January 5, 2021

Mr. Blair Rollins
Caerus Oil and Gas LLC
143 Diamond Ave
Parachute, CO 81635

Via Email

RE Caerus C27 – Pit Investigation
COGCC Facility ID 278619
Garfield County, Colorado

Dear Mr. Rollins,

Entrada Consulting Group, Inc. (Entrada) was contracted by Caerus Oil and Gas, LLC (Caerus) to conduct soil boring and sampling activities associated with a historic pit adjacent to and on the C27 well pad. The Site is within Caerus's North Parachute Ranch Area, specifically located in the NENW, of Section 27, Township 5S, Range 95W of the 6th Principal Meridian in Garfield County, Colorado. The following narrative provides Site background information and presents the results of a subsurface investigation conducted by Entrada on October 13th and 14th, 2020.

BACKGROUND

The C27 produced water storage pit was constructed by previous owner Encana Oil and Gas USA (Encana) and was closed in 2014. The following historical information is an excerpt from a 2018 Report of Work Completed submitted by Rule Engineering, LLC (Rule) to the COGCC on 2/15/18.

> *Based on records acquired from the Colorado Oil & Gas Conservation Commission (COGCC) and provided by Caerus, the produced water storage pit at this location was closed in 2014. Per COGCC rules, the closure was documented in a Form 27, and a remediation number was assigned. After removal of the pit liner, soil samples were collected below-liner identifying organic, inorganic, and metal constituents of concern above COGCC allowable concentrations, indicating a possible liner failure. A subsequent site investigation with a hollow-stem auger drilling rig was completed in 2014. The investigation was conducted to determine the vertical and horizontal extent of soil impacts. Vertical bio-vent wells were also installed to augment natural attenuation, monitor subsurface conditions, and support future remediation efforts.*

Additionally, Rule conducted several remediation activities in 2017 including drilling of assessment borings, drilling of additional Bio-vent wells, and Soil Vapor Extraction (SVE). Please see the following COGCC documents for additional information and details regarding this project:

- Form 27: Doc #2147922, REM # 8255
- Form 4: Doc #400818110
- Form 19: Doc #400772403
- Form 19: Doc #400815164
- Rule Report: Doc #401261982

SOIL BORINGS

Caerus contracted Colorado Drilling and Sampling of Montrose, Colorado to advance four soil borings in the historical pit area to identify any remaining impacts and to determine the efficiency of the existing Bio-vent wells. Each boring was drilled within a 4-foot radius of an existing Bio-vent well. The location of these additional borings is shown on **Figure 1**. The soil borings were advanced to depths ranging from 17.0 and 32.0 ft-bgs. The soil borings were advanced with a 4.25-inch solid stem auger driven by a truck-mounted Simco Drill Rig. Soil samples were collected at prescribed depths using split spoon type samplers. Soil samples were characterized for site lithology, soil color, soil texture, relative moisture content, and potential environmental impact (i.e. chemical staining and/or odors). Soil was screened for volatile organic compound head space measurements at select intervals by placing it into a re-sealable bag, allowing the soil to warm and volatilize any organic compounds, and monitoring the headspace in the bag with a photoionization detector equipped with a 10.6 eV lamp. A total of 11 samples were collected for laboratory analysis.

SOIL ANALYSIS

Soil samples were collected in sample containers appropriate for the specified analyses, sealed, labeled, and placed into an ice filled cooler for preservation. Soil samples were submitted to Pace Analytical in Mt. Juliet, TN following chain of custody procedures and analyzed for the following analyses:

- Total Petroleum Hydrocarbons – diesel range organics (TPH-DRO) by U.S. Environmental Protection Agency (EPA) Method 8015;
- TPH-gasoline range organics (GRO) by EPA Method 8015D;
- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) by EPA Method 8260B; and
- Polycyclic Aromatic Hydrocarbons (PAHs) (COGCC Table 910-1) by EPA Method 8270C;
- pH by EPA Method 9045D;
- Specific Conductance by EPA Method 9050A
- Metals (COGCC Table 910) by EPA Methods 6010B and 6020
    - Mercury by EPA Method 7471A
    - Hexavalent chromium by EPA Method 3060A/7196A; and,
    - Trivalent chromium by calculation.
- Sodium adsorption ratio (SAR) by USDA Method H60.

SOIL ANALYTICAL RESULTS

Soil analytical results were reported for the 11 soil samples. Analytical results are summarized in **Table 1** and **Figure 2** and are compared to the COGCC Table 910-1 concentration levels. The exceedances are summarized below:

- pH was elevated in the soil samples collected at SBMID (5', 15', and 20') and SBOTB (10') at levels ranging from 9.07 to 10.0. The COGCC allowable concentration range for pH in soil is between 6 to 9.
- EC was elevated in a soil sample collected at SBMID (5') at a level of 6.04 mmhos/cm. The COGCC allowable concentration level for EC in soil is <4 mmhos/cm or 2X background.
- SAR was elevated in the soil samples collected at SBN02A (15', 20', and 25'), SBMID (20'), and SBOTB (10' and 15') at concentrations ranging from 12.1 to 37.8. The COGCC allowable concentration level for SAR in soil is 12.
- Arsenic was elevated above the COGCC allowable concentration level of 0.39 mg/kg in all soil samples collected. However, only SBMID (20') and SBN02A (25') were elevated above the local background concentration of 20.7 mg/kg. Arsenic levels ranged in the soil samples from 7.99 to 30.4 mg/kg.
- TPH-DRO was elevated in the soil samples collected at SBN02A (15', 20', and 25') and SBOTB (10') at levels ranging from 736 to 1,320 mg/kg. The COGCC allowable concentration level for TPH-DRO in soil is 500 mg/kg. TPH (GRO+DRO) was elevated above the COGCC allowable concentration in all the aforementioned TPH-DRO samples.
- TPH levels from 2014 to 2020 are summarized on **Table 2**.

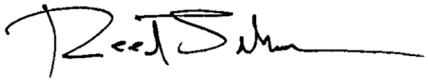
The laboratory analytical report and chain-of-custody documentation are included as an attachment.

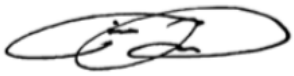
CONCLUSIONS

Based on the soil sample results collected from the soil borings, the impacts associated with the pit at the C27 location are still present at levels above the COGCC allowable concentration. Caerus is in the process of evaluating remediation options for this location. A subsequent Form 27 will be submitted when a remediation approach is selected.

We appreciate the opportunity to assist Caerus Oil and Gas. Please contact me at (970) 270-2986 if you have any questions.

Sincerely,
ENTRADA CONSULTING GROUP, INC



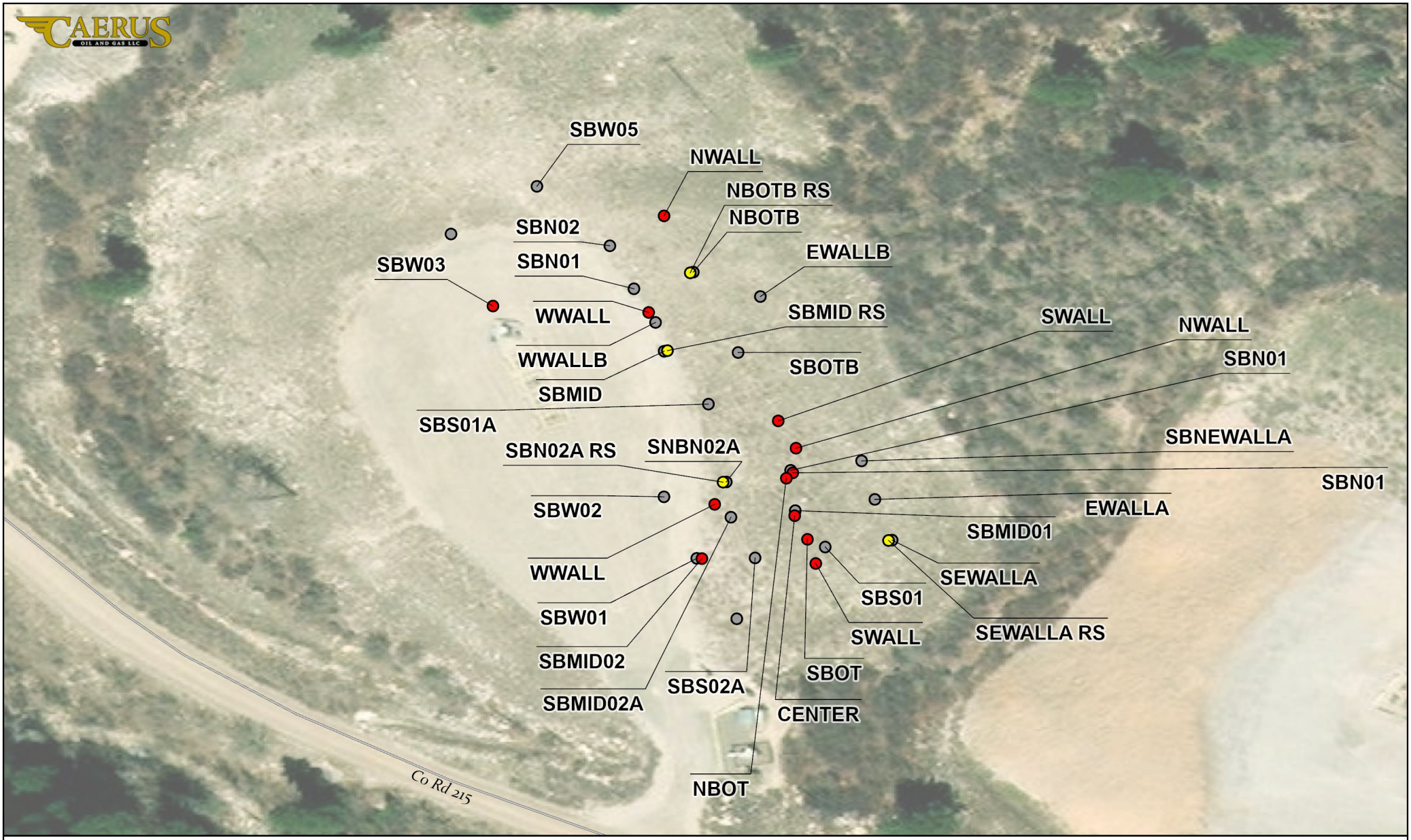


Reed Johnson
Senior Project Geologist

Tim Dobransky
Principal Scientist

Attachments:

Figure 1 – Site Map
Figure 2 – Analytical Results Map
Table 1 – Soil Data Summary
Table 2 – TPH Levels for select borings (2014-2020)
Boring Logs
Laboratory Analytical Reports



LEGEND

Biovent · Historic Soil Sample Location · Resampled Soil Sample Location

0 100 200 Feet

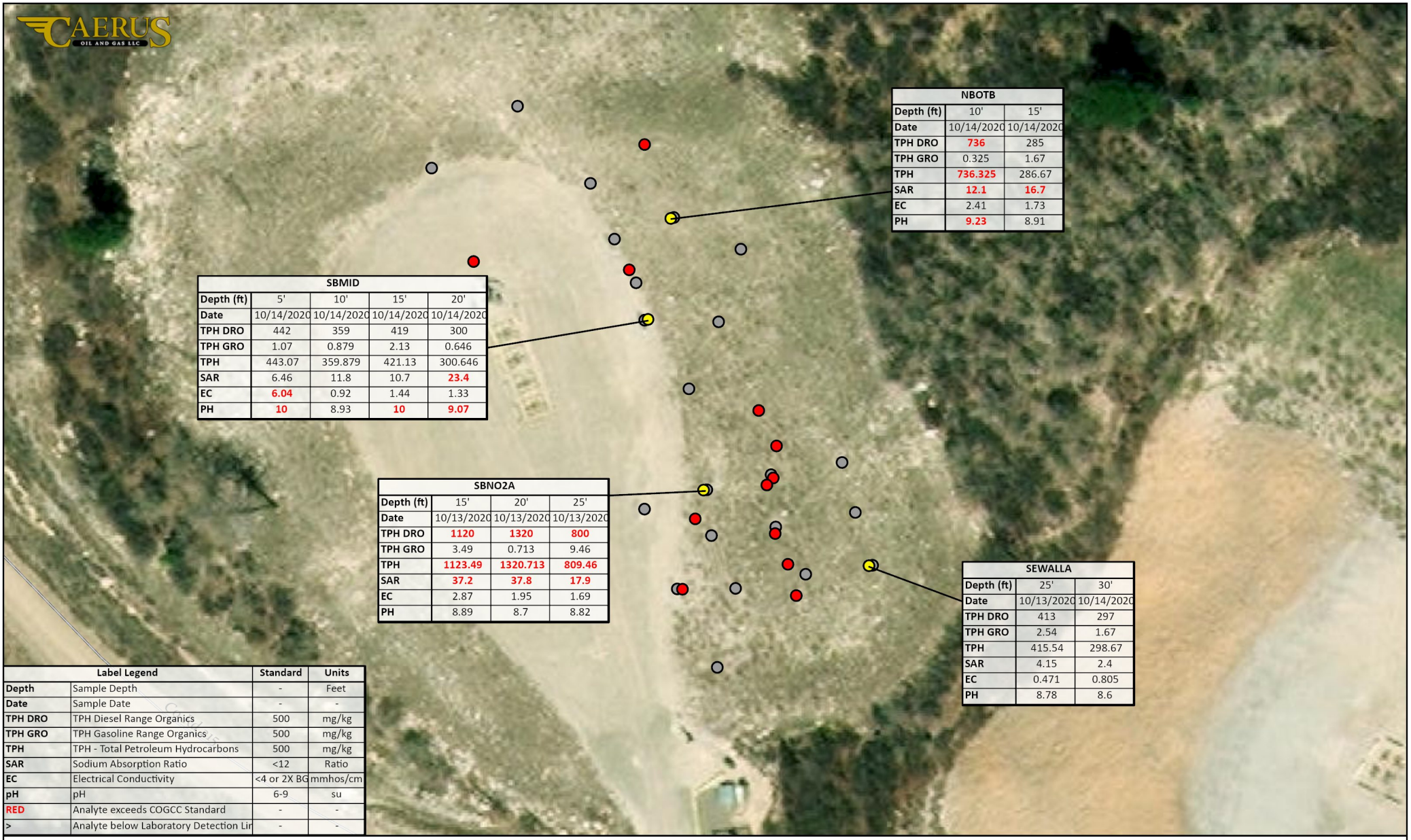
1 inch = 100 ft

Project No:	020-046
Map By:	NDB
Date:	11/6/2020

C27 EAST FORK SITE MAP
CAERUS OIL AND GAS LLC
NENW SEC 27 T5S R95W 6TH PM
GARFIELD COUNTY, COLORADO

ENTRADA CONSULTING GROUP
330 Grand Avenue, Unit C
Grand Junction, CO 81501
970-579-1015

Figure
1



NBOTB		
Depth (ft)	10'	15'
Date	10/14/2020	10/14/2020
TPH DRO	736	285
TPH GRO	0.325	1.67
TPH	736.325	286.67
SAR	12.1	16.7
EC	2.41	1.73
PH	9.23	8.91

SBMID				
Depth (ft)	5'	10'	15'	20'
Date	10/14/2020	10/14/2020	10/14/2020	10/14/2020
TPH DRO	442	359	419	300
TPH GRO	1.07	0.879	2.13	0.646
TPH	443.07	359.879	421.13	300.646
SAR	6.46	11.8	10.7	23.4
EC	6.04	0.92	1.44	1.33
PH	10	8.93	10	9.07

SBNO2A			
Depth (ft)	15'	20'	25'
Date	10/13/2020	10/13/2020	10/13/2020
TPH DRO	1120	1320	800
TPH GRO	3.49	0.713	9.46
TPH	1123.49	1320.713	809.46
SAR	37.2	37.8	17.9
EC	2.87	1.95	1.69
PH	8.89	8.7	8.82

SEWALLA		
Depth (ft)	25'	30'
Date	10/13/2020	10/14/2020
TPH DRO	413	297
TPH GRO	2.54	1.67
TPH	415.54	298.67
SAR	4.15	2.4
EC	0.471	0.805
PH	8.78	8.6

Label Legend		Standard	Units
Depth	Sample Depth	-	Feet
Date	Sample Date	-	-
TPH DRO	TPH Diesel Range Organics	500	mg/kg
TPH GRO	TPH Gasoline Range Organics	500	mg/kg
TPH	TPH - Total Petroleum Hydrocarbons	500	mg/kg
SAR	Sodium Absorption Ratio	<12	Ratio
EC	Electrical Conductivity	<4 or 2X BG	mmhos/cm
pH	pH	6-9	su
RED	Analyte exceeds COGCC Standard	-	-
>	Analyte below Laboratory Detection Lir	-	-

LEGEND

Biovent Soil Sample Location Resampled Soil Sample Location

0 100 200 Feet

1 inch = 100 ft

N W E S

Project No:	020-046
Map By:	NDB
Date:	12/9/2020

C27 EAST FORK ANALYTICAL RESULTS MAP
CAERUS OIL AND GAS LLC
NENW SEC 27 T5S R95W 6TH PM
GARFIELD COUNTY, COLORADO

ENTRADA CONSULTING GROUP
330 Grand Avenue, Unit C
Grand Junction, CO 81501
970-579-1015

