

Jake Janicek
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Report of Work Completed – Separator Release

COGCC Location Name (ID)	SAVAGE-67S94W /5NWSW (335007)
Operator Location Name	5L
COGCC Remediation Project Number	24100
Legal Description	NWSW Sec. 5 T7S-R94W
Coordinates (Lat/Long)	39.465037 / -107.914359
County	Garfield County, Colorado

Mr. Janicek,

Confluence Compliance Companies, LLC (Confluence) prepared this Report of Work Completed (ROWC) for Caerus Oil & Gas LLC (Caerus) to document remedial investigation activities associated with a recent produced water release at the 5L well pad (Location). The Location is 7.3 miles east of Parachute, Colorado, in Garfield County as illustrated in the attached Topographic Map. Additional information on the Location and the associated remediation project is provided in the title block above, the attached Site Diagrams, and laboratory analytical reports. This ROWC provides background on the Location, methods used to complete the remedial investigation, results of the investigation, and recommendations for how to proceed with this information.

Background

On May 4, 2022, a produced water release was discovered while conducting separator calibration. The line was isolated, and the leak was stopped. The release was confined to the working surface of the pad and was reported in Colorado Oil and Gas Conservation Commission (COGCC) Form 19 Document 403038068. Form 27 Document 403077093 was later submitted to open Remediation Project Number 24100.

On May 19, 2022, Confluence coordinated and oversaw initial site investigation activities associated with the recent release at the Location. Using a hydro vacuum truck, the point of release (POR) was exposed and identified as the flowline associated with the westernmost separator. One soil sample was collected from the POR. The soil sample was characterized using visual and olfactory observations and field-screened for volatile organic compounds using a photoionization detector (PID). Six potholes were also advanced using a hydrovac to characterize the extent of olfactory soil impacts in each cardinal direction. A soil sample was collected from the terminus of three of the six potholes: PHW, PHE3, and PHN. A soil sample could not be collected from the southern pothole (PHS) due to the presence of large rocks. Soil samples were not collected from potholes PHE and PHE2 as field screening and characterization indicated potential soil impacts in these areas. A sample was collected from

PHE3 to demonstrate the eastern extent of the observed impacts. Laboratory results of initial characterization sampling exceeded COGCC Table 915-1 Residential Soil Screening Levels for total petroleum hydrocarbons (TPH), xylenes, electrical conductivity (EC), sodium adsorption ratio (SAR), boron, pH, and arsenic. Based on the results of initial site investigation, the COGCC approved a reduced analyte list of TPH, xylenes, EC, SAR, pH, boron, and arsenic via Document 403077093.

Methodology

From March 9 through March 21, 2023, Confluence oversaw drilling activities to delineate the vertical and horizontal extents of soil impacts. Four delineation soil borings (SB01-SB04) were advanced to total depths ranging from 36 to 86 feet bgs. 21 soil samples were collected from the four soil borings. Soil samples were characterized using visual and olfactory observations and field screened using a PID. SB03 and SB04 were completed as soil vapor extraction (SVE) wells.

All soil samples were collected in laboratory provided jars, immediately placed on ice, and shipped for laboratory analysis of constituents listed in COGCC Table 915-1 for soil. Excavation extents and soil sample locations are presented in the attached Site Diagram.

Results

These results summarize observations from onsite remedial investigation efforts and associated laboratory analytical results. For organizational and presentation purposes the results summary is divided between general observations of lithology and hydrogeology for the entire Location and site investigation activities.

Collected spatial data are depicted in the attached Site Diagram. Laboratory analytical reports are attached and summarized in the Laboratory Results Summary Table.

Lithology and Hydrogeology

Lithology at the Location is characterized as sand with gravel to sandy clay. Groundwater is expected to flow northeast toward Cache Creek and ultimately to the Colorado River, located 1.8 miles north of the Location. Depth to groundwater at the Location is estimated to be approximately 170 feet below ground surface based on Division of Water Resources (DWR) Permit 320331 located 934 feet northeast of the Location.

Drilling Assessment Results

Laboratory results of drilling assessment samples are compliant with COGCC Table 915-1 Residential Soil Screening Levels with the exception of TPH, xylenes, SAR, pH, and arsenic. TPH exceedances range from 596 to 2,646 milligrams per kilogram (mg/kg). Xylene exceedances range from 58.4 to 84.5 mg/kg. SAR exceeds at 10.7 at SB03. Exceedances of pH range from 8.32 to 9.94. Arsenic exceedances range from 2.46 to 6.35 mg/kg.



Analysis and Recommendations

Based on these results, organic impacts are delineated vertically as well as horizontally south of the POR. Organic soil impacts extend from the surface to 51 feet bgs at the POR. Additional site investigation is needed to delineate the extent of TPH and xylene exceedances horizontally to the north, east, and west and to characterize native levels of arsenic and pH at the Location. It is reasonable to assume that an assessment of native soil at the Location will demonstrate the arsenic and pH concentrations in the investigation area are consistent with native conditions.

Confluence recommends the advancement of additional soil borings to delineate the extent of TPH and xylene soil impacts horizontally and to collect background characterization samples.

Confluence is grateful for the opportunity to support you with this project. If you have any questions about the methods, results or recommendations presented here, please do not hesitate to contact me.

Regards,



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Attachments

- Topographic Location Diagram
- Site Diagram – Site Investigation
- Site Diagram – Proposed Sampling
- Analytical Results Summary Table – Soil
- Soil Boring Logs
- Laboratory Reports



Topographic Location Map

Caerus Oil and Gas LLC

5L

(SAVAGE-67S94W /5NWSW)

COGCC Location ID: 335007

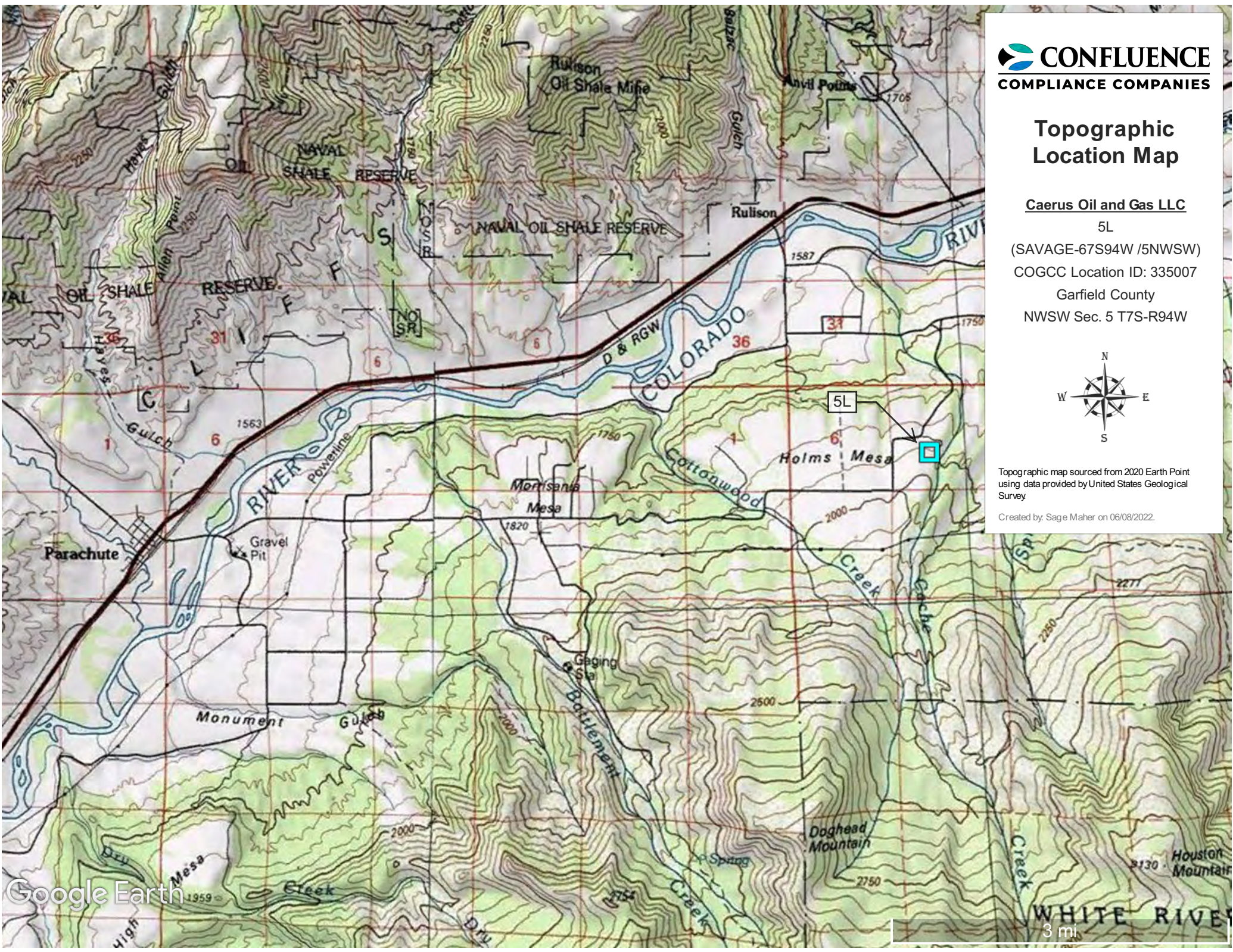
Garfield County

NWSW Sec. 5 T7S-R94W



Topographic map sourced from 2020 Earth Point
using data provided by United States Geological
Survey

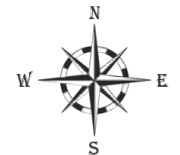
Created by: Sage Maher on 06/08/2022.



Site Diagram Site Investigation

Caerus Oil and Gas LLC

5L
(SAVAGE-67S94W /5NWSW)
COGCC Location ID: 335007
Garfield County
NWSW Sec. 5 T7S-R94W



Legend

- Soil Sample – 05/19/2022
- Soil Sample – March 2023
- SVE Well – March 2023
- Excavation Extent – 5/19/2022

Spatial data was collected using a handheld GPS unit with submeter accuracy. Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. The position of illustrated data may have been manually adjusted to align with the aerial imagery in a manner more representative of field conditions for presentation purposes only.

Map created by: Sage Maher on 04/13/2023.



Site Diagram Proposed Sampling

Caerus Oil and Gas LLC

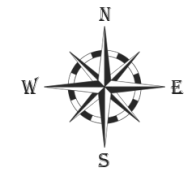
5L

(SAVAGE-67S94W /5NWSW)

COGCC Location ID: 335007

Garfield County

NWSW Sec. 5 T7S-R94W



Legend

- Soil Sample – 05/19/2022
- Soil Boring – March 2023
- SVE Well – March 2023
- Excavation Extent – 5/19/2022
- Proposed Soil Boring

Spatial data was collected using a handheld GPS unit with submeter accuracy. Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. The position of illustrated data may have been manually adjusted to align with the aerial imagery in a manner more representative of field conditions for presentation purposes only.


Map created by: Sage Maher on 04/13/2023.





Laboratory Results Summary Table - Soil 5L


Soil Screening and Remediation Limits				Organic Compounds (mg/kg (ppm))																																
Sample Date	Soil/Soil Source (Equipment) (Agency, Dump Site, Pit, Catching, Background, etc.)	Depth - Z (feet) below ground surface (log)	COGCC Table 915-1 Residential ->	Sample ID	PD (ppm)	TPH (Total Petroleum and extractable petroleum hydrocarbons) (C10-D10-ORO)	TPH-C10 (C6-C10) Low Fraction	TPH-D10 (C16-C28) High Fraction	TPH-ORO (C28-C38) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total (sum of o-, m-, p- isomers)	1,2,4-trimethyl benzene	1,3,5-trimethyl benzene	Acenaphthene	Anthracene	Benz(a)anthracene	Benz(a)pyrene	Benz(b)fluoranthene	Benz(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indene(1,2,3-c)Dipyrrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Pyrene						
																															NA	500	NA	NA	1.2	490
3/21/2023	Separator	-36	20230321-SL(SB04)@35'-36'	3619	766	707	58.6	<4.00	NA	NA	NA	NA	23.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
3/21/2023	Separator	-26	20230321-SL(SB04)@25'-26'	3667	2068	1480	588	<4.00	NA	NA	NA	NA	58.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
3/20/2023	Separator	-16	20230320-SL(SB04)@15'-16'	2552	247	145	101	0.560	NA	NA	NA	NA	11.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
3/20/2023	Separator	-11	20230320-SL(SB04)@10'-11'	116.5	9.98	7.22	2.29	0.462	NA	NA	NA	NA	0.439	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
3/20/2023	Separator	-85	20230320-SL(SB03)@85'	2254	234	128	102	3.54	NA	NA	NA	NA	6.57	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
3/20/2023	Separator	-76	20230320-SL(SB03)@75'-76'	2115	477	427	45.7	3.85	NA	NA	NA	NA	17.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
3/17/2023	Separator	-65	202317-SL(SB03)@65'	1427	229	143	74.2	11.4	NA	NA	NA	NA	2.61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
3/17/2023	Separator	-61	202317-SL(SB03)@60'-61'	2775	298	206	85.1	7.08	NA	NA	NA	NA	17.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3/16/2023	Separator	-51	20230315-SL(SB03)@50'-51'	3461	698	452	244	1.74	NA	NA	NA	NA	15.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3/16/2023	Separator	-46	20230315-SL(SB03)@45'-46'	3142	596	392	203	1.39	NA	NA	NA	NA	11.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3/16/2023	Separator	-36	20230315-SL(SB03)@35'-36'	3721	1124	874	250	<4.00	NA	NA	NA	NA	53.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3/16/2023	Separator	-26	20230315-SL(SB03)@25'-26'	3214	1679	1200	479	<4.00	NA	NA	NA	NA	84.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3/16/2023	Separator	-16	20230315-SL(SB03)@15'-16'	2581	2646	2150	496	<20.0	NA	NA	NA	NA	67.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3/16/2023	Separator	-12	20230315-SL(SB03)@10'-12'	2411	1458	1240	219	<20.0	NA	NA	NA	NA	59.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/15/2023	Separator	-31.5	20230315-SL(SB02)@30'-31.5'	0.7	5.48	0.160	2.13	3.19	NA	NA	NA	NA	0.00145	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3/15/2023	Separator	-19.5	20230315-SL(SB02)@18.5'-19.5'	0.2	6.66	0.0766	3.88	2.70	NA	NA	NA	NA	0.00151	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3/15/2023	Separator	-11.5	20230315-SL(SB02)@10.5'-11.5'	0.1	10.14	0.0688	5.79	4.28	NA	NA	NA	NA	0.00125	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3/9/2023	Separator	-41	20230309-SL(SB01)@40'-41'	1.2	ND	<0.100	<4.00	<4.00	NA	NA	NA	NA	<0.00550	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/9/2023	Separator	-31.5	20230309-SL(SB01)@30.5'-31.5'	0.4	1.174	0.603	<4.00	0.571	NA	NA	NA	NA	0.00105	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/9/2023	Separator	-21	20230309-SL(SB01)@20'-21'	0.5	8.32	0.0909	4.69	3.54	NA	NA	NA	NA	0.00193	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/9/2023	Separator	-10.5	20230309-SL(SB01)@10'-10.5'	1.1	7.83	0.0698	4.14	3.62	NA	NA	NA	NA	0.00265	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5/19/2022	Separator	-6	20220519-SL-PHW@6'	3205	3788	2990	798	<20.0	0.192	2.27	0.200	104	26.9	27.0	0.0323	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	
5/19/2022	Separator	-8.5	20220519-SL-PHW@8.5'	4.6	ND	<0.100	<4.00	<4.00	0.00168	0.0250	<0.00250	0.0742	0.00620	0.00535	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
5/19/2022	Separator	-7	20220519-SL-PHW@7'	13.5	5.43	1.15	<4.00	4.28	0.00188	<0.00500	<0.00250	0.0638	0.0143	0.0144	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600
5/28/2022	Separator	-6.5	20220519-SL-PHW@6.5'	5.1	6.98	<0.100	<4.00	6.98	<0.00100	<0.00500	<0.00250	0.0350	0.00528	0.00655	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600


