Chromium, Hexavalent	ND	mg/kg	1.06	0.270	1	04/21/23 11:53	04/24/23 02:56	18540-29-9	
Wet Chemistry 9045D	Analytical Method: EPA 9045D Preparation Method: 9045C/9045D								
	Pace National - Mt. Juliet								
pH	**8.40**	Std. Units		0.10	1	04/21/23 20:00	04/21/23 22:32		H3
Wet Chemistry 9050AMod	Analytical Method: EPA 9050 Preparation Method: 9050A								
	Pace National - Mt. Juliet								
Specific Conductance @ 25 C	**141**	umhos/cm	10.0	10.0	1	04/21/23 13:00	04/21/23 17:08		
Calculated Results	Analytical Method: Calculated Preparation Method: Calc								
	Pace National - Mt. Juliet								
Sodium Adsorption Ratio	**0.399**				1	04/25/23 21:00	04/25/23 21:00	SAR	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 2 **Lab ID: 60426357003** Collected: 04/13/23 13:15 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
TPH-RRO (C28-C36)	ND	mg/kg	20.5	4.6	1	04/19/23 01:59	04/19/23 12:43		
TPH-DRO (C10-C28)	**5.7J**	mg/kg	10.3	4.6	1	04/19/23 01:59	04/19/23 12:43		
Surrogates									
n-Tetracosane (S)	75	%	31-152		1	04/19/23 01:59	04/19/23 12:43	646-31-1	
p-Terphenyl (S)	69	%	46-130		1	04/19/23 01:59	04/19/23 12:43	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	10.2	1.2	1	04/20/23 13:54	04/21/23 02:36		
Surrogates									
4-Bromofluorobenzene (S)	84	%	66-130		1	04/20/23 13:54	04/21/23 02:36	460-00-4	
Metals (ICP) 6010B-NE493 Ch 2	Analytical Method: 6010B-NE493 Ch 2 Preparation Method: HWS Boron								
	Pace National - Mt. Juliet								
Boron, Hot Water Soluble	**0.195J**	mg/L	0.200	0.0167	1	04/24/23 12:14	04/26/23 11:39	7440-42-8H	J
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Barium	**111**	mg/kg	0.40	0.22	1	04/22/23 10:38	05/01/23 18:23	7440-39-3	
Cadmium	**0.42**	mg/kg	0.40	0.084	1	04/22/23 10:38	05/01/23 18:23	7440-43-9	
Copper	**7.3**	mg/kg	1.6	0.25	1	04/22/23 10:38	05/01/23 18:23	7440-50-8	
Lead	**7.1**	mg/kg	0.80	0.29	1	04/22/23 10:38	05/01/23 18:23	7439-92-1	
Nickel	**7.7**	mg/kg	0.40	0.19	1	04/22/23 10:38	05/01/23 18:23	7440-02-0	
Selenium	ND	mg/kg	1.2	0.61	1	04/22/23 10:38	05/01/23 18:23	7782-49-2	
Silver	ND	mg/kg	0.56	0.14	1	04/22/23 10:38	05/01/23 18:23	7440-22-4	
Zinc	**27.8**	mg/kg	8.0	1.1	1	04/22/23 10:38	05/01/23 18:23	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Arsenic	**4.3**	mg/kg	0.80	0.15	10	04/22/23 10:38	04/25/23 09:36	7440-38-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0034	0.0021	1	04/18/23 16:27	04/26/23 16:00	83-32-9	
Anthracene	ND	mg/kg	0.0034	0.0019	1	04/18/23 16:27	04/26/23 16:00	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.0034	0.0019	1	04/18/23 16:27	04/26/23 16:00	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.0034	0.0014	1	04/18/23 16:27	04/26/23 16:00	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 16:00	205-99-2	
Benzo(k)fluoranthene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 16:00	207-08-9	
Chrysene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 16:00	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 16:00	53-70-3	
Fluoranthene	ND	mg/kg	0.0034	0.0028	1	04/18/23 16:27	04/26/23 16:00	206-44-0	
Fluorene	ND	mg/kg	0.0034	0.0026	1	04/18/23 16:27	04/26/23 16:00	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 16:00	193-39-5	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 2 **Lab ID: 60426357003** Collected: 04/13/23 13:15 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
1-Methylnaphthalene	ND	mg/kg	0.0034	0.0017	1	04/18/23 16:27	04/26/23 16:00	90-12-0	
2-Methylnaphthalene	ND	mg/kg	0.0034	0.0024	1	04/18/23 16:27	04/26/23 16:00	91-57-6	
Naphthalene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 16:00	91-20-3	
Pyrene	ND	mg/kg	0.0034	0.0025	1	04/18/23 16:27	04/26/23 16:00	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	59	%	40-120		1	04/18/23 16:27	04/26/23 16:00	321-60-8	
Terphenyl-d14 (S)	60	%	45-130		1	04/18/23 16:27	04/26/23 16:00	1718-51-0	
8260C MSV 5035A Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0053	0.00048	1	04/19/23 11:54	04/19/23 17:59	71-43-2	
Ethylbenzene	ND	mg/kg	0.0053	0.00091	1	04/19/23 11:54	04/19/23 17:59	100-41-4	
Toluene	ND	mg/kg	0.021	0.0047	1	04/19/23 11:54	04/19/23 17:59	108-88-3	
1,2,4-Trimethylbenzene	ND	mg/kg	0.0053	0.00073	1	04/19/23 11:54	04/19/23 17:59	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.0053	0.00046	1	04/19/23 11:54	04/19/23 17:59	108-67-8	
Xylene (Total)	ND	mg/kg	0.016	0.0039	1	04/19/23 11:54	04/19/23 17:59	1330-20-7	
Surrogates									
Toluene-d8 (S)	104	%	80-120		1	04/19/23 11:54	04/19/23 17:59	2037-26-5	
4-Bromofluorobenzene (S)	101	%	83-119		1	04/19/23 11:54	04/19/23 17:59	460-00-4	
1,2-Dichlorobenzene-d4 (S)	98	%	80-120		1	04/19/23 11:54	04/19/23 17:59	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974								
	Pace Analytical Services - Kansas City								
Percent Moisture	**2.9**	%	0.50	0.50	1		04/17/23 16:46		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G								
	Pace National - Mt. Juliet								
Total Solids	**96.6**	%			1	04/22/23 16:51	04/22/23 17:03		
Wet Chemistry 7199	Analytical Method: EPA 7199 Preparation Method: 3060A								
	Pace National - Mt. Juliet								
Chromium, Hexavalent	ND	mg/kg	1.04	0.264	1	04/21/23 11:53	04/24/23 03:01	18540-29-9	
Wet Chemistry 9045D	Analytical Method: EPA 9045D Preparation Method: 9045C/9045D								
	Pace National - Mt. Juliet								
pH	**8.23**	Std. Units		0.10	1	04/21/23 20:00	04/21/23 22:32		H3
Wet Chemistry 9050AMod	Analytical Method: EPA 9050 Preparation Method: 9050A								
	Pace National - Mt. Juliet								
Specific Conductance @ 25 C	**114**	umhos/cm	10.0	10.0	1	04/21/23 13:00	04/21/23 17:08		
Calculated Results	Analytical Method: Calculated Preparation Method: Calc								
	Pace National - Mt. Juliet								
Sodium Adsorption Ratio	**0.108**				1	04/25/23 20:52	04/25/23 20:52	SAR	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 3 **Lab ID: 60426357004** Collected: 04/13/23 13:25 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
TPH-RRO (C28-C36)	ND	mg/kg	20.6	4.6	1	04/19/23 01:59	04/19/23 12:51		
TPH-DRO (C10-C28)	**7.7J**	mg/kg	10.3	4.6	1	04/19/23 01:59	04/19/23 12:51		
Surrogates									
n-Tetracosane (S)	68	%	31-152		1	04/19/23 01:59	04/19/23 12:51	646-31-1	
p-Terphenyl (S)	68	%	46-130		1	04/19/23 01:59	04/19/23 12:51	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	10.0	1.2	1	04/20/23 13:54	04/21/23 02:51		
Surrogates									
4-Bromofluorobenzene (S)	84	%	66-130		1	04/20/23 13:54	04/21/23 02:51	460-00-4	
Metals (ICP) 6010B-NE493 Ch 2	Analytical Method: 6010B-NE493 Ch 2 Preparation Method: HWS Boron								
	Pace National - Mt. Juliet								
Boron, Hot Water Soluble	**0.418**	mg/L	0.200	0.0167	1	04/24/23 12:14	04/26/23 11:42	7440-42-8H	
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Barium	**97.7**	mg/kg	0.48	0.27	1	04/22/23 10:38	05/01/23 18:25	7440-39-3	
Cadmium	**0.59**	mg/kg	0.48	0.10	1	04/22/23 10:38	05/01/23 18:25	7440-43-9	
Copper	**9.2**	mg/kg	1.9	0.30	1	04/22/23 10:38	05/01/23 18:25	7440-50-8	
Lead	**19.4**	mg/kg	0.97	0.35	1	04/22/23 10:38	05/01/23 18:25	7439-92-1	
Nickel	**9.5**	mg/kg	0.48	0.23	1	04/22/23 10:38	05/01/23 18:25	7440-02-0	
Selenium	**0.75J**	mg/kg	1.4	0.73	1	04/22/23 10:38	05/01/23 18:25	7782-49-2	
Silver	ND	mg/kg	0.68	0.17	1	04/22/23 10:38	05/01/23 18:25	7440-22-4	
Zinc	**29.8**	mg/kg	9.7	1.3	1	04/22/23 10:38	05/01/23 18:25	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Arsenic	**5.6**	mg/kg	0.97	0.18	10	04/22/23 10:38	04/25/23 09:39	7440-38-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0034	0.0021	1	04/27/23 15:34	05/01/23 22:23	83-32-9	
Anthracene	ND	mg/kg	0.0034	0.0020	1	04/27/23 15:34	05/01/23 22:23	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.0034	0.0019	1	04/27/23 15:34	05/01/23 22:23	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.0034	0.0014	1	04/27/23 15:34	05/01/23 22:23	50-32-8	
Benzo(b)fluoranthene	**0.0031J**	mg/kg	0.0034	0.0018	1	04/27/23 15:34	05/01/23 22:23	205-99-2	B
Benzo(k)fluoranthene	ND	mg/kg	0.0034	0.0018	1	04/27/23 15:34	05/01/23 22:23	207-08-9	
Chrysene	**0.0041**	mg/kg	0.0034	0.0018	1	04/27/23 15:34	05/01/23 22:23	218-01-9	B
Dibenz(a,h)anthracene	ND	mg/kg	0.0034	0.0018	1	04/27/23 15:34	05/01/23 22:23	53-70-3	
Fluoranthene	ND	mg/kg	0.0034	0.0029	1	04/27/23 15:34	05/01/23 22:23	206-44-0	
Fluorene	ND	mg/kg	0.0034	0.0026	1	04/27/23 15:34	05/01/23 22:23	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0034	0.0018	1	04/27/23 15:34	05/01/23 22:23	193-39-5	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 3 **Lab ID: 60426357004** Collected: 04/13/23 13:25 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
1-Methylnaphthalene	**0.0068**	mg/kg	0.0034	0.0017	1	04/27/23 15:34	05/01/23 22:23	90-12-0	
2-Methylnaphthalene	**0.0072**	mg/kg	0.0034	0.0024	1	04/27/23 15:34	05/01/23 22:23	91-57-6	
Naphthalene	**0.0045**	mg/kg	0.0034	0.0018	1	04/27/23 15:34	05/01/23 22:23	91-20-3	
Pyrene	**0.0038**	mg/kg	0.0034	0.0025	1	04/27/23 15:34	05/01/23 22:23	129-00-0	B
Surrogates									
2-Fluorobiphenyl (S)	75	%	40-120		1	04/27/23 15:34	05/01/23 22:23	321-60-8	
Terphenyl-d14 (S)	76	%	45-130		1	04/27/23 15:34	05/01/23 22:23	1718-51-0	
8260C MSV 5035A Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0053	0.00049	1	04/19/23 11:54	04/19/23 18:19	71-43-2	
Ethylbenzene	**0.0011J**	mg/kg	0.0053	0.00093	1	04/19/23 11:54	04/19/23 18:19	100-41-4	
Toluene	ND	mg/kg	0.021	0.0048	1	04/19/23 11:54	04/19/23 18:19	108-88-3	
1,2,4-Trimethylbenzene	**0.0019J**	mg/kg	0.0053	0.00074	1	04/19/23 11:54	04/19/23 18:19	95-63-6	
1,3,5-Trimethylbenzene	**0.00064J**	mg/kg	0.0053	0.00046	1	04/19/23 11:54	04/19/23 18:19	108-67-8	
Xylene (Total)	**0.0061J**	mg/kg	0.016	0.0039	1	04/19/23 11:54	04/19/23 18:19	1330-20-7	
Surrogates									
Toluene-d8 (S)	104	%	80-120		1	04/19/23 11:54	04/19/23 18:19	2037-26-5	
4-Bromofluorobenzene (S)	101	%	83-119		1	04/19/23 11:54	04/19/23 18:19	460-00-4	
1,2-Dichlorobenzene-d4 (S)	100	%	80-120		1	04/19/23 11:54	04/19/23 18:19	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974								
	Pace Analytical Services - Kansas City								
Percent Moisture	**4.1**	%	0.50	0.50	1		04/17/23 16:46		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G								
	Pace National - Mt. Juliet								
Total Solids	**96.1**	%			1	04/22/23 16:51	04/22/23 17:03		
Wet Chemistry 7199	Analytical Method: EPA 7199 Preparation Method: 3060A								
	Pace National - Mt. Juliet								
Chromium, Hexavalent	**1.40**	mg/kg	1.04	0.265	1	04/21/23 11:53	04/24/23 03:06	18540-29-9	
Wet Chemistry 9045D	Analytical Method: EPA 9045D Preparation Method: 9045C/9045D								
	Pace National - Mt. Juliet								
pH	**7.69**	Std. Units		0.10	1	04/21/23 20:00	04/21/23 22:32		H3
Wet Chemistry 9050AMod	Analytical Method: EPA 9050 Preparation Method: 9050A								
	Pace National - Mt. Juliet								
Specific Conductance @ 25 C	**2700**	umhos/cm	10.0	10.0	1	04/21/23 13:00	04/21/23 17:08		
Calculated Results	Analytical Method: Calculated Preparation Method: Calc								
	Pace National - Mt. Juliet								
Sodium Adsorption Ratio	**2.55**				1	04/25/23 20:49	04/25/23 20:49	SAR	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 4 **Lab ID: 60426357005** Collected: 04/13/23 13:30 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
TPH-RRO (C28-C36)	**28.0**	mg/kg	20.4	4.6	1	04/19/23 01:59	04/19/23 12:59		
TPH-DRO (C10-C28)	**21.0**	mg/kg	10.2	4.6	1	04/19/23 01:59	04/19/23 12:59		
Surrogates									
n-Tetracosane (S)	75	%	31-152		1	04/19/23 01:59	04/19/23 12:59	646-31-1	
p-Terphenyl (S)	74	%	46-130		1	04/19/23 01:59	04/19/23 12:59	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
TPH-GRO	**1.6J**	mg/kg	10.1	1.2	1	04/20/23 13:54	04/21/23 03:06		
Surrogates									
4-Bromofluorobenzene (S)	87	%	66-130		1	04/20/23 13:54	04/21/23 03:06	460-00-4	
Metals (ICP) 6010B-NE493 Ch 2	Analytical Method: 6010B-NE493 Ch 2 Preparation Method: HWS Boron								
	Pace National - Mt. Juliet								
Boron, Hot Water Soluble	**0.252**	mg/L	0.200	0.0167	1	04/24/23 12:14	04/26/23 11:53	7440-42-8H	
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Barium	**57.6**	mg/kg	0.38	0.21	1	04/22/23 10:38	05/01/23 18:27	7440-39-3	
Cadmium	**0.26J**	mg/kg	0.38	0.079	1	04/22/23 10:38	05/01/23 18:27	7440-43-9	
Copper	**4.9**	mg/kg	1.5	0.23	1	04/22/23 10:38	05/01/23 18:27	7440-50-8	
Lead	**21.7**	mg/kg	0.75	0.27	1	04/22/23 10:38	05/01/23 18:27	7439-92-1	
Nickel	**3.7**	mg/kg	0.38	0.18	1	04/22/23 10:38	05/01/23 18:27	7440-02-0	
Selenium	ND	mg/kg	1.1	0.57	1	04/22/23 10:38	05/01/23 18:27	7782-49-2	
Silver	ND	mg/kg	0.53	0.13	1	04/22/23 10:38	05/01/23 18:27	7440-22-4	
Zinc	**21.1**	mg/kg	7.5	0.99	1	04/22/23 10:38	05/01/23 18:27	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Arsenic	**3.3**	mg/kg	0.75	0.14	10	04/22/23 10:38	04/25/23 09:44	7440-38-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0032	0.0020	1	04/27/23 15:34	05/02/23 09:57	83-32-9	
Anthracene	ND	mg/kg	0.0032	0.0018	1	04/27/23 15:34	05/02/23 09:57	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.0032	0.0018	1	04/27/23 15:34	05/02/23 09:57	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.0032	0.0013	1	04/27/23 15:34	05/02/23 09:57	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.0032	0.0017	1	04/27/23 15:34	05/02/23 09:57	205-99-2	
Benzo(k)fluoranthene	ND	mg/kg	0.0032	0.0017	1	04/27/23 15:34	05/02/23 09:57	207-08-9	
Chrysene	ND	mg/kg	0.0032	0.0017	1	04/27/23 15:34	05/02/23 09:57	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.0032	0.0017	1	04/27/23 15:34	05/02/23 09:57	53-70-3	
Fluoranthene	ND	mg/kg	0.0032	0.0027	1	04/27/23 15:34	05/02/23 09:57	206-44-0	
Fluorene	ND	mg/kg	0.0032	0.0024	1	04/27/23 15:34	05/02/23 09:57	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0032	0.0017	1	04/27/23 15:34	05/02/23 09:57	193-39-5	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 4 **Lab ID: 60426357005** Collected: 04/13/23 13:30 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
1-Methylnaphthalene	ND	mg/kg	0.0032	0.0016	1	04/27/23 15:34	05/02/23 09:57	90-12-0	
2-Methylnaphthalene	ND	mg/kg	0.0032	0.0023	1	04/27/23 15:34	05/02/23 09:57	91-57-6	
Naphthalene	ND	mg/kg	0.0032	0.0017	1	04/27/23 15:34	05/02/23 09:57	91-20-3	
Pyrene	ND	mg/kg	0.0032	0.0023	1	04/27/23 15:34	05/02/23 09:57	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	63	%	40-120		1	04/27/23 15:34	05/02/23 09:57	321-60-8	
Terphenyl-d14 (S)	59	%	45-130		1	04/27/23 15:34	05/02/23 09:57	1718-51-0	
8260C MSV 5035A Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0052	0.00048	1	04/19/23 11:54	04/19/23 18:39	71-43-2	
Ethylbenzene	ND	mg/kg	0.0052	0.00091	1	04/19/23 11:54	04/19/23 18:39	100-41-4	
Toluene	ND	mg/kg	0.021	0.0047	1	04/19/23 11:54	04/19/23 18:39	108-88-3	
1,2,4-Trimethylbenzene	**0.0010J**	mg/kg	0.0052	0.00072	1	04/19/23 11:54	04/19/23 18:39	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.0052	0.00045	1	04/19/23 11:54	04/19/23 18:39	108-67-8	
Xylene (Total)	ND	mg/kg	0.016	0.0038	1	04/19/23 11:54	04/19/23 18:39	1330-20-7	
Surrogates									
Toluene-d8 (S)	105	%	80-120		1	04/19/23 11:54	04/19/23 18:39	2037-26-5	
4-Bromofluorobenzene (S)	102	%	83-119		1	04/19/23 11:54	04/19/23 18:39	460-00-4	
1,2-Dichlorobenzene-d4 (S)	99	%	80-120		1	04/19/23 11:54	04/19/23 18:39	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974								
	Pace Analytical Services - Kansas City								
Percent Moisture	**2.4**	%	0.50	0.50	1		04/17/23 16:46		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G								
	Pace National - Mt. Juliet								
Total Solids	**97.6**	%			1	04/22/23 16:51	04/22/23 17:03		
Wet Chemistry 7199	Analytical Method: EPA 7199 Preparation Method: 3060A								
	Pace National - Mt. Juliet								
Chromium, Hexavalent	ND	mg/kg	1.02	0.261	1	04/21/23 11:53	04/24/23 03:12	18540-29-9	
Wet Chemistry 9045D	Analytical Method: EPA 9045D Preparation Method: 9045C/9045D								
	Pace National - Mt. Juliet								
pH	**7.92**	Std. Units		0.10	1	04/21/23 20:00	04/21/23 22:32		H3
Wet Chemistry 9050AMod	Analytical Method: EPA 9050 Preparation Method: 9050A								
	Pace National - Mt. Juliet								
Specific Conductance @ 25 C	**133**	umhos/cm	10.0	10.0	1	04/21/23 13:00	04/21/23 17:08		
Calculated Results	Analytical Method: Calculated Preparation Method: Calc								
	Pace National - Mt. Juliet								
Sodium Adsorption Ratio	**0.118**				1	04/25/23 20:38	04/25/23 20:38	SAR	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 5 **Lab ID: 60426357006** Collected: 04/13/23 13:40 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
TPH-RRO (C28-C36)	**38.6**	mg/kg	21.2	4.7	1	04/19/23 01:59	04/19/23 13:15		
TPH-DRO (C10-C28)	**33.5**	mg/kg	10.6	4.7	1	04/19/23 01:59	04/19/23 13:15		
Surrogates									
n-Tetracosane (S)	74	%	31-152		1	04/19/23 01:59	04/19/23 13:15	646-31-1	
p-Terphenyl (S)	70	%	46-130		1	04/19/23 01:59	04/19/23 13:15	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	11.4	1.4	1	04/20/23 13:54	04/21/23 03:21		
Surrogates									
4-Bromofluorobenzene (S)	82	%	66-130		1	04/20/23 13:54	04/21/23 03:21	460-00-4	
Metals (ICP) 6010B-NE493 Ch 2	Analytical Method: 6010B-NE493 Ch 2 Preparation Method: HWS Boron								
	Pace National - Mt. Juliet								
Boron, Hot Water Soluble	**0.322**	mg/L	0.200	0.0167	1	04/24/23 12:14	04/26/23 11:55	7440-42-8H	
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Barium	**104**	mg/kg	0.47	0.26	1	04/22/23 10:38	05/01/23 18:29	7440-39-3	
Cadmium	**0.67**	mg/kg	0.47	0.10	1	04/22/23 10:38	05/01/23 18:29	7440-43-9	
Copper	**11.2**	mg/kg	1.9	0.29	1	04/22/23 10:38	05/01/23 18:29	7440-50-8	
Lead	**27.3**	mg/kg	0.95	0.34	1	04/22/23 10:38	05/01/23 18:29	7439-92-1	
Nickel	**10.7**	mg/kg	0.47	0.22	1	04/22/23 10:38	05/01/23 18:29	7440-02-0	
Selenium	**1.1J**	mg/kg	1.4	0.71	1	04/22/23 10:38	05/01/23 18:29	7782-49-2	
Silver	ND	mg/kg	0.66	0.16	1	04/22/23 10:38	05/01/23 18:29	7440-22-4	
Zinc	**34.6**	mg/kg	9.5	1.2	1	04/22/23 10:38	05/01/23 18:29	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Arsenic	**4.6**	mg/kg	0.95	0.17	10	04/22/23 10:38	04/25/23 09:46	7440-38-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0035	0.0021	1	04/27/23 15:34	05/02/23 10:15	83-32-9	
Anthracene	ND	mg/kg	0.0035	0.0020	1	04/27/23 15:34	05/02/23 10:15	120-12-7	
Benzo(a)anthracene	**0.0034J**	mg/kg	0.0035	0.0019	1	04/27/23 15:34	05/02/23 10:15	56-55-3	B
Benzo(a)pyrene	ND	mg/kg	0.0035	0.0014	1	04/27/23 15:34	05/02/23 10:15	50-32-8	
Benzo(b)fluoranthene	**0.0027J**	mg/kg	0.0035	0.0019	1	04/27/23 15:34	05/02/23 10:15	205-99-2	B
Benzo(k)fluoranthene	ND	mg/kg	0.0035	0.0019	1	04/27/23 15:34	05/02/23 10:15	207-08-9	
Chrysene	**0.0039**	mg/kg	0.0035	0.0019	1	04/27/23 15:34	05/02/23 10:15	218-01-9	B
Dibenz(a,h)anthracene	ND	mg/kg	0.0035	0.0019	1	04/27/23 15:34	05/02/23 10:15	53-70-3	
Fluoranthene	**0.0031J**	mg/kg	0.0035	0.0029	1	04/27/23 15:34	05/02/23 10:15	206-44-0	B
Fluorene	ND	mg/kg	0.0035	0.0027	1	04/27/23 15:34	05/02/23 10:15	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0035	0.0019	1	04/27/23 15:34	05/02/23 10:15	193-39-5	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 5 **Lab ID: 60426357006** Collected: 04/13/23 13:40 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
1-Methylnaphthalene	**0.0063**	mg/kg	0.0035	0.0017	1	04/27/23 15:34	05/02/23 10:15	90-12-0	
2-Methylnaphthalene	**0.0069**	mg/kg	0.0035	0.0025	1	04/27/23 15:34	05/02/23 10:15	91-57-6	
Naphthalene	**0.0043**	mg/kg	0.0035	0.0019	1	04/27/23 15:34	05/02/23 10:15	91-20-3	
Pyrene	**0.0035J**	mg/kg	0.0035	0.0025	1	04/27/23 15:34	05/02/23 10:15	129-00-0	B
Surrogates									
2-Fluorobiphenyl (S)	71	%	40-120		1	04/27/23 15:34	05/02/23 10:15	321-60-8	
Terphenyl-d14 (S)	71	%	45-130		1	04/27/23 15:34	05/02/23 10:15	1718-51-0	
8260C MSV 5035A Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0058	0.00053	1	04/19/23 11:54	04/19/23 18:59	71-43-2	
Ethylbenzene	ND	mg/kg	0.0058	0.0010	1	04/19/23 11:54	04/19/23 18:59	100-41-4	
Toluene	ND	mg/kg	0.023	0.0051	1	04/19/23 11:54	04/19/23 18:59	108-88-3	
1,2,4-Trimethylbenzene	**0.0016J**	mg/kg	0.0058	0.00079	1	04/19/23 11:54	04/19/23 18:59	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.0058	0.00050	1	04/19/23 11:54	04/19/23 18:59	108-67-8	
Xylene (Total)	ND	mg/kg	0.017	0.0042	1	04/19/23 11:54	04/19/23 18:59	1330-20-7	
Surrogates									
Toluene-d8 (S)	107	%	80-120		1	04/19/23 11:54	04/19/23 18:59	2037-26-5	
4-Bromofluorobenzene (S)	103	%	83-119		1	04/19/23 11:54	04/19/23 18:59	460-00-4	
1,2-Dichlorobenzene-d4 (S)	98	%	80-120		1	04/19/23 11:54	04/19/23 18:59	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974								
	Pace Analytical Services - Kansas City								
Percent Moisture	**7.5**	%	0.50	0.50	1		04/17/23 16:46		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G								
	Pace National - Mt. Juliet								
Total Solids	**94.3**	%			1	04/22/23 16:51	04/22/23 17:03		
Wet Chemistry 7199	Analytical Method: EPA 7199 Preparation Method: 3060A								
	Pace National - Mt. Juliet								
Chromium, Hexavalent	**0.672J**	mg/kg	1.06	0.270	1	04/21/23 11:53	04/24/23 03:32	18540-29-9	J
Wet Chemistry 9045D	Analytical Method: EPA 9045D Preparation Method: 9045C/9045D								
	Pace National - Mt. Juliet								
pH	**7.83**	Std. Units		0.10	1	04/21/23 20:00	04/21/23 22:32		H3
Wet Chemistry 9050AMod	Analytical Method: EPA 9050 Preparation Method: 9050A								
	Pace National - Mt. Juliet								
Specific Conductance @ 25 C	**203**	umhos/cm	10.0	10.0	1	04/21/23 13:00	04/21/23 17:08		
Calculated Results	Analytical Method: Calculated Preparation Method: Calc								
	Pace National - Mt. Juliet								
Sodium Adsorption Ratio	**0.0763**				1	04/25/23 20:41	04/25/23 20:41	SAR	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 6 **Lab ID: 60426357007** Collected: 04/13/23 13:50 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
TPH-RRO (C28-C36)	**12.1J**	mg/kg	20.5	4.6	1	04/19/23 01:59	04/19/23 13:31		
TPH-DRO (C10-C28)	**9.5J**	mg/kg	10.3	4.6	1	04/19/23 01:59	04/19/23 13:31		
Surrogates									
n-Tetracosane (S)	66	%	31-152		1	04/19/23 01:59	04/19/23 13:31	646-31-1	
p-Terphenyl (S)	66	%	46-130		1	04/19/23 01:59	04/19/23 13:31	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	9.6	1.2	1	04/20/23 13:54	04/21/23 03:36		
Surrogates									
4-Bromofluorobenzene (S)	83	%	66-130		1	04/20/23 13:54	04/21/23 03:36	460-00-4	
Metals (ICP) 6010B-NE493 Ch 2	Analytical Method: 6010B-NE493 Ch 2 Preparation Method: HWS Boron								
	Pace National - Mt. Juliet								
Boron, Hot Water Soluble	**0.201**	mg/L	0.200	0.0167	1	04/24/23 12:14	04/26/23 11:58	7440-42-8H	
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Barium	**59.8**	mg/kg	0.46	0.26	1	04/22/23 10:38	05/01/23 18:31	7440-39-3	
Cadmium	**0.28J**	mg/kg	0.46	0.097	1	04/22/23 10:38	05/01/23 18:31	7440-43-9	
Copper	**4.5**	mg/kg	1.9	0.29	1	04/22/23 10:38	05/01/23 18:31	7440-50-8	
Lead	**4.8**	mg/kg	0.93	0.34	1	04/22/23 10:38	05/01/23 18:31	7439-92-1	
Nickel	**4.4**	mg/kg	0.46	0.22	1	04/22/23 10:38	05/01/23 18:31	7440-02-0	
Selenium	ND	mg/kg	1.4	0.70	1	04/22/23 10:38	05/01/23 18:31	7782-49-2	
Silver	ND	mg/kg	0.65	0.16	1	04/22/23 10:38	05/01/23 18:31	7440-22-4	
Zinc	**21.0**	mg/kg	9.3	1.2	1	04/22/23 10:38	05/01/23 18:31	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Arsenic	**2.7**	mg/kg	0.93	0.17	10	04/22/23 10:38	04/25/23 09:49	7440-38-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0034	0.0021	1	04/18/23 16:27	04/26/23 20:49	83-32-9	
Anthracene	ND	mg/kg	0.0034	0.0020	1	04/18/23 16:27	04/26/23 20:49	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.0034	0.0019	1	04/18/23 16:27	04/26/23 20:49	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.0034	0.0014	1	04/18/23 16:27	04/26/23 20:49	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 20:49	205-99-2	
Benzo(k)fluoranthene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 20:49	207-08-9	
Chrysene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 20:49	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 20:49	53-70-3	
Fluoranthene	ND	mg/kg	0.0034	0.0028	1	04/18/23 16:27	04/26/23 20:49	206-44-0	
Fluorene	ND	mg/kg	0.0034	0.0026	1	04/18/23 16:27	04/26/23 20:49	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 20:49	193-39-5	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 6 **Lab ID: 60426357007** Collected: 04/13/23 13:50 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
1-Methylnaphthalene	ND	mg/kg	0.0034	0.0017	1	04/18/23 16:27	04/26/23 20:49	90-12-0	
2-Methylnaphthalene	ND	mg/kg	0.0034	0.0024	1	04/18/23 16:27	04/26/23 20:49	91-57-6	
Naphthalene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 20:49	91-20-3	
Pyrene	ND	mg/kg	0.0034	0.0025	1	04/18/23 16:27	04/26/23 20:49	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	53	%	40-120		1	04/18/23 16:27	04/26/23 20:49	321-60-8	
Terphenyl-d14 (S)	53	%	45-130		1	04/18/23 16:27	04/26/23 20:49	1718-51-0	
8260C MSV 5035A Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0053	0.00049	1	04/19/23 11:54	04/19/23 19:19	71-43-2	
Ethylbenzene	ND	mg/kg	0.0053	0.00092	1	04/19/23 11:54	04/19/23 19:19	100-41-4	
Toluene	ND	mg/kg	0.021	0.0047	1	04/19/23 11:54	04/19/23 19:19	108-88-3	
1,2,4-Trimethylbenzene	ND	mg/kg	0.0053	0.00073	1	04/19/23 11:54	04/19/23 19:19	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.0053	0.00046	1	04/19/23 11:54	04/19/23 19:19	108-67-8	
Xylene (Total)	ND	mg/kg	0.016	0.0039	1	04/19/23 11:54	04/19/23 19:19	1330-20-7	
Surrogates									
Toluene-d8 (S)	108	%	80-120		1	04/19/23 11:54	04/19/23 19:19	2037-26-5	
4-Bromofluorobenzene (S)	102	%	83-119		1	04/19/23 11:54	04/19/23 19:19	460-00-4	
1,2-Dichlorobenzene-d4 (S)	99	%	80-120		1	04/19/23 11:54	04/19/23 19:19	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974								
	Pace Analytical Services - Kansas City								
Percent Moisture	**3.8**	%	0.50	0.50	1		04/17/23 16:46		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G								
	Pace National - Mt. Juliet								
Total Solids	**95.4**	%			1	04/22/23 16:51	04/22/23 17:03		
Wet Chemistry 7199	Analytical Method: EPA 7199 Preparation Method: 3060A								
	Pace National - Mt. Juliet								
Chromium, Hexavalent	ND	mg/kg	1.05	0.267	1	04/23/23 09:20	04/25/23 14:43	18540-29-9	
Wet Chemistry 9045D	Analytical Method: EPA 9045D Preparation Method: 9045C/9045D								
	Pace National - Mt. Juliet								
pH	**7.86**	Std. Units		0.10	1	04/21/23 20:00	04/21/23 22:32		H3
Wet Chemistry 9050AMod	Analytical Method: EPA 9050 Preparation Method: 9050A								
	Pace National - Mt. Juliet								
Specific Conductance @ 25 C	**160**	umhos/cm	10.0	10.0	1	04/21/23 13:00	04/21/23 17:08		
Calculated Results	Analytical Method: Calculated Preparation Method: Calc								
	Pace National - Mt. Juliet								
Sodium Adsorption Ratio	**0.0756**				1	04/25/23 20:44	04/25/23 20:44	SAR	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 842659
QC Batch Method: EPA 5035A/5030B
Analysis Method: EPA 8015B
Analysis Description: Gasoline Range Organics
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: 3339734 Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
TPH-GRO	mg/kg	ND	10.0	1.2	04/21/23 00:05	
4-Bromofluorobenzene (S)	%	93	66-130		04/21/23 00:05	