Figure
2

TABLE 1 - C27 CUTTINGS ASSESSMENT
SOIL ANALYTICAL RESULTS
CAERUS OIL AND GAS LLC
PICEANCE BASIN, COLORADO

PARAMETER	COGCC CONCENTRATION LEVELS	UNITS	20201013-C27SP-SBN02A (15')	20201013-C27SP-SBN02A (20')	20201013-C27SP-SBN02A (25')	20201013-C27SP-SEWALLA (25')	20201014-C27SP-SEWALLA (30')	20201014-C27NP-SBMID (5')	20201014-C27NP-SBMID (10')	20201014-C27NP-SBMID (15')	20201014-C27NP-SBMID (20')
Sample Date			10/13/2020	10/13/2020	10/13/2020	10/13/2020	10/14/2020	10/14/2020	10/14/2020	10/14/2020	10/14/2020
Sample Matix			Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit
Arsenic	0.39	mg/kg	8.33	15.5	30.4	18.9	17.3	12.9	9.16	11.2	25
Barium	15,000	mg/kg	1660	461	549	937	489	10700	11500	17800	276
Cadmium	70	mg/kg	<0.500	<0.500	0.677	<0.500	<0.500	<0.500	<0.500	<0.500	0.615
Chromium (III)	120,000	mg/kg	26.9	28.2	24.1	26.8	26.1	22.7	19.3	20.4	20.3
Chromium (VI)	23	mg/kg	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00
Copper	3,100	mg/kg	26.1	28.2	42.4	27.2	23.9	20.8	23.5	34.6	39.8
Lead	400	mg/kg	16.1	17	25.3	16.4	14.7	17.4	17.9	21.9	22.7
Mercury	23	mg/kg	0.0519	<0.0400	<0.0400	<0.0400	<0.0400	0.0502	0.0405	0.0465	<0.0400
Nickel	1,600	mg/kg	17.7	21.7	23.5	17.3	18.3	15.7	13.3	13.8	18.9
Selenium	390	mg/kg	<2.00	<2.00	2.59	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00
Silver	390	mg/kg	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Zinc	23,000	mg/kg	61.4	55.4	59.4	47.5	52.7	50.8	42.6	52.7	54.2
EC	4 or 2x background	mmhos/cm	2.87	1.95	1.69	0.471	0.805	6.04	0.92	1.44	1.33
pH	6-9	SU	8.89	8.7	8.82	8.78	8.6	10	8.93	10	9.07
SAR	12	unitless	37.2	37.8	17.9	4.15	2.4	6.46	11.8	10.7	23.4
TPH-DRO			1120	1320	800	413	297	442	359	419	300
TPH-GRO			3.49	0.713	9.46	2.54	1.67	1.07	0.879	2.13	0.646
TPH	500	mg/kg	1123.49	1320.713	809.46	415.54	298.67	443.07	359.879	421.13	300.646
Benzene	0.17	mg/kg	0.00208	<0.00100	0.0273	0.00333	0.001	0.0047	0.0238	0.0216	0.00144
Toluene	85	mg/kg	0.00653	0.0626	1.72	0.292	0.0441	0.135	0.00703	0.106	0.0508
Ethylbenzene	100	mg/kg	0.00383	0.00535	0.172	0.0166	0.003	0.00943	0.00607	0.0108	0.00567
Total Xylenes	175	mg/kg	0.0464	0.155	4.8	0.735	0.109	0.46	0.026	0.338	0.305
Acenaphthene	1,000	mg/kg	0.0304	<0.00600	<0.00600	<0.00600	<0.00600	0.0235	0.0159	0.0317	<0.00600
Anthracene	1,000	mg/kg	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
Benz(a)anthracene	0.22	mg/kg	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
Benzo(b)fluoranthene	0.22	mg/kg	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
Benzo(k)fluoranthene	2.2	mg/kg	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
Benzo(a)pyrene	0.022	mg/kg	<0.00600	<0.00600	0.009	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
Chrysene	22	mg/kg	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	0.00644	0.00937	<0.00600
Dibenzo(a,h)anthracene	0.022	mg/kg	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
Fluoranthene	1,000	mg/kg	0.00703	<0.00600	<0.00600	<0.00600	<0.00600	0.00906	<0.00600	<0.00600	<0.00600
Fluorene	1,000	mg/kg	0.0702	0.038	0.0068	<0.00600	<0.00600	0.0257	0.0262	0.0471	<0.00600
Indeno(1,2,3,c,d)pyrene	0.22	mg/kg	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
Naphthalene	23	mg/kg	0.0783	0.0609	0.0724	<0.0200	<0.0200	0.0915	0.0831	0.141	0.0209
Pyrene	1,000	mg/kg	0.0184	0.00948	0.0318	<0.00600	0.00714	0.037	0.029	0.0362	0.0104

Notes:
< - less than the stated reporting limit
Highlight - indicates result exceeds the COGCC concentration level
COGCC - Colorado Oil and Gas Conservation Commission
EC - electrical conductivity
mg/kg - milligrams per kilogram
mmhos/cm - millimhos per centimeter
NA - not analyzed
ND - non detect
SAR - sodium adsorption ratio
SU - standard unit
TPH-GRO - total petroleum hydrocarbons-gasoline range organics
TPH-DRO - total petroleum hydrocarbons-diesel range organics
TPH - combination of TPH-GRO and TPH-DRO

TABLE 1 - C27 CUTTINGS ASSESSMENT
SOIL ANALYTICAL RESULTS
CAERUS OIL AND GAS LLC
PICEANCE BASIN, COLORADO

PARAMETER	COGCC CONCENTRATION LEVELS	UNITS	20201014-C27NP-NBOTB (10')	20201014-C27NP-NBOTB (15')	NA	NA	NA	NA	NA	NA	NA
Sample Date			10/14/2020	10/14/2020	NA	NA	NA	NA	NA	NA	NA
Sample Matix			Pit	Pit	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.39	mg/kg	7.99	12.2	NA	NA	NA	NA	NA	NA	NA
Barium	15,000	mg/kg	11500	451	NA	NA	NA	NA	NA	NA	NA
Cadmium	70	mg/kg	<0.500	<0.500	NA	NA	NA	NA	NA	NA	NA
Chromium (III)	120,000	mg/kg	18.4	28.9	NA	NA	NA	NA	NA	NA	NA
Chromium (VI)	23	mg/kg	<2.00	<2.00	NA	NA	NA	NA	NA	NA	NA
Copper	3,100	mg/kg	21.1	24.7	NA	NA	NA	NA	NA	NA	NA
Lead	400	mg/kg	19.3	17	NA	NA	NA	NA	NA	NA	NA
Mercury	23	mg/kg	<0.0400	<0.00400	NA	NA	NA	NA	NA	NA	NA
Nickel	1,600	mg/kg	11.8	18.4	NA	NA	NA	NA	NA	NA	NA
Selenium	390	mg/kg	<2.00	<2.00	NA	NA	NA	NA	NA	NA	NA
Silver	390	mg/kg	<1.00	<1.00	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	mg/kg	44.5	55.3	NA	NA	NA	NA	NA	NA	NA
EC	4 or 2x background	mmhos/cm	2.41	1.73	NA	NA	NA	NA	NA	NA	NA
pH	6-9	SU	9.23	8.91	NA	NA	NA	NA	NA	NA	NA
SAR	12	unitless	12.1	16.7	NA	NA	NA	NA	NA	NA	NA
TPH-DRO			736	285	NA	NA	NA	NA	NA	NA	NA
TPH-GRO			0.325	1.67	NA	NA	NA	NA	NA	NA	NA
TPH	500	mg/kg	736.325	286.67	NA	NA	NA	NA	NA	NA	NA
Benzene	0.17	mg/kg	0.00163	<0.00100	NA	NA	NA	NA	NA	NA	NA
Toluene	85	mg/kg	<0.00500	0.0206	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	100	mg/kg	<0.00500	<0.00250	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	175	mg/kg	0.00847	0.0811	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	1,000	mg/kg	<0.00600	<0.00600	NA	NA	NA	NA	NA	NA	NA
Anthracene	1,000	mg/kg	<0.00600	<0.00600	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	0.22	mg/kg	<0.00600	<0.00600	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	0.22	mg/kg	<0.00600	<0.00600	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	2.2	mg/kg	<0.00600	<0.00600	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	0.022	mg/kg	<0.00600	<0.00600	NA	NA	NA	NA	NA	NA	NA
Chrysene	22	mg/kg	0.00913	<0.00600	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	0.022	mg/kg	<0.00600	<0.00600	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	1,000	mg/kg	<0.00600	<0.00600	NA	NA	NA	NA	NA	NA	NA
Fluorene	1,000	mg/kg	0.053	<0.00600	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3,c,d)pyrene	0.22	mg/kg	<0.00600	<0.00600	NA	NA	NA	NA	NA	NA	NA
Naphthalene	23	mg/kg	0.168	<0.0200	NA	NA	NA	NA	NA	NA	NA
Pyrene	1,000	mg/kg	0.0269	0.00878	NA	NA	NA	NA	NA	NA	NA

Notes:
< - less than the stated reporting limit
Highlight - indicates result exceeds the COGCC concentration level
COGCC - Colorado Oil and Gas Conservation Commission
EC - electrical conductivity
mg/kg - milligrams per kilogram
mmhos/cm - millimhos per centimeter
NA - not analyzed
ND - non detect
SAR - sodium adsorption ratio
SU - standard unit
TPH-GRO - total petroleum hydrocarbons-gasoline range organics
TPH-DRO - total petroleum hydrocarbons-diesel range organics
TPH - combination of TPH-GRO and TPH-DRO

Table 2
C27 Pit Investigation
TPH Levels 2014-2020

TPH (DRO+GRO) mg/kg			
Year	**2014**	**2017**	**2020**
NBOTB (10-12')	NS	**889.49**	**736.325**
NBOTB (15-17')	NS	97.404	286.67
SBMID (5-7')	NS	NS	443.07
SBMID (10-12')	**1300**	NS	359.879
SBMID (15-17')	NS	NS	421.13
SBMID (20-22')	NS	NS	300.646
SBNO2A (15-17')	NS	692	**1123.49**
SBNO2A (20-22')	NS	**2542.2**	**1320.713**
SBNO2A (25-27')	NS	ND	**809.46**
SEWALLA (25-27')	NS	**1741**	415.54
SEWALLA (30-32')	NS	29.509	298.67

mg/kg - milligrams per kilogram

NS - not sampled

Over COGCC Table 910-1 concentration levels.

ENTRADA CONSULTING GROUP

Caerus Operating LLC
143 Diamond Ave.
Parachute, CO 81635

C27 Investigation

NBOTB RS

Date Started	: 10/13/20
Detector	: MiniRae PID
Hole Diameter	: 4"
Drilling Method	: Solid Stem Auger
Sampling Method	: Split Spoon
Drilling Company	: CO Drilling and Sampling
Latitude	: 39.589596°
Longitude	: -108.043997°
Project Number	: 020-046
Logged By	: R. Johnson

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Moisture (%)	Fines (%)	Structure	PID (ppm)	Staining	Recovery (in)	Sample	Blow Count
0			0-10: Advance to 10'. Brown gravelly clay.								
5	CL										
10			10-12: Brown CLAY with trace gravel. No odor.	50	80	N	7.1	N	24	10	5-6-2-3
	CL										
15			15-17: Brown SANDY AND GRAVELLY CLAY, no odor.								
	CL			50	50	N	6.6	N	24	15	9-7-10-14

TD at 17'

ENTRADA CONSULTING GROUP

Caerus Operating LLC
143 Diamond Ave.
Parachute, CO 81635

C27 Investigation

SBMID RS

Date Started	: 10/14/20
Detector	: MiniRae PID
Hole Diameter	: 4"
Drilling Method	: Solid Stem Auger
Sampling Method	: Split Spoon
Drilling Company	: CO Drilling and Sampling
Latitude	: 39.589421°
Longitude	: -108.044157°
Project Number	: 020-046
Logged By	: R. Johnson

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Moisture (%)	Fines (%)	Structure	PID (ppm)	Staining	Recovery (in)	Sample	Blow Count
0	CG		0-5: Advance to 5'.								
5	CL		5-7: Dark brown GRAVELLY CLAY. Slight odor, slighly moist.	50	60	N	166	N	24	5	9-8-7-8
10	CL		10-12: Brown GRAVELLY CLAY into black GRAVELLY CLAY. Hydrocarbon odor. Moist.	60	70	N	18.4	Y	12	10	5-4-4-3
15	CL		15-17: Black CLAY, traces of gravel, moist, hydrocarbon odor, poor sample recovery due to rock.	60	80	N	20.1	Y	10	15	50/8
20	CL		20-22: Black CLAY into brown GRAVELLY CLAY into 2" siltstone. No odor.	60	60	L	8.1	Y	18	20	5-7-11-14

TD at 22'

ENTRADA CONSULTING GROUP

Caerus Operating LLC
143 Diamond Ave.
Parachute, CO 81635

C27 Investigation

SBNO2A RS

Date Started	: 10/13/20
Detector	: MiniRae PID
Hole Diameter	: 4"
Drilling Method	: Solid Stem Auger
Sampling Method	: Split Spoon
Drilling Company	: CO Drilling and Sampling
Latitude	: 39.589162°
Longitude	: -108.044039°
Project Number	: 020-046
Logged By	: R. Johnson

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Moisture (%)	Fines (%)	Structure	PID (ppm)	Staining	Recovery (in)	Sample	Blow Count
0	GC		0-15: Advance to 15'.								
15	CL		15-17': Black CLAY with trace gravel into brown-black CLAY with abundant gravel. Hydrocarbon odor. Moist.	60	70	N	5000+	Y	24	15	7-11-9-15
20	CL		20-22: Black-Brown clay with abundant gravel. Moist. Hydrocarbon odor.	60	70	N	3545	Y	18	20	8-11-21-13
25	CL		25-27: Dark brown to brown silty clay with trace gravel. Hydrocarbon odor.	50	80	N	411	Y	24	25	10-24-21

TD at 27'

ENTRADA CONSULTING GROUP

Caerus Operating LLC
143 Diamond Ave.
Parachute, CO 81635

C27 Investigation

SEWALLA RS

Date Started	: 10/13/20
Detector	: MiniRae PID
Hole Diameter	: 4"
Drilling Method	: Solid Stem Auger
Sampling Method	: Split Spoon
Drilling Company	: CO Drilling and Sampling
Latitude	: 39.589023°
Longitude	: -108.043680°
Project Number	: 020-046
Logged By	: R. Johnson

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Moisture (%)	Fines (%)	Structure	PID (ppm)	Staining	Recovery (in)	Sample	Blow Count
0	GC		0-25: Advance to 25'. Slow, rocky drilling. Drilling string stuck at ~24' then later freed. Stopped work at 28' on 10/13. Completed boring and sampling the next day. Brown clayey gravel interpreted from cuttings.								
25	CL		25-26.5: Brown SANDY CLAY, traces of gravel, dry, hydrocarbon odor.	20	70	N	18.0	N	12	25	50
30	CL		30-32: Brown GRAVELLY CLAY, traces of sand, very slightly moist.	30	60	N	398	N	24	30	11-11-16-15
			TD at 32'								

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 23, 2020

Caerus Oil and Gas

Sample Delivery Group:	L1273414
Samples Received:	10/14/2020
Project Number:	
Description:	C27 South Pit

Report To: Blair Rollins
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

20201013-C275P-SBN02A(15') L1273414-01 Solid

Collected by: R. Johnson | Collected date/time: 10/13/20 12:40 | Received date/time: 10/14/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1561069	1	10/20/20 11:54	10/20/20 11:54	EL	Mt. Juliet, TN
Calculated Results	WG1561162	1	10/18/20 06:46	10/20/20 21:16	KPS	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1561333	1	10/19/20 18:00	10/20/20 21:16	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1561828	1	10/20/20 16:31	10/20/20 22:34	WOS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1562692	1	10/21/20 11:19	10/21/20 16:37	MMF	Mt. Juliet, TN
Mercury by Method 7471A	WG1561129	1	10/18/20 13:49	10/19/20 12:03	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561162	1	10/18/20 06:46	10/19/20 20:50	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1561534	5	10/19/20 10:20	10/19/20 18:12	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1562779	1	10/20/20 14:57	10/21/20 14:03	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1562727	1	10/20/20 14:57	10/22/20 06:10	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1562194	10	10/21/20 02:37	10/22/20 01:53	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1562211	1	10/21/20 07:33	10/21/20 20:16	JNJ	Mt. Juliet, TN

20201013-C275P-SBN02A(20') L1273414-02 Solid

Collected by: R. Johnson | Collected date/time: 10/13/20 12:50 | Received date/time: 10/14/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1561069	1	10/20/20 11:56	10/20/20 11:56	EL	Mt. Juliet, TN
Calculated Results	WG1561162	1	10/18/20 06:46	10/20/20 21:16	KPS	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1561333	1	10/19/20 18:00	10/20/20 21:16	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1561828	1	10/20/20 16:31	10/20/20 22:34	WOS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1562692	1	10/21/20 11:19	10/21/20 16:37	MMF	Mt. Juliet, TN
Mercury by Method 7471A	WG1561129	1	10/18/20 13:49	10/19/20 12:05	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561162	1	10/18/20 06:46	10/19/20 20:53	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1561534	5	10/19/20 10:20	10/19/20 18:16	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1562779	1	10/20/20 14:57	10/21/20 14:26	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1563520	1	10/20/20 14:57	10/23/20 02:17	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1562194	40	10/21/20 02:37	10/22/20 01:28	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1562211	1	10/21/20 07:33	10/21/20 21:28	JNJ	Mt. Juliet, TN