Soil Screening and Remediation Limits			Soil Suitability for Reclamation							Metals (mg/kg [ppm])								
COGCC Table 915-1 Residential -->			NA	4	6	6-8.3	2	0.68	15000	71	0.3	3100	400	1500	390	390	23000	
Sample Date	Solid/Soil Source (Equipment) (Vault/Sept, Separator, Tank Battery, Dump Line, Pit, Cultrings, Background, etc.)	Depth - Z (feet) (NEGATIVE VALUE) below ground surface (bgs)	Sample ID	PID (ppm)	EC (Specific Conductance) (millimhos/centimeter) (by saturated paste method)	SAR (Sodium Adsorption Ratio) (calculation) (by saturated paste method)	pH (pH Units) (by saturated paste method)	Boron - Hot Water Soluble (mg/L)	Arsenic	Barium	Cadmium (mg/kg)	Chromium (VI)	Copper	Lead	Nickel	Selenium	Silver	Zinc
3/21/2023	Separator	-36	20230321-SL(SB04)@35'-36'	3619	0.0939	0.602	8.30	0.0733	4.25	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/21/2023	Separator	-26	20230321-SL(SB04)@25'-26'	3667	1.080	0.265	7.57	0.0882	3.57	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/20/2023	Separator	-16	20230320-SL(SB04)@15'-16'	2552	0.408	0.276	7.89	0.0824	3.38	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/20/2023	Separator	-11	20230320-SL(SB04)@10'-11'	116.5	0.455	1.71	8.07	0.115	3.17	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/20/2023	Separator	-85	20230320-SL(SB03)@85'	2254	0.134	0.702	8.36	0.0994	4.47	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/20/2023	Separator	-76	20230320-SL(SB03)@75'-76'	2115	0.182	1.39	8.43	0.115	3.55	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/17/2023	Separator	-65	202317-SL(SB03)@65'	1427	0.724	1.41	7.86	0.100	2.46	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/17/2023	Separator	-61	202317-SL(SB03)@60'-61'	2775	0.869	1.47	8.08	0.0868	2.79	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/16/2023	Separator	-51	20230315-SL(SB03)@ 50'-51'	3461	1.670	1.29	7.52	0.127	3.61	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/16/2023	Separator	-46	20230315-SL(SB03)@ 45'-46'	3142	1.980	0.584	7.69	0.165	3.21	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/16/2023	Separator	-36	20230315-SL(SB03)@ 35'-36'	3721	1.380	0.413	7.78	0.399	3.96	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/16/2023	Separator	-26	20230315-SL(SB03)@ 25'-26'	3214	1.240	10.7	8.36	1.33	6.35	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/16/2023	Separator	-16	20230315-SL(SB03)@ 15'-16'	2581	0.553	2.81	9.40	0.568	2.85	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/16/2023	Separator	-12	20230315-SL(SB03)@ 10'-12'	2411	0.943	3.58	9.94	0.580	4.30	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/15/2023	Separator	-31.5	20230315-SL(SB02)@30'-31.5'	0.7	0.198	0.494	8.32	0.0926	3.74	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/15/2023	Separator	-19.5	20230315-SL(SB02)@18.5'-19.5'	0.2	0.139	0.251	8.67	0.0868	2.58	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/15/2023	Separator	-11.5	20230315-SL(SB02)@10.5'-11.5'	1.1	1.760	0.0946	7.65	0.153	3.30	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/9/2023	Separator	-41	20230309-SL(SB01)@ 40'-41'	1.2	0.147	0.741	8.72	<0.200	3.87	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/9/2023	Separator	-31.5	20230309-SL(SB01)@ 30.5' - 31.5'	0.4	0.076	0.763	8.41	0.146	2.94	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/9/2023	Separator	-21	20230309-SL(SB01)@ 20' - 21'	0.5	0.105	0.388	7.98	0.134	3.86	NA	NA	NA	NA	NA	NA	NA	NA	NA
3/9/2023	Separator	-10.5	20230309-SL(SB01)@ 10' - 10.5'	1.1	0.110	0.400	8.46	0.129	3.33	NA	NA	NA	NA	NA	NA	NA	NA	NA
5/19/2022	Separator	-6	20220519-SL-POR@6'	3205	4.660	59.3	8.29	2.180	4.69	609	<0.500	<1.00	15.4	NA	24.8	<2.00	<1.00	40.1
5/19/2022	Separator	-8.5	20220519-SL-PHW@8.5'	4.6	0.223	0.557	8.41	<0.200	3.63	177	<0.500	<1.00	15.2	7.33	27.7	<2.00	<1.00	28.9
5/19/2022	Separator	-7	20220519-SL-PHN@7'	13.5	0.236	0.633	8.20	0.207	4.82	171	<0.500	<1.00	14.0	10.8	21.5	<2.00	<1.00	42.8
5/19/2022	Separator	-6.5	20220519-SL-PHE3@6.5'	5.1	0.222	0.627	8.42	<0.200	4.54	144	<0.500	<1.00	17.1	8.14	33.2	<2.00	<1.00	36.1

Project Name: 5L Separator Release							
Location: 5L							
Lat/Long: 39.465009/-107.914261				Project Number:			
Boring Number: SB01		Scope: Delineation, Characterization, SVE Install			Geologist: Alex Slorby		
Date: 03/09/2023	Start Time: 0945	Finish Time: 1450	DTW: -----	Drilling Equipment: MST-700			
Drilling Method: Solid Stem			Drilling Contractor: CO Drilling & Sampling		Driller: Scott McKracken		
Depth (ft)	Time	Recovery	Standard Penetration Test Results	USCS Symbol	Material Description	PID Reading (ppm)	
10 - 10.5	1005	55%	17 - 20/0	CL	Brown. Sandy clay. Medium grain. Medium plasticity. Gravel. Poorly graded. Fractured shalestone and basalt. No odor. No stain.	Range 1.1	
15 - 16	1035	40%	22 - 50/3	CL	Brown. Sandy clay. Medium grain. Medium plasticity. Gravel. Poorly graded. Fractured shalestone and basalt. Iron oxide presence. No odor. No stain.	1.2	
20 - 21	1055	30%	23 - 50	CH	Brown. Sandy clay. Medium grain. High plasticity. Gravel. Poorly graded. Fractured shalestone and basalt. Only enough material for 2x9oz jars. No odor. No stain.	0.5	
25.5 - 26.5	1135	50%	17 - 20/0	CH	Brown. Sandy clay. Medium grain. High plasticity. Gravel. Poorly graded. Fractured shalestone and basalt. No odor. No stain.	0.4	
30.5 - 31.5	1315	60%	26 - 25 - 15/2	CL	Brown. Sandy clay. Medium grain. Medium plasticity. Gravel. Poorly graded. Fractured shalestone and basalt. No odor. No stain.	0.4	
35 - 36	1405	50%	27 - 23	CH	Brown. Sandy clay. Medium grain. High plasticity. Gravel. Poorly graded. Fractured shalestone and basalt. No odor. No stain.	0.3	
40 - 41	1450	40%	16 - 19	CH	Brown. Sandy clay. Medium grain. High plasticity. Gravel. Poorly graded. Lava rock. Fractured shalestone and basalt. Only enough material for 2x9oz jars. No odor. No stain.	1.2	
Total Depth of Boring: 40 feet			Samples Collected: 10' - 10.5' 20' - 21' (2 Jars) 30.5' - 31.5'			40' - 41' (2 Jars)	Comments:

Project Name: 5L Separator Release						
Location: 5L						
Lat/Long: 39.464962/-107.914335				Project Number:		
Boring Number: SB02		Scope: Delineation, Characterization, SVE Install			Geologist: Alex Slorby	
Date: 03/15/2023	Start Time: 0840	Finish Time: 1440	DTW: -----	Drilling Equipment: MST-700		
Drilling Method: Air Core			Drilling Contractor: CO Drilling & Sampling		Driller: Scott McKracken	
Depth (ft)	Time	Recovery	Standard Penetration Test Results	USCS Symbol	Material Description	PID Reading (ppm)
7 - 10.5	0940	40%	--	--	Solid basalt	Range: --
10.5 - 11.5	1000	50%	16 - 30	CL	Brown. Sandy clay. Medium grain. Medium plasticity. Gravel. Poorly graded. Basalt fragments. Only enough material for 2x9oz jars. No odor. No stain.	0.1
11.5 - 15.5	1040	80%	--	--	Solid basalt.	--
18.5 - 19.5	1115	100%	--	CH	Brown to grey. Sandy fatty clay. Medium grain. High plasticity. Gravel. Poorly graded. Basalt fragments. Only enough material for 2x9oz jars. No odor. No stain.	0.2
25 - 26	1240	50%	16 - 24	CH	Brown. Sandy fatty clay. Medium grain. High plasticity. Gravel. Poorly graded. Basalt fragments. No odor. No stain.	0.0
30 - 31.5	1325	90%	18 - 25 - 33	CH	Brown to grey. Sandy fatty clay. Medium grain. High plasticity. Gravel. Poorly graded. Basalt fragments. Iron oxide presence. No odor. No stain.	0.7
35 - 36	1355	10%	--	--	Solid rock basalt.	--
39 - 40	1440	100%	--	--	Solid basalt. Too hard of rock to crush for sampling.	--
Total Depth of Boring: 40 feet			Samples Collected: 10.5' - 11.5' (2 Jars) 30' - 31.5' 18.5' - 19.5' (2 Jars)			Comments:

Project Name: 5L Separator Release						
Location: 5L						
Lat/Long: 39.465038/-107.914347				Project Number:		
Boring Number: SB03		Scope: Delineation, Characterization, SVE Install			Geologist: Alex Slorby	
Date: 03/16/2023	Start Time: 0905	Finish Time:	DTW: -----	Drilling Equipment: MST-700		
Drilling Method: Solid Stem			Drilling Contractor: CO Drilling & Sampling		Driller: Scott McKracken	
Depth (ft)	Time	Recovery	Standard Penetration Test Results	USCS Symbol	Material Description	PID Reading (ppm)
10 - 12	0920	80%	17 - 23 - 23	CH	Brown. Sandy fatty clay. Fine grain. High plasticity. Gravel. Poorly graded. Basalt. Some black staining. Hydrocarbon odor present.	Range: 2411
15 - 16	1000	50%	19 - 50	CH	Brown. Sandy fatty clay. Fine grain. High plasticity. Gravel. Poorly graded. Basalt. Fractured sandstone. Some black staining. Hydrocarbon odor present.	2581
20 - 21	1045	30%	90/6	CH	Brown. Sandy fatty clay. Fine grain. High plasticity. Gravel. Poorly graded. Not enough material to sample. Hydrocarbon odor present. No staining.	3118
25 - 26	1135	70%	15 - 44 - 22/0	CH	Brown. Sandy fatty clay. Fine grain. High plasticity. Gravel. Poorly graded. Basalt. Some black staining. Hydrocarbon odor present. No staining.	3214
30 - 32	1220	80%	15 - 21 - 43	CH	Brown. Sandy clay. Medium grain. High plasticity. Gravel. Poorly graded. Basalt. Iron oxide presence. Hydrocarbon odor. No staining.	3531
35 - 36	1300	70%	18 - 41 - 25/0	CH	Brown. Sandy clay. Medium grain. High plasticity. Gravel. Poorly graded. Basalt. Iron oxide presence. White crystalline material. Hydrocarbon odor. No staining.	3721
40 - 42	1340	50%	30 - 80 - 44	CH	Brown. Sandy clay. Medium grain. High plasticity. Mostly gravel and rock content. Iron oxide presence. Hydrocarbon odor. No staining.	3135
45 - 46	1430	50%	31 - 50	CH	Brown. Sandy clay. Medium grain. High plasticity. Gravel. Poorly graded. Basalt. Iron oxide presence. Hydrocarbon odor. No staining.	3142
Total Depth of Boring: 86 feet			Samples Collected: 10' - 12' 35' - 36' 15 - 16' 45' - 46' 25' - 26'		Comments: Page 1 of 2	

Project Name: 5L Separator Release						
Location: 5L						
Lat/Long: 39.465038/-107.914347				Project Number:		
Boring Number: SB03		Scope: Delineation, Characterization, SVE Install			Geologist: Alex Slorby	
Date: 03/20/2023	Start Time: 0815	Finish Time: 1225	DTW: -----	Drilling Equipment: MST-700		
Drilling Method: Solid Stem			Drilling Contractor: CO Drilling & Sampling		Driller: Scott McKracken	
Depth (ft)	Time	Recovery	Standard Penetration Test Results	USCS Symbol	Material Description	PID Reading (ppm)
(3/16/23 End) 50 - 51	1520	80%	46 - 64	CH	Brown. Sandy clay. Medium grain. High plasticity. Gravel. Poorly graded. Basalt. Iron oxide presence. Hydrocarbon odor. No staining.	3461
(3/17/23 0825 Start) 60 - 61	1015	85%	60 - 74	CH	Brown. Sandy clay. Medium grain. High plasticity. Gravel. Poorly graded. Basalt. Highly compacted. Little gravel and rock content. Hydrocarbon odor. No staining.	2775
65	1130	100%	115/4	CH	Brown. Sandy clay. Medium grain. High plasticity. Gravel. Poorly graded. Basalt. Little gravel and rock content. Hydrocarbon odor. No staining.	1427
(3/20/23 0815 Start) 75 - 76	1015	80%	27 - 76	CH	Brown. Sandy clay. Medium grain. High plasticity. Gravel. Poorly graded. Basalt. Iron oxide presence. White crystalline material. Hydrocarbon odor. No staining.	2115
85	1225	40%	90/4	CH	Brown. Sandy clay. Slightly moist. Medium grain. High plasticity. Gravel. Poorly graded. Basalt. Iron oxide presence. Hydrocarbon odor. No staining.	2254
					SVE Well Installed Screen & Sand: 86' bgs to 56' bgs Blank & Bentonite: 56' bgs to Ground Surface	
Total Depth of Boring: 86 feet			Samples Collected: 50' - 51' 75' - 76' 60' - 61' 85' 65'		Comments: Page 2 of 2 Couldn't sample @86'. Solid rock.	