LABORATORY CONTROL SAMPLE: 3339735

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-GRO	mg/kg	50	47.5	95	70-130	
4-Bromofluorobenzene (S)	%			89	66-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3339736 3339737

Parameter	Units	60426357007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TPH-GRO	mg/kg	ND	47.8	47.8	40.0	41.0	82	84	70-130	2	25	
4-Bromofluorobenzene (S)	%						87	91	66-130			

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 2045653
QC Batch Method: HWS Boron
Analysis Method: 6010B-NE493 Ch 2
Analysis Description: Metals (ICP) 6010B-NE493 Ch 2
Laboratory: Pace National - Mt. Juliet
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: R3917697-1
Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron, Hot Water Soluble	mg/L	ND	0.200	0.0167	04/26/23 10:44	

LABORATORY CONTROL SAMPLE & LCSD: R3917697-2 R3917697-3

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Boron, Hot Water Soluble	mg/L	1.00	1.03	1.03	103	103	80.0-120	0.260	20	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 843041
QC Batch Method: EPA 3050
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: 3341537
Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	mg/kg	ND	0.50	0.28	05/01/23 17:52	
Cadmium	mg/kg	ND	0.50	0.10	05/01/23 17:52	
Copper	mg/kg	ND	2.0	0.31	05/01/23 17:52	
Lead	mg/kg	ND	1.0	0.36	05/01/23 17:52	
Nickel	mg/kg	ND	0.50	0.24	05/01/23 17:52	
Selenium	mg/kg	ND	1.5	0.75	05/01/23 17:52	
Silver	mg/kg	ND	0.70	0.17	05/01/23 17:52	
Zinc	mg/kg	ND	10.0	1.3	05/01/23 17:52	

LABORATORY CONTROL SAMPLE: 3341538

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/kg	100	104	104	80-120	
Cadmium	mg/kg	100	102	102	80-120	
Copper	mg/kg	100	101	101	80-120	
Lead	mg/kg	100	103	103	80-120	
Nickel	mg/kg	100	105	105	80-120	
Selenium	mg/kg	100	88.4	88	80-120	
Silver	mg/kg	50	47.4	95	80-120	
Zinc	mg/kg	100	101	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3341539 3341540

Parameter	Units	60426353001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/kg	219	109	99.5	342	315	113	96	75-125	8	20	
Cadmium	mg/kg	0.59	109	99.5	95.9	86.0	87	86	75-125	11	20	
Copper	mg/kg	10.2	109	99.5	116	104	97	94	75-125	11	20	
Lead	mg/kg	9.1	109	99.5	105	95.1	88	86	75-125	10	20	
Nickel	mg/kg	10.5	109	99.5	109	97.3	90	87	75-125	11	20	
Selenium	mg/kg	ND	109	99.5	87.5	79.5	80	80	75-125	10	20	
Silver	mg/kg	ND	54.6	49.7	47.3	42.9	87	86	75-125	10	20	
Zinc	mg/kg	37.6	109	99.5	133	120	87	83	75-125	10	20	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 843042
QC Batch Method: EPA 3050
Analysis Method: EPA 6020
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: 3341541
Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/kg	ND	1.0	0.18	04/25/23 09:03	

LABORATORY CONTROL SAMPLE: 3341542

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	100	100	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3341543 3341544

Parameter	Units	60426353002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	5.4	98.6	102	100	103	96	96	75-125	3	20	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 842421 | Analysis Method: EPA 8260C
QC Batch Method: EPA 5035A/5030B | Analysis Description: 8260C MSV 5035A Low Level
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: 3338687 | Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	ND	0.0050	0.00069	04/19/23 15:17	
1,3,5-Trimethylbenzene	mg/kg	ND	0.0050	0.00043	04/19/23 15:17	
Benzene	mg/kg	ND	0.0050	0.00046	04/19/23 15:17	
Ethylbenzene	mg/kg	ND	0.0050	0.00087	04/19/23 15:17	
Toluene	mg/kg	ND	0.020	0.0044	04/19/23 15:17	
Xylene (Total)	mg/kg	ND	0.015	0.0037	04/19/23 15:17	
1,2-Dichlorobenzene-d4 (S)	%	99	80-120		04/19/23 15:17	
4-Bromofluorobenzene (S)	%	102	83-119		04/19/23 15:17	
Toluene-d8 (S)	%	106	80-120		04/19/23 15:17	

LABORATORY CONTROL SAMPLE: 3338688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	1.2	1.3	108	79-121	
1,3,5-Trimethylbenzene	mg/kg	1.2	1.4	108	81-122	
Benzene	mg/kg	1.2	1.3	101	67-126	
Ethylbenzene	mg/kg	1.2	1.3	102	69-127	
Toluene	mg/kg	1.2	1.2	97	80-118	
Xylene (Total)	mg/kg	3.8	3.8	101	69-130	
1,2-Dichlorobenzene-d4 (S)	%			99	80-120	
4-Bromofluorobenzene (S)	%			96	83-119	
Toluene-d8 (S)	%			95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3338689 3338690

Parameter	Units	60426353001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trimethylbenzene	mg/kg	ND	1.6	1.6	1.5	1.6	101	103	10-124	2	68	
1,3,5-Trimethylbenzene	mg/kg	ND	1.6	1.6	1.5	1.5	101	102	10-125	1	65	
Benzene	mg/kg	ND	1.6	1.6	1.4	1.4	92	95	17-134	3	53	
Ethylbenzene	mg/kg	ND	1.6	1.6	1.4	1.5	95	97	10-137	2	60	
Toluene	mg/kg	ND	1.6	1.6	1.3	1.4	89	90	13-131	1	60	
Xylene (Total)	mg/kg	ND	4.6	4.6	4.4	4.4	96	97	10-137	1	58	
1,2-Dichlorobenzene-d4 (S)	%						100	101	80-120			
4-Bromofluorobenzene (S)	%						100	100	83-119			
Toluene-d8 (S)	%						95	97	80-120			