20201013-C275P-SBN02A(25') L1273414-03 Solid

Collected by: R. Johnson | Collected date/time: 10/13/20 13:15 | Received date/time: 10/14/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1561069	1	10/20/20 11:59	10/20/20 11:59	EL	Mt. Juliet, TN
Calculated Results	WG1561162	1	10/18/20 06:46	10/20/20 21:17	KPS	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1561333	1	10/19/20 18:00	10/20/20 21:17	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1561828	1	10/20/20 16:31	10/20/20 22:34	WOS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1562692	1	10/21/20 11:19	10/21/20 16:37	MMF	Mt. Juliet, TN
Mercury by Method 7471A	WG1561129	1	10/18/20 13:49	10/19/20 12:08	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561162	1	10/18/20 06:46	10/19/20 21:02	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1561534	5	10/19/20 10:20	10/19/20 18:19	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1562779	1	10/20/20 14:57	10/21/20 14:49	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1563520	1	10/20/20 14:57	10/23/20 02:36	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1562194	40	10/21/20 02:37	10/22/20 01:40	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1562211	1	10/21/20 07:33	10/21/20 19:53	JNJ	Mt. Juliet, TN

20201013-C275P-SELIALLA(25') L1273414-04 Solid

Collected by: R. Johnson
Collected date/time: 10/13/20 15:10
Received date/time: 10/14/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1561069	1	10/20/20 12:02	10/20/20 12:02	EL	Mt. Juliet, TN
Calculated Results	WG1561162	1	10/18/20 06:46	10/20/20 21:19	KPS	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1561333	1	10/19/20 18:00	10/20/20 21:19	KPS	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1561828	1	10/20/20 16:31	10/20/20 22:34	WOS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1562692	1	10/21/20 11:19	10/21/20 16:37	MMF	Mt. Juliet, TN
Mercury by Method 7471A	WG1561129	1	10/18/20 13:49	10/19/20 12:11	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561162	1	10/18/20 06:46	10/19/20 21:04	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1561534	5	10/19/20 10:20	10/19/20 18:30	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1562779	1	10/20/20 14:57	10/21/20 15:12	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1563520	1	10/20/20 14:57	10/23/20 02:55	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1562194	40	10/21/20 02:37	10/22/20 01:15	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1562211	1	10/21/20 07:33	10/21/20 22:11	JNJ	Mt. Juliet, TN

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

Chris Ward
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	37.2		1	10/20/2020 11:54	WG1561069

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	26.9		1.00	1	10/20/2020 21:16	WG1561162

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	10/20/2020 21:16	WG1561333

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.89	T8	1	10/20/2020 22:34	WG1561828

Sample Narrative:

L1273414-01 WG1561828: 8.89 at 21.1C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	2870		10.0	1	10/21/2020 16:37	WG1562692

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0519		0.0400	1	10/19/2020 12:03	WG1561129

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	1660		0.500	1	10/19/2020 20:50	WG1561162
Cadmium	ND		0.500	1	10/19/2020 20:50	WG1561162
Chromium	26.9		1.00	1	10/19/2020 20:50	WG1561162
Copper	26.1		2.00	1	10/19/2020 20:50	WG1561162
Lead	16.1		0.500	1	10/19/2020 20:50	WG1561162
Nickel	17.7		2.00	1	10/19/2020 20:50	WG1561162
Selenium	ND		2.00	1	10/19/2020 20:50	WG1561162
Silver	ND		1.00	1	10/19/2020 20:50	WG1561162
Zinc	61.4		5.00	1	10/19/2020 20:50	WG1561162

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.33		1.00	5	10/19/2020 18:12	WG1561534

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	3.49		0.100	1	10/21/2020 14:03	WG1562779

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	*87.2*		*77.0-120*		*10/21/2020 14:03*	WG1562779

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00208		0.00100	1	10/22/2020 06:10	WG1562727
Toluene	0.00653		0.00500	1	10/22/2020 06:10	WG1562727
Ethylbenzene	0.00383		0.00250	1	10/22/2020 06:10	WG1562727
Total Xylenes	0.0464		0.00650	1	10/22/2020 06:10	WG1562727
(S) Toluene-d8	*107*		*75.0-131*		*10/22/2020 06:10*	WG1562727
(S) 4-Bromofluorobenzene	*100*		*67.0-138*		*10/22/2020 06:10*	WG1562727
(S) 1,2-Dichloroethane-d4	*86.5*		*70.0-130*		*10/22/2020 06:10*	WG1562727

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	1120		40.0	10	10/22/2020 01:53	WG1562194
(S) o-Terphenyl	*0.000*	J2	*18.0-148*		*10/22/2020 01:53*	WG1562194

Sample Narrative:

L1273414-01 WG1562194: Surrogate failure due to matrix interference

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	10/21/2020 20:16	WG1562211
Acenaphthene	0.0304		0.00600	1	10/21/2020 20:16	WG1562211
Acenaphthylene	ND		0.00600	1	10/21/2020 20:16	WG1562211
Benzo(a)anthracene	ND		0.00600	1	10/21/2020 20:16	WG1562211
Benzo(a)pyrene	ND		0.00600	1	10/21/2020 20:16	WG1562211
Benzo(b)fluoranthene	ND		0.00600	1	10/21/2020 20:16	WG1562211
Benzo(g,h,i)perylene	ND		0.00600	1	10/21/2020 20:16	WG1562211
Benzo(k)fluoranthene	ND		0.00600	1	10/21/2020 20:16	WG1562211
Chrysene	ND		0.00600	1	10/21/2020 20:16	WG1562211
Dibenz(a,h)anthracene	ND		0.00600	1	10/21/2020 20:16	WG1562211
Fluoranthene	0.00703		0.00600	1	10/21/2020 20:16	WG1562211
Fluorene	0.0702		0.00600	1	10/21/2020 20:16	WG1562211
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/21/2020 20:16	WG1562211
Naphthalene	0.0783		0.0200	1	10/21/2020 20:16	WG1562211
Phenanthrene	0.0846		0.00600	1	10/21/2020 20:16	WG1562211
Pyrene	0.0184		0.00600	1	10/21/2020 20:16	WG1562211
1-Methylnaphthalene	0.125		0.0200	1	10/21/2020 20:16	WG1562211
2-Methylnaphthalene	0.427		0.0200	1	10/21/2020 20:16	WG1562211
2-Chloronaphthalene	ND		0.0200	1	10/21/2020 20:16	WG1562211
(S) p-Terphenyl-d14	*93.5*		*23.0-120*		*10/21/2020 20:16*	WG1562211
(S) Nitrobenzene-d5	*197*	J1	*14.0-149*		*10/21/2020 20:16*	WG1562211
(S) 2-Fluorobiphenyl	*84.5*		*34.0-125*		*10/21/2020 20:16*	WG1562211

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	37.8		1	10/20/2020 11:56	WG1561069

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	28.2		1.00	1	10/20/2020 21:16	WG1561162

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	10/20/2020 21:16	WG1561333

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.70	T8	1	10/20/2020 22:34	WG1561828

Sample Narrative:

L1273414-02 WG1561828: 8.7 at 21.4C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1950		10.0	1	10/21/2020 16:37	WG1562692

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	10/19/2020 12:05	WG1561129

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	461		0.500	1	10/19/2020 20:53	WG1561162
Cadmium	ND		0.500	1	10/19/2020 20:53	WG1561162
Chromium	28.2		1.00	1	10/19/2020 20:53	WG1561162
Copper	28.2		2.00	1	10/19/2020 20:53	WG1561162
Lead	17.0		0.500	1	10/19/2020 20:53	WG1561162
Nickel	21.7		2.00	1	10/19/2020 20:53	WG1561162
Selenium	ND		2.00	1	10/19/2020 20:53	WG1561162
Silver	ND		1.00	1	10/19/2020 20:53	WG1561162
Zinc	55.4		5.00	1	10/19/2020 20:53	WG1561162

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	15.5		1.00	5	10/19/2020 18:16	WG1561534

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.713		0.100	1	10/21/2020 14:26	WG1562779
(S) a,a,a-Trifluorotoluene(FID)	*73.2*	J2	*77.0-120*		*10/21/2020 14:26*	WG1562779

Sample Narrative:

L1273414-02 WG1562779: Surrogate failure due to matrix interference

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/23/2020 02:17	WG1563520
Toluene	0.0626		0.00500	1	10/23/2020 02:17	WG1563520
Ethylbenzene	0.00535		0.00250	1	10/23/2020 02:17	WG1563520
Total Xylenes	0.155		0.00650	1	10/23/2020 02:17	WG1563520
(S) Toluene-d8	*95.4*		*75.0-131*		*10/23/2020 02:17*	WG1563520
(S) 4-Bromofluorobenzene	*100*		*67.0-138*		*10/23/2020 02:17*	WG1563520
(S) 1,2-Dichloroethane-d4	*93.4*		*70.0-130*		*10/23/2020 02:17*	WG1563520

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	1320		160	40	10/22/2020 01:28	WG1562194
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*10/22/2020 01:28*	WG1562194

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	10/21/2020 21:28	WG1562211
Acenaphthene	ND		0.00600	1	10/21/2020 21:28	WG1562211
Acenaphthylene	ND		0.00600	1	10/21/2020 21:28	WG1562211
Benzo(a)anthracene	ND		0.00600	1	10/21/2020 21:28	WG1562211
Benzo(a)pyrene	ND		0.00600	1	10/21/2020 21:28	WG1562211
Benzo(b)fluoranthene	ND		0.00600	1	10/21/2020 21:28	WG1562211
Benzo(g,h,i)perylene	ND		0.00600	1	10/21/2020 21:28	WG1562211
Benzo(k)fluoranthene	ND		0.00600	1	10/21/2020 21:28	WG1562211
Chrysene	ND		0.00600	1	10/21/2020 21:28	WG1562211
Dibenz(a,h)anthracene	ND		0.00600	1	10/21/2020 21:28	WG1562211
Fluoranthene	ND		0.00600	1	10/21/2020 21:28	WG1562211
Fluorene	0.0380		0.00600	1	10/21/2020 21:28	WG1562211
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/21/2020 21:28	WG1562211
Naphthalene	0.0609		0.0200	1	10/21/2020 21:28	WG1562211
Phenanthrene	0.0406		0.00600	1	10/21/2020 21:28	WG1562211
Pyrene	0.00948		0.00600	1	10/21/2020 21:28	WG1562211
1-Methylnaphthalene	0.0973		0.0200	1	10/21/2020 21:28	WG1562211
2-Methylnaphthalene	0.253		0.0200	1	10/21/2020 21:28	WG1562211
2-Chloronaphthalene	ND		0.0200	1	10/21/2020 21:28	WG1562211
(S) p-Terphenyl-d14	*103*		*23.0-120*		*10/21/2020 21:28*	WG1562211
(S) Nitrobenzene-d5	*80.9*		*14.0-149*		*10/21/2020 21:28*	WG1562211
(S) 2-Fluorobiphenyl	*55.1*		*34.0-125*		*10/21/2020 21:28*	WG1562211

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	17.9		1	10/20/2020 11:59	WG1561069

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	24.1		1.00	1	10/20/2020 21:17	WG1561162

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	10/20/2020 21:17	WG1561333

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.82	T8	1	10/20/2020 22:34	WG1561828

Sample Narrative:

L1273414-03 WG1561828: 8.82 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1690		10.0	1	10/21/2020 16:37	WG1562692

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	10/19/2020 12:08	WG1561129

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	549		0.500	1	10/19/2020 21:02	WG1561162
Cadmium	0.677		0.500	1	10/19/2020 21:02	WG1561162
Chromium	24.1		1.00	1	10/19/2020 21:02	WG1561162
Copper	42.4		2.00	1	10/19/2020 21:02	WG1561162
Lead	25.3		0.500	1	10/19/2020 21:02	WG1561162
Nickel	23.5		2.00	1	10/19/2020 21:02	WG1561162
Selenium	2.59		2.00	1	10/19/2020 21:02	WG1561162
Silver	ND		1.00	1	10/19/2020 21:02	WG1561162
Zinc	59.4		5.00	1	10/19/2020 21:02	WG1561162

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	30.4		1.00	5	10/19/2020 18:19	WG1561534

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	9.46		0.100	1	10/21/2020 14:49	WG1562779
(S) a,a,a-Trifluorotoluene(FID)	*64.4*	J2	*77.0-120*		*10/21/2020 14:49*	WG1562779

Sample Narrative:

L1273414-03 WG1562779: Surrogate failure due to matrix interference

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0273		0.00100	1	10/23/2020 02:36	WG1563520
Toluene	1.72		0.00500	1	10/23/2020 02:36	WG1563520
Ethylbenzene	0.172		0.00250	1	10/23/2020 02:36	WG1563520
Total Xylenes	4.80		0.00650	1	10/23/2020 02:36	WG1563520
(S) Toluene-d8	*133*	J1	*75.0-131*		*10/23/2020 02:36*	WG1563520
(S) 4-Bromofluorobenzene	*113*		*67.0-138*		*10/23/2020 02:36*	WG1563520
(S) 1,2-Dichloroethane-d4	*92.3*		*70.0-130*		*10/23/2020 02:36*	WG1563520

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	800		160	40	10/22/2020 01:40	WG1562194
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*10/22/2020 01:40*	WG1562194

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	10/21/2020 19:53	WG1562211
Acenaphthene	ND		0.00600	1	10/21/2020 19:53	WG1562211
Acenaphthylene	0.0145		0.00600	1	10/21/2020 19:53	WG1562211
Benzo(a)anthracene	ND		0.00600	1	10/21/2020 19:53	WG1562211
Benzo(a)pyrene	0.00900		0.00600	1	10/21/2020 19:53	WG1562211
Benzo(b)fluoranthene	ND		0.00600	1	10/21/2020 19:53	WG1562211
Benzo(g,h,i)perylene	ND		0.00600	1	10/21/2020 19:53	WG1562211
Benzo(k)fluoranthene	ND		0.00600	1	10/21/2020 19:53	WG1562211
Chrysene	ND		0.00600	1	10/21/2020 19:53	WG1562211
Dibenz(a,h)anthracene	ND		0.00600	1	10/21/2020 19:53	WG1562211
Fluoranthene	ND		0.00600	1	10/21/2020 19:53	WG1562211
Fluorene	0.00680		0.00600	1	10/21/2020 19:53	WG1562211
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/21/2020 19:53	WG1562211
Naphthalene	0.0724		0.0200	1	10/21/2020 19:53	WG1562211
Phenanthrene	0.0176		0.00600	1	10/21/2020 19:53	WG1562211
Pyrene	0.0318		0.00600	1	10/21/2020 19:53	WG1562211
1-Methylnaphthalene	0.0535		0.0200	1	10/21/2020 19:53	WG1562211
2-Methylnaphthalene	0.318		0.0200	1	10/21/2020 19:53	WG1562211
2-Chloronaphthalene	ND		0.0200	1	10/21/2020 19:53	WG1562211
(S) p-Terphenyl-d14	*86.4*		*23.0-120*		*10/21/2020 19:53*	WG1562211
(S) Nitrobenzene-d5	*98.8*		*14.0-149*		*10/21/2020 19:53*	WG1562211
(S) 2-Fluorobiphenyl	*81.5*		*34.0-125*		*10/21/2020 19:53*	WG1562211

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.15		1	10/20/2020 12:02	WG1561069

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	26.8		1.00	1	10/20/2020 21:19	WG1561162

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	10/20/2020 21:19	WG1561333

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.78	T8	1	10/20/2020 22:34	WG1561828

Sample Narrative:

L1273414-04 WG1561828: 8.78 at 21C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	471		10.0	1	10/21/2020 16:37	WG1562692

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	10/19/2020 12:11	WG1561129

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	937		0.500	1	10/19/2020 21:04	WG1561162
Cadmium	ND		0.500	1	10/19/2020 21:04	WG1561162
Chromium	26.8		1.00	1	10/19/2020 21:04	WG1561162
Copper	27.2		2.00	1	10/19/2020 21:04	WG1561162
Lead	16.4		0.500	1	10/19/2020 21:04	WG1561162
Nickel	17.3		2.00	1	10/19/2020 21:04	WG1561162
Selenium	ND		2.00	1	10/19/2020 21:04	WG1561162
Silver	ND		1.00	1	10/19/2020 21:04	WG1561162
Zinc	47.5		5.00	1	10/19/2020 21:04	WG1561162

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	18.9		1.00	5	10/19/2020 18:30	WG1561534

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	2.54		0.100	1	10/21/2020 15:12	WG1562779
(S) a,a,a-Trifluorotoluene(FID)	*71.7*	J2	*77.0-120*		*10/21/2020 15:12*	WG1562779

Sample Narrative:

L1273414-04 WG1562779: Surrogate failure due to matrix interference

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00333	J3 J5	0.00100	1	10/23/2020 02:55	WG1563520
Toluene	0.292	J5	0.00500	1	10/23/2020 02:55	WG1563520
Ethylbenzene	0.0166	J3 J5	0.00250	1	10/23/2020 02:55	WG1563520
Total Xylenes	0.735	J5	0.00650	1	10/23/2020 02:55	WG1563520
(S) Toluene-d8	*133*	J1	*75.0-131*		*10/23/2020 02:55*	WG1563520
(S) 4-Bromofluorobenzene	*79.3*		*67.0-138*		*10/23/2020 02:55*	WG1563520
(S) 1,2-Dichloroethane-d4	*90.8*		*70.0-130*		*10/23/2020 02:55*	WG1563520

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	413		160	40	10/22/2020 01:15	WG1562194
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*10/22/2020 01:15*	WG1562194