Project Name: 5L Separator Release						
Location: 5L						
Lat/Long: 39.465046/-107.914312				Project Number:		
Boring Number: SB04		Scope: Delineation, Characterization, SVE Install			Geologist: Alex Slorby	
Date: 03/20/2023	Start Time: 1510	Finish Time: 3/21/23 1135	DTW: -----	Drilling Equipment: MST-700		
Drilling Method: Solid Stem			Drilling Contractor: CO Drilling & Sampling		Driller: Scott McKracken	
Depth (ft)	Time	Recovery	Standard Penetration Test Results	USCS Symbol	Material Description	PID Reading (ppm)
10 - 11	1530	40%	17 - 45	CH	Brown. Sandy clay. Medium grain. Medium plasticity. Gravel. Poorly graded. Basalt. Iron oxide presence. Only enough material for 1 3/4 x 9oz jars. Hydrocarbon odor. No staining.	Range: 116.5
15 - 16	1600	50%	11 - 25	CH	Brown. Sandy clay. Medium grain. Medium plasticity. Gravel. Poorly graded. Basalt. Iron oxide presence. Hydrocarbon odor. No staining.	2552
25 - 26	0930	70%	19 - 31	CH	Brown. Sandy clay. Medium grain. Medium plasticity. Gravel. Poorly graded. Basalt. Iron oxide presence. White crystalline material. Hydrocarbon odor. No staining.	3667
35 - 36	1135	50%	21 - 80	CH	Brown. Sandy clay. Medium grain. Medium plasticity. Gravel. Poorly graded. Basalt. Iron oxide presence. Only enough material for 2 x 9oz jars. White crystalline material. Hydrocarbon odor. No staining.	3619
<p>SVE Well Installed</p> <p>Screen: 36' bgs to 16' bgs</p> <p>Sand: 36' bgs to 14.5' bgs</p> <p>Blank: 16' bgs to Ground Surface</p> <p>Bentonite: 14.5' bgs to Ground Surface</p>						
Total Depth of Boring: 36 feet			Samples Collected: 10' - 11' (2 Jars) 25' - 26' 15 - 16' 35' - 36' (2 Jars)			Comments:

Caerus Oil and Gas

Sample Delivery Group: L1597165
Samples Received: 03/22/2023
Project Number:
Description: 5L Separator Release
Site: 5L
Report To: Brett M. , Jake J. , Blair R.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

20230321-5L(SB04)@25'-26' L1597165-01 Solid

Collected by
Collected date/time
Received date/time

03/21/23 09:30
03/22/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2028477	1	03/24/23 10:49	03/24/23 10:49	ABL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2028958	1	03/23/23 15:59	03/24/23 09:16	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2028571	1	03/24/23 10:50	03/24/23 13:11	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2028638	1	03/23/23 12:52	03/23/23 20:05	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2029174	5	03/24/23 02:06	03/24/23 14:23	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2030901	1000	03/27/23 10:33	03/27/23 18:24	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2031015	80	03/27/23 10:33	03/28/23 13:45	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2030528	10	03/27/23 15:56	03/28/23 10:42	KAP	Mt. Juliet, TN

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

20230321-5L(SB04)@35'-36' L1597165-02 Solid

Collected by
Collected date/time
Received date/time

03/21/23 11:35
03/22/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2028477	1	03/24/23 10:52	03/24/23 10:52	ABL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2028958	1	03/23/23 15:59	03/24/23 09:16	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2028571	1	03/24/23 10:50	03/24/23 13:11	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2028638	1	03/23/23 12:52	03/23/23 20:08	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2029174	5	03/24/23 02:06	03/24/23 14:26	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2030901	1000	03/27/23 10:33	03/27/23 18:48	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2031015	80	03/27/23 10:33	03/28/23 14:06	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2030528	1	03/27/23 15:56	03/28/23 07:11	KAP	Mt. Juliet, TN

6
Qc

7
Gl

8
Al

9
Sc

CASE NARRATIVE

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



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.265		1	03/24/2023 10:49	WG2028477

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.57	T8	1	03/24/2023 09:16	WG2028958

Sample Narrative:

L1597165-01 WG2028958: 7.57 at 20.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	1080		10.0	1	03/24/2023 13:11	WG2028571

Sample Narrative:

L1597165-01 WG2028571: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.0882	J J3	0.0167	0.200	1	03/23/2023 20:05	WG2028638

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.57		0.100	1.00	5	03/24/2023 14:23	WG2029174

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	1480		21.7	100	1000	03/27/2023 18:24	WG2030901
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	97.5			77.0-120		03/27/2023 18:24	WG2030901

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	58.4		0.0704	0.520	80	03/28/2023 13:45	WG2031015
(S) Toluene-d8	92.5			75.0-131		03/28/2023 13:45	WG2031015
(S) 4-Bromofluorobenzene	119			67.0-138		03/28/2023 13:45	WG2031015
(S) 1,2-Dichloroethane-d4	105			70.0-130		03/28/2023 13:45	WG2031015

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	558		16.1	40.0	10	03/28/2023 10:42	WG2030528
C28-C36 Motor Oil Range	U		2.74	40.0	10	03/28/2023 10:42	WG2030528
(S) <i>o</i> -Terphenyl	61.9			18.0-148		03/28/2023 10:42	WG2030528

Sample Narrative:

L1597165-01 WG2030528: Dilution due to matrix.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.602		1	03/24/2023 10:52	WG2028477

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.30	T8	1	03/24/2023 09:16	WG2028958

Sample Narrative:

L1597165-02 WG2028958: 8.3 at 20.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	93.9		10.0	1	03/24/2023 13:11	WG2028571

Sample Narrative:

L1597165-02 WG2028571: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.0733	J J3	0.0167	0.200	1	03/23/2023 20:08	WG2028638

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.25		0.100	1.00	5	03/24/2023 14:26	WG2029174

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	707		21.7	100	1000	03/27/2023 18:48	WG2030901
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	100			77.0-120		03/27/2023 18:48	WG2030901

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	23.8		0.0704	0.520	80	03/28/2023 14:06	WG2031015
(S) Toluene-d8	95.2			75.0-131		03/28/2023 14:06	WG2031015
(S) 4-Bromofluorobenzene	123			67.0-138		03/28/2023 14:06	WG2031015
(S) 1,2-Dichloroethane-d4	108			70.0-130		03/28/2023 14:06	WG2031015

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	58.6		1.61	4.00	1	03/28/2023 07:11	WG2030528
C28-C36 Motor Oil Range	U		0.274	4.00	1	03/28/2023 07:11	WG2030528
(S) <i>o</i> -Terphenyl	53.7			18.0-148		03/28/2023 07:11	WG2030528

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1597353-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597353-01 03/24/23 09:16 • (DUP) R3904897-3 03/24/23 09:16

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	8.00	8.00	1	0.000		1

Sample Narrative:

OS: 8 at 20.6C

DUP: 8 at 21C

Laboratory Control Sample (LCS)

(LCS) R3904897-1 03/24/23 09:16

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

Sample Narrative:

LCS: 10.01 at 20.5C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3905069-1 03/24/23 13:11

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

Sample Narrative:

BLANK: at 25C

L1597165-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1597165-02 03/24/23 13:11 • (DUP) R3905069-3 03/24/23 13:11

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	93.9	93.6	1	0.320		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3905069-2 03/24/23 13:11

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1160	104	85.0-115	

Sample Narrative:

LCS: at 25C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3904858-1 03/23/23 19:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3904858-2 03/23/23 20:00 • (LCSD) R3904858-3 03/23/23 20:02

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	0.908	1.11	90.8	111	80.0-120		<u>J3</u>	20.3	20

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

Method Blank (MB)

(MB) R3905136-1 03/24/23 14:00

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

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3905136-2 03/24/23 14:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	95.8	95.8	80.0-120	

4 Cn

5 Sr

L1597531-16 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597531-16 03/24/23 14:06 • (MS) R3905136-5 03/24/23 14:16 • (MSD) R3905136-6 03/24/23 14:19

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	99.6	1.45	102	89.3	100	87.9	5	75.0-125			13.2	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3906473-2 03/27/23 13:17

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.752	↓	0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	97.9			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3906473-1 03/27/23 12:28

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.10	111	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	

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

Method Blank (MB)

(MB) R3906299-3 03/28/23 10:11

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	92.8			75.0-131
(S) 4-Bromofluorobenzene	111			67.0-138
(S) 1,2-Dichloroethane-d4	87.3			70.0-130

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

(LCS) R3906299-1 03/28/23 08:23 • (LCSD) R3906299-2 03/28/23 08:44

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 %
Xylenes, Total	0.375	0.383	0.362	102	96.5	72.0-127			5.64	20
(S) Toluene-d8				95.9	91.6	75.0-131				
(S) 4-Bromofluorobenzene				118	117	67.0-138				
(S) 1,2-Dichloroethane-d4				111	106	70.0-130				

L1597344-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597344-02 03/28/23 12:20 • (MS) R3906299-4 03/28/23 16:58 • (MSD) R3906299-5 03/28/23 17:19

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 %
Xylenes, Total	0.404	U	0.272	0.317	80.7	94.1	1	10.0-160			15.3	38
(S) Toluene-d8					93.9	93.4		75.0-131				
(S) 4-Bromofluorobenzene					109	106		67.0-138				
(S) 1,2-Dichloroethane-d4					89.4	91.3		70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3906258-1 03/28/23 06:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.458	<u>J</u>	0.274	4.00
<i>(S) o-Terphenyl</i>	75.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3906258-2 03/28/23 06:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	33.7	67.4	50.0-150	
<i>(S) o-Terphenyl</i>			83.0	18.0-148	

L1597166-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597166-02 03/28/23 10:35 • (MS) R3906267-1 03/28/23 10:49 • (MSD) R3906267-2 03/28/23 11:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.2	101	98.3	124	0.000	46.7	1	50.0-150	<u>J6</u>	<u>J3 J6</u>	23.1	20
<i>(S) o-Terphenyl</i>					67.1	72.9		18.0-148				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

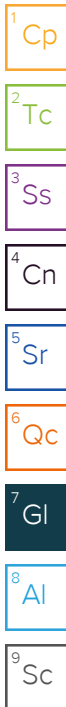
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

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



ACCREDITATIONS & LOCATIONS

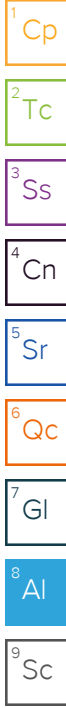
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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





CHAIN-OF-CUSTODY Analytical Request Document

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

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

61592165

ALL BOLD OUTLINED AREAS are for LAB USE ONLY

Company: Caerus Oil and Gas LLC
 Address: Info on file
 Report To: Jake Janicek, Brett Middleton, Blair Rollins
 Copy To: Chris McKisson, remediation@confluence-cc.com
 Customer Project Name/Number: 5L Separator Release

Billing Information:
 Info on file
 Email To: info on file
 Site Collection Info/Address:
 State: County/City: Time Zone Collected:
 CD / Garfield | |PT [X]MT | |CT | |ET

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

Phone: Site/Facility ID #: 5L Compliance Monitoring?
 Email: [] Yes [X] No
 Collected By (print): Alex Slorby Purchase Order #: DW PWS ID #:
 Quote #: DW Location Code:
 Collected By (signature): *Alex Slorby* Turnaround Date Required: Standard Immediately Packed on Ice:
 Turnaround [X] Yes [] No
 Sample Disposal: Rush: (Expedite Charges Apply) Field Filtered (if applicable):
 [] Dispose as appropriate [] Same Day [] Next Day [] Yes [] No
 [] Return [] 2 Day [] 3 Day
 [] Archive: [] 4 Day [] 5 Day
 [] Hold: Analysis:

Analyses	Lab Profile/Line:	
	Lab Sample Receipt Checklist:	
TPH (ORO, GRO, DRO)	Custody Seals Present/Intact	Y <input checked="" type="checkbox"/> N NA
pH, EC, SAR	Custody Signatures Present	Y <input checked="" type="checkbox"/> N NA
Table 915-1 VOCs	Collector Signature Present	X <input checked="" type="checkbox"/> N NA
Table 915-1 PAHs	Bottles Intact	X <input checked="" type="checkbox"/> N NA
pH, EC, SAR	Correct Bottles	Y <input checked="" type="checkbox"/> N NA
Boron (Hot Water Soluble Soil)	Sufficient Volume	Y <input checked="" type="checkbox"/> N NA
Arsenic	Samples Received on Ice	Y <input checked="" type="checkbox"/> N NA
Xylenes	VOA - Headspace Acceptable	Y <input checked="" type="checkbox"/> N NA
	USDA Regulated Soils	Y <input checked="" type="checkbox"/> N NA
	Samples in Holding Time	X <input checked="" type="checkbox"/> N NA
	Residual Chlorine Present	Y <input checked="" type="checkbox"/> N NA
	Cl Strips:	
	Sample pH Acceptable	Y <input checked="" type="checkbox"/> N NA
	pH Strips:	
	Sulfide Present	Y <input checked="" type="checkbox"/> N NA
	Lead Acetate Strips:	