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 842084
QC Batch Method: EPA 3546
Analysis Method: EPA 8015B
Analysis Description: EPA 8015B
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: 3337608 Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
TPH-DRO (C10-C28)	mg/kg	ND	9.9	4.4	04/19/23 10:36	
TPH-RRO (C28-C36)	mg/kg	ND	19.8	4.4	04/19/23 10:36	
n-Tetracosane (S)	%	70	31-152		04/19/23 10:36	
p-Terphenyl (S)	%	73	46-130		04/19/23 10:36	

LABORATORY CONTROL SAMPLE: 3337609

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-DRO (C10-C28)	mg/kg	81.9	63.2	77	74-124	
n-Tetracosane (S)	%			79	31-152	
p-Terphenyl (S)	%			80	46-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3337610 3337611

Parameter	Units	60426353001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TPH-DRO (C10-C28)	mg/kg	15.5	90.8	92.4	58.5	62.7	47	51	30-130	7	35	
n-Tetracosane (S)	%						62	67	31-152			
p-Terphenyl (S)	%						65	67	46-130			

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 842085
QC Batch Method: EPA 3546
Analysis Method: EPA 8270 by SIM
Analysis Description: 8270/3546 MSSV PAH by SIM
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357007

METHOD BLANK: 3337612
Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1-Methylnaphthalene	mg/kg	ND	0.0032	0.0016	04/26/23 11:18	
2-Methylnaphthalene	mg/kg	ND	0.0032	0.0023	04/26/23 11:18	
Acenaphthene	mg/kg	ND	0.0032	0.0020	04/26/23 11:18	
Anthracene	mg/kg	ND	0.0032	0.0018	04/26/23 11:18	
Benzo(a)anthracene	mg/kg	0.0022J	0.0032	0.0018	04/26/23 11:18	
Benzo(a)pyrene	mg/kg	0.0024J	0.0032	0.0013	04/26/23 11:18	
Benzo(b)fluoranthene	mg/kg	0.0024J	0.0032	0.0017	04/26/23 11:18	
Benzo(k)fluoranthene	mg/kg	ND	0.0032	0.0017	04/26/23 11:18	
Chrysene	mg/kg	0.0022J	0.0032	0.0017	04/26/23 11:18	
Dibenz(a,h)anthracene	mg/kg	ND	0.0032	0.0017	04/26/23 11:18	
Fluoranthene	mg/kg	0.0047	0.0032	0.0027	04/26/23 11:18	
Fluorene	mg/kg	ND	0.0032	0.0024	04/26/23 11:18	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.0032	0.0017	04/26/23 11:18	
Naphthalene	mg/kg	ND	0.0032	0.0017	04/26/23 11:18	
Pyrene	mg/kg	0.0039	0.0032	0.0023	04/26/23 11:18	
2-Fluorobiphenyl (S)	%	69	40-120		04/26/23 11:18	
Terphenyl-d14 (S)	%	72	45-130		04/26/23 11:18	

LABORATORY CONTROL SAMPLE: 3337613

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	mg/kg	0.033	0.022	68	55-120	
2-Methylnaphthalene	mg/kg	0.033	0.022	68	55-120	
Acenaphthene	mg/kg	0.033	0.023	68	45-120	
Anthracene	mg/kg	0.033	0.024	72	50-120	
Benzo(a)anthracene	mg/kg	0.033	0.022	65	55-125	
Benzo(a)pyrene	mg/kg	0.033	0.023	68	45-120	
Benzo(b)fluoranthene	mg/kg	0.033	0.018	55	50-125	
Benzo(k)fluoranthene	mg/kg	0.033	0.025	76	55-120	
Chrysene	mg/kg	0.033	0.024	74	55-120	
Dibenz(a,h)anthracene	mg/kg	0.033	0.015	45	40-125	
Fluoranthene	mg/kg	0.033	0.025	74	50-125	
Fluorene	mg/kg	0.033	0.022	66	50-120	
Indeno(1,2,3-cd)pyrene	mg/kg	0.033	0.018	54	44-125	
Naphthalene	mg/kg	0.033	0.022	67	45-120	
Pyrene	mg/kg	0.033	0.026	79	50-125	
2-Fluorobiphenyl (S)	%			65	40-120	
Terphenyl-d14 (S)	%			64	45-130	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

MATRIX SPIKE SAMPLE: 3337614

Parameter	Units	60426353002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	mg/kg	ND	0.038	0.023	61	50-145	
2-Methylnaphthalene	mg/kg	ND	0.038	0.024	63	50-120	
Acenaphthene	mg/kg	ND	0.038	0.022	59	10-150	
Anthracene	mg/kg	ND	0.038	0.025	65	10-160	
Benzo(a)anthracene	mg/kg	ND	0.038	0.023	60	10-160	
Benzo(a)pyrene	mg/kg	ND	0.038	0.021	55	10-150	
Benzo(b)fluoranthene	mg/kg	ND	0.038	0.020	52	10-165	
Benzo(k)fluoranthene	mg/kg	ND	0.038	0.023	61	10-165	
Chrysene	mg/kg	ND	0.038	0.023	61	10-150	
Dibenz(a,h)anthracene	mg/kg	ND	0.038	0.022	58	10-175	
Fluoranthene	mg/kg	ND	0.038	0.026	67	10-180	
Fluorene	mg/kg	ND	0.038	0.024	64	20-145	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.038	0.022	57	10-150	
Naphthalene	mg/kg	ND	0.038	0.023	60	10-165	
Pyrene	mg/kg	ND	0.038	0.025	66	10-180	
2-Fluorobiphenyl (S)	%				57	40-120	
Terphenyl-d14 (S)	%				55	45-130	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 844092
QC Batch Method: EPA 3546
Analysis Method: EPA 8270 by SIM
Analysis Description: 8270/3546 MSSV PAH by SIM
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357004, 60426357005, 60426357006

METHOD BLANK: 3345415
Matrix: Solid
Associated Lab Samples: 60426357004, 60426357005, 60426357006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1-Methylnaphthalene	mg/kg	ND	0.0031	0.0015	05/02/23 09:39	
2-Methylnaphthalene	mg/kg	ND	0.0031	0.0022	05/02/23 09:39	
Acenaphthene	mg/kg	ND	0.0031	0.0019	05/02/23 09:39	
Anthracene	mg/kg	0.0034	0.0031	0.0018	05/02/23 09:39	
Benzo(a)anthracene	mg/kg	0.0082	0.0031	0.0017	05/02/23 09:39	
Benzo(a)pyrene	mg/kg	0.0080	0.0031	0.0013	05/02/23 09:39	
Benzo(b)fluoranthene	mg/kg	0.013	0.0031	0.0017	05/02/23 09:39	
Benzo(k)fluoranthene	mg/kg	0.0047	0.0031	0.0017	05/02/23 09:39	
Chrysene	mg/kg	0.0075	0.0031	0.0017	05/02/23 09:39	
Dibenz(a,h)anthracene	mg/kg	ND	0.0031	0.0017	05/02/23 09:39	
Fluoranthene	mg/kg	0.016	0.0031	0.0026	05/02/23 09:39	
Fluorene	mg/kg	ND	0.0031	0.0024	05/02/23 09:39	
Indeno(1,2,3-cd)pyrene	mg/kg	0.0046	0.0031	0.0017	05/02/23 09:39	
Naphthalene	mg/kg	ND	0.0031	0.0017	05/02/23 09:39	
Pyrene	mg/kg	0.013	0.0031	0.0023	05/02/23 09:39	
2-Fluorobiphenyl (S)	%	83	40-120		05/02/23 09:39	
Terphenyl-d14 (S)	%	78	45-130		05/02/23 09:39	

LABORATORY CONTROL SAMPLE: 3345416

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	mg/kg	0.032	0.027	85	55-120	
2-Methylnaphthalene	mg/kg	0.032	0.027	85	55-120	
Acenaphthene	mg/kg	0.032	0.027	86	45-120	
Anthracene	mg/kg	0.032	0.028	88	50-120	
Benzo(a)anthracene	mg/kg	0.032	0.029	91	55-125	
Benzo(a)pyrene	mg/kg	0.032	0.027	85	45-120	
Benzo(b)fluoranthene	mg/kg	0.032	0.029	90	50-125	
Benzo(k)fluoranthene	mg/kg	0.032	0.030	95	55-120	
Chrysene	mg/kg	0.032	0.029	92	55-120	
Dibenz(a,h)anthracene	mg/kg	0.032	0.027	85	40-125	
Fluoranthene	mg/kg	0.032	0.031	96	50-125	
Fluorene	mg/kg	0.032	0.028	88	50-120	
Indeno(1,2,3-cd)pyrene	mg/kg	0.032	0.028	87	44-125	
Naphthalene	mg/kg	0.032	0.026	83	45-120	
Pyrene	mg/kg	0.032	0.029	91	50-125	
2-Fluorobiphenyl (S)	%			84	40-120	
Terphenyl-d14 (S)	%			86	45-130	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3345417 3345418

Parameter	Units	60426353005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Methylnaphthalene	mg/kg	ND	0.038	0.038	0.027	0.023	71	60	50-145	16	61	
2-Methylnaphthalene	mg/kg	ND	0.038	0.038	0.027	0.023	72	61	50-120	17	61	
Acenaphthene	mg/kg	ND	0.038	0.038	0.028	0.024	73	63	10-150	16	42	
Anthracene	mg/kg	ND	0.038	0.038	0.028	0.024	74	64	10-160	15	54	
Benzo(a)anthracene	mg/kg	ND	0.038	0.038	0.029	0.025	76	65	10-160	16	62	
Benzo(a)pyrene	mg/kg	ND	0.038	0.038	0.027	0.023	70	60	10-150	16	66	
Benzo(b)fluoranthene	mg/kg	ND	0.038	0.038	0.028	0.024	73	64	10-165	14	61	
Benzo(k)fluoranthene	mg/kg	ND	0.038	0.038	0.033	0.024	86	62	10-165	33	53	
Chrysene	mg/kg	ND	0.038	0.038	0.029	0.025	75	65	10-150	16	57	
Dibenz(a,h)anthracene	mg/kg	ND	0.038	0.038	0.027	0.023	70	61	10-175	15	48	
Fluoranthene	mg/kg	ND	0.038	0.038	0.032	0.027	84	71	10-180	17	54	
Fluorene	mg/kg	ND	0.038	0.038	0.030	0.025	78	67	20-145	17	39	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.038	0.038	0.028	0.023	72	61	10-150	18	59	
Naphthalene	mg/kg	ND	0.038	0.038	0.027	0.022	70	59	10-165	18	54	
Pyrene	mg/kg	ND	0.038	0.038	0.029	0.025	76	65	10-180	16	61	
2-Fluorobiphenyl (S)	%						74	63	40-120			
Terphenyl-d14 (S)	%						73	65	45-130			

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 841937
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight/Percent Moisture
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: 3337259
Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Percent Moisture	%	ND	0.50	0.50	04/17/23 16:45	

SAMPLE DUPLICATE: 3337260

Parameter	Units	60426355027 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.4	10.2	2	20	

SAMPLE DUPLICATE: 3337261

Parameter	Units	60426355029 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.0	10.1	1	20	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 2045414
QC Batch Method: SM 2540 G
Analysis Method: SM 2540G
Analysis Description: Total Solids 2540 G-2011
Laboratory: Pace National - Mt. Juliet
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: R3916512-1
Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Solids	%	0.00100			04/22/23 17:03	

LABORATORY CONTROL SAMPLE: R3916512-2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Solids	%	50.0	50.0	100	85.0-115	

SAMPLE DUPLICATE: R3916512-3

Parameter	Units	60426357006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Solids	%	94.3	93.9	0.439	10	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 2045352
QC Batch Method: 3060A
Analysis Method: EPA 7199
Analysis Description: Wet Chemistry 7199
Laboratory: Pace National - Mt. Juliet
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006

METHOD BLANK: R3916419-1 Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	1.00	0.255	04/24/23 01:20	

LABORATORY CONTROL SAMPLE: R3916419-2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	10.0	10.5	105	80.0-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: R3916419-5 R3916419-6

Parameter	Units	L1606850-05 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	23.7	23.7	17.9	18.5	75.8	78.3	75.0-125	3.23	20	

MATRIX SPIKE SAMPLE: R3916419-7

Parameter	Units	L1606850-05 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	ND	761	693	91.1	75.0-125	

SAMPLE DUPLICATE: R3916419-3

Parameter	Units	L1606425-09 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND	0.00	20	

SAMPLE DUPLICATE: R3916419-8

Parameter	Units	60426357005 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND	0.00	20	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 2045357
QC Batch Method: 3060A
Analysis Method: EPA 7199
Analysis Description: Wet Chemistry 7199
Laboratory: Pace National - Mt. Juliet

Associated Lab Samples: 60426357007

METHOD BLANK: R3917218-1 Matrix: Solid
Associated Lab Samples: 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	1.00	0.255	04/25/23 14:30	

LABORATORY CONTROL SAMPLE: R3917218-2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	10.0	10.7	107	80.0-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: R3917218-3 R3917218-4

Parameter	Units	60426357007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	21.0	21.0	19.6	22.3	93.4	106	75.0-125	12.8	20	

MATRIX SPIKE SAMPLE: R3917218-5

Parameter	Units	60426357007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	ND	682	649	95.1	75.0-125	

SAMPLE DUPLICATE: R3917218-7

Parameter	Units	L1606925-05 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	2.34	2.10	10.7	20	

SAMPLE DUPLICATE: R3917218-8

Parameter	Units	L1606951-06 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	0.375J	200	20	D8,J

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 2046581
QC Batch Method: 9045C/9045D
Analysis Method: EPA 9045D
Analysis Description: Wet Chemistry 9045D
Laboratory: Pace National - Mt. Juliet
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

LABORATORY CONTROL SAMPLE: R3916113-1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
pH	Std. Units	10.0	9.98	99.8	99.0-101	

SAMPLE DUPLICATE: R3916113-2

Parameter	Units	L1606850-05 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	8.08	8.05	0.372	1	

SAMPLE DUPLICATE: R3916113-3

Parameter	Units	L1607178-01 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.02	7.03	0.142	1	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 2045126
QC Batch Method: EPA 9050
Analysis Method: EPA 9050
Analysis Description: Wet Chemistry 9050AMod
Laboratory: Pace National - Mt. Juliet
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: R3916056-1
Matrix: Solid
Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Specific Conductance @ 25 C	umhos/cm	ND	10.0	10.0	04/21/23 17:08	

LABORATORY CONTROL SAMPLE: R3916056-2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Specific Conductance @ 25 C	umhos/cm	1120	1050	93.5	85.0-115	

SAMPLE DUPLICATE: R3916056-3

Parameter	Units	L1606678-04 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance @ 25 C	umhos/cm	211	208	1.19	20	

SAMPLE DUPLICATE: R3916056-4

Parameter	Units	60426357004 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance @ 25 C	umhos/cm	2700	2760	2.12	20	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 2045126
QC Batch Method: 9050A
Analysis Method: EPA 9050
Analysis Description: Wet Chemistry 9050AMod
Laboratory: Pace National - Mt. Juliet
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: R3916056-1
Matrix: Solid
Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Specific Conductance @ 25 C	umhos/cm	ND	10.0	10.0	04/21/23 17:08	

LABORATORY CONTROL SAMPLE: R3916056-2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Specific Conductance @ 25 C	umhos/cm	1120	1050	93.5	85.0-115	

SAMPLE DUPLICATE: R3916056-3

Parameter	Units	L1606678-04 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance @ 25 C	umhos/cm	211	208	1.19	20	

SAMPLE DUPLICATE: R3916056-4

Parameter	Units	60426357004 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance @ 25 C	umhos/cm	2700	2760	2.12	20	

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QUALIFIERS

Project: MUSF 20
Pace Project No.: 60426357

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.

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TNI - The NELAC Institute.

SAMPLE QUALIFIERS

Sample: 60426357001
- [1] Wet Chemistry by Method 9045D - 8.44 at 19.7C
- [1] Wet Chemistry by Method 9050AMod - at 25C

Sample: 60426357002
- [1] Wet Chemistry by Method 9045D - 8.4 at 19.7C
- [1] Wet Chemistry by Method 9050AMod - at 25C

Sample: 60426357003
- [1] Wet Chemistry by Method 9045D - 8.23 at 19.5C
- [1] Wet Chemistry by Method 9050AMod - at 25C

Sample: 60426357004
- [1] Wet Chemistry by Method 9045D - 7.69 at 19.5C
- [1] Wet Chemistry by Method 9050AMod - at 25C

Sample: 60426357005
- [1] Wet Chemistry by Method 9045D - 7.92 at 19.5C
- [1] Wet Chemistry by Method 9050AMod - at 25C

Sample: 60426357006
- [1] Wet Chemistry by Method 9045D - 7.83 at 19.5C

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QUALIFIERS

Project: MUSF 20
Pace Project No.: 60426357

SAMPLE QUALIFIERS

Sample: 60426357006
[1] Wet Chemistry by Method 9050AMod - at 25C
Sample: 60426357007
[1] Wet Chemistry by Method 9045D - 7.86 at 19.6C
[1] Wet Chemistry by Method 9050AMod - at 25C
Sample: R3916056-1
[1] Wet Chemistry by Method 9050AMod - at 25C
Sample: R3916056-2
[1] Wet Chemistry by Method 9050AMod - at 25C
Sample: R3916056-3
[1] Wet Chemistry by Method 9050AMod - at 25C
Sample: R3916056-4
[1] Wet Chemistry by Method 9050AMod - at 25C
Sample: R3916113-1
[1] Wet Chemistry by Method 9045D - 9.98 at 19.2C
Sample: R3916113-2
[1] Wet Chemistry by Method 9045D - 8.05 at 19.7C
Sample: R3916113-3
[1] Wet Chemistry by Method 9045D - 7.03 at 19.5C
Sample: L1606678-04
[1] Wet Chemistry by Method 9050AMod - at 25C
Sample: L1606850-05
[1] Wet Chemistry by Method 9045D - 8.08 at 19.7C
Sample: L1607178-01
[1] Wet Chemistry by Method 9045D - 7.02 at 19.5C

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
D8	The sample and duplicate results for this parameter are less than 5 times the reporting limit, the RPD may not be statistically valid.
H3	Sample was received or analysis requested beyond the recognized method holding time.
J	Analyte detected below the reporting limit, therefore result is an estimate. This qualifier is also used for all TICs.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MUSF 20
Pace Project No.: 60426357

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60426357001	**SP 1**	EPA 3546	842084	EPA 8015B	842336
60426357002	**SP 1 4'**	EPA 3546	842084	EPA 8015B	842336
60426357003	**SP 2**	EPA 3546	842084	EPA 8015B	842336
60426357004	**SP 3**	EPA 3546	842084	EPA 8015B	842336
60426357005	**SP 4**	EPA 3546	842084	EPA 8015B	842336
60426357006	**SP 5**	EPA 3546	842084	EPA 8015B	842336
60426357007	**SP 6**	EPA 3546	842084	EPA 8015B	842336
60426357001	**SP 1**	EPA 5035A/5030B	842659	EPA 8015B	842790
60426357002	**SP 1 4'**	EPA 5035A/5030B	842659	EPA 8015B	842790
60426357003	**SP 2**	EPA 5035A/5030B	842659	EPA 8015B	842790
60426357004	**SP 3**	EPA 5035A/5030B	842659	EPA 8015B	842790
60426357005	**SP 4**	EPA 5035A/5030B	842659	EPA 8015B	842790
60426357006	**SP 5**	EPA 5035A/5030B	842659	EPA 8015B	842790
60426357007	**SP 6**	EPA 5035A/5030B	842659	EPA 8015B	842790
60426357001	**SP 1**	HWS Boron	2045653	6010B-NE493 Ch 2	2045653
60426357002	**SP 1 4'**	HWS Boron	2045653	6010B-NE493 Ch 2	2045653
60426357003	**SP 2**	HWS Boron	2045653	6010B-NE493 Ch 2	2045653
60426357004	**SP 3**	HWS Boron	2045653	6010B-NE493 Ch 2	2045653
60426357005	**SP 4**	HWS Boron	2045653	6010B-NE493 Ch 2	2045653
60426357006	**SP 5**	HWS Boron	2045653	6010B-NE493 Ch 2	2045653
60426357007	**SP 6**	HWS Boron	2045653	6010B-NE493 Ch 2	2045653
60426357001	**SP 1**	EPA 3050	843041	EPA 6010	843212
60426357002	**SP 1 4'**	EPA 3050	843041	EPA 6010	843212
60426357003	**SP 2**	EPA 3050	843041	EPA 6010	843212
60426357004	**SP 3**	EPA 3050	843041	EPA 6010	843212
60426357005	**SP 4**	EPA 3050	843041	EPA 6010	843212
60426357006	**SP 5**	EPA 3050	843041	EPA 6010	843212
60426357007	**SP 6**	EPA 3050	843041	EPA 6010	843212
60426357001	**SP 1**	EPA 3050	843042	EPA 6020	843215
60426357002	**SP 1 4'**	EPA 3050	843042	EPA 6020	843215
60426357003	**SP 2**	EPA 3050	843042	EPA 6020	843215
60426357004	**SP 3**	EPA 3050	843042	EPA 6020	843215
60426357005	**SP 4**	EPA 3050	843042	EPA 6020	843215
60426357006	**SP 5**	EPA 3050	843042	EPA 6020	843215
60426357007	**SP 6**	EPA 3050	843042	EPA 6020	843215
60426357001	**SP 1**	EPA 3546	842085	EPA 8270 by SIM	843724
60426357002	**SP 1 4'**	EPA 3546	842085	EPA 8270 by SIM	843724
60426357003	**SP 2**	EPA 3546	842085	EPA 8270 by SIM	843724
60426357004	**SP 3**	EPA 3546	844092	EPA 8270 by SIM	844607
60426357005	**SP 4**	EPA 3546	844092	EPA 8270 by SIM	844607
60426357006	**SP 5**	EPA 3546	844092	EPA 8270 by SIM	844607
60426357007	**SP 6**	EPA 3546	842085	EPA 8270 by SIM	843724
60426357001	**SP 1**	EPA 5035A/5030B	842421	EPA 8260C	842464
60426357002	**SP 1 4'**	EPA 5035A/5030B	842421	EPA 8260C	842464
60426357003	**SP 2**	EPA 5035A/5030B	842421	EPA 8260C	842464