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	10/21/2020 22:11	WG1562211
Acenaphthene	ND		0.00600	1	10/21/2020 22:11	WG1562211
Acenaphthylene	ND		0.00600	1	10/21/2020 22:11	WG1562211
Benzo(a)anthracene	ND		0.00600	1	10/21/2020 22:11	WG1562211
Benzo(a)pyrene	ND		0.00600	1	10/21/2020 22:11	WG1562211
Benzo(b)fluoranthene	ND		0.00600	1	10/21/2020 22:11	WG1562211
Benzo(g,h,i)perylene	ND		0.00600	1	10/21/2020 22:11	WG1562211
Benzo(k)fluoranthene	ND		0.00600	1	10/21/2020 22:11	WG1562211
Chrysene	ND		0.00600	1	10/21/2020 22:11	WG1562211
Dibenz(a,h)anthracene	ND		0.00600	1	10/21/2020 22:11	WG1562211
Fluoranthene	ND		0.00600	1	10/21/2020 22:11	WG1562211
Fluorene	ND		0.00600	1	10/21/2020 22:11	WG1562211
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/21/2020 22:11	WG1562211
Naphthalene	ND		0.0200	1	10/21/2020 22:11	WG1562211
Phenanthrene	0.00959		0.00600	1	10/21/2020 22:11	WG1562211
Pyrene	ND		0.00600	1	10/21/2020 22:11	WG1562211
1-Methylnaphthalene	0.0205		0.0200	1	10/21/2020 22:11	WG1562211
2-Methylnaphthalene	0.150		0.0200	1	10/21/2020 22:11	WG1562211
2-Chloronaphthalene	ND		0.0200	1	10/21/2020 22:11	WG1562211
(S) p-Terphenyl-d14	*92.9*		*23.0-120*		*10/21/2020 22:11*	WG1562211
(S) Nitrobenzene-d5	*74.8*		*14.0-149*		*10/21/2020 22:11*	WG1562211
(S) 2-Fluorobiphenyl	*64.9*		*34.0-125*		*10/21/2020 22:11*	WG1562211

Method Blank (MB)

(MB) R3583658-1 10/20/20 21:07

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

L1273336-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1273336-03 10/20/20 21:09 • (DUP) R3583658-3 10/20/20 21:09

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

L1273414-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1273414-03 10/20/20 21:17 • (DUP) R3583658-8 10/20/20 21:18

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

Laboratory Control Sample (LCS)

(LCS) R3583658-2 10/20/20 21:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chromium,Hexavalent	24.0	22.3	92.8	80.0-120	

L1273411-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273411-01 10/20/20 21:14 • (MS) R3583658-4 10/20/20 21:14 • (MSD) R3583658-5 10/20/20 21:14

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chromium,Hexavalent	20.0	ND	18.6	18.9	93.0	94.6	1	75.0-125			1.65	20

L1273411-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1273411-01 10/20/20 21:14 • (MS) R3583658-6 10/20/20 21:15

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chromium,Hexavalent	653	ND	597	91.5	50	75.0-125	

L1273352-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1273352-01 10/20/20 22:34 • (DUP) R3583659-2 10/20/20 22:34

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.50	8.50	1	0.000		1

Sample Narrative:

OS: 8.5 at 21.9C

DUP: 8.5 at 21.6C

L1273411-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1273411-02 10/20/20 22:34 • (DUP) R3583659-3 10/20/20 22:34

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.76	8.79	1	0.342		1

Sample Narrative:

OS: 8.76 at 22.1C

DUP: 8.79 at 21.3C

Laboratory Control Sample (LCS)

(LCS) R3583659-1 10/20/20 22:34

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

Sample Narrative:

LCS: 10.02 at 21C

Method Blank (MB)

(MB) R3584033-1 10/21/20 16:37

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

L1273411-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1273411-01 10/21/20 16:37 • (DUP) R3584033-3 10/21/20 16:37

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	214	211	1	1.27		20

L1273792-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1273792-05 10/21/20 16:37 • (DUP) R3584033-4 10/21/20 16:37

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	2410	2420	1	0.331		20

Laboratory Control Sample (LCS)

(LCS) R3584033-2 10/21/20 16:37

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	326	324	99.4	85.0-115	

Method Blank (MB)

(MB) R3583106-1 10/19/20 11:22

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.0180	0.0400

Laboratory Control Sample (LCS)

(LCS) R3583106-2 10/19/20 11:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.500	0.516	103	80.0-120	

L1273411-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273411-01 10/19/20 11:32 • (MS) R3583106-3 10/19/20 11:35 • (MSD) R3583106-4 10/19/20 11:37

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.500	ND	0.482	0.461	96.5	92.3	1	75.0-125			4.48	20

Method Blank (MB)

(MB) R3583281-1 10/19/20 20:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		0.240	0.500
Cadmium	U		0.0810	0.500
Chromium	U		0.250	1.00
Copper	U		0.506	2.00
Lead	U		0.208	0.500
Nickel	U		0.490	2.00
Selenium	U		0.617	2.00
Silver	U		0.228	1.00
Zinc	U		0.939	5.00

Laboratory Control Sample (LCS)

(LCS) R3583281-2 10/19/20 20:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	101	101	80.0-120	
Cadmium	100	96.8	96.8	80.0-120	
Chromium	100	97.2	97.2	80.0-120	
Copper	100	96.2	96.2	80.0-120	
Lead	100	96.2	96.2	80.0-120	
Nickel	100	98.5	98.5	80.0-120	
Selenium	100	96.7	96.7	80.0-120	
Silver	20.0	17.6	88.1	80.0-120	
Zinc	100	96.9	96.9	80.0-120	

L1274820-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1274820-01 10/19/20 20:35 • (MS) R3583281-5 10/19/20 20:42 • (MSD) R3583281-6 10/19/20 20:45

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	53.1	154	153	101	99.9	1	75.0-125			0.723	20
Cadmium	100	ND	100	96.0	100	95.7	1	75.0-125			4.42	20
Chromium	100	8.91	109	104	100	95.5	1	75.0-125			4.31	20
Copper	100	6.79	109	106	102	99.3	1	75.0-125			2.85	20
Lead	100	13.8	116	113	102	99.2	1	75.0-125			2.30	20
Nickel	100	4.30	109	105	105	101	1	75.0-125			3.76	20
Selenium	100	ND	99.3	95.4	99.3	95.4	1	75.0-125			3.98	20
Silver	20.0	ND	18.7	18.0	93.6	89.8	1	75.0-125			4.09	20
Zinc	100	87.5	181	187	93.8	99.4	1	75.0-125			3.04	20

Method Blank (MB)

(MB) R3583210-1 10/19/20 17:47

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

Laboratory Control Sample (LCS)

(LCS) R3583210-2 10/19/20 17:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	103	103	80.0-120	

L1273954-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273954-01 10/19/20 17:54 • (MS) R3583210-5 10/19/20 18:05 • (MSD) R3583210-6 10/19/20 18:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	20.0	2.05	96.0	96.8	94.0	94.8	5	75.0-125			0.809	20

Method Blank (MB)

(MB) R3584432-1 10/21/20 11:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0566	J	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*100*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3584432-2 10/21/20 12:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.36	116	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*106*	*77.0-120*	

L1274696-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1274696-06 10/21/20 20:38 • (MS) R3584432-3 10/21/20 21:01 • (MSD) R3584432-4 10/21/20 21:24

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	158	ND	98.7	100	67.6	68.5	26.5	10.0-151			1.31	28
(S) a,a,a-Trifluorotoluene(FID)					*104*	*103*		*77.0-120*				

Method Blank (MB)

(MB) R3584445-2 10/21/20 23:23

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*109*			*75.0-131*
(S) 4-Bromofluorobenzene	*93.1*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*84.4*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3584445-1 10/21/20 22:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.133	106	70.0-123	
Ethylbenzene	0.125	0.113	90.4	74.0-126	
Toluene	0.125	0.122	97.6	75.0-121	
Xylenes, Total	0.375	0.351	93.6	72.0-127	
(S) Toluene-d8			*104*	*75.0-131*	
(S) 4-Bromofluorobenzene			*98.1*	*67.0-138*	
(S) 1,2-Dichloroethane-d4			*90.9*	*70.0-130*	

L1273409-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273409-02 10/22/20 05:50 • (MS) R3584445-3 10/22/20 06:30 • (MSD) R3584445-4 10/22/20 06:51

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	1.00	0.0272	0.902	1.02	87.5	99.3	8	10.0-149			12.3	37
Ethylbenzene	1.00	0.520	1.34	1.40	82.0	88.0	8	10.0-160			4.38	38
Toluene	1.00	ND	0.842	0.954	81.4	92.6	8	10.0-156			12.5	38
Xylenes, Total	3.00	8.46	11.0	11.2	84.7	91.3	8	10.0-160			1.80	38
(S) Toluene-d8					*102*	*105*		*75.0-131*				
(S) 4-Bromofluorobenzene					*109*	*103*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*90.0*	*86.9*		*70.0-130*				

Method Blank (MB)

(MB) R3584903-2 10/22/20 23:44

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*127*			*75.0-131*
(S) 4-Bromofluorobenzene	*78.7*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*92.2*			*70.0-130*

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

(LCS) R3584903-1 10/22/20 22:28 • (LCSD) R3584903-3 10/23/20 00:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.112	0.116	89.6	92.8	70.0-123			3.51	20
Ethylbenzene	0.125	0.120	0.132	96.0	106	74.0-126			9.52	20
Toluene	0.125	0.113	0.116	90.4	92.8	75.0-121			2.62	20
Xylenes, Total	0.375	0.336	0.390	89.6	104	72.0-127			14.9	20
(S) Toluene-d8				*105*	*106*	*75.0-131*				
(S) 4-Bromofluorobenzene				*101*	*87.3*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*97.4*	*96.5*	*70.0-130*				

L1273414-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273414-04 10/23/20 02:55 • (MS) R3584903-4 10/23/20 07:03 • (MSD) R3584903-5 10/23/20 07:22

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.00333	0.230	0.136	181	106	1	10.0-149	J5	J3	51.4	37
Ethylbenzene	0.125	0.0166	0.308	0.161	233	116	1	10.0-160	J5	J3	62.7	38
Toluene	0.125	0.292	1.09	1.33	638	830	1	10.0-156	J5	J5	19.8	38
Xylenes, Total	0.375	0.735	2.88	2.19	572	388	1	10.0-160	J5	J5	27.2	38
(S) Toluene-d8					*126*	*168*		*75.0-131*		J1		
(S) 4-Bromofluorobenzene					*95.6*	*101*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*95.4*	*86.4*		*70.0-130*				

Method Blank (MB)

(MB) R3583919-1 10/21/20 10:37

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) High Fraction	U		0.769	4.00
(S) o-Terphenyl	*71.3*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3583919-2 10/21/20 10:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) High Fraction	50.0	36.2	72.4	50.0-150	
(S) o-Terphenyl			*75.8*	*18.0-148*	

L1273336-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273336-02 10/22/20 00:24 • (MS) R3583919-3 10/22/20 00:37 • (MSD) R3583919-4 10/22/20 00:49

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) High Fraction	49.7	26.0	36.4	45.3	20.9	38.8	1	50.0-150	J6	J3 J6	21.8	20
(S) o-Terphenyl					*48.8*	*56.0*		*18.0-148*				

Method Blank (MB)

(MB) R3584214-2 10/21/20 13:36

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*94.4*			*14.0-149*
(S) 2-Fluorobiphenyl	*79.1*			*34.0-125*
(S) p-Terphenyl-d14	*97.6*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3584214-1 10/21/20 13:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0542	67.8	50.0-126	
Acenaphthene	0.0800	0.0576	72.0	50.0-120	
Acenaphthylene	0.0800	0.0595	74.4	50.0-120	
Benzo(a)anthracene	0.0800	0.0608	76.0	45.0-120	
Benzo(a)pyrene	0.0800	0.0459	57.4	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0575	71.9	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0561	70.1	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0641	80.1	49.0-125	
Chrysene	0.0800	0.0609	76.1	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0589	73.6	47.0-125	
Fluoranthene	0.0800	0.0591	73.9	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3584214-1 10/21/20 13:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0592	74.0	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0538	67.3	46.0-125	
Naphthalene	0.0800	0.0592	74.0	50.0-120	
Phenanthrene	0.0800	0.0565	70.6	47.0-120	
Pyrene	0.0800	0.0607	75.9	43.0-123	
1-Methylnaphthalene	0.0800	0.0588	73.5	51.0-121	
2-Methylnaphthalene	0.0800	0.0559	69.9	50.0-120	
2-Chloronaphthalene	0.0800	0.0565	70.6	50.0-120	
(S) Nitrobenzene-d5			*110*	*14.0-149*	
(S) 2-Fluorobiphenyl			*86.2*	*34.0-125*	
(S) p-Terphenyl-d14			*100*	*23.0-120*	

L1273414-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273414-04 10/21/20 22:11 • (MS) R3584214-3 10/21/20 22:32 • (MSD) R3584214-4 10/21/20 22:54

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0784	ND	0.0574	0.0569	73.2	72.9	1	10.0-145			0.875	30
Acenaphthene	0.0784	ND	0.0567	0.0562	72.3	72.1	1	14.0-127			0.886	27
Acenaphthylene	0.0784	ND	0.0669	0.0652	85.3	83.6	1	21.0-124			2.57	25
Benzo(a)anthracene	0.0784	ND	0.0734	0.0706	93.6	90.5	1	10.0-139			3.89	30
Benzo(a)pyrene	0.0784	ND	0.0614	0.0631	78.3	80.9	1	10.0-141			2.73	31
Benzo(b)fluoranthene	0.0784	ND	0.0558	0.0583	71.2	74.7	1	10.0-140			4.38	36
Benzo(g,h,i)perylene	0.0784	ND	0.0218	0.0183	27.8	23.5	1	10.0-140			17.5	33
Benzo(k)fluoranthene	0.0784	ND	0.0547	0.0567	69.8	72.7	1	10.0-137			3.59	31
Chrysene	0.0784	ND	0.0643	0.0580	82.0	74.4	1	10.0-145			10.3	30
Dibenz(a,h)anthracene	0.0784	ND	0.0301	0.0259	38.4	33.2	1	10.0-132			15.0	31
Fluoranthene	0.0784	ND	0.0584	0.0574	74.5	73.6	1	10.0-153			1.73	33
Fluorene	0.0784	ND	0.0630	0.0624	80.4	80.0	1	11.0-130			0.957	29
Indeno(1,2,3-cd)pyrene	0.0784	ND	0.0334	0.0303	42.6	38.8	1	10.0-137			9.73	32
Naphthalene	0.0784	ND	0.0831	0.0920	94.1	106	1	10.0-135			10.2	27
Phenanthrene	0.0784	0.00959	0.0595	0.0605	63.7	65.3	1	10.0-144			1.67	31
Pyrene	0.0784	ND	0.0707	0.0695	90.2	89.1	1	10.0-148			1.71	35
1-Methylnaphthalene	0.0784	0.0205	0.0827	0.0888	79.3	87.6	1	10.0-142			7.11	28
2-Methylnaphthalene	0.0784	0.150	0.200	0.227	63.8	98.7	1	10.0-137			12.6	28
2-Chloronaphthalene	0.0784	ND	0.0532	0.0520	67.9	66.7	1	29.0-120			2.28	24
(S) Nitrobenzene-d5					*80.5*	*77.6*		*14.0-149*				
(S) 2-Fluorobiphenyl					*67.1*	*68.3*		*34.0-125*				
(S) p-Terphenyl-d14					*92.9*	*95.6*		*23.0-120*				

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
T8	Sample(s) received past/too close to holding time expiration.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

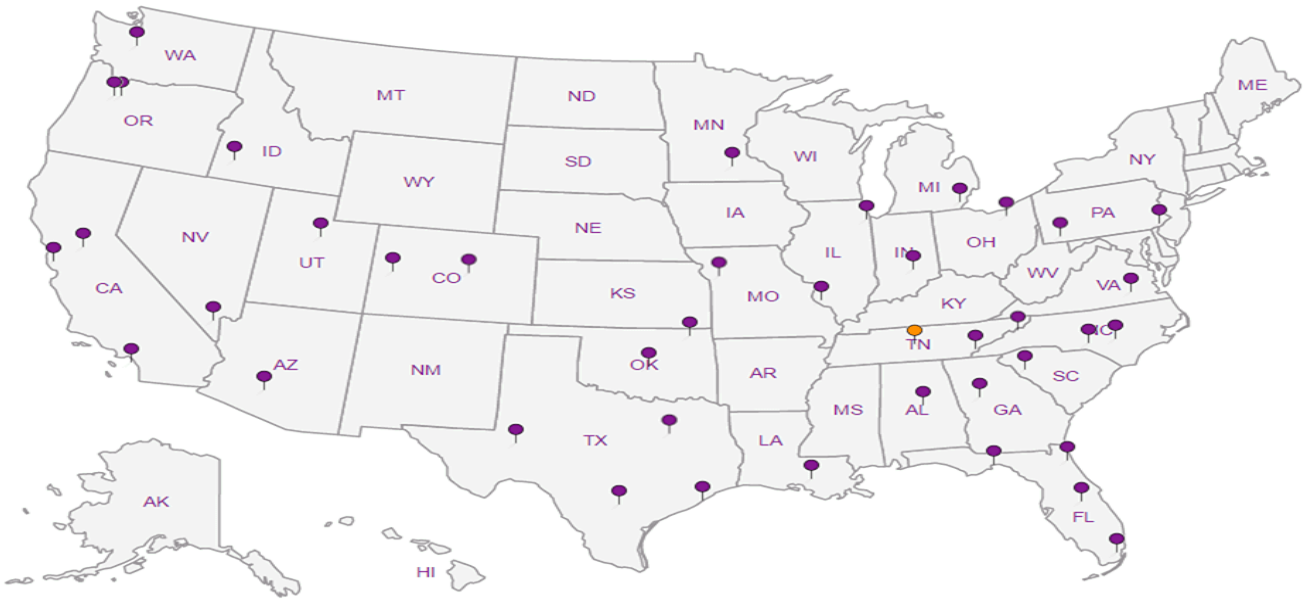
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Caerus Oil and Gas
143 Diamond Avenue
Parachute, CO 81635