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

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	Container Type: Plastic (P) or Glass (G)
			Date	Time	Date	Time			
20230321-5L(SB04)@ 25' - 26'	SL	G			3/21/2023	0930		3	G/P
20230321-5L(SB04)@ 35' - 36'	SL	G			3/21/2023	1135		2	G

TPH (ORO, GRO, DRO)	pH, EC, SAR	Table 915-1 VOCs	Table 915-1 PAHs	pH, EC, SAR	Boron (Hot Water Soluble Soil)	Arsenic	Xylenes
X	X			X	X	X	X
X	X			X	X	X	X

Customer Remarks / Special Conditions / Possible Hazards:
 Type of Ice Used: Wet Blue Dry None
 Packing Material Used:
 Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A
 Lab Tracking #:
 Samples received via:
 FEDEX UPS Client Courier Pace Courier

LAB Sample Temperature Info:
 Temp Blank Received: Y N NA
 Therm ID#: *NSM7*
 Cooler 1 Temp Upon Receipt: *4.3*
 Cooler 1 Therm Corr. Factor: *0.0*
 Cooler 1 Corrected Temp: *0.0*
 Comments:

Relinquished by/Company: (Signature) *Alex Slorby* Date/Time: *3/23/23 1600*
 Relinquished by/Company: (Signature) *[Signature]* Date/Time: *3/23/23 17*
 Relinquished by/Company: (Signature) Date/Time:

Received by/Company: (Signature) Date/Time: *J098*
 Received by/Company: (Signature) Date/Time:
 Received by/Company: (Signature) Date/Time: *03/22/23 0915*

Trip Blank Received: Y N NA
 HCL MeOH TSP Other
 Non Conformance(s): YES / NO Page: of:

Caerus Oil and Gas

Sample Delivery Group: L1597168
Samples Received: 03/22/2023
Project Number:
Description: 5L Separator Release
Site: 5L
Report To: Brett M. , Jake J. , Blair R.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

20230320-5L(SB03)@75'-76' L1597168-01 Solid

Collected by
Collected date/time
Received date/time

03/20/23 10:15
03/22/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2028477	1	03/24/23 11:00	03/24/23 11:00	ABL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2028958	1	03/23/23 15:59	03/24/23 09:16	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2028571	1	03/24/23 10:50	03/24/23 13:11	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2028638	1	03/23/23 12:52	03/23/23 20:16	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2029174	5	03/24/23 02:06	03/24/23 15:02	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2030901	1000	03/27/23 10:33	03/27/23 20:01	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2032167	10	03/27/23 10:33	03/29/23 14:13	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2030528	1	03/27/23 15:56	03/28/23 07:38	KAP	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

20230320-5L(SB03)@85' L1597168-02 Solid

Collected by
Collected date/time
Received date/time

03/20/23 12:25
03/22/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2028477	1	03/24/23 11:03	03/24/23 11:03	ABL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2028958	1	03/23/23 15:59	03/24/23 09:16	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2028571	1	03/24/23 10:50	03/24/23 13:11	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2028638	1	03/23/23 12:52	03/23/23 20:19	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2029174	5	03/24/23 02:06	03/24/23 15:06	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2031587	100	03/27/23 10:33	03/28/23 23:44	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2031899	4	03/27/23 10:33	03/29/23 13:09	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2030528	1	03/27/23 15:56	03/28/23 07:51	KAP	Mt. Juliet, TN

6 Qc

7 Gl

8 Al

9 Sc

CASE NARRATIVE

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



Chris Ward
Project Manager

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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.39		1	03/24/2023 11:00	WG2028477

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.43	T8	1	03/24/2023 09:16	WG2028958

Sample Narrative:

L1597168-01 WG2028958: 8.43 at 20.1C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	182		10.0	1	03/24/2023 13:11	WG2028571

Sample Narrative:

L1597168-01 WG2028571: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.115	J J3	0.0167	0.200	1	03/23/2023 20:16	WG2028638

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.55		0.100	1.00	5	03/24/2023 15:02	WG2029174

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	427		21.7	100	1000	03/27/2023 20:01	WG2030901
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	98.9			77.0-120		03/27/2023 20:01	WG2030901

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	17.9		0.00880	0.0650	10	03/29/2023 14:13	WG2032167
(S) Toluene-d8	96.3			75.0-131		03/29/2023 14:13	WG2032167
(S) 4-Bromofluorobenzene	118			67.0-138		03/29/2023 14:13	WG2032167
(S) 1,2-Dichloroethane-d4	101			70.0-130		03/29/2023 14:13	WG2032167

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	45.7		1.61	4.00	1	03/28/2023 07:38	WG2030528
C28-C36 Motor Oil Range	3.85	B J	0.274	4.00	1	03/28/2023 07:38	WG2030528
(S) <i>o</i> -Terphenyl	71.7			18.0-148		03/28/2023 07:38	WG2030528

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.702		1	03/24/2023 11:03	WG2028477

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.36	T8	1	03/24/2023 09:16	WG2028958

Sample Narrative:

L1597168-02 WG2028958: 8.36 at 20.8C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	134		10.0	1	03/24/2023 13:11	WG2028571

Sample Narrative:

L1597168-02 WG2028571: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.0994	J J3	0.0167	0.200	1	03/23/2023 20:19	WG2028638

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.47		0.100	1.00	5	03/24/2023 15:06	WG2029174

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	128		2.17	10.0	100	03/28/2023 23:44	WG2031587
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	100			77.0-120		03/28/2023 23:44	WG2031587

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

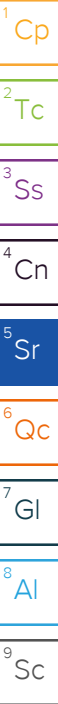
Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	6.57		0.00352	0.0260	4	03/29/2023 13:09	WG2031899
(S) Toluene-d8	104			75.0-131		03/29/2023 13:09	WG2031899
(S) 4-Bromofluorobenzene	149	J1		67.0-138		03/29/2023 13:09	WG2031899
(S) 1,2-Dichloroethane-d4	100			70.0-130		03/29/2023 13:09	WG2031899

Sample Narrative:

L1597168-02 WG2031899: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	102		1.61	4.00	1	03/28/2023 07:51	WG2030528
C28-C36 Motor Oil Range	3.54	B J	0.274	4.00	1	03/28/2023 07:51	WG2030528
(S) <i>o</i> -Terphenyl	74.0			18.0-148		03/28/2023 07:51	WG2030528



L1597353-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597353-01 03/24/23 09:16 • (DUP) R3904897-3 03/24/23 09:16

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	8.00	8.00	1	0.000		1

Sample Narrative:

OS: 8 at 20.6C

DUP: 8 at 21C

Laboratory Control Sample (LCS)

(LCS) R3904897-1 03/24/23 09:16

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

Sample Narrative:

LCS: 10.01 at 20.5C

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

Method Blank (MB)

(MB) R3905069-1 03/24/23 13:11

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

Sample Narrative:

BLANK: at 25C

L1597165-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1597165-02 03/24/23 13:11 • (DUP) R3905069-3 03/24/23 13:11

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	93.9	93.6	1	0.320		20

Sample Narrative:

OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3905069-2 03/24/23 13:11

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1160	104	85.0-115	

Sample Narrative:

LCS: at 25C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3904858-1 03/23/23 19:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3904858-2 03/23/23 20:00 • (LCSD) R3904858-3 03/23/23 20:02

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	0.908	1.11	90.8	111	80.0-120		<u>J3</u>	20.3	20

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

Method Blank (MB)

(MB) R3905136-1 03/24/23 14:00

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

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3905136-2 03/24/23 14:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	95.8	95.8	80.0-120	

4 Cn

5 Sr

L1597531-16 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597531-16 03/24/23 14:06 • (MS) R3905136-5 03/24/23 14:16 • (MSD) R3905136-6 03/24/23 14:19

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	99.6	1.45	102	89.3	100	87.9	5	75.0-125			13.2	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3906473-2 03/27/23 13:17

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.752	↓	0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	97.9			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3906473-1 03/27/23 12:28

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.10	111	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	

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

Method Blank (MB)

(MB) R3906784-2 03/28/23 22:01

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.759	↓	0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	99.4			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3906784-1 03/28/23 20:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.13	111	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			106	77.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3906836-3 03/29/23 10:03

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	95.0			75.0-131
(S) 4-Bromofluorobenzene	113			67.0-138
(S) 1,2-Dichloroethane-d4	89.0			70.0-130

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

(LCS) R3906836-1 03/29/23 08:18 • (LCSD) R3906836-2 03/29/23 08:39

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 %
Xylenes, Total	0.375	0.367	0.364	97.9	97.1	72.0-127			0.821	20
(S) Toluene-d8				94.9	90.9	75.0-131				
(S) 4-Bromofluorobenzene				114	116	67.0-138				
(S) 1,2-Dichloroethane-d4				104	106	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3906914-3 03/29/23 10:03

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	95.0			75.0-131
(S) 4-Bromofluorobenzene	113			67.0-138
(S) 1,2-Dichloroethane-d4	89.0			70.0-130

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

(LCS) R3906914-1 03/29/23 08:18 • (LCSD) R3906914-2 03/29/23 08:39

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 %
Xylenes, Total	0.375	0.367	0.364	97.9	97.1	72.0-127			0.821	20
(S) Toluene-d8				94.9	90.9	75.0-131				
(S) 4-Bromofluorobenzene				114	116	67.0-138				
(S) 1,2-Dichloroethane-d4				104	106	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3906258-1 03/28/23 06:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.458	J	0.274	4.00
(S) o-Terphenyl	75.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3906258-2 03/28/23 06:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	33.7	67.4	50.0-150	
(S) o-Terphenyl			83.0	18.0-148	

L1597166-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597166-02 03/28/23 10:35 • (MS) R3906267-1 03/28/23 10:49 • (MSD) R3906267-2 03/28/23 11:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.2	101	98.3	124	0.000	46.7	1	50.0-150	J6	J3 J6	23.1	20
(S) o-Terphenyl					67.1	72.9		18.0-148				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

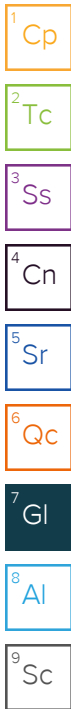
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
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.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

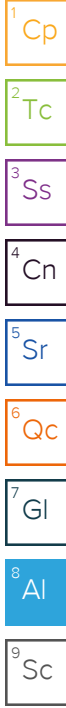
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

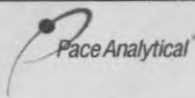
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Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina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

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

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

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





CHAIN-OF-CUSTODY Analytical Request Document

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and

Conditions found at: <https://info.pacelabs.com/hubfs/pas-standard-terms.pdf>

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

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

MTJL Log-in Number Here

61597168

ALL BOLD OUTLINED AREAS are for LAB USE ONLY

Company: Caerus Oil and Gas LLC

Billing Information: Info on file

Address: Info on file

Report To: Jake Janicek, Brett Middleton, Blair Rollins

Copy To: Chris McKisson, remediation@confluence-cc.com

Email To: info on file

Customer Project Name/Number: 5L Separator Release

State: County/City: Time Zone Collected:

CO / Garfield []PT [X]MT []CT []ET

Phone:

Site/Facility ID #: 5L

Compliance Monitoring?

Email:

Purchase Order #:

[] Yes [X] No

Collected By (print): Alex Slorby

Quote #:

DW PWS ID #:

Collected By (signature): Alex Slorby

Turnaround Date Required: Standard

DW Location Code:

Sample Disposal:

Rush: (Expedite Charges Apply)

Immediately Packed on Ice:

[] Dispose as appropriate

[] Same Day [] Next Day

[X] Yes [] No

[] Return

[] 2 Day [] 3 Day

[] Yes [] No

[] Archive:

[] 4 Day [] 5 Day

Analysis:

[] Hold:

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

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		

20230320-5L(SB03)@ 75' - 76'

SL G 3/20/2023 1015 3 G/P

20230320-5L(SB03)@ 85'

SL G 3/20/2023 1225 3 G/P

Container Type: Plastic (P) or Glass (G)

TPH (ORO, GRO, DRO)

pH, EC, SAR

Table 915-1 VOCs

Table 915-1 PAHs

pH, EC, SAR

Boron (Hot Water Soluble Soil)

Arsenic

Xylenes

Lab Profile/Line:

Lab Sample Receipt Checklist:	
Custody Seals Present/Intact	Y N NA
Custody Signatures Present	Y N NA
Collector Signature Present	Y N NA
Bottles Intact	Y N NA
Correct Bottles	Y N NA
Sufficient Volume	Y N NA
Samples Received on Ice	Y N NA
VOA - Headspace Acceptable	Y N NA
USDA Regulated Soils	Y N NA
Samples in Holding Time	Y N NA
Residual Chlorine Present	Y N NA
Cl Strips:	
Sample pH Acceptable	Y N NA
pH Strips:	
Sulfide Present	Y N NA
Lead Acetate Strips:	

LAB USE ONLY: Lab Sample # / Comments:

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used:

Lab Tracking #:

Radchem sample(s) screened (<500 cpm): Y N NA

Samples received via: FEDEX UPS Client Courier Pace Courier

LAB Sample Temperature Info:

Temp Blank Received: Y N NA
Therm ID#: NSA7
Cooler 1 Temp Upon Receipt: 4.3°C
Cooler 1 Therm Corr. Factor: 0°C
Cooler 1 Corrected Temp: 0°C
Comments:

Relinquished by/Company: (Signature) Alex Slorby

Date/Time: 3/21/23 1200

Received by/Company: (Signature)

Date/Time: J100

Relinquished by/Company: (Signature)

Date/Time: 3/21/23 1700

Received by/Company: (Signature)

Date/Time: Acctnum: Template: Prelogin:

Relinquished by/Company: (Signature)

Date/Time:

Received by/Company: (Signature)

Date/Time: PM: PB: 08/02/23 0915

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO Page: of:

Caerus Oil and Gas

Sample Delivery Group: L1597166
Samples Received: 03/22/2023
Project Number:
Description: 5L Separator Release
Site: 5L
Report To: Brett M. , Jake J. , Blair R.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SAMPLE SUMMARY