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MUSF 20
Pace Project No.: 60426357

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60426357004	**SP 3**	EPA 5035A/5030B	842421	EPA 8260C	842464
60426357005	**SP 4**	EPA 5035A/5030B	842421	EPA 8260C	842464
60426357006	**SP 5**	EPA 5035A/5030B	842421	EPA 8260C	842464
60426357007	**SP 6**	EPA 5035A/5030B	842421	EPA 8260C	842464
60426357001	**SP 1**	ASTM D2974	841937		
60426357002	**SP 1 4'**	ASTM D2974	841937		
60426357003	**SP 2**	ASTM D2974	841937		
60426357004	**SP 3**	ASTM D2974	841937		
60426357005	**SP 4**	ASTM D2974	841937		
60426357006	**SP 5**	ASTM D2974	841937		
60426357007	**SP 6**	ASTM D2974	841937		
60426357001	**SP 1**	SM 2540 G	2045414	SM 2540G	2045414
60426357002	**SP 1 4'**	SM 2540 G	2045414	SM 2540G	2045414
60426357003	**SP 2**	SM 2540 G	2045414	SM 2540G	2045414
60426357004	**SP 3**	SM 2540 G	2045414	SM 2540G	2045414
60426357005	**SP 4**	SM 2540 G	2045414	SM 2540G	2045414
60426357006	**SP 5**	SM 2540 G	2045414	SM 2540G	2045414
60426357007	**SP 6**	SM 2540 G	2045414	SM 2540G	2045414
60426357001	**SP 1**	3060A	2045352	EPA 7199	2045352
60426357002	**SP 1 4'**	3060A	2045352	EPA 7199	2045352
60426357003	**SP 2**	3060A	2045352	EPA 7199	2045352
60426357004	**SP 3**	3060A	2045352	EPA 7199	2045352
60426357005	**SP 4**	3060A	2045352	EPA 7199	2045352
60426357006	**SP 5**	3060A	2045352	EPA 7199	2045352
60426357007	**SP 6**	3060A	2045357	EPA 7199	2045357
60426357001	**SP 1**	9045C/9045D	2046581	EPA 9045D	2046581
60426357002	**SP 1 4'**	9045C/9045D	2046581	EPA 9045D	2046581
60426357003	**SP 2**	9045C/9045D	2046581	EPA 9045D	2046581
60426357004	**SP 3**	9045C/9045D	2046581	EPA 9045D	2046581
60426357005	**SP 4**	9045C/9045D	2046581	EPA 9045D	2046581
60426357006	**SP 5**	9045C/9045D	2046581	EPA 9045D	2046581
60426357007	**SP 6**	9045C/9045D	2046581	EPA 9045D	2046581
60426357001	**SP 1**	9050A	2045126	EPA 9050	2045126
60426357002	**SP 1 4'**	9050A	2045126	EPA 9050	2045126
60426357003	**SP 2**	9050A	2045126	EPA 9050	2045126
60426357004	**SP 3**	9050A	2045126	EPA 9050	2045126
60426357005	**SP 4**	9050A	2045126	EPA 9050	2045126
60426357006	**SP 5**	9050A	2045126	EPA 9050	2045126
60426357007	**SP 6**	9050A	2045126	EPA 9050	2045126
60426357001	**SP 1**	Calc	2045648	Calculated	2045648
60426357002	**SP 1 4'**	Calc	2045648	Calculated	2045648
60426357003	**SP 2**	Calc	2045648	Calculated	2045648
60426357004	**SP 3**	Calc	2045648	Calculated	2045648
60426357005	**SP 4**	Calc	2045648	Calculated	2045648
60426357006	**SP 5**	Calc	2045648	Calculated	2045648

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(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MUSF 20
Pace Project No.: 60426357

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60426357007	**SP 6**	Calc	2045648	Calculated	2045648

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Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-LENE-0009	
	Revision: 2	Effective Date: 01

WO# : 60426357

60426357

Client Name: Mull Drilling

Courier: FedEx ☐ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☒ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☐ No ☒ Seals intact: Yes ☐ No ☒

Packing Material: Bubble Wrap ☐ Bubble Bags ☒ Foam ☐ None ☐ Other ☐

Thermometer Used: T-299 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.6 **Corr. Factor** +0.2 **Corrected** 1.8

Date and initials of person examining contents: AL 4/15

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☒No ☐N/A	
Filtered volume received for dissolved tests?	☐Yes ☒No ☐N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: SL	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) **LOT#:**	☐Yes ☐No ☒N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☒No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☒No ☐N/A	
Samples from USDA Regulated Area: State: SL	☐Yes ☒No ☐N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☒No ☐N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Pace Analytical
WWW.PACELABS.COM

CHAIN-OF-CUSTODY / Analytical Request Document

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

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.

Section A — Required Client Information:

Company: Mull Drilling Company
Address: 1700 N Waterfront Pkwy
Wichita, KS 67206
Email: jbeilman@mulldrilling.com
Phone: 316-364-6366 Fax:
Requested Due Date:

Section B — Required Project Information:

Report To: James Beilman
Copy To:
Purchase Order #:
Project Name: ~~[illegible]~~ MUSF 20
Project #: MUSF 20

Section C — Invoice Information:

Attention:
Company Name:
Address:
Pace Quote:
Pace Project Manager: nolie.wood@pacelabs.com,
Pace Profile #: 15035, 2

Regulatory Agency:

State / Location: CO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other 1 G	Analyses Test Y/N	VOAS/SVOA PAH SIM	8015 DRO/GRO	6010/6020 metals	Paste EC, SAR, pH,	HW Boron, 7199 CrIV	Residual Chlorine (Y/N)	60426357
1	SP 1	SL	G	4/13/23	0	1300			1	✓									✓	✓	✓	✓	✓		
2	SP 1 4'					1310																			
3	SP 2					1315																			
4	SP 3					1325																			
5	SP 4					1330																			
6	SP 5					1340																			
7	SP 6					1350																			
8																									
9																									
10																									
11																									
12																									

Matrix codes: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Send 7199 CrIV,Saturated Paste EC, SAR, pH, and Hot Water Boron to Pace National	[signature]	4/15/23	1031	[signature] Pace	4/15	1031	1.8	Y	Y	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: J. Beilman

SIGNATURE of SAMPLER: [signature]

DATE Signed: 4/13/23

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

J074

Internal Transfer Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples Pre-Logged into eCOC.

State Of Origin: CO
Cert. Needed: ☐ Yes ☐ No

Workorder: 60426357 **Workorder Name:** MUSF 20 **Owner Received Date:** 4/15/2023 **Results Requested By:** 5/2/2023

Report To

Heather Wilson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1407

Subcontract To

Pace National
12065 Lebanon Rd
Mt. Juliet, TN 37122
Phone (615) 758-5858

Requested Analysis

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved						7199 CrIV	Hot water Boron	Saturated Paste EC,SAR,pH									LAB USE ONLY
																							41606853
1	SP 1	PS	4/13/2023 13:00	60426357001	Solid	1						X	X	X									-01
2	SP 1 4'	PS	4/13/2023 13:10	60426357002	Solid	1						X	X	X									-02
3	SP 2	PS	4/13/2023 13:15	60426357003	Solid	1						X	X	X									-03
4	SP 3	PS	4/13/2023 13:25	60426357004	Solid	1						X	X	X									-04
5	SP 4	PS	4/13/2023 13:30	60426357005	Solid	1						X	X	X									-05
6	SP 5	PS	4/13/2023 13:40	60426357006	Solid	1						X	X	X									-06
7	SP 6	PS	4/13/2023 13:50	60426357007	Solid	1						X	X	X									-07

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible]	4/18/23 1700	[illegible]	04/19/23 0905
2				
3				

Comments

Cooler Temperature on Receipt 1.8 °C (NSLVI) **Custody Seal** Y or N **Received on Ice** Y or N **Samples Intact** Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Receipt Checklist

COC Seal Present/Intact: Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
RAD Screen <0.5 mR/hr: Y N

If Applicable
VOA Zero Headspace: Y N
Pres.Correct/Check: Y N

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

May 02, 2023

James Beilman
Mull Drilling Company
1700 N Waterfront Pkwy
Bld. 1200
Wichita, KS 67206

RE: Project: MUSF 20
Pace Project No.: 60426357

Dear James Beilman:

Enclosed are the analytical results for sample(s) received by the laboratory on April 15, 2023. 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 National - Mt. Juliet
- Pace Analytical Services - Kansas City

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

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

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CERTIFICATIONS

Project: MUSF 20
Pace Project No.: 60426357

Pace Analytical Services Kansas

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 22-031-0
Illinois Certification #: 2000302021-3
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212023-1
Oklahoma Certification #: 2022-057
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-21-15
Utah Certification #: KS000212022-12
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

Pace Analytical Services National

12065 Lebanon Road, Mt. Juliet, TN 37122
Alabama Certification #: 40660
Alaska Certification 17-026
Arizona Certification #: AZ0612
Arkansas Certification #: 88-0469
California Certification #: 2932
Canada Certification #: 1461.01
Colorado Certification #: TN00003
Connecticut Certification #: PH-0197
DOD Certification: #1461.01
EPA# TN00003
Florida Certification #: E87487
Georgia DW Certification #: 923
Georgia Certification: NELAP
Idaho Certification #: TN00003
Illinois Certification #: 200008
Indiana Certification #: C-TN-01
Iowa Certification #: 364
Kansas Certification #: E-10277
Kentucky UST Certification #: 16
Kentucky Certification #: 90010
Louisiana Certification #: AI30792
Louisiana DW Certification #: LA180010
Maine Certification #: TN0002
Maryland Certification #: 324
Massachusetts Certification #: M-TN003
Michigan Certification #: 9958
Minnesota Certification #: 047-999-395
Mississippi Certification #: TN00003
Missouri Certification #: 340
Montana Certification #: CERT0086
Nebraska Certification #: NE-OS-15-05
Nevada Certification #: TN-03-2002-34
New Hampshire Certification #: 2975
New Jersey Certification #: TN002
New Mexico DW Certification
New York Certification #: 11742
North Carolina Aquatic Toxicity Certification #: 41
North Carolina Drinking Water Certification #: 21704
North Carolina Environmental Certificate #: 375
North Dakota Certification #: R-140
Ohio VAP Certification #: CL0069
Oklahoma Certification #: 9915
Oregon Certification #: TN200002
Pennsylvania Certification #: 68-02979
Rhode Island Certification #: LAO00356
South Carolina Certification #: 84004
South Dakota Certification
Tennessee DW/Chem/Micro Certification #: 2006
Texas Certification #: T 104704245-17-14
Texas Mold Certification #: LAB0152
USDA Soil Permit #: P330-15-00234
Utah Certification #: TN00003
Vermont Dept. of Health: ID# VT-2006
Virginia Certification #: VT2006
Virginia Certification #: 460132
Washington Certification #: C847
West Virginia Certification #: 233
Wisconsin Certification #: 998093910
Wyoming UST Certification #: via A2LA 2926.01
A2LA-ISO 17025 Certification #: 1461.01
A2LA-ISO 17025 Certification #: 1461.02
AIHA-LAP/LLC EMLAP Certification #:100789

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SAMPLE SUMMARY

Project: MUSF 20
Pace Project No.: 60426357

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60426357001	**SP 1**	Solid	04/13/23 13:00	04/15/23 10:31
60426357002	**SP 1 4'**	Solid	04/13/23 13:10	04/15/23 10:31
60426357003	**SP 2**	Solid	04/13/23 13:15	04/15/23 10:31
60426357004	**SP 3**	Solid	04/13/23 13:25	04/15/23 10:31
60426357005	**SP 4**	Solid	04/13/23 13:30	04/15/23 10:31
60426357006	**SP 5**	Solid	04/13/23 13:40	04/15/23 10:31
60426357007	**SP 6**	Solid	04/13/23 13:50	04/15/23 10:31

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SAMPLE ANALYTE COUNT

Project: MUSF 20
Pace Project No.: 60426357

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60426357001	**SP 1**	EPA 8015B	YGR	4	PASI-K
		EPA 8015B	JLO	2	PASI-K
		6010B-NE493 Ch 2	SPL	1	PAN
		EPA 6010	MA1	8	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 8270 by SIM	SJJ	17	PASI-K
		EPA 8260C	RAD	9	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	CMK	1	PAN
		EPA 7199	VSS	1	PAN
		EPA 9045D	KAD	1	PAN
		EPA 9050	NTG	1	PAN
		Calculated	ZSA	1	PAN
60426357002	**SP 1 4'**	EPA 8015B	YGR	4	PASI-K
		EPA 8015B	JLO	2	PASI-K
		6010B-NE493 Ch 2	SPL	1	PAN
		EPA 6010	MA1	8	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 8270 by SIM	SJJ	17	PASI-K
		EPA 8260C	RAD	9	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	CMK	1	PAN
		EPA 7199	VSS	1	PAN
		EPA 9045D	KAD	1	PAN
		EPA 9050	NTG	1	PAN
		Calculated	ZSA	1	PAN
60426357003	**SP 2**	EPA 8015B	YGR	4	PASI-K
		EPA 8015B	JLO	2	PASI-K
		6010B-NE493 Ch 2	SPL	1	PAN
		EPA 6010	MA1	8	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 8270 by SIM	SJJ	17	PASI-K
		EPA 8260C	RAD	9	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	CMK	1	PAN
		EPA 7199	VSS	1	PAN
		EPA 9045D	KAD	1	PAN

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SAMPLE ANALYTE COUNT

Project: MUSF 20
Pace Project No.: 60426357

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 9050	NTG	1	PAN
		Calculated	ZSA	1	PAN
60426357004	**SP 3**	EPA 8015B	YGR	4	PASI-K
		EPA 8015B	JLO	2	PASI-K
		6010B-NE493 Ch 2	SPL	1	PAN
		EPA 6010	MA1	8	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 8270 by SIM	SJJ	17	PASI-K
		EPA 8260C	RAD	9	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	CMK	1	PAN
		EPA 7199	VSS	1	PAN
		EPA 9045D	KAD	1	PAN
		EPA 9050	NTG	1	PAN
		Calculated	ZSA	1	PAN
60426357005	**SP 4**	EPA 8015B	YGR	4	PASI-K
		EPA 8015B	JLO	2	PASI-K
		6010B-NE493 Ch 2	SPL	1	PAN
		EPA 6010	MA1	8	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 8270 by SIM	SJJ	17	PASI-K
		EPA 8260C	RAD	9	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	CMK	1	PAN
		EPA 7199	VSS	1	PAN
		EPA 9045D	KAD	1	PAN
		EPA 9050	NTG	1	PAN
		Calculated	ZSA	1	PAN
60426357006	**SP 5**	EPA 8015B	YGR	4	PASI-K
		EPA 8015B	JLO	2	PASI-K
		6010B-NE493 Ch 2	SPL	1	PAN
		EPA 6010	MA1	8	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 8270 by SIM	SJJ	17	PASI-K
		EPA 8260C	RAD	9	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	CMK	1	PAN

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SAMPLE ANALYTE COUNT

Project: MUSF 20
Pace Project No.: 60426357

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7199	VSS	1	PAN
		EPA 9045D	KAD	1	PAN
		EPA 9050	NTG	1	PAN
		Calculated	ZSA	1	PAN
60426357007	**SP 6**	EPA 8015B	YGR	4	PASI-K
		EPA 8015B	JLO	2	PASI-K
		6010B-NE493 Ch 2	SPL	1	PAN
		EPA 6010	MA1	8	PASI-K
		EPA 6020	JGP	1	PASI-K
		EPA 8270 by SIM	SJJ	17	PASI-K
		EPA 8260C	RAD	9	PASI-K
		ASTM D2974	DWC	1	PASI-K
		SM 2540G	CMK	1	PAN
		EPA 7199	SET	1	PAN
		EPA 9045D	KAD	1	PAN
		EPA 9050	NTG	1	PAN
		Calculated	ZSA	1	PAN