Billing Information: **Same as left**

Pres Chk

Report to: **Blair Rollins**

Email To: **brollins@caerusoilandgas.com**

Project Description: C27 South Pit

City/State Collected: **CO**

Phone: **(970) 640-6919**
Fax:

Client Project #

Lab Project #

Collected by (print): R. Johnson

Site/Facility ID #

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Immediately
Packed on Ice N ___ Y X

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH (DRO and GRO)	BTEX	Table 910-1 metals in soil	Table 910-1 PAHs	EC, SAR, pH	Remarks	Sample # (lab only)
20201013-C27SP-SBN02A(15')	Grab	SS	15'	10/13/20	1240	2	X	X	X	X	X		-01
20201013-C27SP-SBN02A(20')	"	"	20'	"	1250	2	X	X	X	X	X		02
20201013-C27SP-SBN02A(25')	"	"	25'	"	1315	2	X	X	X	X	X		03
20201013-C27SP-SELIALLA (25')	"	"	25'	"	1510	2	X	X	X	X	X		04

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L1273414
J116

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 1676 2550 6199

Sample Receipt Checklist
COC Seal Present/Intact: DNP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N
RAD SCREEN: <0.5 mR/hr

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	10/13/20	1645		
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:
	10/13/20	1700		3.8-13.7 DG CK 5
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:
	/		Dawn	10/14/20 9:00

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

December 10, 2020

Revised Report

Caerus Oil and Gas

Sample Delivery Group:	L1273792
Samples Received:	10/15/2020
Project Number:	
Description:	C27 North Pit

Report To: Blair Rollins
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

TABLE OF CONTENTS

20201014-C27NP-SBMID(5') L1273792-01 Solid

Collected by: R. Johnson | Collected date/time: 10/14/20 10:35 | Received date/time: 10/15/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1561069	1	10/20/20 12:30	10/20/20 12:30	EL	Mt. Juliet, TN
Calculated Results	WG1561163	1	10/18/20 16:18	10/22/20 18:09	KEG	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1561334	1	10/21/20 20:20	10/22/20 18:09	KEG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1562685	1	10/21/20 09:10	10/21/20 12:29	KLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1562692	1	10/21/20 11:19	10/21/20 16:37	MMF	Mt. Juliet, TN
Mercury by Method 7471A	WG1561139	1	10/19/20 10:57	10/19/20 19:40	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561163	1	10/18/20 16:18	10/20/20 00:16	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561163	5	10/18/20 16:18	10/20/20 02:44	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1561534	5	10/19/20 10:20	10/19/20 18:34	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1563017	1	10/20/20 21:52	10/21/20 21:17	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1564334	1	10/20/20 21:52	10/23/20 19:48	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1562963	10	10/22/20 06:44	10/23/20 12:22	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1562551	1	10/21/20 18:16	10/22/20 10:13	JNJ	Mt. Juliet, TN

20201014-C27NP-SBMID(10') L1273792-02 Solid

Collected by: R. Johnson | Collected date/time: 10/14/20 10:50 | Received date/time: 10/15/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1561069	1	10/20/20 12:32	10/20/20 12:32	EL	Mt. Juliet, TN
Calculated Results	WG1561163	1	10/18/20 16:18	10/22/20 18:13	KEG	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1561334	1	10/21/20 20:20	10/22/20 18:13	KEG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1562685	1	10/21/20 09:10	10/21/20 12:29	KLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1562692	1	10/21/20 11:19	10/21/20 16:37	MMF	Mt. Juliet, TN
Mercury by Method 7471A	WG1561139	1	10/19/20 10:57	10/19/20 19:43	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561163	1	10/18/20 16:18	10/20/20 00:19	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561163	5	10/18/20 16:18	10/20/20 02:46	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1561534	5	10/19/20 10:20	10/19/20 18:37	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1563017	1	10/20/20 21:52	10/21/20 21:38	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1564334	1	10/20/20 21:52	10/23/20 20:07	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1562963	10	10/22/20 06:44	10/25/20 01:00	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1562551	1	10/21/20 18:16	10/22/20 10:36	JNJ	Mt. Juliet, TN

20201014-C27NP-SBMID(15') L1273792-03 Solid

Collected by: R. Johnson | Collected date/time: 10/14/20 11:15 | Received date/time: 10/15/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1561069	1	10/20/20 12:35	10/20/20 12:35	EL	Mt. Juliet, TN
Calculated Results	WG1561163	1	10/18/20 16:18	10/22/20 18:14	KEG	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1561334	1	10/21/20 20:20	10/22/20 18:14	KEG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1562685	1	10/21/20 09:10	10/21/20 12:29	KLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1562692	1	10/21/20 11:19	10/21/20 16:37	MMF	Mt. Juliet, TN
Mercury by Method 7471A	WG1561139	1	10/19/20 10:57	10/19/20 19:45	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561163	1	10/18/20 16:18	10/20/20 00:27	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561163	5	10/18/20 16:18	10/20/20 02:49	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1561534	5	10/19/20 10:20	10/19/20 18:41	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1563017	1	10/20/20 21:52	10/21/20 21:58	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1564334	1	10/20/20 21:52	10/23/20 20:26	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1562963	10	10/22/20 06:44	10/23/20 12:36	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1562551	1	10/21/20 18:16	10/22/20 10:59	JNJ	Mt. Juliet, TN

20201014-C27NP-SBMID(20') L1273792-04 Solid

Collected by: R. Johnson | Collected date/time: 10/14/20 11:35 | Received date/time: 10/15/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1561069	1	10/20/20 12:38	10/20/20 12:38	EL	Mt. Juliet, TN
Calculated Results	WG1561163	1	10/18/20 16:18	10/22/20 18:15	KEG	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1561334	1	10/21/20 20:20	10/22/20 18:15	KEG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1562685	1	10/21/20 09:10	10/21/20 12:29	KLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1562692	1	10/21/20 11:19	10/21/20 16:37	MMF	Mt. Juliet, TN
Mercury by Method 7471A	WG1561139	1	10/19/20 10:57	10/19/20 19:48	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561163	1	10/18/20 16:18	10/20/20 00:30	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1561534	5	10/19/20 10:20	10/19/20 18:44	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1563017	1	10/20/20 21:52	10/21/20 22:19	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1564334	1	10/20/20 21:52	10/23/20 20:44	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1562963	20	10/22/20 06:44	10/23/20 12:49	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1562551	1	10/21/20 18:16	10/22/20 11:22	JNJ	Mt. Juliet, TN

20201014-C27NP-NBOTB(10') L1273792-05 Solid

Collected by: R. Johnson | Collected date/time: 10/14/20 12:20 | Received date/time: 10/15/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1561069	1	10/20/20 12:46	10/20/20 12:46	EL	Mt. Juliet, TN
Calculated Results	WG1561163	1	10/18/20 16:18	10/22/20 18:17	KEG	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1561334	1	10/21/20 20:20	10/22/20 18:17	KEG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1562685	1	10/21/20 09:10	10/21/20 12:29	KLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1562692	1	10/21/20 11:19	10/21/20 16:37	MMF	Mt. Juliet, TN
Mercury by Method 7471A	WG1561139	1	10/19/20 10:57	10/19/20 19:50	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561163	1	10/18/20 16:18	10/19/20 23:58	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561163	5	10/18/20 16:18	10/20/20 02:41	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1561534	5	10/19/20 10:20	10/19/20 18:48	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1563094	1	10/20/20 21:52	10/22/20 06:37	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1563772	1	10/20/20 21:52	10/22/20 22:19	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1562963	10	10/22/20 06:44	10/23/20 13:03	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1562551	1	10/21/20 18:16	10/22/20 11:45	JNJ	Mt. Juliet, TN

20201014-C27NP-NBOTB(15') L1273792-06 Solid

Collected by: R. Johnson | Collected date/time: 10/14/20 12:35 | Received date/time: 10/15/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1561070	1	10/21/20 12:30	10/21/20 12:30	EL	Mt. Juliet, TN
Calculated Results	WG1561163	1	10/18/20 16:18	10/22/20 18:18	KEG	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1561334	1	10/21/20 20:20	10/22/20 18:18	KEG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1563390	1	10/22/20 09:26	10/22/20 12:58	KLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1563225	1	10/22/20 10:58	10/22/20 13:02	MMF	Mt. Juliet, TN
Mercury by Method 7471A	WG1561139	1	10/19/20 10:57	10/19/20 19:53	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561163	1	10/18/20 16:18	10/20/20 00:33	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1561534	5	10/19/20 10:20	10/19/20 18:51	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1563094	1	10/20/20 21:52	10/22/20 07:00	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1563772	1	10/20/20 21:52	10/22/20 22:39	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1562963	40	10/22/20 06:44	10/23/20 13:16	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1562551	1	10/21/20 18:16	10/22/20 12:08	JNJ	Mt. Juliet, TN

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

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

Chris Ward
Project Manager

Report Revision History

Level II Report - Version 1: 10/27/20 10:08

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	6.46		1	10/20/2020 12:30	WG1561069

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	22.7		1.00	1	10/22/2020 18:09	WG1561163

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND	J6 O1	2.00	1	10/22/2020 18:09	WG1561334

Sample Narrative:

L1273792-01 WG1561334: sample is a reducer

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	10.0	T8	1	10/21/2020 12:29	WG1562685

Sample Narrative:

L1273792-01 WG1562685: 10.01 at 21.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	6040		10.0	1	10/21/2020 16:37	WG1562692

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0502		0.0400	1	10/19/2020 19:40	WG1561139

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	10700		2.50	5	10/20/2020 02:44	WG1561163
Cadmium	ND		0.500	1	10/20/2020 00:16	WG1561163
Chromium	22.7		1.00	1	10/20/2020 00:16	WG1561163
Copper	20.8		2.00	1	10/20/2020 00:16	WG1561163
Lead	17.4		0.500	1	10/20/2020 00:16	WG1561163
Nickel	15.7		2.00	1	10/20/2020 00:16	WG1561163
Selenium	ND		2.00	1	10/20/2020 00:16	WG1561163
Silver	ND		1.00	1	10/20/2020 00:16	WG1561163
Zinc	50.8		5.00	1	10/20/2020 00:16	WG1561163

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	12.9		1.00	5	10/19/2020 18:34	WG1561534

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	1.07		0.100	1	10/21/2020 21:17	WG1563017
(S) a,a,a-Trifluorotoluene(FID)	*87.9*		*77.0-120*		*10/21/2020 21:17*	WG1563017

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00470		0.00100	1	10/23/2020 19:48	WG1564334
Toluene	0.135		0.00500	1	10/23/2020 19:48	WG1564334
Ethylbenzene	0.00943		0.00250	1	10/23/2020 19:48	WG1564334
Total Xylenes	0.460		0.00650	1	10/23/2020 19:48	WG1564334
(S) Toluene-d8	*110*		*75.0-131*		*10/23/2020 19:48*	WG1564334
(S) 4-Bromofluorobenzene	*105*		*67.0-138*		*10/23/2020 19:48*	WG1564334
(S) 1,2-Dichloroethane-d4	*113*		*70.0-130*		*10/23/2020 19:48*	WG1564334

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	442		40.0	10	10/23/2020 12:22	WG1562963
(S) o-Terphenyl	*80.3*		*18.0-148*		*10/23/2020 12:22*	WG1562963

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	10/22/2020 10:13	WG1562551
Acenaphthene	0.0235		0.00600	1	10/22/2020 10:13	WG1562551
Acenaphthylene	ND		0.00600	1	10/22/2020 10:13	WG1562551
Benzo(a)anthracene	ND		0.00600	1	10/22/2020 10:13	WG1562551
Benzo(a)pyrene	ND		0.00600	1	10/22/2020 10:13	WG1562551
Benzo(b)fluoranthene	ND		0.00600	1	10/22/2020 10:13	WG1562551
Benzo(g,h,i)perylene	ND		0.00600	1	10/22/2020 10:13	WG1562551
Benzo(k)fluoranthene	ND		0.00600	1	10/22/2020 10:13	WG1562551
Chrysene	ND		0.00600	1	10/22/2020 10:13	WG1562551
Dibenz(a,h)anthracene	ND		0.00600	1	10/22/2020 10:13	WG1562551
Fluoranthene	0.00906		0.00600	1	10/22/2020 10:13	WG1562551
Fluorene	0.0257		0.00600	1	10/22/2020 10:13	WG1562551
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/22/2020 10:13	WG1562551
Naphthalene	0.0915		0.0200	1	10/22/2020 10:13	WG1562551
Phenanthrene	0.149		0.00600	1	10/22/2020 10:13	WG1562551
Pyrene	0.0370		0.00600	1	10/22/2020 10:13	WG1562551
1-Methylnaphthalene	0.119		0.0200	1	10/22/2020 10:13	WG1562551
2-Methylnaphthalene	0.264		0.0200	1	10/22/2020 10:13	WG1562551
2-Chloronaphthalene	ND		0.0200	1	10/22/2020 10:13	WG1562551
(S) p-Terphenyl-d14	*93.9*		*23.0-120*		*10/22/2020 10:13*	WG1562551
(S) Nitrobenzene-d5	*85.0*		*14.0-149*		*10/22/2020 10:13*	WG1562551
(S) 2-Fluorobiphenyl	*86.7*		*34.0-125*		*10/22/2020 10:13*	WG1562551

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	11.8		1	10/20/2020 12:32	WG1561069

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	19.3		1.00	1	10/22/2020 18:13	WG1561163

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	10/22/2020 18:13	WG1561334

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.93	T8	1	10/21/2020 12:29	WG1562685

Sample Narrative:
L1273792-02 WG1562685: 8.93 at 21.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	920		10.0	1	10/21/2020 16:37	WG1562692

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0405		0.0400	1	10/19/2020 19:43	WG1561139

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	11500		2.50	5	10/20/2020 02:46	WG1561163
Cadmium	ND		0.500	1	10/20/2020 00:19	WG1561163
Chromium	19.3		1.00	1	10/20/2020 00:19	WG1561163
Copper	23.5		2.00	1	10/20/2020 00:19	WG1561163
Lead	17.9		0.500	1	10/20/2020 00:19	WG1561163
Nickel	13.3		2.00	1	10/20/2020 00:19	WG1561163
Selenium	ND		2.00	1	10/20/2020 00:19	WG1561163
Silver	ND		1.00	1	10/20/2020 00:19	WG1561163
Zinc	42.6		5.00	1	10/20/2020 00:19	WG1561163

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.16		1.00	5	10/19/2020 18:37	WG1561534

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.879		0.100	1	10/21/2020 21:38	WG1563017

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	*90.1*		*77.0-120*		*10/21/2020 21:38*	WG1563017

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0238		0.00100	1	10/23/2020 20:07	WG1564334
Toluene	0.00703		0.00500	1	10/23/2020 20:07	WG1564334
Ethylbenzene	0.00607		0.00250	1	10/23/2020 20:07	WG1564334
Total Xylenes	0.0260		0.00650	1	10/23/2020 20:07	WG1564334
(S) Toluene-d8	*111*		*75.0-131*		*10/23/2020 20:07*	WG1564334
(S) 4-Bromofluorobenzene	*108*		*67.0-138*		*10/23/2020 20:07*	WG1564334
(S) 1,2-Dichloroethane-d4	*96.9*		*70.0-130*		*10/23/2020 20:07*	WG1564334

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	359		40.0	10	10/25/2020 01:00	WG1562963
(S) o-Terphenyl	*92.9*		*18.0-148*		*10/25/2020 01:00*	WG1562963

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	10/22/2020 10:36	WG1562551
Acenaphthene	0.0159		0.00600	1	10/22/2020 10:36	WG1562551
Acenaphthylene	ND		0.00600	1	10/22/2020 10:36	WG1562551
Benzo(a)anthracene	ND		0.00600	1	10/22/2020 10:36	WG1562551
Benzo(a)pyrene	ND		0.00600	1	10/22/2020 10:36	WG1562551
Benzo(b)fluoranthene	ND		0.00600	1	10/22/2020 10:36	WG1562551
Benzo(g,h,i)perylene	ND		0.00600	1	10/22/2020 10:36	WG1562551
Benzo(k)fluoranthene	ND		0.00600	1	10/22/2020 10:36	WG1562551
Chrysene	0.00644		0.00600	1	10/22/2020 10:36	WG1562551
Dibenz(a,h)anthracene	ND		0.00600	1	10/22/2020 10:36	WG1562551
Fluoranthene	ND		0.00600	1	10/22/2020 10:36	WG1562551
Fluorene	0.0262		0.00600	1	10/22/2020 10:36	WG1562551
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/22/2020 10:36	WG1562551
Naphthalene	0.0831		0.0200	1	10/22/2020 10:36	WG1562551
Phenanthrene	0.129		0.00600	1	10/22/2020 10:36	WG1562551
Pyrene	0.0290		0.00600	1	10/22/2020 10:36	WG1562551
1-Methylnaphthalene	0.100		0.0200	1	10/22/2020 10:36	WG1562551
2-Methylnaphthalene	0.232		0.0200	1	10/22/2020 10:36	WG1562551
2-Chloronaphthalene	ND		0.0200	1	10/22/2020 10:36	WG1562551
(S) p-Terphenyl-d14	*77.6*		*23.0-120*		*10/22/2020 10:36*	WG1562551
(S) Nitrobenzene-d5	*70.2*		*14.0-149*		*10/22/2020 10:36*	WG1562551
(S) 2-Fluorobiphenyl	*82.8*		*34.0-125*		*10/22/2020 10:36*	WG1562551