20230320-5L(SB04)@10'-11' L1597166-01 Solid

Collected by:
 Collected date/time: 03/20/23 15:30
 Received date/time: 03/22/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2028477	1	03/24/23 10:55	03/24/23 10:55	ABL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2028958	1	03/23/23 15:59	03/24/23 09:16	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2028571	1	03/24/23 10:50	03/24/23 13:11	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2028638	1	03/23/23 12:52	03/23/23 20:11	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2029174	5	03/24/23 02:06	03/24/23 14:56	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2031587	25	03/27/23 10:33	03/28/23 23:20	KSD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2031899	1	03/27/23 10:33	03/29/23 12:06	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2030528	1	03/27/23 15:56	03/28/23 07:24	KAP	Mt. Juliet, TN

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

20230320-5L(SB04)@15'-16' L1597166-02 Solid

Collected by:
 Collected date/time: 03/20/23 16:00
 Received date/time: 03/22/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2028477	1	03/24/23 10:58	03/24/23 10:58	ABL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2028958	1	03/23/23 15:59	03/24/23 09:16	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2028571	1	03/24/23 10:50	03/24/23 13:11	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2028638	1	03/23/23 12:52	03/23/23 20:13	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2029174	5	03/24/23 02:06	03/24/23 14:59	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2030901	1000	03/27/23 10:33	03/27/23 19:37	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2031899	4	03/27/23 10:33	03/29/23 12:48	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2030528	1	03/27/23 15:56	03/28/23 10:35	JAS	Mt. Juliet, TN

6
Qc

7
Gl

8
Al

9
Sc

CASE NARRATIVE

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



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.71		1	03/24/2023 10:55	WG2028477

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.07	T8	1	03/24/2023 09:16	WG2028958

Sample Narrative:

L1597166-01 WG2028958: 8.07 at 20.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	455		10.0	1	03/24/2023 13:11	WG2028571

Sample Narrative:

L1597166-01 WG2028571: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.115	J J3	0.0167	0.200	1	03/23/2023 20:11	WG2028638

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.17		0.100	1.00	5	03/24/2023 14:56	WG2029174

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	7.22	B	0.543	2.50	25	03/28/2023 23:20	WG2031587
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	101			77.0-120		03/28/2023 23:20	WG2031587

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	0.439		0.000880	0.00650	1	03/29/2023 12:06	WG2031899
(S) Toluene-d8	93.4			75.0-131		03/29/2023 12:06	WG2031899
(S) 4-Bromofluorobenzene	111			67.0-138		03/29/2023 12:06	WG2031899
(S) 1,2-Dichloroethane-d4	79.9			70.0-130		03/29/2023 12:06	WG2031899

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	2.29	J	1.61	4.00	1	03/28/2023 07:24	WG2030528
C28-C36 Motor Oil Range	0.462	B J	0.274	4.00	1	03/28/2023 07:24	WG2030528
(S) <i>o</i> -Terphenyl	57.0			18.0-148		03/28/2023 07:24	WG2030528

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.276		1	03/24/2023 10:58	WG2028477

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.89	T8	1	03/24/2023 09:16	WG2028958

Sample Narrative:

L1597166-02 WG2028958: 7.89 at 20.2C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	408		10.0	1	03/24/2023 13:11	WG2028571

Sample Narrative:

L1597166-02 WG2028571: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.0824	J J3	0.0167	0.200	1	03/23/2023 20:13	WG2028638

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.38		0.100	1.00	5	03/24/2023 14:59	WG2029174

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	145	B	21.7	100	1000	03/27/2023 19:37	WG2030901
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	101			77.0-120		03/27/2023 19:37	WG2030901

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

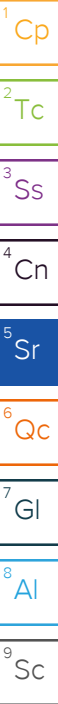
Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	11.4		0.00352	0.0260	4	03/29/2023 12:48	WG2031899
(S) Toluene-d8	94.1			75.0-131		03/29/2023 12:48	WG2031899
(S) 4-Bromofluorobenzene	148	J1		67.0-138		03/29/2023 12:48	WG2031899
(S) 1,2-Dichloroethane-d4	100			70.0-130		03/29/2023 12:48	WG2031899

Sample Narrative:

L1597166-02 WG2031899: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	101	J3 J6	1.61	4.00	1	03/28/2023 10:35	WG2030528
C28-C36 Motor Oil Range	0.560	B J	0.274	4.00	1	03/28/2023 10:35	WG2030528
(S) <i>o</i> -Terphenyl	73.9			18.0-148		03/28/2023 10:35	WG2030528



L1597353-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597353-01 03/24/23 09:16 • (DUP) R3904897-3 03/24/23 09:16

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	8.00	8.00	1	0.000		1

Sample Narrative:

OS: 8 at 20.6C
DUP: 8 at 21C

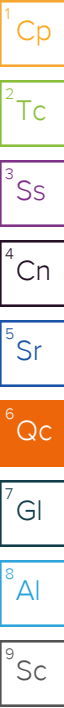
Laboratory Control Sample (LCS)

(LCS) R3904897-1 03/24/23 09:16

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

Sample Narrative:

LCS: 10.01 at 20.5C



Method Blank (MB)

(MB) R3905069-1 03/24/23 13:11

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1597165-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1597165-02 03/24/23 13:11 • (DUP) R3905069-3 03/24/23 13:11

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	93.9	93.6	1	0.320		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3905069-2 03/24/23 13:11

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	1120	1160	104	85.0-115	

Sample Narrative:

LCS: at 25C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3904858-1 03/23/23 19:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3904858-2 03/23/23 20:00 • (LCSD) R3904858-3 03/23/23 20:02

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	0.908	1.11	90.8	111	80.0-120		<u>J3</u>	20.3	20

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

Method Blank (MB)

(MB) R3905136-1 03/24/23 14:00

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

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3905136-2 03/24/23 14:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	95.8	95.8	80.0-120	

4 Cn

5 Sr

L1597531-16 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597531-16 03/24/23 14:06 • (MS) R3905136-5 03/24/23 14:16 • (MSD) R3905136-6 03/24/23 14:19

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	99.6	1.45	102	89.3	100	87.9	5	75.0-125			13.2	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3906473-2 03/27/23 13:17

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.752	↓	0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	97.9			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3906473-1 03/27/23 12:28

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.10	111	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	

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

Method Blank (MB)

(MB) R3906784-2 03/28/23 22:01

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.759	↓	0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	99.4			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3906784-1 03/28/23 20:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.13	111	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			106	77.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3906836-3 03/29/23 10:03

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	95.0			75.0-131
(S) 4-Bromofluorobenzene	113			67.0-138
(S) 1,2-Dichloroethane-d4	89.0			70.0-130

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

(LCS) R3906836-1 03/29/23 08:18 • (LCSD) R3906836-2 03/29/23 08:39

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 %
Xylenes, Total	0.375	0.367	0.364	97.9	97.1	72.0-127			0.821	20
(S) Toluene-d8				94.9	90.9	75.0-131				
(S) 4-Bromofluorobenzene				114	116	67.0-138				
(S) 1,2-Dichloroethane-d4				104	106	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3906258-1 03/28/23 06:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.458	J	0.274	4.00
(S) o-Terphenyl	75.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3906258-2 03/28/23 06:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	33.7	67.4	50.0-150	
(S) o-Terphenyl			83.0	18.0-148	

L1597166-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597166-02 03/28/23 10:35 • (MS) R3906267-1 03/28/23 10:49 • (MSD) R3906267-2 03/28/23 11:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.2	101	98.3	124	0.000	46.7	1	50.0-150	J6	J3 J6	23.1	20
(S) o-Terphenyl					67.1	72.9		18.0-148				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

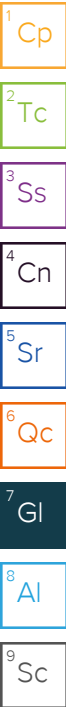
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

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



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

¹ Cp

² Tc

³ Ss

⁴ Cn

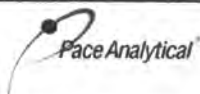
⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



CHAIN-OF-CUSTODY Analytical Request Document

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

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

L-1597166

ALL BOLD OUTLINED AREAS are for LAB USE ONLY

Company: Caerus Oil and Gas LLC	Billing Information: Info on file
Address: Info on file	
Report To: Jake Janicek, Brett Middleton, Blair Rollins	Email To: info on file
Copy To: Chris McKisson, remediation@confluence-cc.com	Site Collection Info/Address:

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

Customer Project Name/Number: 5L Separator Release	State: <u>CO</u> / County/City: <u>Garfield</u> / Time Zone Collected: <u>[]PT [X]MT []CT []ET</u>
Phone: _____	Site/Facility ID #: 5L
Email: _____	Compliance Monitoring? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Collected By (print): Alex Slorby	Purchase Order #: _____
	Quote #: _____
Collected By (signature):	Turnaround Date Required: Standard Turnaround
	Immediately Packed on Ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Sample Disposal: <input type="checkbox"/> Dispose as appropriate <input type="checkbox"/> Return <input type="checkbox"/> Archive: _____ <input type="checkbox"/> Hold: _____	Rush: (Expedite Charges Apply) <input type="checkbox"/> Same Day <input type="checkbox"/> Next Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 4 Day <input type="checkbox"/> 5 Day
	Field Filtered (if applicable): <input type="checkbox"/> Yes <input type="checkbox"/> No
	Analysis: _____

Analyses		Lab Profile/Line:
TPH (ORO, GRO, DRO)		Lab Sample Receipt Checklist:
pH, EC, SAR		Custody Seals Present/Intact Y <input checked="" type="checkbox"/> NA
Table 915-1 VOCs		Custody Signatures Present Y <input checked="" type="checkbox"/> NA
Table 915-1 PAHs		Collector Signature Present Y <input checked="" type="checkbox"/> NA
pH, EC, SAR		Bottles Intact Y <input checked="" type="checkbox"/> NA
Boron (Hot Water Soluble Soil)		Correct Bottles Y <input checked="" type="checkbox"/> NA
Arsenic		Sufficient Volume Y <input checked="" type="checkbox"/> NA
Xylenes		Samples Received on Ice Y <input checked="" type="checkbox"/> NA
		VOA - Headspace Acceptable Y <input checked="" type="checkbox"/> NA
		USDA Regulated Soils Y <input checked="" type="checkbox"/> NA
		Samples in Holding Time Y <input checked="" type="checkbox"/> NA
		Residual Chlorine Present Y <input checked="" type="checkbox"/> NA
		Cl Strips: _____
		Sample pH Acceptable Y <input checked="" type="checkbox"/> NA
		pH Strips: _____
		Sulfide Present Y <input checked="" type="checkbox"/> NA
		Lead Acetate Strips: _____

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

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)				Composite End	Res Cl	# of Ctns	Container Type: Plastic (P) or Glass (G)
			Date	Time	Date	Time				
20230320-5L(SB04)@ 10' - 11'	SL	G			3/20/2023	1530		2	G	
20230320-5L(SB04)@ 15' - 16'	SL	G			3/20/2023	1600		3	G/P	

LAB USE ONLY: Lab Sample # / Comments:
01 02

Customer Remarks / Special Conditions / Possible Hazards:	Type of Ice Used: Wet Blue Dry None
	Packing Material Used:
	Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A	LAB Sample Temperature Info:
Lab Tracking #:	Temp Blank Received: Y N NA
Samples received via: FEDEX UPS Client Courier Pace Courier	Therm ID#: <u>NSA7</u>
	Cooler 1 Temp Upon Receipt: <u>4.3</u>
	Cooler 1 Therm Corr. Factor: _____
	Cooler 1 Corrected Temp: _____
	Comments:


Relinquished by/Company: (Signature)	Date/Time: <u>3/21/23 1200</u>	Received by/Company: (Signature)	Date/Time: _____
Relinquished by/Company: (Signature)	Date/Time: <u>3/21/23 1700</u>	Received by/Company: (Signature) _____	Date/Time: _____
Relinquished by/Company: (Signature) _____	Date/Time: _____	Received by/Company: (Signature) _____	Date/Time: <u>03/22/23 0915</u>

Acctnum: _____	Trip Blank Received: Y N NA
Template: _____	HCL MeOH TSP Other
Prelogin: _____	
PM: _____	Non Conformance(s): _____
PB: _____	YES / NO
	Page: _____
	of: _____

Caerus Oil and Gas

Sample Delivery Group: L1596359
Samples Received: 03/18/2023
Project Number:
Description: 5L
Site: 5L
Report To: Brett M. , Jake J. , Blair R.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

SAMPLE SUMMARY

230317-5L(SB03)@60'-61' L1596359-01 Solid

Collected by: Alex Slorby
 Collected date/time: 03/17/23 10:15
 Received date/time: 03/18/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2026293	1	03/22/23 13:47	03/22/23 13:47	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2027257	1	03/22/23 10:08	03/22/23 12:56	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2025290	1	03/22/23 07:00	03/22/23 11:06	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2025972	1	03/21/23 11:31	03/21/23 21:40	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2027194	5	03/21/23 13:46	03/21/23 19:48	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2027492	1000	03/21/23 10:52	03/22/23 00:01	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2028668	20	03/21/23 10:52	03/23/23 14:29	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2028429	1	03/23/23 09:02	03/23/23 16:03	JAS	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

230317-5L(SB03)@65' L1596359-02 Solid

Collected by: Alex Slorby
 Collected date/time: 03/17/23 11:30
 Received date/time: 03/18/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2026293	1	03/22/23 13:50	03/22/23 13:50	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2027257	1	03/22/23 10:08	03/22/23 12:56	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2025290	1	03/22/23 07:00	03/22/23 11:06	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2025972	1	03/21/23 12:56	03/21/23 21:42	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2027194	5	03/21/23 13:46	03/21/23 19:51	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2027492	1000	03/21/23 10:52	03/22/23 00:22	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2028668	20	03/21/23 10:52	03/23/23 14:50	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2028429	1	03/23/23 09:02	03/23/23 15:50	JAS	Mt. Juliet, TN

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.47		1	03/22/2023 13:47	WG2026293

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.08	T8	1	03/22/2023 12:56	WG2027257

Sample Narrative:

L1596359-01 WG2027257: 8.08 at 20.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	869		10.0	1	03/22/2023 11:06	WG2025290

Sample Narrative:

L1596359-01 WG2025290: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.0868	J	0.0167	0.200	1	03/21/2023 21:40	WG2025972

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	2.79		0.100	1.00	5	03/21/2023 19:48	WG2027194