PAN = Pace National - Mt. Juliet
PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 1 **Lab ID: 60426357001** Collected: 04/13/23 13:00 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
TPH-RRO (C28-C36)	ND	mg/kg	19.9	4.5	1	04/19/23 01:59	04/19/23 12:27		
TPH-DRO (C10-C28)	**6.9J**	mg/kg	10	4.5	1	04/19/23 01:59	04/19/23 12:27		
Surrogates									
n-Tetracosane (S)	45	%	31-152		1	04/19/23 01:59	04/19/23 12:27	646-31-1	
p-Terphenyl (S)	46	%	46-130		1	04/19/23 01:59	04/19/23 12:27	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	10.1	1.2	1	04/20/23 13:54	04/21/23 01:36		
Surrogates									
4-Bromofluorobenzene (S)	87	%	66-130		1	04/20/23 13:54	04/21/23 01:36	460-00-4	
Metals (ICP) 6010B-NE493 Ch 2	Analytical Method: 6010B-NE493 Ch 2 Preparation Method: HWS Boron								
	Pace National - Mt. Juliet								
Boron, Hot Water Soluble	**0.176J**	mg/L	0.200	0.0167	1	04/24/23 12:14	04/26/23 11:33	7440-42-8H	J
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Barium	**75.6**	mg/kg	0.48	0.26	1	04/22/23 10:38	05/01/23 18:18	7440-39-3	
Cadmium	**0.26J**	mg/kg	0.48	0.10	1	04/22/23 10:38	05/01/23 18:18	7440-43-9	
Copper	**4.5**	mg/kg	1.9	0.29	1	04/22/23 10:38	05/01/23 18:18	7440-50-8	
Lead	**8.0**	mg/kg	0.96	0.35	1	04/22/23 10:38	05/01/23 18:18	7439-92-1	
Nickel	**4.0**	mg/kg	0.48	0.23	1	04/22/23 10:38	05/01/23 18:18	7440-02-0	
Selenium	ND	mg/kg	1.4	0.72	1	04/22/23 10:38	05/01/23 18:18	7782-49-2	
Silver	ND	mg/kg	0.67	0.17	1	04/22/23 10:38	05/01/23 18:18	7440-22-4	
Zinc	**20.4**	mg/kg	9.6	1.3	1	04/22/23 10:38	05/01/23 18:18	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Arsenic	**5.1**	mg/kg	0.96	0.18	10	04/22/23 10:38	04/25/23 09:31	7440-38-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0033	0.0020	1	04/18/23 16:27	04/26/23 15:24	83-32-9	
Anthracene	ND	mg/kg	0.0033	0.0019	1	04/18/23 16:27	04/26/23 15:24	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.0033	0.0018	1	04/18/23 16:27	04/26/23 15:24	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.0033	0.0013	1	04/18/23 16:27	04/26/23 15:24	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.0033	0.0017	1	04/18/23 16:27	04/26/23 15:24	205-99-2	
Benzo(k)fluoranthene	ND	mg/kg	0.0033	0.0017	1	04/18/23 16:27	04/26/23 15:24	207-08-9	
Chrysene	ND	mg/kg	0.0033	0.0017	1	04/18/23 16:27	04/26/23 15:24	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.0033	0.0018	1	04/18/23 16:27	04/26/23 15:24	53-70-3	
Fluoranthene	ND	mg/kg	0.0033	0.0028	1	04/18/23 16:27	04/26/23 15:24	206-44-0	
Fluorene	ND	mg/kg	0.0033	0.0025	1	04/18/23 16:27	04/26/23 15:24	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0033	0.0017	1	04/18/23 16:27	04/26/23 15:24	193-39-5	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 1 **Lab ID: 60426357001** Collected: 04/13/23 13:00 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
1-Methylnaphthalene	ND	mg/kg	0.0033	0.0016	1	04/18/23 16:27	04/26/23 15:24	90-12-0	
2-Methylnaphthalene	ND	mg/kg	0.0033	0.0023	1	04/18/23 16:27	04/26/23 15:24	91-57-6	
Naphthalene	ND	mg/kg	0.0033	0.0018	1	04/18/23 16:27	04/26/23 15:24	91-20-3	
Pyrene	ND	mg/kg	0.0033	0.0024	1	04/18/23 16:27	04/26/23 15:24	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	55	%	40-120		1	04/18/23 16:27	04/26/23 15:24	321-60-8	
Terphenyl-d14 (S)	51	%	45-130		1	04/18/23 16:27	04/26/23 15:24	1718-51-0	
8260C MSV 5035A Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0051	0.00046	1	04/19/23 11:54	04/19/23 17:20	71-43-2	
Ethylbenzene	ND	mg/kg	0.0051	0.00088	1	04/19/23 11:54	04/19/23 17:20	100-41-4	
Toluene	ND	mg/kg	0.020	0.0045	1	04/19/23 11:54	04/19/23 17:20	108-88-3	
1,2,4-Trimethylbenzene	ND	mg/kg	0.0051	0.00070	1	04/19/23 11:54	04/19/23 17:20	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.0051	0.00044	1	04/19/23 11:54	04/19/23 17:20	108-67-8	
Xylene (Total)	ND	mg/kg	0.015	0.0037	1	04/19/23 11:54	04/19/23 17:20	1330-20-7	
Surrogates									
Toluene-d8 (S)	106	%	80-120		1	04/19/23 11:54	04/19/23 17:20	2037-26-5	
4-Bromofluorobenzene (S)	102	%	83-119		1	04/19/23 11:54	04/19/23 17:20	460-00-4	
1,2-Dichlorobenzene-d4 (S)	97	%	80-120		1	04/19/23 11:54	04/19/23 17:20	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974								
	Pace Analytical Services - Kansas City								
Percent Moisture	**1.6**	%	0.50	0.50	1		04/17/23 16:46		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G								
	Pace National - Mt. Juliet								
Total Solids	**95.1**	%			1	04/22/23 16:51	04/22/23 17:03		
Wet Chemistry 7199	Analytical Method: EPA 7199 Preparation Method: 3060A								
	Pace National - Mt. Juliet								
Chromium, Hexavalent	ND	mg/kg	1.05	0.268	1	04/21/23 11:53	04/24/23 02:51	18540-29-9	
Wet Chemistry 9045D	Analytical Method: EPA 9045D Preparation Method: 9045C/9045D								
	Pace National - Mt. Juliet								
pH	**8.44**	Std. Units		0.10	1	04/21/23 20:00	04/21/23 22:32		H3
Wet Chemistry 9050AMod	Analytical Method: EPA 9050 Preparation Method: 9050A								
	Pace National - Mt. Juliet								
Specific Conductance @ 25 C	**163**	umhos/cm	10.0	10.0	1	04/21/23 13:00	04/21/23 17:08		
Calculated Results	Analytical Method: Calculated Preparation Method: Calc								
	Pace National - Mt. Juliet								
Sodium Adsorption Ratio	**0.300**				1	04/25/23 20:46	04/25/23 20:46	SAR	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 1 4' **Lab ID: 60426357002** Collected: 04/13/23 13:10 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
TPH-RRO (C28-C36)	ND	mg/kg	21.5	4.8	1	04/19/23 01:59	04/19/23 12:35		
TPH-DRO (C10-C28)	ND	mg/kg	10.7	4.8	1	04/19/23 01:59	04/19/23 12:35		
Surrogates									
n-Tetracosane (S)	62	%	31-152		1	04/19/23 01:59	04/19/23 12:35	646-31-1	
p-Terphenyl (S)	64	%	46-130		1	04/19/23 01:59	04/19/23 12:35	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	11.2	1.4	1	04/20/23 13:54	04/21/23 01:51		
Surrogates									
4-Bromofluorobenzene (S)	83	%	66-130		1	04/20/23 13:54	04/21/23 01:51	460-00-4	
Metals (ICP) 6010B-NE493 Ch 2	Analytical Method: 6010B-NE493 Ch 2 Preparation Method: HWS Boron								
	Pace National - Mt. Juliet								
Boron, Hot Water Soluble	**0.153J**	mg/L	0.200	0.0167	1	04/24/23 12:14	04/26/23 11:36	7440-42-8H	J
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Barium	**64.0**	mg/kg	0.44	0.24	1	04/22/23 10:38	05/01/23 18:21	7440-39-3	
Cadmium	**0.29J**	mg/kg	0.44	0.092	1	04/22/23 10:38	05/01/23 18:21	7440-43-9	
Copper	**4.7**	mg/kg	1.7	0.27	1	04/22/23 10:38	05/01/23 18:21	7440-50-8	
Lead	**4.6**	mg/kg	0.87	0.31	1	04/22/23 10:38	05/01/23 18:21	7439-92-1	
Nickel	**5.0**	mg/kg	0.44	0.20	1	04/22/23 10:38	05/01/23 18:21	7440-02-0	
Selenium	ND	mg/kg	1.3	0.66	1	04/22/23 10:38	05/01/23 18:21	7782-49-2	
Silver	ND	mg/kg	0.61	0.15	1	04/22/23 10:38	05/01/23 18:21	7440-22-4	
Zinc	**19.2**	mg/kg	8.7	1.1	1	04/22/23 10:38	05/01/23 18:21	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Arsenic	**3.0**	mg/kg	0.87	0.16	10	04/22/23 10:38	04/25/23 09:34	7440-38-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0035	0.0021	1	04/18/23 16:27	04/26/23 15:42	83-32-9	
Anthracene	ND	mg/kg	0.0035	0.0020	1	04/18/23 16:27	04/26/23 15:42	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.0035	0.0019	1	04/18/23 16:27	04/26/23 15:42	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.0035	0.0014	1	04/18/23 16:27	04/26/23 15:42	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.0035	0.0019	1	04/18/23 16:27	04/26/23 15:42	205-99-2	
Benzo(k)fluoranthene	ND	mg/kg	0.0035	0.0019	1	04/18/23 16:27	04/26/23 15:42	207-08-9	
Chrysene	ND	mg/kg	0.0035	0.0019	1	04/18/23 16:27	04/26/23 15:42	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.0035	0.0019	1	04/18/23 16:27	04/26/23 15:42	53-70-3	
Fluoranthene	ND	mg/kg	0.0035	0.0029	1	04/18/23 16:27	04/26/23 15:42	206-44-0	
Fluorene	ND	mg/kg	0.0035	0.0027	1	04/18/23 16:27	04/26/23 15:42	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0035	0.0019	1	04/18/23 16:27	04/26/23 15:42	193-39-5	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 1 4' **Lab ID: 60426357002** Collected: 04/13/23 13:10 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
1-Methylnaphthalene	ND	mg/kg	0.0035	0.0017	1	04/18/23 16:27	04/26/23 15:42	90-12-0	
2-Methylnaphthalene	ND	mg/kg	0.0035	0.0025	1	04/18/23 16:27	04/26/23 15:42	91-57-6	
Naphthalene	ND	mg/kg	0.0035	0.0019	1	04/18/23 16:27	04/26/23 15:42	91-20-3	
Pyrene	ND	mg/kg	0.0035	0.0026	1	04/18/23 16:27	04/26/23 15:42	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	58	%	40-120		1	04/18/23 16:27	04/26/23 15:42	321-60-8	
Terphenyl-d14 (S)	57	%	45-130		1	04/18/23 16:27	04/26/23 15:42	1718-51-0	
8260C MSV 5035A Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0057	0.00052	1	04/19/23 11:54	04/19/23 17:40	71-43-2	
Ethylbenzene	ND	mg/kg	0.0057	0.00099	1	04/19/23 11:54	04/19/23 17:40	100-41-4	
Toluene	ND	mg/kg	0.023	0.0051	1	04/19/23 11:54	04/19/23 17:40	108-88-3	
1,2,4-Trimethylbenzene	ND	mg/kg	0.0057	0.00079	1	04/19/23 11:54	04/19/23 17:40	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.0057	0.00050	1	04/19/23 11:54	04/19/23 17:40	108-67-8	
Xylene (Total)	ND	mg/kg	0.017	0.0042	1	04/19/23 11:54	04/19/23 17:40	1330-20-7	
Surrogates									
Toluene-d8 (S)	106	%	80-120		1	04/19/23 11:54	04/19/23 17:40	2037-26-5	
4-Bromofluorobenzene (S)	101	%	83-119		1	04/19/23 11:54	04/19/23 17:40	460-00-4	
1,2-Dichlorobenzene-d4 (S)	99	%	80-120		1	04/19/23 11:54	04/19/23 17:40	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974								
	Pace Analytical Services - Kansas City								
Percent Moisture	**7.5**	%	0.50	0.50	1		04/17/23 16:46		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G								
	Pace National - Mt. Juliet								
Total Solids	**94.6**	%			1	04/22/23 16:51	04/22/23 17:03		
Wet Chemistry 7199	Analytical Method: EPA 7199 Preparation Method: 3060A								
	Pace National - Mt. Juliet								
Chromium, Hexavalent	ND	mg/kg	1.06	0.270	1	04/21/23 11:53	04/24/23 02:56	18540-29-9	
Wet Chemistry 9045D	Analytical Method: EPA 9045D Preparation Method: 9045C/9045D								
	Pace National - Mt. Juliet								
pH	**8.40**	Std. Units		0.10	1	04/21/23 20:00	04/21/23 22:32		H3
Wet Chemistry 9050AMod	Analytical Method: EPA 9050 Preparation Method: 9050A								
	Pace National - Mt. Juliet								
Specific Conductance @ 25 C	**141**	umhos/cm	10.0	10.0	1	04/21/23 13:00	04/21/23 17:08		
Calculated Results	Analytical Method: Calculated Preparation Method: Calc								
	Pace National - Mt. Juliet								
Sodium Adsorption Ratio	**0.399**				1	04/25/23 21:00	04/25/23 21:00	SAR	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 2 **Lab ID: 60426357003** Collected: 04/13/23 13:15 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
TPH-RRO (C28-C36)	ND	mg/kg	20.5	4.6	1	04/19/23 01:59	04/19/23 12:43		
TPH-DRO (C10-C28)	**5.7J**	mg/kg	10.3	4.6	1	04/19/23 01:59	04/19/23 12:43		
Surrogates									
n-Tetracosane (S)	75	%	31-152		1	04/19/23 01:59	04/19/23 12:43	646-31-1	
p-Terphenyl (S)	69	%	46-130		1	04/19/23 01:59	04/19/23 12:43	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	10.2	1.2	1	04/20/23 13:54	04/21/23 02:36		
Surrogates									
4-Bromofluorobenzene (S)	84	%	66-130		1	04/20/23 13:54	04/21/23 02:36	460-00-4	
Metals (ICP) 6010B-NE493 Ch 2	Analytical Method: 6010B-NE493 Ch 2 Preparation Method: HWS Boron								
	Pace National - Mt. Juliet								
Boron, Hot Water Soluble	**0.195J**	mg/L	0.200	0.0167	1	04/24/23 12:14	04/26/23 11:39	7440-42-8H	J
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Barium	**111**	mg/kg	0.40	0.22	1	04/22/23 10:38	05/01/23 18:23	7440-39-3	
Cadmium	**0.42**	mg/kg	0.40	0.084	1	04/22/23 10:38	05/01/23 18:23	7440-43-9	
Copper	**7.3**	mg/kg	1.6	0.25	1	04/22/23 10:38	05/01/23 18:23	7440-50-8	
Lead	**7.1**	mg/kg	0.80	0.29	1	04/22/23 10:38	05/01/23 18:23	7439-92-1	
Nickel	**7.7**	mg/kg	0.40	0.19	1	04/22/23 10:38	05/01/23 18:23	7440-02-0	
Selenium	ND	mg/kg	1.2	0.61	1	04/22/23 10:38	05/01/23 18:23	7782-49-2	
Silver	ND	mg/kg	0.56	0.14	1	04/22/23 10:38	05/01/23 18:23	7440-22-4	
Zinc	**27.8**	mg/kg	8.0	1.1	1	04/22/23 10:38	05/01/23 18:23	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Arsenic	**4.3**	mg/kg	0.80	0.15	10	04/22/23 10:38	04/25/23 09:36	7440-38-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0034	0.0021	1	04/18/23 16:27	04/26/23 16:00	83-32-9	
Anthracene	ND	mg/kg	0.0034	0.0019	1	04/18/23 16:27	04/26/23 16:00	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.0034	0.0019	1	04/18/23 16:27	04/26/23 16:00	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.0034	0.0014	1	04/18/23 16:27	04/26/23 16:00	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 16:00	205-99-2	
Benzo(k)fluoranthene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 16:00	207-08-9	
Chrysene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 16:00	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 16:00	53-70-3	
Fluoranthene	ND	mg/kg	0.0034	0.0028	1	04/18/23 16:27	04/26/23 16:00	206-44-0	
Fluorene	ND	mg/kg	0.0034	0.0026	1	04/18/23 16:27	04/26/23 16:00	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 16:00	193-39-5	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 2 **Lab ID: 60426357003** Collected: 04/13/23 13:15 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
1-Methylnaphthalene	ND	mg/kg	0.0034	0.0017	1	04/18/23 16:27	04/26/23 16:00	90-12-0	
2-Methylnaphthalene	ND	mg/kg	0.0034	0.0024	1	04/18/23 16:27	04/26/23 16:00	91-57-6	
Naphthalene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 16:00	91-20-3	
Pyrene	ND	mg/kg	0.0034	0.0025	1	04/18/23 16:27	04/26/23 16:00	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	59	%	40-120		1	04/18/23 16:27	04/26/23 16:00	321-60-8	
Terphenyl-d14 (S)	60	%	45-130		1	04/18/23 16:27	04/26/23 16:00	1718-51-0	
8260C MSV 5035A Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0053	0.00048	1	04/19/23 11:54	04/19/23 17:59	71-43-2	
Ethylbenzene	ND	mg/kg	0.0053	0.00091	1	04/19/23 11:54	04/19/23 17:59	100-41-4	
Toluene	ND	mg/kg	0.021	0.0047	1	04/19/23 11:54	04/19/23 17:59	108-88-3	
1,2,4-Trimethylbenzene	ND	mg/kg	0.0053	0.00073	1	04/19/23 11:54	04/19/23 17:59	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.0053	0.00046	1	04/19/23 11:54	04/19/23 17:59	108-67-8	
Xylene (Total)	ND	mg/kg	0.016	0.0039	1	04/19/23 11:54	04/19/23 17:59	1330-20-7	
Surrogates									
Toluene-d8 (S)	104	%	80-120		1	04/19/23 11:54	04/19/23 17:59	2037-26-5	
4-Bromofluorobenzene (S)	101	%	83-119		1	04/19/23 11:54	04/19/23 17:59	460-00-4	
1,2-Dichlorobenzene-d4 (S)	98	%	80-120		1	04/19/23 11:54	04/19/23 17:59	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974								
	Pace Analytical Services - Kansas City								
Percent Moisture	**2.9**	%	0.50	0.50	1		04/17/23 16:46		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G								
	Pace National - Mt. Juliet								
Total Solids	**96.6**	%			1	04/22/23 16:51	04/22/23 17:03		
Wet Chemistry 7199	Analytical Method: EPA 7199 Preparation Method: 3060A								
	Pace National - Mt. Juliet								
Chromium, Hexavalent	ND	mg/kg	1.04	0.264	1	04/21/23 11:53	04/24/23 03:01	18540-29-9	
Wet Chemistry 9045D	Analytical Method: EPA 9045D Preparation Method: 9045C/9045D								
	Pace National - Mt. Juliet								
pH	**8.23**	Std. Units		0.10	1	04/21/23 20:00	04/21/23 22:32		H3
Wet Chemistry 9050AMod	Analytical Method: EPA 9050 Preparation Method: 9050A								
	Pace National - Mt. Juliet								
Specific Conductance @ 25 C	**114**	umhos/cm	10.0	10.0	1	04/21/23 13:00	04/21/23 17:08		
Calculated Results	Analytical Method: Calculated Preparation Method: Calc								
	Pace National - Mt. Juliet								
Sodium Adsorption Ratio	**0.108**				1	04/25/23 20:52	04/25/23 20:52	SAR	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 3 **Lab ID: 60426357004** Collected: 04/13/23 13:25 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
TPH-RRO (C28-C36)	ND	mg/kg	20.6	4.6	1	04/19/23 01:59	04/19/23 12:51		
TPH-DRO (C10-C28)	**7.7J**	mg/kg	10.3	4.6	1	04/19/23 01:59	04/19/23 12:51		
Surrogates									
n-Tetracosane (S)	68	%	31-152		1	04/19/23 01:59	04/19/23 12:51	646-31-1	
p-Terphenyl (S)	68	%	46-130		1	04/19/23 01:59	04/19/23 12:51	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	10.0	1.2	1	04/20/23 13:54	04/21/23 02:51		
Surrogates									
4-Bromofluorobenzene (S)	84	%	66-130		1	04/20/23 13:54	04/21/23 02:51	460-00-4	
Metals (ICP) 6010B-NE493 Ch 2	Analytical Method: 6010B-NE493 Ch 2 Preparation Method: HWS Boron								
	Pace National - Mt. Juliet								
Boron, Hot Water Soluble	**0.418**	mg/L	0.200	0.0167	1	04/24/23 12:14	04/26/23 11:42	7440-42-8H	
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Barium	**97.7**	mg/kg	0.48	0.27	1	04/22/23 10:38	05/01/23 18:25	7440-39-3	
Cadmium	**0.59**	mg/kg	0.48	0.10	1	04/22/23 10:38	05/01/23 18:25	7440-43-9	
Copper	**9.2**	mg/kg	1.9	0.30	1	04/22/23 10:38	05/01/23 18:25	7440-50-8	
Lead	**19.4**	mg/kg	0.97	0.35	1	04/22/23 10:38	05/01/23 18:25	7439-92-1	
Nickel	**9.5**	mg/kg	0.48	0.23	1	04/22/23 10:38	05/01/23 18:25	7440-02-0	
Selenium	**0.75J**	mg/kg	1.4	0.73	1	04/22/23 10:38	05/01/23 18:25	7782-49-2	