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	10.7		1	10/20/2020 12:35	WG1561069

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	20.4		1.00	1	10/22/2020 18:14	WG1561163

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	10/22/2020 18:14	WG1561334

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	10.0	T8	1	10/21/2020 12:29	WG1562685

Sample Narrative:

L1273792-03 WG1562685: 10.02 at 21.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1440		10.0	1	10/21/2020 16:37	WG1562692

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0465		0.0400	1	10/19/2020 19:45	WG1561139

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	17800		2.50	5	10/20/2020 02:49	WG1561163
Cadmium	ND		0.500	1	10/20/2020 00:27	WG1561163
Chromium	20.4		1.00	1	10/20/2020 00:27	WG1561163
Copper	34.6		2.00	1	10/20/2020 00:27	WG1561163
Lead	21.9		0.500	1	10/20/2020 00:27	WG1561163
Nickel	13.8		2.00	1	10/20/2020 00:27	WG1561163
Selenium	ND		2.00	1	10/20/2020 00:27	WG1561163
Silver	ND		1.00	1	10/20/2020 00:27	WG1561163
Zinc	52.7		5.00	1	10/20/2020 00:27	WG1561163

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	11.2		1.00	5	10/19/2020 18:41	WG1561534

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	2.13		0.100	1	10/21/2020 21:58	WG1563017

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	*96.4*		*77.0-120*		*10/21/2020 21:58*	WG1563017

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0216		0.00100	1	10/23/2020 20:26	WG1564334
Toluene	0.106		0.00500	1	10/23/2020 20:26	WG1564334
Ethylbenzene	0.0108		0.00250	1	10/23/2020 20:26	WG1564334
Total Xylenes	0.338		0.00650	1	10/23/2020 20:26	WG1564334
(S) Toluene-d8	*107*		*75.0-131*		*10/23/2020 20:26*	WG1564334
(S) 4-Bromofluorobenzene	*107*		*67.0-138*		*10/23/2020 20:26*	WG1564334
(S) 1,2-Dichloroethane-d4	*120*		*70.0-130*		*10/23/2020 20:26*	WG1564334

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	419		40.0	10	10/23/2020 12:36	WG1562963
(S) o-Terphenyl	*103*		*18.0-148*		*10/23/2020 12:36*	WG1562963

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	10/22/2020 10:59	WG1562551
Acenaphthene	0.0317		0.00600	1	10/22/2020 10:59	WG1562551
Acenaphthylene	ND		0.00600	1	10/22/2020 10:59	WG1562551
Benzo(a)anthracene	ND		0.00600	1	10/22/2020 10:59	WG1562551
Benzo(a)pyrene	ND		0.00600	1	10/22/2020 10:59	WG1562551
Benzo(b)fluoranthene	ND		0.00600	1	10/22/2020 10:59	WG1562551
Benzo(g,h,i)perylene	ND		0.00600	1	10/22/2020 10:59	WG1562551
Benzo(k)fluoranthene	ND		0.00600	1	10/22/2020 10:59	WG1562551
Chrysene	0.00937		0.00600	1	10/22/2020 10:59	WG1562551
Dibenz(a,h)anthracene	ND		0.00600	1	10/22/2020 10:59	WG1562551
Fluoranthene	ND		0.00600	1	10/22/2020 10:59	WG1562551
Fluorene	0.0471		0.00600	1	10/22/2020 10:59	WG1562551
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/22/2020 10:59	WG1562551
Naphthalene	0.141		0.0200	1	10/22/2020 10:59	WG1562551
Phenanthrene	0.170		0.00600	1	10/22/2020 10:59	WG1562551
Pyrene	0.0362		0.00600	1	10/22/2020 10:59	WG1562551
1-Methylnaphthalene	0.163		0.0200	1	10/22/2020 10:59	WG1562551
2-Methylnaphthalene	0.364		0.0200	1	10/22/2020 10:59	WG1562551
2-Chloronaphthalene	ND		0.0200	1	10/22/2020 10:59	WG1562551
(S) p-Terphenyl-d14	*79.2*		*23.0-120*		*10/22/2020 10:59*	WG1562551
(S) Nitrobenzene-d5	*75.8*		*14.0-149*		*10/22/2020 10:59*	WG1562551
(S) 2-Fluorobiphenyl	*88.7*		*34.0-125*		*10/22/2020 10:59*	WG1562551

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	23.4		1	10/20/2020 12:38	WG1561069

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	20.3		1.00	1	10/22/2020 18:15	WG1561163

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	10/22/2020 18:15	WG1561334

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.07	T8	1	10/21/2020 12:29	WG1562685

Sample Narrative:

L1273792-04 WG1562685: 9.07 at 22.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1330		10.0	1	10/21/2020 16:37	WG1562692

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	10/19/2020 19:48	WG1561139

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	276		0.500	1	10/20/2020 00:30	WG1561163
Cadmium	0.615		0.500	1	10/20/2020 00:30	WG1561163
Chromium	20.3		1.00	1	10/20/2020 00:30	WG1561163
Copper	39.8		2.00	1	10/20/2020 00:30	WG1561163
Lead	22.7		0.500	1	10/20/2020 00:30	WG1561163
Nickel	18.9		2.00	1	10/20/2020 00:30	WG1561163
Selenium	ND		2.00	1	10/20/2020 00:30	WG1561163
Silver	ND		1.00	1	10/20/2020 00:30	WG1561163
Zinc	54.2		5.00	1	10/20/2020 00:30	WG1561163

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	25.0		1.00	5	10/19/2020 18:44	WG1561534

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.646		0.100	1	10/21/2020 22:19	WG1563017

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	*88.4*		*77.0-120*		*10/21/2020 22:19*	WG1563017

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00144		0.00100	1	10/23/2020 20:44	WG1564334
Toluene	0.0508		0.00500	1	10/23/2020 20:44	WG1564334
Ethylbenzene	0.00567		0.00250	1	10/23/2020 20:44	WG1564334
Total Xylenes	0.305		0.00650	1	10/23/2020 20:44	WG1564334
(S) Toluene-d8	*112*		*75.0-131*		*10/23/2020 20:44*	WG1564334
(S) 4-Bromofluorobenzene	*107*		*67.0-138*		*10/23/2020 20:44*	WG1564334
(S) 1,2-Dichloroethane-d4	*102*		*70.0-130*		*10/23/2020 20:44*	WG1564334

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	300		80.0	20	10/23/2020 12:49	WG1562963
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*10/23/2020 12:49*	WG1562963

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	10/22/2020 11:22	WG1562551
Acenaphthene	ND		0.00600	1	10/22/2020 11:22	WG1562551
Acenaphthylene	ND		0.00600	1	10/22/2020 11:22	WG1562551
Benzo(a)anthracene	ND		0.00600	1	10/22/2020 11:22	WG1562551
Benzo(a)pyrene	ND		0.00600	1	10/22/2020 11:22	WG1562551
Benzo(b)fluoranthene	ND		0.00600	1	10/22/2020 11:22	WG1562551
Benzo(g,h,i)perylene	ND		0.00600	1	10/22/2020 11:22	WG1562551
Benzo(k)fluoranthene	ND		0.00600	1	10/22/2020 11:22	WG1562551
Chrysene	ND		0.00600	1	10/22/2020 11:22	WG1562551
Dibenz(a,h)anthracene	ND		0.00600	1	10/22/2020 11:22	WG1562551
Fluoranthene	ND		0.00600	1	10/22/2020 11:22	WG1562551
Fluorene	ND		0.00600	1	10/22/2020 11:22	WG1562551
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/22/2020 11:22	WG1562551
Naphthalene	0.0209		0.0200	1	10/22/2020 11:22	WG1562551
Phenanthrene	ND		0.00600	1	10/22/2020 11:22	WG1562551
Pyrene	0.0104		0.00600	1	10/22/2020 11:22	WG1562551
1-Methylnaphthalene	ND		0.0200	1	10/22/2020 11:22	WG1562551
2-Methylnaphthalene	0.0823		0.0200	1	10/22/2020 11:22	WG1562551
2-Chloronaphthalene	ND		0.0200	1	10/22/2020 11:22	WG1562551
(S) p-Terphenyl-d14	*84.7*		*23.0-120*		*10/22/2020 11:22*	WG1562551
(S) Nitrobenzene-d5	*58.3*		*14.0-149*		*10/22/2020 11:22*	WG1562551
(S) 2-Fluorobiphenyl	*86.9*		*34.0-125*		*10/22/2020 11:22*	WG1562551

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	12.1		1	10/20/2020 12:46	WG1561069

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	18.4		1.00	1	10/22/2020 18:17	WG1561163

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	10/22/2020 18:17	WG1561334

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.23	T8	1	10/21/2020 12:29	WG1562685

Sample Narrative:
L1273792-05 WG1562685: 9.23 at 21.9C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	2410		10.0	1	10/21/2020 16:37	WG1562692

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	10/19/2020 19:50	WG1561139

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	11500		2.50	5	10/20/2020 02:41	WG1561163
Cadmium	ND		0.500	1	10/19/2020 23:58	WG1561163
Chromium	18.4		1.00	1	10/19/2020 23:58	WG1561163
Copper	21.1		2.00	1	10/19/2020 23:58	WG1561163
Lead	19.3	O1	0.500	1	10/19/2020 23:58	WG1561163
Nickel	11.8		2.00	1	10/19/2020 23:58	WG1561163
Selenium	ND		2.00	1	10/19/2020 23:58	WG1561163
Silver	ND		1.00	1	10/19/2020 23:58	WG1561163
Zinc	44.5		5.00	1	10/19/2020 23:58	WG1561163

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.99		1.00	5	10/19/2020 18:48	WG1561534

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.325	B	0.100	1	10/22/2020 06:37	WG1563094

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	*95.0*		*77.0-120*		*10/22/2020 06:37*	WG1563094

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00163		0.00100	1	10/22/2020 22:19	WG1563772
Toluene	ND		0.00500	1	10/22/2020 22:19	WG1563772
Ethylbenzene	ND		0.00250	1	10/22/2020 22:19	WG1563772
Total Xylenes	0.00847		0.00650	1	10/22/2020 22:19	WG1563772
(S) Toluene-d8	*107*		*75.0-131*		*10/22/2020 22:19*	WG1563772
(S) 4-Bromofluorobenzene	*97.4*		*67.0-138*		*10/22/2020 22:19*	WG1563772
(S) 1,2-Dichloroethane-d4	*84.4*		*70.0-130*		*10/22/2020 22:19*	WG1563772

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	736		40.0	10	10/23/2020 13:03	WG1562963
(S) o-Terphenyl	*161*	J1	*18.0-148*		*10/23/2020 13:03*	WG1562963

Sample Narrative:

L1273792-05 WG1562963: Surrogate failure due to matrix interference

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	10/22/2020 11:45	WG1562551
Acenaphthene	ND		0.00600	1	10/22/2020 11:45	WG1562551
Acenaphthylene	ND		0.00600	1	10/22/2020 11:45	WG1562551
Benzo(a)anthracene	ND		0.00600	1	10/22/2020 11:45	WG1562551
Benzo(a)pyrene	ND		0.00600	1	10/22/2020 11:45	WG1562551
Benzo(b)fluoranthene	ND		0.00600	1	10/22/2020 11:45	WG1562551
Benzo(g,h,i)perylene	ND		0.00600	1	10/22/2020 11:45	WG1562551
Benzo(k)fluoranthene	ND		0.00600	1	10/22/2020 11:45	WG1562551
Chrysene	0.00913		0.00600	1	10/22/2020 11:45	WG1562551
Dibenz(a,h)anthracene	ND		0.00600	1	10/22/2020 11:45	WG1562551
Fluoranthene	ND		0.00600	1	10/22/2020 11:45	WG1562551
Fluorene	0.0530		0.00600	1	10/22/2020 11:45	WG1562551
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/22/2020 11:45	WG1562551
Naphthalene	0.168		0.0200	1	10/22/2020 11:45	WG1562551
Phenanthrene	0.134		0.00600	1	10/22/2020 11:45	WG1562551
Pyrene	0.0269		0.00600	1	10/22/2020 11:45	WG1562551
1-Methylnaphthalene	0.156		0.0200	1	10/22/2020 11:45	WG1562551
2-Methylnaphthalene	0.441		0.0200	1	10/22/2020 11:45	WG1562551
2-Chloronaphthalene	ND		0.0200	1	10/22/2020 11:45	WG1562551
(S) p-Terphenyl-d14	*77.5*		*23.0-120*		*10/22/2020 11:45*	WG1562551
(S) Nitrobenzene-d5	*85.1*		*14.0-149*		*10/22/2020 11:45*	WG1562551
(S) 2-Fluorobiphenyl	*82.5*		*34.0-125*		*10/22/2020 11:45*	WG1562551

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	16.7		1	10/21/2020 12:30	WG1561070

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	28.9		1.00	1	10/22/2020 18:18	WG1561163

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	10/22/2020 18:18	WG1561334

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.91	T8	1	10/22/2020 12:58	WG1563390

Sample Narrative:

L1273792-06 WG1563390: 8.91 at 23.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1730		10.0	1	10/22/2020 13:02	WG1563225

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	10/19/2020 19:53	WG1561139

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	451		0.500	1	10/20/2020 00:33	WG1561163
Cadmium	ND		0.500	1	10/20/2020 00:33	WG1561163
Chromium	28.9		1.00	1	10/20/2020 00:33	WG1561163
Copper	24.7		2.00	1	10/20/2020 00:33	WG1561163
Lead	17.0		0.500	1	10/20/2020 00:33	WG1561163
Nickel	18.4		2.00	1	10/20/2020 00:33	WG1561163
Selenium	ND		2.00	1	10/20/2020 00:33	WG1561163
Silver	ND		1.00	1	10/20/2020 00:33	WG1561163
Zinc	55.3		5.00	1	10/20/2020 00:33	WG1561163

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	12.2		1.00	5	10/19/2020 18:51	WG1561534

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	1.67		0.100	1	10/22/2020 07:00	WG1563094

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	*85.8*		*77.0-120*		*10/22/2020 07:00*	WG1563094

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/22/2020 22:39	WG1563772
Toluene	0.0206	J5	0.00500	1	10/22/2020 22:39	WG1563772
Ethylbenzene	ND		0.00250	1	10/22/2020 22:39	WG1563772
Total Xylenes	0.0811	J5	0.00650	1	10/22/2020 22:39	WG1563772
(S) Toluene-d8	*104*		*75.0-131*		*10/22/2020 22:39*	WG1563772
(S) 4-Bromofluorobenzene	*97.7*		*67.0-138*		*10/22/2020 22:39*	WG1563772
(S) 1,2-Dichloroethane-d4	*85.1*		*70.0-130*		*10/22/2020 22:39*	WG1563772

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	285		160	40	10/23/2020 13:16	WG1562963
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*10/23/2020 13:16*	WG1562963

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	10/22/2020 12:08	WG1562551
Acenaphthene	ND		0.00600	1	10/22/2020 12:08	WG1562551
Acenaphthylene	ND		0.00600	1	10/22/2020 12:08	WG1562551
Benzo(a)anthracene	ND		0.00600	1	10/22/2020 12:08	WG1562551
Benzo(a)pyrene	ND		0.00600	1	10/22/2020 12:08	WG1562551
Benzo(b)fluoranthene	ND		0.00600	1	10/22/2020 12:08	WG1562551
Benzo(g,h,i)perylene	ND		0.00600	1	10/22/2020 12:08	WG1562551
Benzo(k)fluoranthene	ND		0.00600	1	10/22/2020 12:08	WG1562551
Chrysene	ND		0.00600	1	10/22/2020 12:08	WG1562551
Dibenz(a,h)anthracene	ND		0.00600	1	10/22/2020 12:08	WG1562551
Fluoranthene	ND		0.00600	1	10/22/2020 12:08	WG1562551
Fluorene	ND		0.00600	1	10/22/2020 12:08	WG1562551
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/22/2020 12:08	WG1562551
Naphthalene	ND		0.0200	1	10/22/2020 12:08	WG1562551
Phenanthrene	0.00970		0.00600	1	10/22/2020 12:08	WG1562551
Pyrene	0.00878		0.00600	1	10/22/2020 12:08	WG1562551
1-Methylnaphthalene	ND		0.0200	1	10/22/2020 12:08	WG1562551
2-Methylnaphthalene	0.0642		0.0200	1	10/22/2020 12:08	WG1562551
2-Chloronaphthalene	ND		0.0200	1	10/22/2020 12:08	WG1562551
(S) p-Terphenyl-d14	*86.2*		*23.0-120*		*10/22/2020 12:08*	WG1562551
(S) Nitrobenzene-d5	*83.5*		*14.0-149*		*10/22/2020 12:08*	WG1562551
(S) 2-Fluorobiphenyl	*88.4*		*34.0-125*		*10/22/2020 12:08*	WG1562551

Method Blank (MB)

(MB) R3584574-1 10/22/20 18:04

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

L1273792-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1273792-06 10/22/20 18:18 • (DUP) R3584574-7 10/22/20 18:18

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

L1273863-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1273863-04 10/22/20 18:21 • (DUP) R3584574-8 10/22/20 18:22

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

Laboratory Control Sample (LCS)

(LCS) R3584574-2 10/22/20 18:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chromium,Hexavalent	24.0	23.1	96.1	80.0-120	

L1273792-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273792-01 10/22/20 18:09 • (MS) R3584574-3 10/22/20 18:11 • (MSD) R3584574-4 10/22/20 18:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chromium,Hexavalent	20.0	ND	ND	ND	9.40	9.92	1	75.0-125	J6	J6	5.39	20