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	206		21.7	100	1000	03/22/2023 00:01	WG2027492
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	94.5			77.0-120		03/22/2023 00:01	WG2027492

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	17.6		0.0176	0.130	20	03/23/2023 14:29	WG2028668
(S) Toluene-d8	114			75.0-131		03/23/2023 14:29	WG2028668
(S) 4-Bromofluorobenzene	124			67.0-138		03/23/2023 14:29	WG2028668
(S) 1,2-Dichloroethane-d4	107			70.0-130		03/23/2023 14:29	WG2028668

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	85.1		1.61	4.00	1	03/23/2023 16:03	WG2028429
C28-C36 Motor Oil Range	7.08		0.274	4.00	1	03/23/2023 16:03	WG2028429
(S) <i>o</i> -Terphenyl	69.7			18.0-148		03/23/2023 16:03	WG2028429

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.41		1	03/22/2023 13:50	WG2026293

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.86	T8	1	03/22/2023 12:56	WG2027257

Sample Narrative:

L1596359-02 WG2027257: 7.86 at 20.6C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	724		10.0	1	03/22/2023 11:06	WG2025290

Sample Narrative:

L1596359-02 WG2025290: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.100	J	0.0167	0.200	1	03/21/2023 21:42	WG2025972

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	2.46		0.100	1.00	5	03/21/2023 19:51	WG2027194

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	143		21.7	100	1000	03/22/2023 00:22	WG2027492
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	96.1			77.0-120		03/22/2023 00:22	WG2027492

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

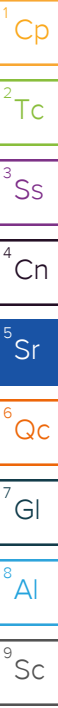
Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	2.61		0.0176	0.130	20	03/23/2023 14:50	WG2028668
(S) Toluene-d8	98.1			75.0-131		03/23/2023 14:50	WG2028668
(S) 4-Bromofluorobenzene	119			67.0-138		03/23/2023 14:50	WG2028668
(S) 1,2-Dichloroethane-d4	102			70.0-130		03/23/2023 14:50	WG2028668

Sample Narrative:

L1596359-02 WG2028668: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	74.2		1.61	4.00	1	03/23/2023 15:50	WG2028429
C28-C36 Motor Oil Range	11.4		0.274	4.00	1	03/23/2023 15:50	WG2028429
(S) <i>o</i> -Terphenyl	65.6			18.0-148		03/23/2023 15:50	WG2028429



L1596270-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1596270-01 03/22/23 12:56 • (DUP) R3904025-2 03/22/23 12:56

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
su	su			%		%
pH	8.32	8.37	1	0.599		1

Sample Narrative:

OS: 8.32 at 21.1C
DUP: 8.37 at 20.8C

L1596403-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1596403-02 03/22/23 12:56 • (DUP) R3904025-3 03/22/23 12:56

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
su	su			%		%
pH	8.71	8.75	1	0.458		1

Sample Narrative:

OS: 8.71 at 20.1C
DUP: 8.75 at 20.5C

Laboratory Control Sample (LCS)

(LCS) R3904025-1 03/22/23 12:56

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
su	su		%	%	
pH	10.0	9.99	99.9	99.0-101	

Sample Narrative:

LCS: 9.99 at 20.2C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3903943-1 03/22/23 11:06

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1595631-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1595631-01 03/22/23 11:06 • (DUP) R3903943-3 03/22/23 11:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	515	521	1	1.16		20

Sample Narrative:

OS: at 25C
DUP: at 25C

L1596104-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1596104-02 03/22/23 11:06 • (DUP) R3903943-4 03/22/23 11:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	706	717	1	1.55		20

Sample Narrative:

OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3903943-2 03/22/23 11:06

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	1120	1100	98.3	85.0-115	

Sample Narrative:

LCS: at 25C

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3903773-1 03/21/23 20:59

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3903773-2 03/21/23 21:01 • (LCSD) R3903773-3 03/21/23 21:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.02	1.10	102	110	80.0-120			7.80	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3903701-1 03/21/23 18:54

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

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3903701-2 03/21/23 18:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	98.5	98.5	80.0-120	

4 Cn

5 Sr

L1596327-18 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1596327-18 03/21/23 19:01 • (MS) R3903701-5 03/21/23 19:11 • (MSD) R3903701-6 03/21/23 19:14

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 %
Arsenic	100	1.56	93.1	90.7	91.5	89.1	5	75.0-125			2.63	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3904645-2 03/21/23 22:31

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.686	↓	0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	96.5			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3904645-1 03/21/23 21:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.88	88.7	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			110	77.0-120	

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

Method Blank (MB)

(MB) R3904702-1 03/23/23 13:22

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	103			75.0-131
(S) 4-Bromofluorobenzene	116			67.0-138
(S) 1,2-Dichloroethane-d4	84.0			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3904702-2 03/23/23 15:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Xylenes, Total	0.375	0.380	101	72.0-127	
(S) Toluene-d8			100	75.0-131	
(S) 4-Bromofluorobenzene			119	67.0-138	
(S) 1,2-Dichloroethane-d4			105	70.0-130	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3904890-1 03/23/23 14:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
<i>(S) o-Terphenyl</i>	70.6			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3904890-2 03/23/23 14:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	31.9	63.8	50.0-150	
<i>(S) o-Terphenyl</i>			71.0	18.0-148	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.
Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
T8	Sample(s) received past/too close to holding time expiration.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc

ACCREDITATIONS & LOCATIONS

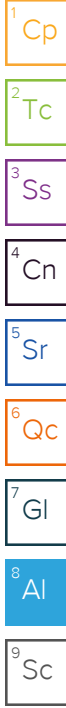
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



Caerus Oil and Gas

Sample Delivery Group: L1596362
Samples Received: 03/18/2023
Project Number:
Description: 5L Separator Release
Site: 5L
Report To: Brett M. , Jake J. , Blair R.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



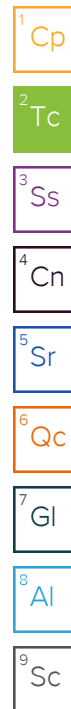
Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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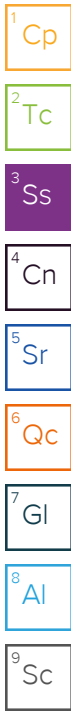


SAMPLE SUMMARY

20230316-5L(SB03)@ 10'-12' L1596362-01 Solid

Collected by: Alex Slorby
 Collected date/time: 03/16/23 09:20
 Received date/time: 03/18/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2026293	1	03/22/23 13:52	03/22/23 13:52	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2027260	1	03/21/23 19:00	03/21/23 20:50	KAD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2025290	1	03/22/23 07:00	03/22/23 11:06	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2025972	1	03/21/23 11:31	03/21/23 21:45	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2027614	5	03/22/23 02:41	03/22/23 19:38	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2027492	1000	03/21/23 10:52	03/22/23 00:42	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2027923	80	03/21/23 10:52	03/22/23 17:53	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2028429	5	03/23/23 09:02	03/23/23 18:53	JAS	Mt. Juliet, TN



20230316-5L(SB03)@ 15'-16' L1596362-02 Solid

Collected by: Alex Slorby
 Collected date/time: 03/16/23 10:00
 Received date/time: 03/18/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2026293	1	03/22/23 13:55	03/22/23 13:55	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2027260	1	03/21/23 19:00	03/21/23 20:50	KAD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2025290	1	03/22/23 07:00	03/22/23 11:06	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2025972	1	03/21/23 12:56	03/21/23 21:48	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2027614	5	03/22/23 02:41	03/22/23 19:50	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2027492	1000	03/21/23 10:52	03/22/23 01:03	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2027923	80	03/21/23 10:52	03/22/23 18:15	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2028429	5	03/23/23 09:02	03/23/23 18:40	JAS	Mt. Juliet, TN

20230316-5L(SB03)@ 25'-26' L1596362-03 Solid

Collected by: Alex Slorby
 Collected date/time: 03/16/23 11:35
 Received date/time: 03/18/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2026293	1	03/22/23 14:03	03/22/23 14:03	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2027260	1	03/21/23 19:00	03/21/23 20:50	KAD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2027685	1	03/23/23 11:00	03/24/23 08:02	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2025972	1	03/21/23 11:31	03/21/23 21:51	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2027614	5	03/22/23 02:41	03/22/23 19:54	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2027492	1000	03/21/23 10:52	03/22/23 01:23	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2027923	80	03/21/23 10:52	03/22/23 18:38	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2028429	1	03/23/23 09:02	03/23/23 17:09	JAS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2028429	10	03/23/23 09:02	03/24/23 10:15	JAS	Mt. Juliet, TN

20230316-5L(SB03)@ 35'-36' L1596362-04 Solid

Collected by: Alex Slorby
 Collected date/time: 03/16/23 13:00
 Received date/time: 03/18/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2026295	1	03/23/23 12:10	03/23/23 12:10	ABL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2027260	1	03/21/23 19:00	03/21/23 20:50	KAD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2027685	1	03/23/23 11:00	03/24/23 08:02	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2025972	1	03/21/23 11:31	03/21/23 21:54	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2027614	5	03/22/23 02:41	03/22/23 19:57	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2027492	1000	03/21/23 10:52	03/22/23 01:43	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2027923	80	03/21/23 10:52	03/22/23 19:00	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2028429	1	03/23/23 09:02	03/23/23 16:43	JAS	Mt. Juliet, TN

SAMPLE SUMMARY

20230316-5L(SB03)@ 45'-46' L1596362-05 Solid

Collected by: Alex Slorby
 Collected date/time: 03/16/23 14:30
 Received date/time: 03/18/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2026295	1	03/23/23 12:13	03/23/23 12:13	ABL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2027260	1	03/21/23 19:00	03/21/23 20:50	KAD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2027685	1	03/23/23 11:00	03/24/23 08:02	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2025972	1	03/21/23 11:31	03/21/23 21:56	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2027614	5	03/22/23 02:41	03/22/23 20:00	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2027492	500	03/21/23 10:52	03/21/23 23:41	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2028378	40	03/21/23 10:52	03/23/23 04:59	KSD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2028429	1	03/23/23 09:02	03/23/23 16:56	JAS	Mt. Juliet, TN

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

20230316-5L(SB03)@ 50'-51' L1596362-06 Solid

Collected by: Alex Slorby
 Collected date/time: 03/16/23 15:20
 Received date/time: 03/18/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2026295	1	03/23/23 12:15	03/23/23 12:15	ABL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2027260	1	03/21/23 19:00	03/21/23 20:50	KAD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2027685	1	03/23/23 11:00	03/24/23 08:02	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2027935	1	03/22/23 12:14	03/22/23 18:55	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2027614	5	03/22/23 02:41	03/22/23 20:03	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2027492	1000	03/21/23 10:52	03/22/23 02:04	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2028378	80	03/21/23 10:52	03/23/23 05:18	KSD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2028429	1	03/23/23 09:02	03/23/23 15:10	JAS	Mt. Juliet, TN

6
Qc

7
Gl

8
Al

9
Sc

CASE NARRATIVE

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



Chris Ward
Project Manager

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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.58		1	03/22/2023 13:52	WG2026293

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.94	T8	1	03/21/2023 20:50	WG2027260

Sample Narrative:

L1596362-01 WG2027260: 9.94 at 20.2C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	943		10.0	1	03/22/2023 11:06	WG2025290

Sample Narrative:

L1596362-01 WG2025290: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.580		0.0167	0.200	1	03/21/2023 21:45	WG2025972

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.30		0.100	1.00	5	03/22/2023 19:38	WG2027614

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	1240		21.7	100	1000	03/22/2023 00:42	WG2027492
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	86.6			77.0-120		03/22/2023 00:42	WG2027492

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	59.0		0.0704	0.520	80	03/22/2023 17:53	WG2027923
(S) Toluene-d8	113			75.0-131		03/22/2023 17:53	WG2027923
(S) 4-Bromofluorobenzene	134			67.0-138		03/22/2023 17:53	WG2027923
(S) 1,2-Dichloroethane-d4	107			70.0-130		03/22/2023 17:53	WG2027923

Sample Narrative:

L1596362-01 WG2027923: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	218		8.05	20.0	5	03/23/2023 18:53	WG2028429
C28-C36 Motor Oil Range	U		1.37	20.0	5	03/23/2023 18:53	WG2028429
(S) <i>o</i> -Terphenyl	72.6			18.0-148		03/23/2023 18:53	WG2028429

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	<u>Qualifier</u>	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	<u>Batch</u>
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Sample Narrative:

L1596362-01 WG2028429: Dilution due to matrix.

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.81		1	03/22/2023 13:55	WG2026293

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.40	T8	1	03/21/2023 20:50	WG2027260

Sample Narrative:

L1596362-02 WG2027260: 9.4 at 20.2C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	553		10.0	1	03/22/2023 11:06	WG2025290

Sample Narrative:

L1596362-02 WG2025290: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.568		0.0167	0.200	1	03/21/2023 21:48	WG2025972

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	2.85		0.100	1.00	5	03/22/2023 19:50	WG2027614

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	2150		21.7	100	1000	03/22/2023 01:03	WG2027492
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	89.5			77.0-120		03/22/2023 01:03	WG2027492

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

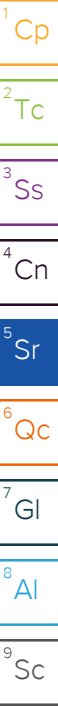
Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	67.3		0.0704	0.520	80	03/22/2023 18:15	WG2027923
(S) Toluene-d8	108			75.0-131		03/22/2023 18:15	WG2027923
(S) 4-Bromofluorobenzene	127			67.0-138		03/22/2023 18:15	WG2027923
(S) 1,2-Dichloroethane-d4	105			70.0-130		03/22/2023 18:15	WG2027923

Sample Narrative:

L1596362-02 WG2027923: Non-target compounds too high to run at a lower dilution.

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	496		8.05	20.0	5	03/23/2023 18:40	WG2028429
C28-C36 Motor Oil Range	U		1.37	20.0	5	03/23/2023 18:40	WG2028429
(S) <i>o</i> -Terphenyl	70.8			18.0-148		03/23/2023 18:40	WG2028429



Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	<u>Qualifier</u>	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	<u>Batch</u>
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Sample Narrative:

L1596362-02 WG2028429: Dilution due to matrix.