Silver	ND	mg/kg	0.68	0.17	1	04/22/23 10:38	05/01/23 18:25	7440-22-4	
Zinc	**29.8**	mg/kg	9.7	1.3	1	04/22/23 10:38	05/01/23 18:25	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Arsenic	**5.6**	mg/kg	0.97	0.18	10	04/22/23 10:38	04/25/23 09:39	7440-38-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0034	0.0021	1	04/27/23 15:34	05/01/23 22:23	83-32-9	
Anthracene	ND	mg/kg	0.0034	0.0020	1	04/27/23 15:34	05/01/23 22:23	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.0034	0.0019	1	04/27/23 15:34	05/01/23 22:23	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.0034	0.0014	1	04/27/23 15:34	05/01/23 22:23	50-32-8	
Benzo(b)fluoranthene	**0.0031J**	mg/kg	0.0034	0.0018	1	04/27/23 15:34	05/01/23 22:23	205-99-2	B
Benzo(k)fluoranthene	ND	mg/kg	0.0034	0.0018	1	04/27/23 15:34	05/01/23 22:23	207-08-9	
Chrysene	**0.0041**	mg/kg	0.0034	0.0018	1	04/27/23 15:34	05/01/23 22:23	218-01-9	B
Dibenz(a,h)anthracene	ND	mg/kg	0.0034	0.0018	1	04/27/23 15:34	05/01/23 22:23	53-70-3	
Fluoranthene	ND	mg/kg	0.0034	0.0029	1	04/27/23 15:34	05/01/23 22:23	206-44-0	
Fluorene	ND	mg/kg	0.0034	0.0026	1	04/27/23 15:34	05/01/23 22:23	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0034	0.0018	1	04/27/23 15:34	05/01/23 22:23	193-39-5	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 3 **Lab ID: 60426357004** Collected: 04/13/23 13:25 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
1-Methylnaphthalene	**0.0068**	mg/kg	0.0034	0.0017	1	04/27/23 15:34	05/01/23 22:23	90-12-0	
2-Methylnaphthalene	**0.0072**	mg/kg	0.0034	0.0024	1	04/27/23 15:34	05/01/23 22:23	91-57-6	
Naphthalene	**0.0045**	mg/kg	0.0034	0.0018	1	04/27/23 15:34	05/01/23 22:23	91-20-3	
Pyrene	**0.0038**	mg/kg	0.0034	0.0025	1	04/27/23 15:34	05/01/23 22:23	129-00-0	B
Surrogates									
2-Fluorobiphenyl (S)	75	%	40-120		1	04/27/23 15:34	05/01/23 22:23	321-60-8	
Terphenyl-d14 (S)	76	%	45-130		1	04/27/23 15:34	05/01/23 22:23	1718-51-0	
8260C MSV 5035A Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0053	0.00049	1	04/19/23 11:54	04/19/23 18:19	71-43-2	
Ethylbenzene	**0.0011J**	mg/kg	0.0053	0.00093	1	04/19/23 11:54	04/19/23 18:19	100-41-4	
Toluene	ND	mg/kg	0.021	0.0048	1	04/19/23 11:54	04/19/23 18:19	108-88-3	
1,2,4-Trimethylbenzene	**0.0019J**	mg/kg	0.0053	0.00074	1	04/19/23 11:54	04/19/23 18:19	95-63-6	
1,3,5-Trimethylbenzene	**0.00064J**	mg/kg	0.0053	0.00046	1	04/19/23 11:54	04/19/23 18:19	108-67-8	
Xylene (Total)	**0.0061J**	mg/kg	0.016	0.0039	1	04/19/23 11:54	04/19/23 18:19	1330-20-7	
Surrogates									
Toluene-d8 (S)	104	%	80-120		1	04/19/23 11:54	04/19/23 18:19	2037-26-5	
4-Bromofluorobenzene (S)	101	%	83-119		1	04/19/23 11:54	04/19/23 18:19	460-00-4	
1,2-Dichlorobenzene-d4 (S)	100	%	80-120		1	04/19/23 11:54	04/19/23 18:19	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974								
	Pace Analytical Services - Kansas City								
Percent Moisture	**4.1**	%	0.50	0.50	1		04/17/23 16:46		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G								
	Pace National - Mt. Juliet								
Total Solids	**96.1**	%			1	04/22/23 16:51	04/22/23 17:03		
Wet Chemistry 7199	Analytical Method: EPA 7199 Preparation Method: 3060A								
	Pace National - Mt. Juliet								
Chromium, Hexavalent	**1.40**	mg/kg	1.04	0.265	1	04/21/23 11:53	04/24/23 03:06	18540-29-9	
Wet Chemistry 9045D	Analytical Method: EPA 9045D Preparation Method: 9045C/9045D								
	Pace National - Mt. Juliet								
pH	**7.69**	Std. Units		0.10	1	04/21/23 20:00	04/21/23 22:32		H3
Wet Chemistry 9050AMod	Analytical Method: EPA 9050 Preparation Method: 9050A								
	Pace National - Mt. Juliet								
Specific Conductance @ 25 C	**2700**	umhos/cm	10.0	10.0	1	04/21/23 13:00	04/21/23 17:08		
Calculated Results	Analytical Method: Calculated Preparation Method: Calc								
	Pace National - Mt. Juliet								
Sodium Adsorption Ratio	**2.55**				1	04/25/23 20:49	04/25/23 20:49	SAR	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 4 **Lab ID: 60426357005** Collected: 04/13/23 13:30 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
TPH-RRO (C28-C36)	**28.0**	mg/kg	20.4	4.6	1	04/19/23 01:59	04/19/23 12:59		
TPH-DRO (C10-C28)	**21.0**	mg/kg	10.2	4.6	1	04/19/23 01:59	04/19/23 12:59		
Surrogates									
n-Tetracosane (S)	75	%	31-152		1	04/19/23 01:59	04/19/23 12:59	646-31-1	
p-Terphenyl (S)	74	%	46-130		1	04/19/23 01:59	04/19/23 12:59	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
TPH-GRO	**1.6J**	mg/kg	10.1	1.2	1	04/20/23 13:54	04/21/23 03:06		
Surrogates									
4-Bromofluorobenzene (S)	87	%	66-130		1	04/20/23 13:54	04/21/23 03:06	460-00-4	
Metals (ICP) 6010B-NE493 Ch 2	Analytical Method: 6010B-NE493 Ch 2 Preparation Method: HWS Boron								
	Pace National - Mt. Juliet								
Boron, Hot Water Soluble	**0.252**	mg/L	0.200	0.0167	1	04/24/23 12:14	04/26/23 11:53	7440-42-8H	
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Barium	**57.6**	mg/kg	0.38	0.21	1	04/22/23 10:38	05/01/23 18:27	7440-39-3	
Cadmium	**0.26J**	mg/kg	0.38	0.079	1	04/22/23 10:38	05/01/23 18:27	7440-43-9	
Copper	**4.9**	mg/kg	1.5	0.23	1	04/22/23 10:38	05/01/23 18:27	7440-50-8	
Lead	**21.7**	mg/kg	0.75	0.27	1	04/22/23 10:38	05/01/23 18:27	7439-92-1	
Nickel	**3.7**	mg/kg	0.38	0.18	1	04/22/23 10:38	05/01/23 18:27	7440-02-0	
Selenium	ND	mg/kg	1.1	0.57	1	04/22/23 10:38	05/01/23 18:27	7782-49-2	
Silver	ND	mg/kg	0.53	0.13	1	04/22/23 10:38	05/01/23 18:27	7440-22-4	
Zinc	**21.1**	mg/kg	7.5	0.99	1	04/22/23 10:38	05/01/23 18:27	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Arsenic	**3.3**	mg/kg	0.75	0.14	10	04/22/23 10:38	04/25/23 09:44	7440-38-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0032	0.0020	1	04/27/23 15:34	05/02/23 09:57	83-32-9	
Anthracene	ND	mg/kg	0.0032	0.0018	1	04/27/23 15:34	05/02/23 09:57	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.0032	0.0018	1	04/27/23 15:34	05/02/23 09:57	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.0032	0.0013	1	04/27/23 15:34	05/02/23 09:57	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.0032	0.0017	1	04/27/23 15:34	05/02/23 09:57	205-99-2	
Benzo(k)fluoranthene	ND	mg/kg	0.0032	0.0017	1	04/27/23 15:34	05/02/23 09:57	207-08-9	
Chrysene	ND	mg/kg	0.0032	0.0017	1	04/27/23 15:34	05/02/23 09:57	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.0032	0.0017	1	04/27/23 15:34	05/02/23 09:57	53-70-3	
Fluoranthene	ND	mg/kg	0.0032	0.0027	1	04/27/23 15:34	05/02/23 09:57	206-44-0	
Fluorene	ND	mg/kg	0.0032	0.0024	1	04/27/23 15:34	05/02/23 09:57	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0032	0.0017	1	04/27/23 15:34	05/02/23 09:57	193-39-5	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 4 **Lab ID: 60426357005** Collected: 04/13/23 13:30 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
1-Methylnaphthalene	ND	mg/kg	0.0032	0.0016	1	04/27/23 15:34	05/02/23 09:57	90-12-0	
2-Methylnaphthalene	ND	mg/kg	0.0032	0.0023	1	04/27/23 15:34	05/02/23 09:57	91-57-6	
Naphthalene	ND	mg/kg	0.0032	0.0017	1	04/27/23 15:34	05/02/23 09:57	91-20-3	
Pyrene	ND	mg/kg	0.0032	0.0023	1	04/27/23 15:34	05/02/23 09:57	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	63	%	40-120		1	04/27/23 15:34	05/02/23 09:57	321-60-8	
Terphenyl-d14 (S)	59	%	45-130		1	04/27/23 15:34	05/02/23 09:57	1718-51-0	
8260C MSV 5035A Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0052	0.00048	1	04/19/23 11:54	04/19/23 18:39	71-43-2	
Ethylbenzene	ND	mg/kg	0.0052	0.00091	1	04/19/23 11:54	04/19/23 18:39	100-41-4	
Toluene	ND	mg/kg	0.021	0.0047	1	04/19/23 11:54	04/19/23 18:39	108-88-3	
1,2,4-Trimethylbenzene	**0.0010J**	mg/kg	0.0052	0.00072	1	04/19/23 11:54	04/19/23 18:39	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.0052	0.00045	1	04/19/23 11:54	04/19/23 18:39	108-67-8	
Xylene (Total)	ND	mg/kg	0.016	0.0038	1	04/19/23 11:54	04/19/23 18:39	1330-20-7	
Surrogates									
Toluene-d8 (S)	105	%	80-120		1	04/19/23 11:54	04/19/23 18:39	2037-26-5	
4-Bromofluorobenzene (S)	102	%	83-119		1	04/19/23 11:54	04/19/23 18:39	460-00-4	
1,2-Dichlorobenzene-d4 (S)	99	%	80-120		1	04/19/23 11:54	04/19/23 18:39	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974								
	Pace Analytical Services - Kansas City								
Percent Moisture	**2.4**	%	0.50	0.50	1		04/17/23 16:46		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G								
	Pace National - Mt. Juliet								
Total Solids	**97.6**	%			1	04/22/23 16:51	04/22/23 17:03		
Wet Chemistry 7199	Analytical Method: EPA 7199 Preparation Method: 3060A								
	Pace National - Mt. Juliet								
Chromium, Hexavalent	ND	mg/kg	1.02	0.261	1	04/21/23 11:53	04/24/23 03:12	18540-29-9	
Wet Chemistry 9045D	Analytical Method: EPA 9045D Preparation Method: 9045C/9045D								
	Pace National - Mt. Juliet								
pH	**7.92**	Std. Units		0.10	1	04/21/23 20:00	04/21/23 22:32		H3
Wet Chemistry 9050AMod	Analytical Method: EPA 9050 Preparation Method: 9050A								
	Pace National - Mt. Juliet								
Specific Conductance @ 25 C	**133**	umhos/cm	10.0	10.0	1	04/21/23 13:00	04/21/23 17:08		
Calculated Results	Analytical Method: Calculated Preparation Method: Calc								
	Pace National - Mt. Juliet								
Sodium Adsorption Ratio	**0.118**				1	04/25/23 20:38	04/25/23 20:38	SAR	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 5 **Lab ID: 60426357006** Collected: 04/13/23 13:40 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
TPH-RRO (C28-C36)	**38.6**	mg/kg	21.2	4.7	1	04/19/23 01:59	04/19/23 13:15		
TPH-DRO (C10-C28)	**33.5**	mg/kg	10.6	4.7	1	04/19/23 01:59	04/19/23 13:15		
Surrogates									
n-Tetracosane (S)	74	%	31-152		1	04/19/23 01:59	04/19/23 13:15	646-31-1	
p-Terphenyl (S)	70	%	46-130		1	04/19/23 01:59	04/19/23 13:15	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	11.4	1.4	1	04/20/23 13:54	04/21/23 03:21		
Surrogates									
4-Bromofluorobenzene (S)	82	%	66-130		1	04/20/23 13:54	04/21/23 03:21	460-00-4	
Metals (ICP) 6010B-NE493 Ch 2	Analytical Method: 6010B-NE493 Ch 2 Preparation Method: HWS Boron								
	Pace National - Mt. Juliet								
Boron, Hot Water Soluble	**0.322**	mg/L	0.200	0.0167	1	04/24/23 12:14	04/26/23 11:55	7440-42-8H	
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Barium	**104**	mg/kg	0.47	0.26	1	04/22/23 10:38	05/01/23 18:29	7440-39-3	
Cadmium	**0.67**	mg/kg	0.47	0.10	1	04/22/23 10:38	05/01/23 18:29	7440-43-9	
Copper	**11.2**	mg/kg	1.9	0.29	1	04/22/23 10:38	05/01/23 18:29	7440-50-8	
Lead	**27.3**	mg/kg	0.95	0.34	1	04/22/23 10:38	05/01/23 18:29	7439-92-1	
Nickel	**10.7**	mg/kg	0.47	0.22	1	04/22/23 10:38	05/01/23 18:29	7440-02-0	
Selenium	**1.1J**	mg/kg	1.4	0.71	1	04/22/23 10:38	05/01/23 18:29	7782-49-2	
Silver	ND	mg/kg	0.66	0.16	1	04/22/23 10:38	05/01/23 18:29	7440-22-4	
Zinc	**34.6**	mg/kg	9.5	1.2	1	04/22/23 10:38	05/01/23 18:29	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Arsenic	**4.6**	mg/kg	0.95	0.17	10	04/22/23 10:38	04/25/23 09:46	7440-38-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0035	0.0021	1	04/27/23 15:34	05/02/23 10:15	83-32-9	
Anthracene	ND	mg/kg	0.0035	0.0020	1	04/27/23 15:34	05/02/23 10:15	120-12-7	
Benzo(a)anthracene	**0.0034J**	mg/kg	0.0035	0.0019	1	04/27/23 15:34	05/02/23 10:15	56-55-3	B
Benzo(a)pyrene	ND	mg/kg	0.0035	0.0014	1	04/27/23 15:34	05/02/23 10:15	50-32-8	
Benzo(b)fluoranthene	**0.0027J**	mg/kg	0.0035	0.0019	1	04/27/23 15:34	05/02/23 10:15	205-99-2	B
Benzo(k)fluoranthene	ND	mg/kg	0.0035	0.0019	1	04/27/23 15:34	05/02/23 10:15	207-08-9	
Chrysene	**0.0039**	mg/kg	0.0035	0.0019	1	04/27/23 15:34	05/02/23 10:15	218-01-9	B
Dibenz(a,h)anthracene	ND	mg/kg	0.0035	0.0019	1	04/27/23 15:34	05/02/23 10:15	53-70-3	
Fluoranthene	**0.0031J**	mg/kg	0.0035	0.0029	1	04/27/23 15:34	05/02/23 10:15	206-44-0	B
Fluorene	ND	mg/kg	0.0035	0.0027	1	04/27/23 15:34	05/02/23 10:15	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0035	0.0019	1	04/27/23 15:34	05/02/23 10:15	193-39-5	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 5 **Lab ID: 60426357006** Collected: 04/13/23 13:40 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
1-Methylnaphthalene	**0.0063**	mg/kg	0.0035	0.0017	1	04/27/23 15:34	05/02/23 10:15	90-12-0	
2-Methylnaphthalene	**0.0069**	mg/kg	0.0035	0.0025	1	04/27/23 15:34	05/02/23 10:15	91-57-6	
Naphthalene	**0.0043**	mg/kg	0.0035	0.0019	1	04/27/23 15:34	05/02/23 10:15	91-20-3	
Pyrene	**0.0035J**	mg/kg	0.0035	0.0025	1	04/27/23 15:34	05/02/23 10:15	129-00-0	B
Surrogates									
2-Fluorobiphenyl (S)	71	%	40-120		1	04/27/23 15:34	05/02/23 10:15	321-60-8	
Terphenyl-d14 (S)	71	%	45-130		1	04/27/23 15:34	05/02/23 10:15	1718-51-0	
8260C MSV 5035A Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0058	0.00053	1	04/19/23 11:54	04/19/23 18:59	71-43-2	
Ethylbenzene	ND	mg/kg	0.0058	0.0010	1	04/19/23 11:54	04/19/23 18:59	100-41-4	
Toluene	ND	mg/kg	0.023	0.0051	1	04/19/23 11:54	04/19/23 18:59	108-88-3	
1,2,4-Trimethylbenzene	**0.0016J**	mg/kg	0.0058	0.00079	1	04/19/23 11:54	04/19/23 18:59	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.0058	0.00050	1	04/19/23 11:54	04/19/23 18:59	108-67-8	
Xylene (Total)	ND	mg/kg	0.017	0.0042	1	04/19/23 11:54	04/19/23 18:59	1330-20-7	
Surrogates									
Toluene-d8 (S)	107	%	80-120		1	04/19/23 11:54	04/19/23 18:59	2037-26-5	
4-Bromofluorobenzene (S)	103	%	83-119		1	04/19/23 11:54	04/19/23 18:59	460-00-4	
1,2-Dichlorobenzene-d4 (S)	98	%	80-120		1	04/19/23 11:54	04/19/23 18:59	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974								
	Pace Analytical Services - Kansas City								
Percent Moisture	**7.5**	%	0.50	0.50	1		04/17/23 16:46		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G								
	Pace National - Mt. Juliet								
Total Solids	**94.3**	%			1	04/22/23 16:51	04/22/23 17:03		
Wet Chemistry 7199	Analytical Method: EPA 7199 Preparation Method: 3060A								
	Pace National - Mt. Juliet								
Chromium, Hexavalent	**0.672J**	mg/kg	1.06	0.270	1	04/21/23 11:53	04/24/23 03:32	18540-29-9	J
Wet Chemistry 9045D	Analytical Method: EPA 9045D Preparation Method: 9045C/9045D								
	Pace National - Mt. Juliet								
pH	**7.83**	Std. Units		0.10	1	04/21/23 20:00	04/21/23 22:32		H3
Wet Chemistry 9050AMod	Analytical Method: EPA 9050 Preparation Method: 9050A								
	Pace National - Mt. Juliet								
Specific Conductance @ 25 C	**203**	umhos/cm	10.0	10.0	1	04/21/23 13:00	04/21/23 17:08		
Calculated Results	Analytical Method: Calculated Preparation Method: Calc								
	Pace National - Mt. Juliet								
Sodium Adsorption Ratio	**0.0763**				1	04/25/23 20:41	04/25/23 20:41	SAR	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 6 **Lab ID: 60426357007** Collected: 04/13/23 13:50 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
TPH-RRO (C28-C36)	**12.1J**	mg/kg	20.5	4.6	1	04/19/23 01:59	04/19/23 13:31		
TPH-DRO (C10-C28)	**9.5J**	mg/kg	10.3	4.6	1	04/19/23 01:59	04/19/23 13:31		
Surrogates									
n-Tetracosane (S)	66	%	31-152		1	04/19/23 01:59	04/19/23 13:31	646-31-1	
p-Terphenyl (S)	66	%	46-130		1	04/19/23 01:59	04/19/23 13:31	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	9.6	1.2	1	04/20/23 13:54	04/21/23 03:36		
Surrogates									
4-Bromofluorobenzene (S)	83	%	66-130		1	04/20/23 13:54	04/21/23 03:36	460-00-4	
Metals (ICP) 6010B-NE493 Ch 2	Analytical Method: 6010B-NE493 Ch 2 Preparation Method: HWS Boron								
	Pace National - Mt. Juliet								
Boron, Hot Water Soluble	**0.201**	mg/L	0.200	0.0167	1	04/24/23 12:14	04/26/23 11:58	7440-42-8H	
6010 MET ICP Red. Interference	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Barium	**59.8**	mg/kg	0.46	0.26	1	04/22/23 10:38	05/01/23 18:31	7440-39-3	
Cadmium	**0.28J**	mg/kg	0.46	0.097	1	04/22/23 10:38	05/01/23 18:31	7440-43-9	
Copper	**4.5**	mg/kg	1.9	0.29	1	04/22/23 10:38	05/01/23 18:31	7440-50-8	
Lead	**4.8**	mg/kg	0.93	0.34	1	04/22/23 10:38	05/01/23 18:31	7439-92-1	
Nickel	**4.4**	mg/kg	0.46	0.22	1	04/22/23 10:38	05/01/23 18:31	7440-02-0	
Selenium	ND	mg/kg	1.4	0.70	1	04/22/23 10:38	05/01/23 18:31	7782-49-2	
Silver	ND	mg/kg	0.65	0.16	1	04/22/23 10:38	05/01/23 18:31	7440-22-4	
Zinc	**21.0**	mg/kg	9.3	1.2	1	04/22/23 10:38	05/01/23 18:31	7440-66-6	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3050								
	Pace Analytical Services - Kansas City								
Arsenic	**2.7**	mg/kg	0.93	0.17	10	04/22/23 10:38	04/25/23 09:49	7440-38-2	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0034	0.0021	1	04/18/23 16:27	04/26/23 20:49	83-32-9	
Anthracene	ND	mg/kg	0.0034	0.0020	1	04/18/23 16:27	04/26/23 20:49	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.0034	0.0019	1	04/18/23 16:27	04/26/23 20:49	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.0034	0.0014	1	04/18/23 16:27	04/26/23 20:49	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 20:49	205-99-2	
Benzo(k)fluoranthene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 20:49	207-08-9	
Chrysene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 20:49	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 20:49	53-70-3	
Fluoranthene	ND	mg/kg	0.0034	0.0028	1	04/18/23 16:27	04/26/23 20:49	206-44-0	
Fluorene	ND	mg/kg	0.0034	0.0026	1	04/18/23 16:27	04/26/23 20:49	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 20:49	193-39-5	