Sample Narrative:

OS: sample is a reducer

L1273792-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1273792-01 10/22/20 18:09 • (MS) R3584574-5 10/22/20 18:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chromium,Hexavalent	646	ND	583	90.2	50	75.0-125	

Sample Narrative:

OS: sample is a reducer

L1273684-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1273684-05 10/21/20 12:29 • (DUP) R3583899-2 10/21/20 12:29

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.97	7.97	1	0.000		1

Sample Narrative:

OS: 7.97 at 21.9C

DUP: 7.97 at 21.8C

L1273863-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1273863-03 10/21/20 12:29 • (DUP) R3583899-3 10/21/20 12:29

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.43	8.45	1	0.237		1

Sample Narrative:

OS: 8.43 at 21.7C

DUP: 8.45 at 21.5C

Laboratory Control Sample (LCS)

(LCS) R3583899-1 10/21/20 12:29

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	10.1	101	99.0-101	

Sample Narrative:

LCS: 10.05 at 20.7C

L1273904-16 Original Sample (OS) • Duplicate (DUP)

(OS) L1273904-16 10/22/20 12:58 • (DUP) R3584423-2 10/22/20 12:58

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.05	8.09	1	0.496		1

Sample Narrative:

OS: 8.05 at 22.5C

DUP: 8.09 at 22.2C

L1274567-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1274567-02 10/22/20 12:58 • (DUP) R3584423-3 10/22/20 12:58

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.98	8.92	1	0.670		1

Sample Narrative:

OS: 8.98 at 22.4C

DUP: 8.92 at 22.1C

Laboratory Control Sample (LCS)

(LCS) R3584423-1 10/22/20 12:58

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

Sample Narrative:

LCS: 10.02 at 21.1C

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

Method Blank (MB)

(MB) R3584033-1 10/21/20 16:37

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

L1273411-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1273411-01 10/21/20 16:37 • (DUP) R3584033-3 10/21/20 16:37

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	umhos/cm	umhos/cm		%		%
Specific Conductance	214	211	1	1.27		20

L1273792-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1273792-05 10/21/20 16:37 • (DUP) R3584033-4 10/21/20 16:37

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	umhos/cm	umhos/cm		%		%
Specific Conductance	2410	2420	1	0.331		20

Laboratory Control Sample (LCS)

(LCS) R3584033-2 10/21/20 16:37

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	umhos/cm	umhos/cm	%	%	
Specific Conductance	326	324	99.4	85.0-115	

Method Blank (MB)

(MB) R3584378-1 10/22/20 13:02

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

L1273863-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1273863-05 10/22/20 13:02 • (DUP) R3584378-3 10/22/20 13:02

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	umhos/cm	umhos/cm		%		%
Specific Conductance	189	186	1	1.50		20

Laboratory Control Sample (LCS)

(LCS) R3584378-2 10/22/20 13:02

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	umhos/cm	umhos/cm	%	%	
Specific Conductance	326	324	99.4	85.0-115	

Method Blank (MB)

(MB) R3583252-1 10/19/20 18:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.0180	0.0400

Laboratory Control Sample (LCS)

(LCS) R3583252-2 10/19/20 18:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.500	0.493	98.6	80.0-120	

L1273331-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273331-02 10/19/20 18:50 • (MS) R3583252-3 10/19/20 18:52 • (MSD) R3583252-4 10/19/20 18:55

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.500	ND	0.465	0.451	86.2	83.4	1	75.0-125			3.08	20

Method Blank (MB)

(MB) R3583283-1 10/19/20 23:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		0.240	0.500
Cadmium	U		0.0810	0.500
Chromium	U		0.250	1.00
Copper	U		0.506	2.00
Lead	U		0.208	0.500
Nickel	U		0.490	2.00
Selenium	U		0.617	2.00
Silver	U		0.228	1.00
Zinc	1.02	J	0.939	5.00

Laboratory Control Sample (LCS)

(LCS) R3583283-2 10/19/20 23:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	107	107	80.0-120	
Cadmium	100	104	104	80.0-120	
Chromium	100	107	107	80.0-120	
Copper	100	107	107	80.0-120	
Lead	100	102	102	80.0-120	
Nickel	100	105	105	80.0-120	
Selenium	100	104	104	80.0-120	
Silver	20.0	19.1	95.7	80.0-120	
Zinc	100	104	104	80.0-120	

L1273792-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273792-05 10/19/20 23:58 • (MS) R3583283-5 10/20/20 00:07 • (MSD) R3583283-6 10/20/20 00:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	8850	9600	8940	749	87.8	1	75.0-125	E V	E	7.13	20
Cadmium	100	ND	109	97.0	109	97.0	1	75.0-125			11.9	20
Chromium	100	18.4	119	110	101	91.4	1	75.0-125			8.35	20
Copper	100	21.1	132	120	111	99.3	1	75.0-125			9.20	20
Lead	100	19.3	128	118	109	98.9	1	75.0-125			8.28	20
Nickel	100	11.8	121	111	110	98.7	1	75.0-125			9.47	20
Selenium	100	ND	111	98.3	109	96.8	1	75.0-125			11.9	20
Silver	20.0	ND	20.7	18.6	103	93.1	1	75.0-125			10.5	20
Zinc	100	44.5	142	136	97.9	91.1	1	75.0-125			4.88	20

Method Blank (MB)

(MB) R3583210-1 10/19/20 17:47

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

Laboratory Control Sample (LCS)

(LCS) R3583210-2 10/19/20 17:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	103	103	80.0-120	

L1273954-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273954-01 10/19/20 17:54 • (MS) R3583210-5 10/19/20 18:05 • (MSD) R3583210-6 10/19/20 18:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	20.0	2.05	96.0	96.8	94.0	94.8	5	75.0-125			0.809	20

Method Blank (MB)

(MB) R3584372-2 10/21/20 14:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0296	J	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*99.7*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3584372-1 10/21/20 14:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.97	90.4	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*109*	*77.0-120*	

Method Blank (MB)

(MB) R3585729-2 10/22/20 05:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0966	J	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*100*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3585729-1 10/22/20 04:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.82	106	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*106*	*77.0-120*	

Method Blank (MB)

(MB) R3584849-3 10/22/20 21:20

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*108*			*75.0-131*
(S) 4-Bromofluorobenzene	*95.6*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*85.2*			*70.0-130*

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

(LCS) R3584849-1 10/22/20 20:00 • (LCSD) R3584849-2 10/22/20 20:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.136	0.138	109	110	70.0-123			1.46	20
Ethylbenzene	0.125	0.115	0.116	92.0	92.8	74.0-126			0.866	20
Toluene	0.125	0.131	0.134	105	107	75.0-121			2.26	20
Xylenes, Total	0.375	0.340	0.351	90.7	93.6	72.0-127			3.18	20
(S) Toluene-d8				*106*	*110*	*75.0-131*				
(S) 4-Bromofluorobenzene				*92.8*	*93.2*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*88.4*	*92.2*	*70.0-130*				

L1273792-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273792-06 10/22/20 22:39 • (MS) R3584849-4 10/23/20 04:37 • (MSD) R3584849-5 10/23/20 04:57

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.124	ND	0.119	0.0968	95.3	77.4	1	10.0-149			20.6	37
Ethylbenzene	0.124	ND	0.111	0.0957	87.9	75.6	1	10.0-160			14.8	38
Toluene	0.124	0.0206	0.355	0.327	270	247	1	10.0-156	J5	J5	8.21	38
Xylenes, Total	0.372	0.0811	1.01	0.950	250	234	1	10.0-160	J5	J5	6.12	38
(S) Toluene-d8					*105*	*105*		*75.0-131*				
(S) 4-Bromofluorobenzene					*95.7*	*103*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*77.6*	*78.7*		*70.0-130*				

Method Blank (MB)

(MB) R3585116-3 10/23/20 16:24

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*111*			*75.0-131*
(S) 4-Bromofluorobenzene	*105*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*106*			*70.0-130*

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

(LCS) R3585116-1 10/23/20 15:27 • (LCSD) R3585116-2 10/23/20 15:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.107	0.109	85.6	87.2	70.0-123			1.85	20
Ethylbenzene	0.125	0.132	0.133	106	106	74.0-126			0.755	20
Toluene	0.125	0.135	0.134	108	107	75.0-121			0.743	20
Xylenes, Total	0.375	0.423	0.414	113	110	72.0-127			2.15	20
(S) Toluene-d8				*108*	*109*	*75.0-131*				
(S) 4-Bromofluorobenzene				*106*	*104*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*105*	*102*	*70.0-130*				

L1274488-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1274488-04 10/23/20 22:57 • (MS) R3585116-4 10/24/20 00:12 • (MSD) R3585116-5 10/24/20 00:31

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.127	0.00103	0.113	0.100	89.6	79.2	1	10.0-149			12.2	37
Ethylbenzene	0.127	ND	0.151	0.136	121	109	1	10.0-160			10.5	38
Toluene	0.127	ND	0.156	0.137	125	110	1	10.0-156			13.0	38
Xylenes, Total	0.382	ND	0.473	0.417	126	111	1	10.0-160			12.6	38
(S) Toluene-d8					*110*	*107*		*75.0-131*				
(S) 4-Bromofluorobenzene					*107*	*107*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*95.4*	*96.9*		*70.0-130*				

Method Blank (MB)

(MB) R3585007-1 10/23/20 09:42

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) High Fraction	U		0.769	4.00
(S) o-Terphenyl	*71.3*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3585007-2 10/23/20 10:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) High Fraction	50.0	38.7	77.4	50.0-150	
(S) o-Terphenyl			*98.9*	*18.0-148*	

Method Blank (MB)

(MB) R3584288-2 10/22/20 02:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*82.5*			*14.0-149*
(S) 2-Fluorobiphenyl	*88.7*			*34.0-125*
(S) p-Terphenyl-d14	*93.3*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3584288-1 10/22/20 02:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0660	82.5	50.0-126	
Acenaphthene	0.0800	0.0716	89.5	50.0-120	
Acenaphthylene	0.0800	0.0682	85.3	50.0-120	
Benzo(a)anthracene	0.0800	0.0694	86.8	45.0-120	
Benzo(a)pyrene	0.0800	0.0511	63.9	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0609	76.1	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0646	80.7	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0662	82.8	49.0-125	
Chrysene	0.0800	0.0703	87.9	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0663	82.9	47.0-125	
Fluoranthene	0.0800	0.0659	82.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3584288-1 10/22/20 02:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0694	86.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0642	80.3	46.0-125	
Naphthalene	0.0800	0.0675	84.4	50.0-120	
Phenanthrene	0.0800	0.0675	84.4	47.0-120	
Pyrene	0.0800	0.0671	83.9	43.0-123	
1-Methylnaphthalene	0.0800	0.0656	82.0	51.0-121	
2-Methylnaphthalene	0.0800	0.0621	77.6	50.0-120	
2-Chloronaphthalene	0.0800	0.0695	86.9	50.0-120	
(S) Nitrobenzene-d5			*83.7*	*14.0-149*	
(S) 2-Fluorobiphenyl			*87.9*	*34.0-125*	
(S) p-Terphenyl-d14			*90.6*	*23.0-120*	

L1273863-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273863-04 10/22/20 07:10 • (MS) R3584288-3 10/22/20 07:33 • (MSD) R3584288-4 10/22/20 07:56

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0772	ND	0.0601	0.0566	77.8	73.7	1	10.0-145			6.00	30
Acenaphthene	0.0772	ND	0.0628	0.0592	81.3	77.1	1	14.0-127			5.90	27
Acenaphthylene	0.0772	ND	0.0598	0.0560	77.5	72.9	1	21.0-124			6.56	25
Benzo(a)anthracene	0.0772	ND	0.0614	0.0574	79.5	74.7	1	10.0-139			6.73	30
Benzo(a)pyrene	0.0772	ND	0.0537	0.0499	69.6	65.0	1	10.0-141			7.34	31
Benzo(b)fluoranthene	0.0772	ND	0.0537	0.0505	66.5	62.6	1	10.0-140			6.14	36
Benzo(g,h,i)perylene	0.0772	ND	0.0641	0.0596	83.0	77.6	1	10.0-140			7.28	33
Benzo(k)fluoranthene	0.0772	ND	0.0530	0.0505	68.7	65.8	1	10.0-137			4.83	31
Chrysene	0.0772	ND	0.0616	0.0570	79.8	74.2	1	10.0-145			7.76	30
Dibenz(a,h)anthracene	0.0772	ND	0.0610	0.0563	79.0	73.3	1	10.0-132			8.01	31
Fluoranthene	0.0772	ND	0.0578	0.0540	70.3	65.7	1	10.0-153			6.80	33
Fluorene	0.0772	ND	0.0614	0.0581	79.5	75.7	1	11.0-130			5.52	29
Indeno(1,2,3-cd)pyrene	0.0772	ND	0.0604	0.0564	78.2	73.4	1	10.0-137			6.85	32
Naphthalene	0.0772	ND	0.0588	0.0555	76.2	72.3	1	10.0-135			5.77	27
Phenanthrene	0.0772	ND	0.0590	0.0557	76.4	72.5	1	10.0-144			5.75	31
Pyrene	0.0772	ND	0.0674	0.0613	81.7	74.2	1	10.0-148			9.48	35
1-Methylnaphthalene	0.0772	ND	0.0576	0.0548	74.6	71.4	1	10.0-142			4.98	28
2-Methylnaphthalene	0.0772	ND	0.0544	0.0511	70.5	66.5	1	10.0-137			6.26	28
2-Chloronaphthalene	0.0772	ND	0.0604	0.0572	78.2	74.5	1	29.0-120			5.44	24
(S) Nitrobenzene-d5					*72.0*	*70.3*		*14.0-149*				
(S) 2-Fluorobiphenyl					*80.1*	*77.2*		*34.0-125*				
(S) p-Terphenyl-d14					*90.1*	*85.0*		*23.0-120*				

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

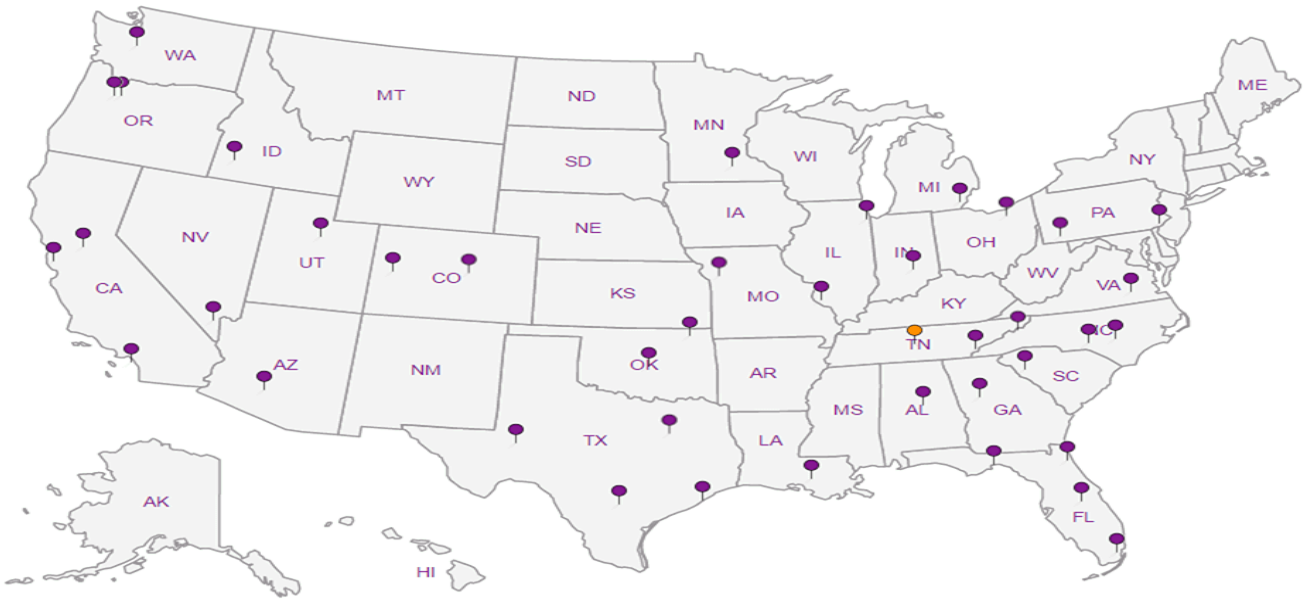
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Company Name/Address:
Caerus
143 Diamond Avenue
Parachute, CO 81635

Billing Information:
Blair Rollings
143 Diamond Avenue
Parachute, CO 81635

Report to: Blair Rollins

Email To: brollins@caerusoilandgas.com

Project Description: C27 North Pit

City/State Collected: CO

Phone: 970-640-6919
Fax:

Client Project #

Lab Project #

Collected by (print): R. Johnson

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ✓No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 127392

H078

Template:
Prelogin:
TSR:
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH - GRO & DRO	BTEX	Table 910-1 Metals in soil	Table 910-1 PAHs	EC, SAR, pH	Rem./Contaminant	Sample # (lab only)
20201014-C27NP-SBMID (5')	Grab	SS	5'	10/14/20	1035	2	X	X	X	X	X		-01
20201014-C27NP-SBMID (10')			10'		1050	2	X	X	X	X	X		02
20201014-C27NP-SBMID (15')			15'		1115	2	X	X	X	X	X		03
20201014-C27NP-SBMID (20')			20'		1135	2	X	X	X	X	X		04
20201014-C27NP-NBOTB (10')			10'		1220	2	X	X	X	X	X		05
20201014-C27NP-NBOTB (15')			15'		1235	2	X	X	X	X	X		06

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other ___

pH ___ Temp ___

Remarks: 1676 2750 8177

Flow ___ Other ___

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	10/14/20	1600	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	10/14/20	1700	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			M Pappas

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ___

Temp: WW 13 °C Bottles Received: 12
1.5-1=1.4

Date: 10-15-20 Time: 900

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 26, 2020

Caerus Oil and Gas

Sample Delivery Group:	L1273795
Samples Received:	10/15/2020
Project Number:	
Description:	C27South Pit

Report To: Blair Rollins
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

TABLE OF CONTENTS

20201014-C27SP-SEWALLA(30') L1273795-01 Solid

Collected by: R. Johnson
Collected date/time: 10/14/20 09:45
Received date/time: 10/15/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1561070	1	10/21/20 12:33	10/21/20 12:33	EL	Mt. Juliet, TN
Calculated Results	WG1561163	1	10/18/20 16:18	10/22/20 18:19	KEG	Mt. Juliet, TN
Wet Chemistry by Method 3060A/7196A	WG1561334	1	10/21/20 20:20	10/22/20 18:19	KEG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1563390	1	10/22/20 09:49	10/22/20 12:58	KLS	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1563225	1	10/22/20 10:58	10/22/20 13:02	MMF	Mt. Juliet, TN
Mercury by Method 7471A	WG1561140	1	10/18/20 13:34	10/19/20 09:46	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1561163	1	10/18/20 16:18	10/20/20 00:36	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1561534	5	10/19/20 10:20	10/19/20 18:55	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1563094	1	10/21/20 10:17	10/22/20 07:23	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1563772	1	10/21/20 10:17	10/22/20 22:59	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1562963	40	10/22/20 06:44	10/23/20 13:30	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1562551	1	10/21/20 18:16	10/22/20 12:31	JNJ	Mt. Juliet, TN

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

Chris Ward
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.40		1	10/21/2020 12:33	WG1561070

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	26.1		1.00	1	10/22/2020 18:19	WG1561163

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	10/22/2020 18:19	WG1561334

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.60	T8	1	10/22/2020 12:58	WG1563390

Sample Narrative:

L1273795-01 WG1563390: 8.6 at 23.1C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	805		10.0	1	10/22/2020 13:02	WG1563225

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0400	1	10/19/2020 09:46	WG1561140

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	489		0.500	1	10/20/2020 00:36	WG1561163
Cadmium	ND		0.500	1	10/20/2020 00:36	WG1561163
Chromium	26.1		1.00	1	10/20/2020 00:36	WG1561163
Copper	23.9		2.00	1	10/20/2020 00:36	WG1561163
Lead	14.7		0.500	1	10/20/2020 00:36	WG1561163
Nickel	18.3		2.00	1	10/20/2020 00:36	WG1561163
Selenium	ND		2.00	1	10/20/2020 00:36	WG1561163
Silver	ND		1.00	1	10/20/2020 00:36	WG1561163
Zinc	52.7		5.00	1	10/20/2020 00:36	WG1561163

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	17.3		1.00	5	10/19/2020 18:55	WG1561534

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	1.67		0.100	1	10/22/2020 07:23	WG1563094

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) a,a,a-Trifluorotoluene(FID)	*77.7*		*77.0-120*		*10/22/2020 07:23*	WG1563094

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00100		0.00100	1	10/22/2020 22:59	WG1563772
Toluene	0.0441		0.00500	1	10/22/2020 22:59	WG1563772
Ethylbenzene	0.00300		0.00250	1	10/22/2020 22:59	WG1563772
Total Xylenes	0.109		0.00650	1	10/22/2020 22:59	WG1563772
(S) Toluene-d8	*105*		*75.0-131*		*10/22/2020 22:59*	WG1563772
(S) 4-Bromofluorobenzene	*93.8*		*67.0-138*		*10/22/2020 22:59*	WG1563772
(S) 1,2-Dichloroethane-d4	*83.8*		*70.0-130*		*10/22/2020 22:59*	WG1563772

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	297		160	40	10/23/2020 13:30	WG1562963
(S) o-Terphenyl	*0.000*	J7	*18.0-148*		*10/23/2020 13:30*	WG1562963

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	10/22/2020 12:31	WG1562551
Acenaphthene	ND		0.00600	1	10/22/2020 12:31	WG1562551
Acenaphthylene	ND		0.00600	1	10/22/2020 12:31	WG1562551
Benzo(a)anthracene	ND		0.00600	1	10/22/2020 12:31	WG1562551
Benzo(a)pyrene	ND		0.00600	1	10/22/2020 12:31	WG1562551
Benzo(b)fluoranthene	ND		0.00600	1	10/22/2020 12:31	WG1562551
Benzo(g,h,i)perylene	ND		0.00600	1	10/22/2020 12:31	WG1562551
Benzo(k)fluoranthene	ND		0.00600	1	10/22/2020 12:31	WG1562551
Chrysene	ND		0.00600	1	10/22/2020 12:31	WG1562551
Dibenz(a,h)anthracene	ND		0.00600	1	10/22/2020 12:31	WG1562551
Fluoranthene	ND		0.00600	1	10/22/2020 12:31	WG1562551
Fluorene	ND		0.00600	1	10/22/2020 12:31	WG1562551
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	10/22/2020 12:31	WG1562551
Naphthalene	ND		0.0200	1	10/22/2020 12:31	WG1562551
Phenanthrene	0.00615		0.00600	1	10/22/2020 12:31	WG1562551
Pyrene	0.00714		0.00600	1	10/22/2020 12:31	WG1562551
1-Methylnaphthalene	ND		0.0200	1	10/22/2020 12:31	WG1562551
2-Methylnaphthalene	0.0431		0.0200	1	10/22/2020 12:31	WG1562551
2-Chloronaphthalene	ND		0.0200	1	10/22/2020 12:31	WG1562551
(S) p-Terphenyl-d14	*87.5*		*23.0-120*		*10/22/2020 12:31*	WG1562551
(S) Nitrobenzene-d5	*85.4*		*14.0-149*		*10/22/2020 12:31*	WG1562551
(S) 2-Fluorobiphenyl	*91.5*		*34.0-125*		*10/22/2020 12:31*	WG1562551

Method Blank (MB)

(MB) R3584574-1 10/22/20 18:04

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

Laboratory Control Sample (LCS)

(LCS) R3584574-2 10/22/20 18:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chromium,Hexavalent	24.0	23.1	96.1	80.0-120	

L1273904-16 Original Sample (OS) • Duplicate (DUP)

(OS) L1273904-16 10/22/20 12:58 • (DUP) R3584423-2 10/22/20 12:58

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.05	8.09	1	0.496		1

Sample Narrative:

OS: 8.05 at 22.5C

DUP: 8.09 at 22.2C

L1274567-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1274567-02 10/22/20 12:58 • (DUP) R3584423-3 10/22/20 12:58

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.98	8.92	1	0.670		1

Sample Narrative:

OS: 8.98 at 22.4C

DUP: 8.92 at 22.1C

Laboratory Control Sample (LCS)

(LCS) R3584423-1 10/22/20 12:58

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

Sample Narrative:

LCS: 10.02 at 21.1C

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

Method Blank (MB)

(MB) R3584378-1 10/22/20 13:02

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

L1273863-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1273863-05 10/22/20 13:02 • (DUP) R3584378-3 10/22/20 13:02

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	umhos/cm	umhos/cm		%		%
Specific Conductance	189	186	1	1.50		20

Laboratory Control Sample (LCS)

(LCS) R3584378-2 10/22/20 13:02

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	umhos/cm	umhos/cm	%	%	
Specific Conductance	326	324	99.4	85.0-115	

Method Blank (MB)

(MB) R3583009-1 10/19/20 09:00

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.0180	0.0400

Laboratory Control Sample (LCS)

(LCS) R3583009-2 10/19/20 09:02

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.500	0.516	103	80.0-120	

L1274146-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1274146-02 10/19/20 09:05 • (MS) R3583009-3 10/19/20 09:07 • (MSD) R3583009-4 10/19/20 09:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.500	ND	0.440	0.468	84.3	89.9	1	75.0-125			6.16	20

Method Blank (MB)

(MB) R3583283-1 10/19/20 23:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		0.240	0.500
Cadmium	U		0.0810	0.500
Chromium	U		0.250	1.00
Copper	U		0.506	2.00
Lead	U		0.208	0.500
Nickel	U		0.490	2.00
Selenium	U		0.617	2.00
Silver	U		0.228	1.00
Zinc	1.02	J	0.939	5.00

Laboratory Control Sample (LCS)

(LCS) R3583283-2 10/19/20 23:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	107	107	80.0-120	
Cadmium	100	104	104	80.0-120	
Chromium	100	107	107	80.0-120	
Copper	100	107	107	80.0-120	
Lead	100	102	102	80.0-120	
Nickel	100	105	105	80.0-120	
Selenium	100	104	104	80.0-120	
Silver	20.0	19.1	95.7	80.0-120	
Zinc	100	104	104	80.0-120	

L1273792-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273792-05 10/19/20 23:58 • (MS) R3583283-5 10/20/20 00:07 • (MSD) R3583283-6 10/20/20 00:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	8850	9600	8940	749	87.8	1	75.0-125	E V	E	7.13	20
Cadmium	100	ND	109	97.0	109	97.0	1	75.0-125			11.9	20
Chromium	100	18.4	119	110	101	91.4	1	75.0-125			8.35	20
Copper	100	21.1	132	120	111	99.3	1	75.0-125			9.20	20
Lead	100	19.3	128	118	109	98.9	1	75.0-125			8.28	20
Nickel	100	11.8	121	111	110	98.7	1	75.0-125			9.47	20
Selenium	100	ND	111	98.3	109	96.8	1	75.0-125			11.9	20
Silver	20.0	ND	20.7	18.6	103	93.1	1	75.0-125			10.5	20
Zinc	100	44.5	142	136	97.9	91.1	1	75.0-125			4.88	20

Method Blank (MB)

(MB) R3583210-1 10/19/20 17:47

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

Laboratory Control Sample (LCS)

(LCS) R3583210-2 10/19/20 17:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	103	103	80.0-120	

L1273954-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1273954-01 10/19/20 17:54 • (MS) R3583210-5 10/19/20 18:05 • (MSD) R3583210-6 10/19/20 18:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	20.0	2.05	96.0	96.8	94.0	94.8	5	75.0-125			0.809	20

Method Blank (MB)

(MB) R3585729-2 10/22/20 05:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0966	J	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*100*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3585729-1 10/22/20 04:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.82	106	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*106*	*77.0-120*	

Method Blank (MB)

(MB) R3584849-3 10/22/20 21:20

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*108*			*75.0-131*
(S) 4-Bromofluorobenzene	*95.6*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*85.2*			*70.0-130*

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

(LCS) R3584849-1 10/22/20 20:00 • (LCSD) R3584849-2 10/22/20 20:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.136	0.138	109	110	70.0-123			1.46	20
Ethylbenzene	0.125	0.115	0.116	92.0	92.8	74.0-126			0.866	20
Toluene	0.125	0.131	0.134	105	107	75.0-121			2.26	20
Xylenes, Total	0.375	0.340	0.351	90.7	93.6	72.0-127			3.18	20
(S) Toluene-d8				*106*	*110*	*75.0-131*				
(S) 4-Bromofluorobenzene				*92.8*	*93.2*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*88.4*	*92.2*	*70.0-130*				

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3584849-4 10/23/20 04:37 • (MSD) R3584849-5 10/23/20 04:57

Analyte	Spike Amount mg/kg	Original Result	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.124		0.119	0.0968	95.3	77.4	1	10.0-149			20.6	37
Ethylbenzene	0.124		0.111	0.0957	87.9	75.6	1	10.0-160			14.8	38
Toluene	0.124		0.355	0.327	270	247	1	10.0-156	J5	J5	8.21	38
Xylenes, Total	0.372		1.01	0.950	250	234	1	10.0-160	J5	J5	6.12	38
(S) Toluene-d8					*105*	*105*		*75.0-131*				
(S) 4-Bromofluorobenzene					*95.7*	*103*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*77.6*	*78.7*		*70.0-130*				

Method Blank (MB)

(MB) R3585007-1 10/23/20 09:42

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) High Fraction	U		0.769	4.00
(S) o-Terphenyl	*71.3*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3585007-2 10/23/20 10:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) High Fraction	50.0	38.7	77.4	50.0-150	
(S) o-Terphenyl			*98.9*	*18.0-148*	

Method Blank (MB)

(MB) R3584288-2 10/22/20 02:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*82.5*			*14.0-149*
(S) 2-Fluorobiphenyl	*88.7*			*34.0-125*
(S) p-Terphenyl-d14	*93.3*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3584288-1 10/22/20 02:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0660	82.5	50.0-126	
Acenaphthene	0.0800	0.0716	89.5	50.0-120	
Acenaphthylene	0.0800	0.0682	85.3	50.0-120	
Benzo(a)anthracene	0.0800	0.0694	86.8	45.0-120	
Benzo(a)pyrene	0.0800	0.0511	63.9	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0609	76.1	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0646	80.7	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0662	82.8	49.0-125	
Chrysene	0.0800	0.0703	87.9	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0663	82.9	47.0-125	
Fluoranthene	0.0800	0.0659	82.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3584288-1 10/22/20 02:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0694	86.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0642	80.3	46.0-125	
Naphthalene	0.0800	0.0675	84.4	50.0-120	
Phenanthrene	0.0800	0.0675	84.4	47.0-120	
Pyrene	0.0800	0.0671	83.9	43.0-123	
1-Methylnaphthalene	0.0800	0.0656	82.0	51.0-121	
2-Methylnaphthalene	0.0800	0.0621	77.6	50.0-120	
2-Chloronaphthalene	0.0800	0.0695	86.9	50.0-120	
(S) Nitrobenzene-d5			*83.7*	*14.0-149*	
(S) 2-Fluorobiphenyl			*87.9*	*34.0-125*	
(S) p-Terphenyl-d14			*90.6*	*23.0-120*	

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

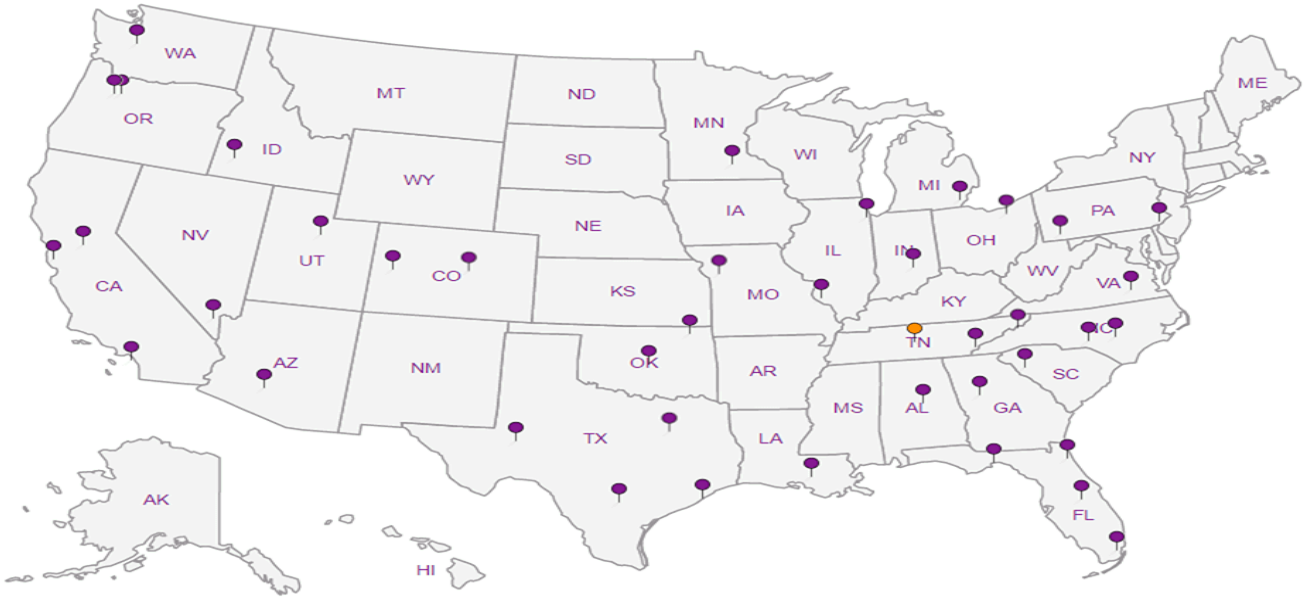
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Company Name/Address:
Caerus
143 Diamond Avenue
Parachute, CO 81635

Billing Information:
Blair Rollings
143 Diamond Avenue
Parachute, CO 81635

Report to: Blair Rollins

Email To: brollins@caerusoilandgas.com

Project Description: C27 South Pit

City/State Collected: CO

Phone: 970-640-6919
Fax:

Client Project #

Lab Project #

Collected by (print): R. Johnson

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ✓No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH - GRO & DRO	BTEX	Table 910-1 Metals in soil	Table 910-1 PAHs	EC, SAR, pH	Rem./Contaminant	Sample # (lab only)
20201014-C2750-SELIMA(30')	Grab	SS	30'	~~10/14/20~~	0945	2	X	X	X	X	X		-01

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LABSCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 173795
H079

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

pH _____ Temp _____

Remarks: 1676 2750 6877

Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	10/14/20	1600	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	10/14/20	1708	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			MPappas

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 1.5-.1=1.4 °C Bottles Received: 12

Date: 10-15-20 Time: 900

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

Note