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ANALYTICAL RESULTS

Project: MUSF 20
Pace Project No.: 60426357

Sample: SP 6 **Lab ID: 60426357007** Collected: 04/13/23 13:50 Received: 04/15/23 10:31 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
	Pace Analytical Services - Kansas City								
1-Methylnaphthalene	ND	mg/kg	0.0034	0.0017	1	04/18/23 16:27	04/26/23 20:49	90-12-0	
2-Methylnaphthalene	ND	mg/kg	0.0034	0.0024	1	04/18/23 16:27	04/26/23 20:49	91-57-6	
Naphthalene	ND	mg/kg	0.0034	0.0018	1	04/18/23 16:27	04/26/23 20:49	91-20-3	
Pyrene	ND	mg/kg	0.0034	0.0025	1	04/18/23 16:27	04/26/23 20:49	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	53	%	40-120		1	04/18/23 16:27	04/26/23 20:49	321-60-8	
Terphenyl-d14 (S)	53	%	45-130		1	04/18/23 16:27	04/26/23 20:49	1718-51-0	
8260C MSV 5035A Low Level	Analytical Method: EPA 8260C Preparation Method: EPA 5035A/5030B								
	Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0053	0.00049	1	04/19/23 11:54	04/19/23 19:19	71-43-2	
Ethylbenzene	ND	mg/kg	0.0053	0.00092	1	04/19/23 11:54	04/19/23 19:19	100-41-4	
Toluene	ND	mg/kg	0.021	0.0047	1	04/19/23 11:54	04/19/23 19:19	108-88-3	
1,2,4-Trimethylbenzene	ND	mg/kg	0.0053	0.00073	1	04/19/23 11:54	04/19/23 19:19	95-63-6	
1,3,5-Trimethylbenzene	ND	mg/kg	0.0053	0.00046	1	04/19/23 11:54	04/19/23 19:19	108-67-8	
Xylene (Total)	ND	mg/kg	0.016	0.0039	1	04/19/23 11:54	04/19/23 19:19	1330-20-7	
Surrogates									
Toluene-d8 (S)	108	%	80-120		1	04/19/23 11:54	04/19/23 19:19	2037-26-5	
4-Bromofluorobenzene (S)	102	%	83-119		1	04/19/23 11:54	04/19/23 19:19	460-00-4	
1,2-Dichlorobenzene-d4 (S)	99	%	80-120		1	04/19/23 11:54	04/19/23 19:19	2199-69-1	
Percent Moisture	Analytical Method: ASTM D2974								
	Pace Analytical Services - Kansas City								
Percent Moisture	**3.8**	%	0.50	0.50	1		04/17/23 16:46		
Total Solids 2540 G-2011	Analytical Method: SM 2540G Preparation Method: SM 2540 G								
	Pace National - Mt. Juliet								
Total Solids	**95.4**	%			1	04/22/23 16:51	04/22/23 17:03		
Wet Chemistry 7199	Analytical Method: EPA 7199 Preparation Method: 3060A								
	Pace National - Mt. Juliet								
Chromium, Hexavalent	ND	mg/kg	1.05	0.267	1	04/23/23 09:20	04/25/23 14:43	18540-29-9	
Wet Chemistry 9045D	Analytical Method: EPA 9045D Preparation Method: 9045C/9045D								
	Pace National - Mt. Juliet								
pH	**7.86**	Std. Units		0.10	1	04/21/23 20:00	04/21/23 22:32		H3
Wet Chemistry 9050AMod	Analytical Method: EPA 9050 Preparation Method: 9050A								
	Pace National - Mt. Juliet								
Specific Conductance @ 25 C	**160**	umhos/cm	10.0	10.0	1	04/21/23 13:00	04/21/23 17:08		
Calculated Results	Analytical Method: Calculated Preparation Method: Calc								
	Pace National - Mt. Juliet								
Sodium Adsorption Ratio	**0.0756**				1	04/25/23 20:44	04/25/23 20:44	SAR	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 842659
QC Batch Method: EPA 5035A/5030B
Analysis Method: EPA 8015B
Analysis Description: Gasoline Range Organics
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: 3339734 Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
TPH-GRO	mg/kg	ND	10.0	1.2	04/21/23 00:05	
4-Bromofluorobenzene (S)	%	93	66-130		04/21/23 00:05	

LABORATORY CONTROL SAMPLE: 3339735

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-GRO	mg/kg	50	47.5	95	70-130	
4-Bromofluorobenzene (S)	%			89	66-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3339736 3339737

Parameter	Units	60426357007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TPH-GRO	mg/kg	ND	47.8	47.8	40.0	41.0	82	84	70-130	2	25	
4-Bromofluorobenzene (S)	%						87	91	66-130			

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.

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 2045653
QC Batch Method: HWS Boron
Analysis Method: 6010B-NE493 Ch 2
Analysis Description: Metals (ICP) 6010B-NE493 Ch 2
Laboratory: Pace National - Mt. Juliet
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: R3917697-1
Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron, Hot Water Soluble	mg/L	ND	0.200	0.0167	04/26/23 10:44	

LABORATORY CONTROL SAMPLE & LCSD: R3917697-2 R3917697-3

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Boron, Hot Water Soluble	mg/L	1.00	1.03	1.03	103	103	80.0-120	0.260	20	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 843041
QC Batch Method: EPA 3050
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: 3341537
Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	mg/kg	ND	0.50	0.28	05/01/23 17:52	
Cadmium	mg/kg	ND	0.50	0.10	05/01/23 17:52	
Copper	mg/kg	ND	2.0	0.31	05/01/23 17:52	
Lead	mg/kg	ND	1.0	0.36	05/01/23 17:52	
Nickel	mg/kg	ND	0.50	0.24	05/01/23 17:52	
Selenium	mg/kg	ND	1.5	0.75	05/01/23 17:52	
Silver	mg/kg	ND	0.70	0.17	05/01/23 17:52	
Zinc	mg/kg	ND	10.0	1.3	05/01/23 17:52	

LABORATORY CONTROL SAMPLE: 3341538

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/kg	100	104	104	80-120	
Cadmium	mg/kg	100	102	102	80-120	
Copper	mg/kg	100	101	101	80-120	
Lead	mg/kg	100	103	103	80-120	
Nickel	mg/kg	100	105	105	80-120	
Selenium	mg/kg	100	88.4	88	80-120	
Silver	mg/kg	50	47.4	95	80-120	
Zinc	mg/kg	100	101	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3341539 3341540

Parameter	Units	60426353001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/kg	219	109	99.5	342	315	113	96	75-125	8	20	
Cadmium	mg/kg	0.59	109	99.5	95.9	86.0	87	86	75-125	11	20	
Copper	mg/kg	10.2	109	99.5	116	104	97	94	75-125	11	20	
Lead	mg/kg	9.1	109	99.5	105	95.1	88	86	75-125	10	20	
Nickel	mg/kg	10.5	109	99.5	109	97.3	90	87	75-125	11	20	
Selenium	mg/kg	ND	109	99.5	87.5	79.5	80	80	75-125	10	20	
Silver	mg/kg	ND	54.6	49.7	47.3	42.9	87	86	75-125	10	20	
Zinc	mg/kg	37.6	109	99.5	133	120	87	83	75-125	10	20	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 843042
QC Batch Method: EPA 3050
Analysis Method: EPA 6020
Analysis Description: 6020 MET
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: 3341541
Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/kg	ND	1.0	0.18	04/25/23 09:03	

LABORATORY CONTROL SAMPLE: 3341542

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	100	100	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3341543 3341544

Parameter	Units	60426353002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	5.4	98.6	102	100	103	96	96	75-125	3	20	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 842421 | Analysis Method: EPA 8260C
QC Batch Method: EPA 5035A/5030B | Analysis Description: 8260C MSV 5035A Low Level
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: 3338687 | Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	ND	0.0050	0.00069	04/19/23 15:17	
1,3,5-Trimethylbenzene	mg/kg	ND	0.0050	0.00043	04/19/23 15:17	
Benzene	mg/kg	ND	0.0050	0.00046	04/19/23 15:17	
Ethylbenzene	mg/kg	ND	0.0050	0.00087	04/19/23 15:17	
Toluene	mg/kg	ND	0.020	0.0044	04/19/23 15:17	
Xylene (Total)	mg/kg	ND	0.015	0.0037	04/19/23 15:17	
1,2-Dichlorobenzene-d4 (S)	%	99	80-120		04/19/23 15:17	
4-Bromofluorobenzene (S)	%	102	83-119		04/19/23 15:17	
Toluene-d8 (S)	%	106	80-120		04/19/23 15:17	

LABORATORY CONTROL SAMPLE: 3338688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	1.2	1.3	108	79-121	
1,3,5-Trimethylbenzene	mg/kg	1.2	1.4	108	81-122	
Benzene	mg/kg	1.2	1.3	101	67-126	
Ethylbenzene	mg/kg	1.2	1.3	102	69-127	
Toluene	mg/kg	1.2	1.2	97	80-118	
Xylene (Total)	mg/kg	3.8	3.8	101	69-130	
1,2-Dichlorobenzene-d4 (S)	%			99	80-120	
4-Bromofluorobenzene (S)	%			96	83-119	
Toluene-d8 (S)	%			95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3338689 3338690

Parameter	Units	60426353001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trimethylbenzene	mg/kg	ND	1.6	1.6	1.5	1.6	101	103	10-124	2	68	
1,3,5-Trimethylbenzene	mg/kg	ND	1.6	1.6	1.5	1.5	101	102	10-125	1	65	
Benzene	mg/kg	ND	1.6	1.6	1.4	1.4	92	95	17-134	3	53	
Ethylbenzene	mg/kg	ND	1.6	1.6	1.4	1.5	95	97	10-137	2	60	
Toluene	mg/kg	ND	1.6	1.6	1.3	1.4	89	90	13-131	1	60	
Xylene (Total)	mg/kg	ND	4.6	4.6	4.4	4.4	96	97	10-137	1	58	
1,2-Dichlorobenzene-d4 (S)	%						100	101	80-120			
4-Bromofluorobenzene (S)	%						100	100	83-119			
Toluene-d8 (S)	%						95	97	80-120			

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 842084
QC Batch Method: EPA 3546
Analysis Method: EPA 8015B
Analysis Description: EPA 8015B
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: 3337608 Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
TPH-DRO (C10-C28)	mg/kg	ND	9.9	4.4	04/19/23 10:36	
TPH-RRO (C28-C36)	mg/kg	ND	19.8	4.4	04/19/23 10:36	
n-Tetracosane (S)	%	70	31-152		04/19/23 10:36	
p-Terphenyl (S)	%	73	46-130		04/19/23 10:36	

LABORATORY CONTROL SAMPLE: 3337609

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-DRO (C10-C28)	mg/kg	81.9	63.2	77	74-124	
n-Tetracosane (S)	%			79	31-152	
p-Terphenyl (S)	%			80	46-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3337610 3337611

Parameter	Units	60426353001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TPH-DRO (C10-C28)	mg/kg	15.5	90.8	92.4	58.5	62.7	47	51	30-130	7	35	
n-Tetracosane (S)	%						62	67	31-152			
p-Terphenyl (S)	%						65	67	46-130			

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 842085
QC Batch Method: EPA 3546
Analysis Method: EPA 8270 by SIM
Analysis Description: 8270/3546 MSSV PAH by SIM
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357007

METHOD BLANK: 3337612
Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1-Methylnaphthalene	mg/kg	ND	0.0032	0.0016	04/26/23 11:18	
2-Methylnaphthalene	mg/kg	ND	0.0032	0.0023	04/26/23 11:18	
Acenaphthene	mg/kg	ND	0.0032	0.0020	04/26/23 11:18	
Anthracene	mg/kg	ND	0.0032	0.0018	04/26/23 11:18	
Benzo(a)anthracene	mg/kg	0.0022J	0.0032	0.0018	04/26/23 11:18	
Benzo(a)pyrene	mg/kg	0.0024J	0.0032	0.0013	04/26/23 11:18	
Benzo(b)fluoranthene	mg/kg	0.0024J	0.0032	0.0017	04/26/23 11:18	
Benzo(k)fluoranthene	mg/kg	ND	0.0032	0.0017	04/26/23 11:18	
Chrysene	mg/kg	0.0022J	0.0032	0.0017	04/26/23 11:18	
Dibenz(a,h)anthracene	mg/kg	ND	0.0032	0.0017	04/26/23 11:18	
Fluoranthene	mg/kg	0.0047	0.0032	0.0027	04/26/23 11:18	
Fluorene	mg/kg	ND	0.0032	0.0024	04/26/23 11:18	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.0032	0.0017	04/26/23 11:18	
Naphthalene	mg/kg	ND	0.0032	0.0017	04/26/23 11:18	
Pyrene	mg/kg	0.0039	0.0032	0.0023	04/26/23 11:18	
2-Fluorobiphenyl (S)	%	69	40-120		04/26/23 11:18	
Terphenyl-d14 (S)	%	72	45-130		04/26/23 11:18	

LABORATORY CONTROL SAMPLE: 3337613

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	mg/kg	0.033	0.022	68	55-120	
2-Methylnaphthalene	mg/kg	0.033	0.022	68	55-120	
Acenaphthene	mg/kg	0.033	0.023	68	45-120	
Anthracene	mg/kg	0.033	0.024	72	50-120	
Benzo(a)anthracene	mg/kg	0.033	0.022	65	55-125	
Benzo(a)pyrene	mg/kg	0.033	0.023	68	45-120	
Benzo(b)fluoranthene	mg/kg	0.033	0.018	55	50-125	
Benzo(k)fluoranthene	mg/kg	0.033	0.025	76	55-120	
Chrysene	mg/kg	0.033	0.024	74	55-120	
Dibenz(a,h)anthracene	mg/kg	0.033	0.015	45	40-125	
Fluoranthene	mg/kg	0.033	0.025	74	50-125	
Fluorene	mg/kg	0.033	0.022	66	50-120	
Indeno(1,2,3-cd)pyrene	mg/kg	0.033	0.018	54	44-125	
Naphthalene	mg/kg	0.033	0.022	67	45-120	
Pyrene	mg/kg	0.033	0.026	79	50-125	
2-Fluorobiphenyl (S)	%			65	40-120	
Terphenyl-d14 (S)	%			64	45-130	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

MATRIX SPIKE SAMPLE: 3337614

Parameter	Units	60426353002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	mg/kg	ND	0.038	0.023	61	50-145	
2-Methylnaphthalene	mg/kg	ND	0.038	0.024	63	50-120	
Acenaphthene	mg/kg	ND	0.038	0.022	59	10-150	
Anthracene	mg/kg	ND	0.038	0.025	65	10-160	
Benzo(a)anthracene	mg/kg	ND	0.038	0.023	60	10-160	
Benzo(a)pyrene	mg/kg	ND	0.038	0.021	55	10-150	
Benzo(b)fluoranthene	mg/kg	ND	0.038	0.020	52	10-165	
Benzo(k)fluoranthene	mg/kg	ND	0.038	0.023	61	10-165	
Chrysene	mg/kg	ND	0.038	0.023	61	10-150	
Dibenz(a,h)anthracene	mg/kg	ND	0.038	0.022	58	10-175	
Fluoranthene	mg/kg	ND	0.038	0.026	67	10-180	
Fluorene	mg/kg	ND	0.038	0.024	64	20-145	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.038	0.022	57	10-150	
Naphthalene	mg/kg	ND	0.038	0.023	60	10-165	
Pyrene	mg/kg	ND	0.038	0.025	66	10-180	
2-Fluorobiphenyl (S)	%				57	40-120	
Terphenyl-d14 (S)	%				55	45-130	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 844092
QC Batch Method: EPA 3546
Analysis Method: EPA 8270 by SIM
Analysis Description: 8270/3546 MSSV PAH by SIM
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357004, 60426357005, 60426357006

METHOD BLANK: 3345415
Matrix: Solid
Associated Lab Samples: 60426357004, 60426357005, 60426357006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1-Methylnaphthalene	mg/kg	ND	0.0031	0.0015	05/02/23 09:39	
2-Methylnaphthalene	mg/kg	ND	0.0031	0.0022	05/02/23 09:39	
Acenaphthene	mg/kg	ND	0.0031	0.0019	05/02/23 09:39	
Anthracene	mg/kg	0.0034	0.0031	0.0018	05/02/23 09:39	
Benzo(a)anthracene	mg/kg	0.0082	0.0031	0.0017	05/02/23 09:39	
Benzo(a)pyrene	mg/kg	0.0080	0.0031	0.0013	05/02/23 09:39	
Benzo(b)fluoranthene	mg/kg	0.013	0.0031	0.0017	05/02/23 09:39	
Benzo(k)fluoranthene	mg/kg	0.0047	0.0031	0.0017	05/02/23 09:39	
Chrysene	mg/kg	0.0075	0.0031	0.0017	05/02/23 09:39	
Dibenz(a,h)anthracene	mg/kg	ND	0.0031	0.0017	05/02/23 09:39	
Fluoranthene	mg/kg	0.016	0.0031	0.0026	05/02/23 09:39	
Fluorene	mg/kg	ND	0.0031	0.0024	05/02/23 09:39	
Indeno(1,2,3-cd)pyrene	mg/kg	0.0046	0.0031	0.0017	05/02/23 09:39	
Naphthalene	mg/kg	ND	0.0031	0.0017	05/02/23 09:39	
Pyrene	mg/kg	0.013	0.0031	0.0023	05/02/23 09:39	
2-Fluorobiphenyl (S)	%	83	40-120		05/02/23 09:39	
Terphenyl-d14 (S)	%	78	45-130		05/02/23 09:39	

LABORATORY CONTROL SAMPLE: 3345416

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	mg/kg	0.032	0.027	85	55-120	
2-Methylnaphthalene	mg/kg	0.032	0.027	85	55-120	
Acenaphthene	mg/kg	0.032	0.027	86	45-120	
Anthracene	mg/kg	0.032	0.028	88	50-120	
Benzo(a)anthracene	mg/kg	0.032	0.029	91	55-125	
Benzo(a)pyrene	mg/kg	0.032	0.027	85	45-120	
Benzo(b)fluoranthene	mg/kg	0.032	0.029	90	50-125	
Benzo(k)fluoranthene	mg/kg	0.032	0.030	95	55-120	
Chrysene	mg/kg	0.032	0.029	92	55-120	
Dibenz(a,h)anthracene	mg/kg	0.032	0.027	85	40-125	
Fluoranthene	mg/kg	0.032	0.031	96	50-125	
Fluorene	mg/kg	0.032	0.028	88	50-120	
Indeno(1,2,3-cd)pyrene	mg/kg	0.032	0.028	87	44-125	
Naphthalene	mg/kg	0.032	0.026	83	45-120	
Pyrene	mg/kg	0.032	0.029	91	50-125	
2-Fluorobiphenyl (S)	%			84	40-120	
Terphenyl-d14 (S)	%			86	45-130	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3345417 3345418

Parameter	Units	60426353005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Methylnaphthalene	mg/kg	ND	0.038	0.038	0.027	0.023	71	60	50-145	16	61	
2-Methylnaphthalene	mg/kg	ND	0.038	0.038	0.027	0.023	72	61	50-120	17	61	
Acenaphthene	mg/kg	ND	0.038	0.038	0.028	0.024	73	63	10-150	16	42	
Anthracene	mg/kg	ND	0.038	0.038	0.028	0.024	74	64	10-160	15	54	
Benzo(a)anthracene	mg/kg	ND	0.038	0.038	0.029	0.025	76	65	10-160	16	62	
Benzo(a)pyrene	mg/kg	ND	0.038	0.038	0.027	0.023	70	60	10-150	16	66	
Benzo(b)fluoranthene	mg/kg	ND	0.038	0.038	0.028	0.024	73	64	10-165	14	61	
Benzo(k)fluoranthene	mg/kg	ND	0.038	0.038	0.033	0.024	86	62	10-165	33	53	
Chrysene	mg/kg	ND	0.038	0.038	0.029	0.025	75	65	10-150	16	57	
Dibenz(a,h)anthracene	mg/kg	ND	0.038	0.038	0.027	0.023	70	61	10-175	15	48	
Fluoranthene	mg/kg	ND	0.038	0.038	0.032	0.027	84	71	10-180	17	54	
Fluorene	mg/kg	ND	0.038	0.038	0.030	0.025	78	67	20-145	17	39	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.038	0.038	0.028	0.023	72	61	10-150	18	59	
Naphthalene	mg/kg	ND	0.038	0.038	0.027	0.022	70	59	10-165	18	54	
Pyrene	mg/kg	ND	0.038	0.038	0.029	0.025	76	65	10-180	16	61	
2-Fluorobiphenyl (S)	%						74	63	40-120			
Terphenyl-d14 (S)	%						73	65	45-130			

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 841937
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight/Percent Moisture
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: 3337259
Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Percent Moisture	%	ND	0.50	0.50	04/17/23 16:45	

SAMPLE DUPLICATE: 3337260

Parameter	Units	60426355027 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.4	10.2	2	20	

SAMPLE DUPLICATE: 3337261

Parameter	Units	60426355029 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	10.0	10.1	1	20	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 2045414
QC Batch Method: SM 2540 G
Analysis Method: SM 2540G
Analysis Description: Total Solids 2540 G-2011
Laboratory: Pace National - Mt. Juliet
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: R3916512-1
Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Solids	%	0.00100			04/22/23 17:03	

LABORATORY CONTROL SAMPLE: R3916512-2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Solids	%	50.0	50.0	100	85.0-115	

SAMPLE DUPLICATE: R3916512-3

Parameter	Units	60426357006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Solids	%	94.3	93.9	0.439	10	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 2045352
QC Batch Method: 3060A
Analysis Method: EPA 7199
Analysis Description: Wet Chemistry 7199
Laboratory: Pace National - Mt. Juliet
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006

METHOD BLANK: R3916419-1 Matrix: Solid
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	1.00	0.255	04/24/23 01:20	

LABORATORY CONTROL SAMPLE: R3916419-2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	10.0	10.5	105	80.0-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: R3916419-5 R3916419-6

Parameter	Units	L1606850-05 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	23.7	23.7	17.9	18.5	75.8	78.3	75.0-125	3.23	20	

MATRIX SPIKE SAMPLE: R3916419-7

Parameter	Units	L1606850-05 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	ND	761	693	91.1	75.0-125	

SAMPLE DUPLICATE: R3916419-3

Parameter	Units	L1606425-09 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND	0.00	20	

SAMPLE DUPLICATE: R3916419-8

Parameter	Units	60426357005 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND	0.00	20	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 2045357
QC Batch Method: 3060A
Analysis Method: EPA 7199
Analysis Description: Wet Chemistry 7199
Laboratory: Pace National - Mt. Juliet

Associated Lab Samples: 60426357007

METHOD BLANK: R3917218-1 Matrix: Solid
Associated Lab Samples: 60426357007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	1.00	0.255	04/25/23 14:30	

LABORATORY CONTROL SAMPLE: R3917218-2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	10.0	10.7	107	80.0-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: R3917218-3 R3917218-4

Parameter	Units	60426357007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	21.0	21.0	19.6	22.3	93.4	106	75.0-125	12.8	20	

MATRIX SPIKE SAMPLE: R3917218-5

Parameter	Units	60426357007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	ND	682	649	95.1	75.0-125	

SAMPLE DUPLICATE: R3917218-7

Parameter	Units	L1606925-05 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	2.34	2.10	10.7	20	

SAMPLE DUPLICATE: R3917218-8

Parameter	Units	L1606951-06 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	0.375J	200	20	D8,J

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 2046581
QC Batch Method: 9045C/9045D
Analysis Method: EPA 9045D
Analysis Description: Wet Chemistry 9045D
Laboratory: Pace National - Mt. Juliet
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

LABORATORY CONTROL SAMPLE: R3916113-1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
pH	Std. Units	10.0	9.98	99.8	99.0-101	

SAMPLE DUPLICATE: R3916113-2

Parameter	Units	L1606850-05 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	8.08	8.05	0.372	1	

SAMPLE DUPLICATE: R3916113-3

Parameter	Units	L1607178-01 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.02	7.03	0.142	1	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 2045126
QC Batch Method: EPA 9050
Analysis Method: EPA 9050
Analysis Description: Wet Chemistry 9050AMod
Laboratory: Pace National - Mt. Juliet
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: R3916056-1
Matrix: Solid
Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Specific Conductance @ 25 C	umhos/cm	ND	10.0	10.0	04/21/23 17:08	

LABORATORY CONTROL SAMPLE: R3916056-2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Specific Conductance @ 25 C	umhos/cm	1120	1050	93.5	85.0-115	

SAMPLE DUPLICATE: R3916056-3

Parameter	Units	L1606678-04 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance @ 25 C	umhos/cm	211	208	1.19	20	

SAMPLE DUPLICATE: R3916056-4

Parameter	Units	60426357004 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance @ 25 C	umhos/cm	2700	2760	2.12	20	

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QUALITY CONTROL DATA

Project: MUSF 20
Pace Project No.: 60426357

QC Batch: 2045126
QC Batch Method: 9050A
Analysis Method: EPA 9050
Analysis Description: Wet Chemistry 9050AMod
Laboratory: Pace National - Mt. Juliet
Associated Lab Samples: 60426357001, 60426357002, 60426357003, 60426357004, 60426357005, 60426357006, 60426357007

METHOD BLANK: R3916056-1
Matrix: Solid
Associated Lab Samples:

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Specific Conductance @ 25 C	umhos/cm	ND	10.0	10.0	04/21/23 17:08	

LABORATORY CONTROL SAMPLE: R3916056-2

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Specific Conductance @ 25 C	umhos/cm	1120	1050	93.5	85.0-115	

SAMPLE DUPLICATE: R3916056-3

Parameter	Units	L1606678-04 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance @ 25 C	umhos/cm	211	208	1.19	20	

SAMPLE DUPLICATE: R3916056-4

Parameter	Units	60426357004 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance @ 25 C	umhos/cm	2700	2760	2.12	20	

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QUALIFIERS

Project: MUSF 20
Pace Project No.: 60426357

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.

SAMPLE QUALIFIERS

Sample: 60426357001
- [1] Wet Chemistry by Method 9045D - 8.44 at 19.7C
- [1] Wet Chemistry by Method 9050AMod - at 25C

Sample: 60426357002
- [1] Wet Chemistry by Method 9045D - 8.4 at 19.7C
- [1] Wet Chemistry by Method 9050AMod - at 25C

Sample: 60426357003
- [1] Wet Chemistry by Method 9045D - 8.23 at 19.5C
- [1] Wet Chemistry by Method 9050AMod - at 25C

Sample: 60426357004
- [1] Wet Chemistry by Method 9045D - 7.69 at 19.5C
- [1] Wet Chemistry by Method 9050AMod - at 25C

Sample: 60426357005
- [1] Wet Chemistry by Method 9045D - 7.92 at 19.5C
- [1] Wet Chemistry by Method 9050AMod - at 25C

Sample: 60426357006
- [1] Wet Chemistry by Method 9045D - 7.83 at 19.5C

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QUALIFIERS

Project: MUSF 20
Pace Project No.: 60426357

SAMPLE QUALIFIERS

Sample: 60426357006
[1] Wet Chemistry by Method 9050AMod - at 25C
Sample: 60426357007
[1] Wet Chemistry by Method 9045D - 7.86 at 19.6C
[1] Wet Chemistry by Method 9050AMod - at 25C
Sample: R3916056-1
[1] Wet Chemistry by Method 9050AMod - at 25C
Sample: R3916056-2
[1] Wet Chemistry by Method 9050AMod - at 25C
Sample: R3916056-3
[1] Wet Chemistry by Method 9050AMod - at 25C
Sample: R3916056-4
[1] Wet Chemistry by Method 9050AMod - at 25C
Sample: R3916113-1
[1] Wet Chemistry by Method 9045D - 9.98 at 19.2C
Sample: R3916113-2
[1] Wet Chemistry by Method 9045D - 8.05 at 19.7C
Sample: R3916113-3
[1] Wet Chemistry by Method 9045D - 7.03 at 19.5C
Sample: L1606678-04
[1] Wet Chemistry by Method 9050AMod - at 25C
Sample: L1606850-05
[1] Wet Chemistry by Method 9045D - 8.08 at 19.7C
Sample: L1607178-01
[1] Wet Chemistry by Method 9045D - 7.02 at 19.5C

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
D8	The sample and duplicate results for this parameter are less than 5 times the reporting limit, the RPD may not be statistically valid.
H3	Sample was received or analysis requested beyond the recognized method holding time.
J	Analyte detected below the reporting limit, therefore result is an estimate. This qualifier is also used for all TICs.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MUSF 20
Pace Project No.: 60426357

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60426357001	**SP 1**	EPA 3546	842084	EPA 8015B	842336
60426357002	**SP 1 4'**	EPA 3546	842084	EPA 8015B	842336
60426357003	**SP 2**	EPA 3546	842084	EPA 8015B	842336
60426357004	**SP 3**	EPA 3546	842084	EPA 8015B	842336
60426357005	**SP 4**	EPA 3546	842084	EPA 8015B	842336
60426357006	**SP 5**	EPA 3546	842084	EPA 8015B	842336
60426357007	**SP 6**	EPA 3546	842084	EPA 8015B	842336
60426357001	**SP 1**	EPA 5035A/5030B	842659	EPA 8015B	842790
60426357002	**SP 1 4'**	EPA 5035A/5030B	842659	EPA 8015B	842790
60426357003	**SP 2**	EPA 5035A/5030B	842659	EPA 8015B	842790
60426357004	**SP 3**	EPA 5035A/5030B	842659	EPA 8015B	842790
60426357005	**SP 4**	EPA 5035A/5030B	842659	EPA 8015B	842790
60426357006	**SP 5**	EPA 5035A/5030B	842659	EPA 8015B	842790
60426357007	**SP 6**	EPA 5035A/5030B	842659	EPA 8015B	842790
60426357001	**SP 1**	HWS Boron	2045653	6010B-NE493 Ch 2	2045653
60426357002	**SP 1 4'**	HWS Boron	2045653	6010B-NE493 Ch 2	2045653
60426357003	**SP 2**	HWS Boron	2045653	6010B-NE493 Ch 2	2045653
60426357004	**SP 3**	HWS Boron	2045653	6010B-NE493 Ch 2	2045653
60426357005	**SP 4**	HWS Boron	2045653	6010B-NE493 Ch 2	2045653
60426357006	**SP 5**	HWS Boron	2045653	6010B-NE493 Ch 2	2045653
60426357007	**SP 6**	HWS Boron	2045653	6010B-NE493 Ch 2	2045653
60426357001	**SP 1**	EPA 3050	843041	EPA 6010	843212
60426357002	**SP 1 4'**	EPA 3050	843041	EPA 6010	843212
60426357003	**SP 2**	EPA 3050	843041	EPA 6010	843212
60426357004	**SP 3**	EPA 3050	843041	EPA 6010	843212
60426357005	**SP 4**	EPA 3050	843041	EPA 6010	843212
60426357006	**SP 5**	EPA 3050	843041	EPA 6010	843212
60426357007	**SP 6**	EPA 3050	843041	EPA 6010	843212
60426357001	**SP 1**	EPA 3050	843042	EPA 6020	843215
60426357002	**SP 1 4'**	EPA 3050	843042	EPA 6020	843215
60426357003	**SP 2**	EPA 3050	843042	EPA 6020	843215
60426357004	**SP 3**	EPA 3050	843042	EPA 6020	843215
60426357005	**SP 4**	EPA 3050	843042	EPA 6020	843215
60426357006	**SP 5**	EPA 3050	843042	EPA 6020	843215
60426357007	**SP 6**	EPA 3050	843042	EPA 6020	843215
60426357001	**SP 1**	EPA 3546	842085	EPA 8270 by SIM	843724
60426357002	**SP 1 4'**	EPA 3546	842085	EPA 8270 by SIM	843724
60426357003	**SP 2**	EPA 3546	842085	EPA 8270 by SIM	843724
60426357004	**SP 3**	EPA 3546	844092	EPA 8270 by SIM	844607
60426357005	**SP 4**	EPA 3546	844092	EPA 8270 by SIM	844607
60426357006	**SP 5**	EPA 3546	844092	EPA 8270 by SIM	844607
60426357007	**SP 6**	EPA 3546	842085	EPA 8270 by SIM	843724
60426357001	**SP 1**	EPA 5035A/5030B	842421	EPA 8260C	842464
60426357002	**SP 1 4'**	EPA 5035A/5030B	842421	EPA 8260C	842464
60426357003	**SP 2**	EPA 5035A/5030B	842421	EPA 8260C	842464

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MUSF 20
Pace Project No.: 60426357

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60426357004	**SP 3**	EPA 5035A/5030B	842421	EPA 8260C	842464
60426357005	**SP 4**	EPA 5035A/5030B	842421	EPA 8260C	842464
60426357006	**SP 5**	EPA 5035A/5030B	842421	EPA 8260C	842464
60426357007	**SP 6**	EPA 5035A/5030B	842421	EPA 8260C	842464
60426357001	**SP 1**	ASTM D2974	841937		
60426357002	**SP 1 4'**	ASTM D2974	841937		
60426357003	**SP 2**	ASTM D2974	841937		
60426357004	**SP 3**	ASTM D2974	841937		
60426357005	**SP 4**	ASTM D2974	841937		
60426357006	**SP 5**	ASTM D2974	841937		
60426357007	**SP 6**	ASTM D2974	841937		
60426357001	**SP 1**	SM 2540 G	2045414	SM 2540G	2045414
60426357002	**SP 1 4'**	SM 2540 G	2045414	SM 2540G	2045414
60426357003	**SP 2**	SM 2540 G	2045414	SM 2540G	2045414
60426357004	**SP 3**	SM 2540 G	2045414	SM 2540G	2045414
60426357005	**SP 4**	SM 2540 G	2045414	SM 2540G	2045414
60426357006	**SP 5**	SM 2540 G	2045414	SM 2540G	2045414
60426357007	**SP 6**	SM 2540 G	2045414	SM 2540G	2045414
60426357001	**SP 1**	3060A	2045352	EPA 7199	2045352
60426357002	**SP 1 4'**	3060A	2045352	EPA 7199	2045352
60426357003	**SP 2**	3060A	2045352	EPA 7199	2045352
60426357004	**SP 3**	3060A	2045352	EPA 7199	2045352
60426357005	**SP 4**	3060A	2045352	EPA 7199	2045352
60426357006	**SP 5**	3060A	2045352	EPA 7199	2045352
60426357007	**SP 6**	3060A	2045357	EPA 7199	2045357
60426357001	**SP 1**	9045C/9045D	2046581	EPA 9045D	2046581
60426357002	**SP 1 4'**	9045C/9045D	2046581	EPA 9045D	2046581
60426357003	**SP 2**	9045C/9045D	2046581	EPA 9045D	2046581
60426357004	**SP 3**	9045C/9045D	2046581	EPA 9045D	2046581
60426357005	**SP 4**	9045C/9045D	2046581	EPA 9045D	2046581
60426357006	**SP 5**	9045C/9045D	2046581	EPA 9045D	2046581
60426357007	**SP 6**	9045C/9045D	2046581	EPA 9045D	2046581
60426357001	**SP 1**	9050A	2045126	EPA 9050	2045126
60426357002	**SP 1 4'**	9050A	2045126	EPA 9050	2045126
60426357003	**SP 2**	9050A	2045126	EPA 9050	2045126
60426357004	**SP 3**	9050A	2045126	EPA 9050	2045126
60426357005	**SP 4**	9050A	2045126	EPA 9050	2045126
60426357006	**SP 5**	9050A	2045126	EPA 9050	2045126
60426357007	**SP 6**	9050A	2045126	EPA 9050	2045126
60426357001	**SP 1**	Calc	2045648	Calculated	2045648
60426357002	**SP 1 4'**	Calc	2045648	Calculated	2045648
60426357003	**SP 2**	Calc	2045648	Calculated	2045648
60426357004	**SP 3**	Calc	2045648	Calculated	2045648
60426357005	**SP 4**	Calc	2045648	Calculated	2045648
60426357006	**SP 5**	Calc	2045648	Calculated	2045648

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: MUSF 20
Pace Project No.: 60426357

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60426357007	**SP 6**	Calc	2045648	Calculated	2045648

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Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-LENE-0009	
	Revision: 2	Effective Date: 01

WO# : 60426357

60426357

Client Name: Mull Drilling

Courier: FedEx ☐ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☒ Other ☐

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☐ No ☒ Seals intact: Yes ☐ No ☒

Packing Material: Bubble Wrap ☐ Bubble Bags ☒ Foam ☐ None ☐ Other ☐

Thermometer Used: T-299 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.6 **Corr. Factor** +0.2 **Corrected** 1.8

Date and initials of person examining contents: AL 4/15

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☒No ☐N/A	
Filtered volume received for dissolved tests?	☐Yes ☒No ☐N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: SL	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) **LOT#:**	☐Yes ☐No ☒N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☒No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☒No ☐N/A	
Samples from USDA Regulated Area: State: SL	☐Yes ☒No ☐N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☒No ☐N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Pace Analytical
WWW.PACELABS.COM

CHAIN-OF-CUSTODY / Analytical Request Document

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

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.

Section A — Required Client Information:

Company: Mull Drilling Company
Address: 1700 N Waterfront Pkwy
Wichita, KS 67206
Email: jbeilman@mulldrilling.com
Phone: 316-364-6366 Fax:
Requested Due Date:

Section B — Required Project Information:

Report To: James Beilman
Copy To:
Purchase Order #:
Project Name: ~~[illegible]~~ MUSF 20
Project #: MUSF 20

Section C — Invoice Information:

Attention:
Company Name:
Address:
Pace Quote:
Pace Project Manager: nolie.wood@pacelabs.com,
Pace Profile #: 15035, 2

Regulatory Agency:

State / Location: CO

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other 1 G	Analyses Test Y/N	VOAS/SVOA PAH SIM	8015 DRO/GRO	6010/6020 metals	Paste EC, SAR, pH,	HW Boron, 7199 CrIV	Residual Chlorine (Y/N)	60426357
1	SP 1	SL	G	4/13/23	0	1300			1	✓									✓	✓	✓	✓	✓		
2	SP 1 4'					1310																			
3	SP 2					1315																			
4	SP 3					1325																			
5	SP 4					1330																			
6	SP 5					1340																			
7	SP 6					1350																			
8																									
9																									
10																									
11																									
12																									

Matrix codes: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Send 7199 CrIV,Saturated Paste EC, SAR, pH, and Hot Water Boron to Pace National	[signature]	4/15/23	1031	[signature] Pace	4/15	1031	1.8	Y	Y	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: J. Beilman

SIGNATURE of SAMPLER: [signature]

DATE Signed: 4/13/23

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

J074

Internal Transfer Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples Pre-Logged into eCOC.

State Of Origin: CO
Cert. Needed: ☐ Yes ☐ No

Workorder: 60426357 **Workorder Name:** MUSF 20 **Owner Received Date:** 4/15/2023 **Results Requested By:** 5/2/2023

Report To

Heather Wilson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1407

Subcontract To

Pace National
12065 Lebanon Rd
Mt. Juliet, TN 37122
Phone (615) 758-5858

Requested Analysis

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved						7199 CrIV	Hot water Boron	Saturated Paste EC,SAR,pH									LAB USE ONLY
																							41606853
1	SP 1	PS	4/13/2023 13:00	60426357001	Solid	1						X	X	X									-01
2	SP 1 4'	PS	4/13/2023 13:10	60426357002	Solid	1						X	X	X									-02
3	SP 2	PS	4/13/2023 13:15	60426357003	Solid	1						X	X	X									-03
4	SP 3	PS	4/13/2023 13:25	60426357004	Solid	1						X	X	X									-04
5	SP 4	PS	4/13/2023 13:30	60426357005	Solid	1						X	X	X									-05
6	SP 5	PS	4/13/2023 13:40	60426357006	Solid	1						X	X	X									-06
7	SP 6	PS	4/13/2023 13:50	60426357007	Solid	1						X	X	X									-07

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible]	4/18/23 1700	[illegible]	04/19/23 0905
2				
3				

Comments

Cooler Temperature on Receipt 1.8 °C (NSLVI) **Custody Seal** Y or N **Received on Ice** Y or N **Samples Intact** Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Sample Receipt Checklist

COC Seal Present/Intact: Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
RAD Screen <0.5 mR/hr: Y N

If Applicable
VOA Zero Headspace: Y N
Pres.Correct/Check: Y N

ATTACHMENT B

Field Photos

Mull Unit 20 (MUSF20) Photo Log

Mull Drilling Company Inc.

October 7, 2024

SP1 @ 6’

SP2 @ 8’

SP3 @ 8’

SP5 @ 6’

BG2 @ 4’, 6’ and 8’

BG3 @ 4’, 6’ and 8’

BG4 @ 4’, 6’ and 8’

BG5 @ 4’, 6’ and 8’

Mull Unit 20 (MUSF20) Photo Log

Mull Drilling Company Inc.

February 28, 2024

Title/Sample ID:	SP1 @6’

Title/Sample ID:	BG-01 @4’ and BG-01 @6’

Title/Sample ID:	SP2 @ 4’

Title/Sample ID:	SP3 @ 6’

Title/Sample ID:	SP5 @4’