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	10.7		1	03/22/2023 14:03	WG2026293

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.36	T8	1	03/21/2023 20:50	WG2027260

Sample Narrative:

L1596362-03 WG2027260: 8.36 at 20.2C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	1240		10.0	1	03/24/2023 08:02	WG2027685

Sample Narrative:

L1596362-03 WG2027685: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	1.33		0.0167	0.200	1	03/21/2023 21:51	WG2025972

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	6.35		0.100	1.00	5	03/22/2023 19:54	WG2027614

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	1200		21.7	100	1000	03/22/2023 01:23	WG2027492
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	88.1			77.0-120		03/22/2023 01:23	WG2027492

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	84.5		0.0704	0.520	80	03/22/2023 18:38	WG2027923
(S) Toluene-d8	111			75.0-131		03/22/2023 18:38	WG2027923
(S) 4-Bromofluorobenzene	121			67.0-138		03/22/2023 18:38	WG2027923
(S) 1,2-Dichloroethane-d4	106			70.0-130		03/22/2023 18:38	WG2027923

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	479		16.1	40.0	10	03/24/2023 10:15	WG2028429
C28-C36 Motor Oil Range	U		0.274	4.00	1	03/23/2023 17:09	WG2028429
(S) <i>o</i> -Terphenyl	68.8			18.0-148		03/23/2023 17:09	WG2028429
(S) <i>o</i> -Terphenyl	57.8			18.0-148		03/24/2023 10:15	WG2028429

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.413		1	03/23/2023 12:10	WG2026295

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.78	T8	1	03/21/2023 20:50	WG2027260

Sample Narrative:

L1596362-04 WG2027260: 7.78 at 20.2C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	1380		10.0	1	03/24/2023 08:02	WG2027685

Sample Narrative:

L1596362-04 WG2027685: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.399		0.0167	0.200	1	03/21/2023 21:54	WG2025972

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.96		0.100	1.00	5	03/22/2023 19:57	WG2027614

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	874		21.7	100	1000	03/22/2023 01:43	WG2027492
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	87.6			77.0-120		03/22/2023 01:43	WG2027492

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	53.9		0.0704	0.520	80	03/22/2023 19:00	WG2027923
(S) Toluene-d8	112			75.0-131		03/22/2023 19:00	WG2027923
(S) 4-Bromofluorobenzene	126			67.0-138		03/22/2023 19:00	WG2027923
(S) 1,2-Dichloroethane-d4	107			70.0-130		03/22/2023 19:00	WG2027923

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	250		1.61	4.00	1	03/23/2023 16:43	WG2028429
C28-C36 Motor Oil Range	U		0.274	4.00	1	03/23/2023 16:43	WG2028429
(S) <i>o</i> -Terphenyl	53.5			18.0-148		03/23/2023 16:43	WG2028429

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.584		1	03/23/2023 12:13	WG2026295

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.69	T8	1	03/21/2023 20:50	WG2027260

Sample Narrative:

L1596362-05 WG2027260: 7.69 at 20.2C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	1980		10.0	1	03/24/2023 08:02	WG2027685

Sample Narrative:

L1596362-05 WG2027685: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.165	J	0.0167	0.200	1	03/21/2023 21:56	WG2025972

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.21		0.100	1.00	5	03/22/2023 20:00	WG2027614

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	392		10.9	50.0	500	03/21/2023 23:41	WG2027492
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	91.7			77.0-120		03/21/2023 23:41	WG2027492

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	11.8		0.0352	0.260	40	03/23/2023 04:59	WG2028378
(S) Toluene-d8	97.8			75.0-131		03/23/2023 04:59	WG2028378
(S) 4-Bromofluorobenzene	104			67.0-138		03/23/2023 04:59	WG2028378
(S) 1,2-Dichloroethane-d4	90.7			70.0-130		03/23/2023 04:59	WG2028378

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	203		1.61	4.00	1	03/23/2023 16:56	WG2028429
C28-C36 Motor Oil Range	1.39	J	0.274	4.00	1	03/23/2023 16:56	WG2028429
(S) <i>o</i> -Terphenyl	67.2			18.0-148		03/23/2023 16:56	WG2028429

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.29		1	03/23/2023 12:15	WG2026295

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.52	T8	1	03/21/2023 20:50	WG2027260

Sample Narrative:

L1596362-06 WG2027260: 7.52 at 20.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	1670		10.0	1	03/24/2023 08:02	WG2027685

Sample Narrative:

L1596362-06 WG2027685: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.127	J	0.0167	0.200	1	03/22/2023 18:55	WG2027935

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.61		0.100	1.00	5	03/22/2023 20:03	WG2027614

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	452		21.7	100	1000	03/22/2023 02:04	WG2027492
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.5			77.0-120		03/22/2023 02:04	WG2027492

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	15.1		0.0704	0.520	80	03/23/2023 05:18	WG2028378
(S) Toluene-d8	98.3			75.0-131		03/23/2023 05:18	WG2028378
(S) 4-Bromofluorobenzene	101			67.0-138		03/23/2023 05:18	WG2028378
(S) 1,2-Dichloroethane-d4	90.1			70.0-130		03/23/2023 05:18	WG2028378

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	244		1.61	4.00	1	03/23/2023 15:10	WG2028429
C28-C36 Motor Oil Range	1.74	J	0.274	4.00	1	03/23/2023 15:10	WG2028429
(S) <i>o</i> -Terphenyl	59.5			18.0-148		03/23/2023 15:10	WG2028429

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1596362-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1596362-03 03/21/23 20:50 • (DUP) R3903721-2 03/21/23 20:50

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	8.36	8.37	1	0.120		1

Sample Narrative:

OS: 8.36 at 20.2C
 DUP: 8.37 at 20.2C

L1596576-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1596576-03 03/21/23 20:50 • (DUP) R3903721-3 03/21/23 20:50

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	8.24	8.28	1	0.484		1

Sample Narrative:

OS: 8.24 at 20.1C
 DUP: 8.28 at 20C

Laboratory Control Sample (LCS)

(LCS) R3903721-1 03/21/23 20:50

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 20.3C

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3903943-1 03/22/23 11:06

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1595631-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1595631-01 03/22/23 11:06 • (DUP) R3903943-3 03/22/23 11:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	515	521	1	1.16		20

Sample Narrative:

OS: at 25C
DUP: at 25C

L1596104-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1596104-02 03/22/23 11:06 • (DUP) R3903943-4 03/22/23 11:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	706	717	1	1.55		20

Sample Narrative:

OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3903943-2 03/22/23 11:06

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	1120	1100	98.3	85.0-115	

Sample Narrative:

LCS: at 25C

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3904862-1 03/24/23 08:02

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

Sample Narrative:

BLANK: at 25C

L1596362-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1596362-04 03/24/23 08:02 • (DUP) R3904862-3 03/24/23 08:02

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	1380	1340	1	2.57		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1596400-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1596400-01 03/24/23 08:02 • (DUP) R3904862-4 03/24/23 08:02

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	280	296	1	5.48		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3904862-2 03/24/23 08:02

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1090	97.6	85.0-115	

Sample Narrative:

LCS: at 25C

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3903773-1 03/21/23 20:59

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3903773-2 03/21/23 21:01 • (LCSD) R3903773-3 03/21/23 21:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.02	1.10	102	110	80.0-120			7.80	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3904273-1 03/22/23 18:47

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3904273-2 03/22/23 18:49 • (LCSD) R3904273-3 03/22/23 18:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.09	1.10	109	110	80.0-120			0.940	20

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

Method Blank (MB)

(MB) R3904266-1 03/22/23 18:27

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

¹Cp

²Tc

³Ss

Laboratory Control Sample (LCS)

(LCS) R3904266-2 03/22/23 18:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	91.0	91.0	80.0-120	

⁴Cn

⁵Sr

L1596327-22 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1596327-22 03/22/23 18:34 • (MS) R3904266-5 03/22/23 18:44 • (MSD) R3904266-6 03/22/23 18:47

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	100	3.75	91.5	96.6	87.8	92.8	5	75.0-125			5.38	20

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3904645-2 03/21/23 22:31

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.686	↓	0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	96.5			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3904645-1 03/21/23 21:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.88	88.7	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			110	77.0-120	

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

Method Blank (MB)

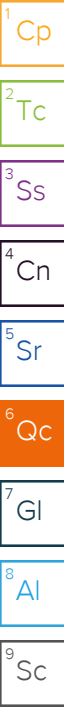
(MB) R3904420-2 03/22/23 10:08

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	99.7			75.0-131
(S) 4-Bromofluorobenzene	113			67.0-138
(S) 1,2-Dichloroethane-d4	87.9			70.0-130

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

(LCS) R3904420-1 03/22/23 08:20 • (LCSD) R3904420-3 03/22/23 10:41

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 %
Xylenes, Total	0.375	0.416	0.401	111	107	72.0-127			3.67	20
(S) Toluene-d8				105	102	75.0-131				
(S) 4-Bromofluorobenzene				114	114	67.0-138				
(S) 1,2-Dichloroethane-d4				98.6	102	70.0-130				



Method Blank (MB)

(MB) R3904541-2 03/22/23 20:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	99.6			75.0-131
(S) 4-Bromofluorobenzene	90.0			67.0-138
(S) 1,2-Dichloroethane-d4	85.0			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3904541-1 03/22/23 19:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Xylenes, Total	0.375	0.378	101	72.0-127	
(S) Toluene-d8			95.8	75.0-131	
(S) 4-Bromofluorobenzene			101	67.0-138	
(S) 1,2-Dichloroethane-d4			97.9	70.0-130	

L1596362-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1596362-05 03/23/23 04:59 • (MS) R3904541-3 03/23/23 05:37 • (MSD) R3904541-4 03/23/23 05:56

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 %
Xylenes, Total	15.0	11.8	17.9	14.5	40.7	18.0	40	10.0-160			21.0	38
(S) Toluene-d8					97.4	97.0		75.0-131				
(S) 4-Bromofluorobenzene					98.8	101		67.0-138				
(S) 1,2-Dichloroethane-d4					92.5	90.4		70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3904890-1 03/23/23 14:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	70.6			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3904890-2 03/23/23 14:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	31.9	63.8	50.0-150	
(S) o-Terphenyl			71.0	18.0-148	

L1596266-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1596266-01 03/24/23 09:25 • (MS) R3905006-1 03/24/23 09:37 • (MSD) R3905006-2 03/24/23 09:50

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	3.82	33.4	44.0	59.2	80.4	1	50.0-150		J3	27.4	20
(S) o-Terphenyl					63.2	83.2		18.0-148				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

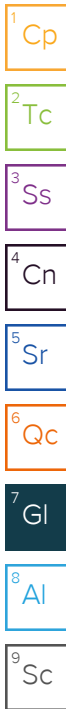
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



CHAIN-OF-CUSTODY Analytical Request Document

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

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

ALL BOLD OUTLINED AREAS are for LAB USE ONLY

Company: Caerus Oil and Gas LLC
 Address: Info on file
 Report To: Jake Janicek, Brett Middleton, Blair Rollins
 Copy To: Chris McKisson, remediation@confluence-cc.com
 Customer Project Name/Number: 5L Separator Release

Container Preservative Type **
 Lab Project Manager:

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

Phone: _____ Site/Facility ID #: 5L
 Email: _____ Compliance Monitoring?
 Yes No
 Collected By (print): Alex Slorby Purchase Order #: _____ DW PWS ID #: _____
 Quote #: _____ DW Location Code: _____
 Collected By (signature): *Alex Slorby* Turnaround Date Required: **Standard** Immediately Packed on Ice:
 Yes No
 Sample Disposal: Rush: (Expedite Charges Apply) Field Filtered (if applicable):
 Dispose as appropriate Same Day Next Day Yes No
 Return 2 Day 3 Day
 Archive: _____ 4 Day 5 Day Analysis: _____
 Hold: _____

Analyses

Analyses	TPH (ORO, GRO, DRO)	pH, EC, SAR	Table 915-1 VOCs	Table 915-1 PAHs	pH, EC, SAR	Boron (Hot Water Soluble Soil)	Arsenic	Xylenes
	X	X			X	X	X	X
	X	X			X	X	X	X
	X	X			X	X	X	X
	X	X			X	X	X	X
	X	X			X	X	X	X
	X	X			X	X	X	X

Lab Profile/Line:
 Lab Sample Receipt Checklist:
 Custody Seals Present/Intact Y N NA
 Custody Signatures Present Y N NA
 Collector Signature Present O N NA
 Bottles Intact O N NA
 Correct Bottles O N NA
 Sufficient Volume O N NA
 Samples Received on Ice Y N NA
 VOA - Headspace Acceptable Y N NA
 USDA Regulated Soils Y N NA
 Samples in Holding Time Y N NA
 Residual Chlorine Present Y N NA
 Cl Strips: _____
 Sample pH Acceptable Y N NA
 pH Strips: _____
 Sulfide Present Y N NA
 Lead Acetate Strips: _____

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

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	Container Type: Plastic (P) or Glass (G)
			Date	Time	Date	Time			
20230316-5L(SB03)@ 10' - 12'	SL	G			3/16/2023	0920	3	G/P	X X
20230316-5L(SB03)@ 15' - 16'	SL	G			3/16/2023	1000	3	G/P	X X
20230316-5L(SB03)@ 25' - 26'	SL	G			3/16/2023	1135	3	G/P	X X
20230316-5L(SB03)@ 35' - 36'	SL	G			3/16/2023	1300	3	G/P	X X
20230316-5L(SB03)@ 45' - 46'	SL	G			3/16/2023	1430	3	G/P	X X
20230316-5L(SB03)@ 50' - 51'	SL	G			3/16/2023	1520	3	G/P	X X

LAB USE ONLY:
 Lab Sample # / Comments:
 21596362

→ 01
→ 02
→ 03
→ 04
→ 05
→ 06

Customer Remarks / Special Conditions / Possible Hazards:
 Type of Ice Used: Wet Blue Dry None
 Packing Material Used:
 Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A
 Lab Tracking #:
 Samples received via:
 FEDEX UPS Client Courier Pace Courier

LAB Sample Temperature Info:
 Temp Blank Received: Y N NA
 Therm ID#: *CUBA T*
 Cooler 1 Temp Upon Receipt: *16.1* °C
 Cooler 1 Therm Corr. Factor: _____ °C
 Cooler 1 Corrected Temp: _____ °C
 Comments:

Relinquished by/Company: (Signature) *Alex Slorby* Date/Time: *3/16/23 1200*
 Relinquished by/Company: (Signature) *[Signature]* Date/Time: *3/17/23 1500*
 Relinquished by/Company: (Signature) *[Signature]* Date/Time: _____

Received by/Company: (Signature) *[Signature]* Date/Time: *3/17 1115*
 Received by/Company: (Signature) *[Signature]* Date/Time: _____
 Received by/Company: (Signature) *[Signature]* Date/Time: *03/18/23 0900*

H012
 Trip Blank Received: Y N NA
 HCL MeOH TSP Other
 Non Conformance(s): _____ Page: _____
 YES / NO of: _____

Caerus Oil and Gas

Sample Delivery Group: L1596102
Samples Received: 03/17/2023
Project Number:
Description: 5L Separator Release
Site: 5L
Report To: Brett M. , Jake J. , Blair R.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



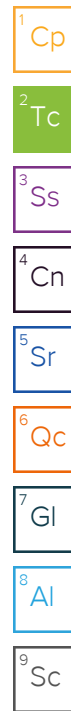
Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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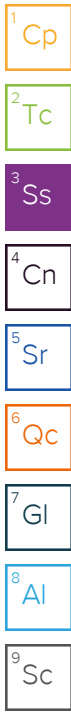


SAMPLE SUMMARY

20230315-5L(SB02)@10.5'-11.5' L1596102-01 Solid

Collected by: Alex Slorby
 Collected date/time: 03/15/23 10:00
 Received date/time: 03/17/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2026289	1	03/21/23 15:05	03/21/23 15:05	SPL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2025860	1	03/18/23 18:08	03/21/23 11:26	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2025290	1	03/22/23 07:00	03/22/23 11:06	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2025971	1	03/21/23 07:49	03/21/23 17:55	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2025977	5	03/19/23 09:48	03/19/23 22:55	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2025930	1	03/18/23 17:04	03/19/23 17:19	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2026783	1	03/18/23 17:04	03/21/23 02:32	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2027768	1	03/23/23 16:26	03/24/23 00:41	JAS	Mt. Juliet, TN



20230315-5L(SB02)@18.5'-19.5' L1596102-02 Solid

Collected by: Alex Slorby
 Collected date/time: 03/15/23 12:40
 Received date/time: 03/17/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2026289	1	03/21/23 15:13	03/21/23 15:13	SPL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2025860	1	03/18/23 18:08	03/21/23 11:26	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2025290	1	03/22/23 07:00	03/22/23 11:06	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2025971	1	03/21/23 07:49	03/21/23 17:58	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2025977	5	03/19/23 09:48	03/19/23 22:58	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2025930	1	03/18/23 17:04	03/19/23 17:41	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2026783	1	03/18/23 17:04	03/21/23 02:51	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2027768	1	03/23/23 16:26	03/24/23 00:54	JAS	Mt. Juliet, TN

20230315-5L(SB02)@30'-31.5' L1596102-03 Solid

Collected by: Alex Slorby
 Collected date/time: 03/15/23 13:25
 Received date/time: 03/17/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2026293	1	03/22/23 12:37	03/22/23 12:37	ABL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2025860	1	03/18/23 18:08	03/21/23 11:26	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2025290	1	03/22/23 07:00	03/22/23 11:06	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2025971	1	03/21/23 07:49	03/21/23 18:01	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2025977	5	03/19/23 09:48	03/19/23 23:01	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2025930	1	03/18/23 17:04	03/19/23 18:04	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2026783	1	03/18/23 17:04	03/21/23 03:10	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2027768	1	03/23/23 16:26	03/24/23 01:08	JAS	Mt. Juliet, TN

CASE NARRATIVE

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



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0946		1	03/21/2023 15:05	WG2026289

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.65	T8	1	03/21/2023 11:26	WG2025860

Sample Narrative:

L1596102-01 WG2025860: 7.65 at 20.1C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	1760		10.0	1	03/22/2023 11:06	WG2025290

Sample Narrative:

L1596102-01 WG2025290: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.153	J	0.0167	0.200	1	03/21/2023 17:55	WG2025971

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.30		0.100	1.00	5	03/19/2023 22:55	WG2025977

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0688	J	0.0217	0.100	1	03/19/2023 17:19	WG2025930
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	102			77.0-120		03/19/2023 17:19	WG2025930

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	0.00125	J	0.000880	0.00650	1	03/21/2023 02:32	WG2026783
(S) Toluene-d8	97.3			75.0-131		03/21/2023 02:32	WG2026783
(S) 4-Bromofluorobenzene	94.3			67.0-138		03/21/2023 02:32	WG2026783
(S) 1,2-Dichloroethane-d4	86.3			70.0-130		03/21/2023 02:32	WG2026783

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.79		1.61	4.00	1	03/24/2023 00:41	WG2027768
C28-C36 Motor Oil Range	4.28		0.274	4.00	1	03/24/2023 00:41	WG2027768
(S) <i>o</i> -Terphenyl	61.3			18.0-148		03/24/2023 00:41	WG2027768

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.251		1	03/21/2023 15:13	WG2026289

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.67	T8	1	03/21/2023 11:26	WG2025860

Sample Narrative:

L1596102-02 WG2025860: 8.67 at 19.7C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	139		10.0	1	03/22/2023 11:06	WG2025290

Sample Narrative:

L1596102-02 WG2025290: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.0868	J	0.0167	0.200	1	03/21/2023 17:58	WG2025971

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	2.58		0.100	1.00	5	03/19/2023 22:58	WG2025977

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0766	J	0.0217	0.100	1	03/19/2023 17:41	WG2025930
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	102			77.0-120		03/19/2023 17:41	WG2025930

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	0.00151	J	0.000880	0.00650	1	03/21/2023 02:51	WG2026783
(S) Toluene-d8	97.4			75.0-131		03/21/2023 02:51	WG2026783
(S) 4-Bromofluorobenzene	95.3			67.0-138		03/21/2023 02:51	WG2026783
(S) 1,2-Dichloroethane-d4	91.9			70.0-130		03/21/2023 02:51	WG2026783

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	3.88	J	1.61	4.00	1	03/24/2023 00:54	WG2027768
C28-C36 Motor Oil Range	2.70	J	0.274	4.00	1	03/24/2023 00:54	WG2027768
(S) <i>o</i> -Terphenyl	32.2			18.0-148		03/24/2023 00:54	WG2027768

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.494		1	03/22/2023 12:37	WG2026293

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.32	<u>T8</u>	1	03/21/2023 11:26	WG2025860

Sample Narrative:

L1596102-03 WG2025860: 8.32 at 19.6C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	198		10.0	1	03/22/2023 11:06	WG2025290

Sample Narrative:

L1596102-03 WG2025290: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.0926	<u>J</u>	0.0167	0.200	1	03/21/2023 18:01	WG2025971

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.74		0.100	1.00	5	03/19/2023 23:01	WG2025977

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.160		0.0217	0.100	1	03/19/2023 18:04	WG2025930
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	101			77.0-120		03/19/2023 18:04	WG2025930

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	0.00145	<u>J</u>	0.000880	0.00650	1	03/21/2023 03:10	WG2026783
(S) Toluene-d8	99.1			75.0-131		03/21/2023 03:10	WG2026783
(S) 4-Bromofluorobenzene	95.0			67.0-138		03/21/2023 03:10	WG2026783
(S) 1,2-Dichloroethane-d4	90.1			70.0-130		03/21/2023 03:10	WG2026783

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	2.13	<u>J</u>	1.61	4.00	1	03/24/2023 01:08	WG2027768
C28-C36 Motor Oil Range	3.19	<u>J</u>	0.274	4.00	1	03/24/2023 01:08	WG2027768
(S) <i>o</i> -Terphenyl	50.0			18.0-148		03/24/2023 01:08	WG2027768

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1596102-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1596102-01 03/21/23 11:26 • (DUP) R3903451-2 03/21/23 11:26

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	7.65	7.69	1	0.522		1

Sample Narrative:

OS: 7.65 at 20.1C
DUP: 7.69 at 19.8C

L1596164-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1596164-01 03/21/23 11:26 • (DUP) R3903451-3 03/21/23 11:26

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	8.00	8.02	1	0.250		1

Sample Narrative:

OS: 8 at 19.3C
DUP: 8.02 at 19.4C

Laboratory Control Sample (LCS)

(LCS) R3903451-1 03/21/23 11:26

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
pH	10.0	9.99	99.9	99.0-101	

Sample Narrative:

LCS: 9.99 at 19.4C

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3903943-1 03/22/23 11:06

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1595631-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1595631-01 03/22/23 11:06 • (DUP) R3903943-3 03/22/23 11:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	515	521	1	1.16		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1596104-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1596104-02 03/22/23 11:06 • (DUP) R3903943-4 03/22/23 11:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	706	717	1	1.55		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3903943-2 03/22/23 11:06

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	1120	1100	98.3	85.0-115	

Sample Narrative:

LCS: at 25C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3903781-1 03/21/23 17:07

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3903781-3 03/21/23 22:56 • (LCSD) R3903781-2 03/21/23 17:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.18	1.18	118	118	80.0-120			0.0301	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3902806-1 03/19/23 22:17

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

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3902806-2 03/19/23 22:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	95.6	95.6	80.0-120	

4 Cn

5 Sr

L1596232-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1596232-02 03/19/23 22:23 • (MS) R3902806-5 03/19/23 22:33 • (MSD) R3902806-6 03/19/23 22:37

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 %
Arsenic	100	1.38	94.0	93.4	92.6	92.0	5	75.0-125			0.638	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3904198-2 03/19/23 13:11

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
^(S) a,a,a-Trifluorotoluene(FID)	103			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3904198-1 03/19/23 12:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.41	98.4	72.0-127	
^(S) a,a,a-Trifluorotoluene(FID)			106	77.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Method Blank (MB)

(MB) R3903583-2 03/21/23 00:40

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	99.7			75.0-131
(S) 4-Bromofluorobenzene	95.2			67.0-138
(S) 1,2-Dichloroethane-d4	91.6			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3903583-1 03/20/23 20:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Xylenes, Total	0.375	0.371	98.9	72.0-127	
(S) Toluene-d8			95.4	75.0-131	
(S) 4-Bromofluorobenzene			103	67.0-138	
(S) 1,2-Dichloroethane-d4			101	70.0-130	

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

Method Blank (MB)

(MB) R3904889-1 03/23/23 23:36

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	64.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3904889-2 03/23/23 23:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	28.5	57.0	50.0-150	
(S) o-Terphenyl			68.5	18.0-148	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.
Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
T8	Sample(s) received past/too close to holding time expiration.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc

ACCREDITATIONS & LOCATIONS

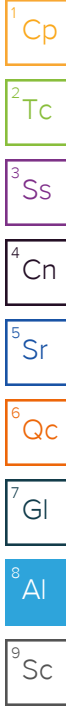
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

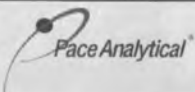
Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia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

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

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

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





CHAIN-OF-CUSTODY Analytical Request Document

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

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

ALL BOLD OUTLINED AREAS are for LAB USE ONLY

Company: Caerus Oil and Gas LLC
 Address: Info on file
 Report To: Jake Janicek, Brett Middleton, Blair Rollins
 Copy To: Chris McKisson, remediation@confluence-cc.com

Billing Information: Info on file
 Email To: info on file
 Site Collection Info/Address:
 Customer Project Name/Number: 5L Separator Release
 State: County/City: Time Zone Collected:
 CO / Garfield []PT [X]MT []CT []ET
 Phone: Site/Facility ID #: 5L Compliance Monitoring?
 Email: [] Yes [X] No
 Collected By (print): Alex Slorby Purchase Order #: DW PWS ID #:
 Quote #: DW Location Code:
 Collected By (signature): *Alex Slorby* Turnaround Date Required: **Standard** Immediately Packed on Ice:
 Turnaround [X] Yes [] No
 Sample Disposal: Rush: (Expedite Charges Apply) Field Filtered (if applicable):
 [] Dispose as appropriate [] Same Day [] Next Day [] Yes [] No
 [] Return [] 2 Day [] 3 Day
 [] Archive: [] 4 Day [] 5 Day Analysis:
 [] Hold:

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

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	Container Type: Plastic (P) or Glass (G)	TPH (ORO, GRO, DRO)	pH, EC, SAR	Table 915-1 VOCs	Table 915-1 PAHs	pH, EC, SAR	Boron (Hot Water Soluble Soil)	Arsenic	Xylenes
			Date	Time	Date	Time											
20230315-5L(SB02)@ 10.5' - 11.5'	SL	G			3/15/2023	1000		2	G	X	X			X	X	X	X
20230315-5L(SB02)@ 18.5' - 19.5'	SL	G			3/15/2023	1240		2	G	X	X			X	X	X	X
20230315-5L(SB02)@ 30' - 31.5'	SL	G			3/15/2023	1325		3	G/P	X	X			X	X	X	X

Container Preservative Type **
 Lab Project Manager:

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

Analyses

TPH (ORO, GRO, DRO)	pH, EC, SAR	Table 915-1 VOCs	Table 915-1 PAHs	pH, EC, SAR	Boron (Hot Water Soluble Soil)	Arsenic	Xylenes
X	X			X	X	X	X
X	X			X	X	X	X
X	X			X	X	X	X

Lab Profile/Line:
 Lab Sample Receipt Checklist:
 Custody Seals Present/Intact Y N **NA**
 Custody Signatures Present Y N **NA**
 Collector Signature Present **NA** NA
 Bottles Intact **NA** NA
 Correct Bottles **NA** NA
 Sufficient Volume **NA** NA
 Samples Received on Ice **NA** NA
 VOA - Headspace Acceptable **NA** NA
 USDA Regulated Soils Y N NA
 Samples in Holding Time Y N NA
 Residual Chlorine Present Y N NA
 Cl Strips:
 Sample pH Acceptable Y N NA
 pH Strips:
 Sulfide Present Y N NA
 Lead Acetate Strips:

LAB USE ONLY:
Lab Sample # / Comments:
L1996102

Customer Remarks / Special Conditions / Possible Hazards:
 Type of Ice Used: Wet Blue Dry None
 Packing Material Used:
 Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A
 Lab Tracking #: **6126 6537 4254**
 Samples received via:
 FEDEX UPS Client Courier Pace Courier

LAB Sample Temperature Info:
 Temp Blank Received: Y N NA
 Therm ID#: **1.23**
 Cooler 1 Temp Upon Receipt: ___oC
 Cooler 1 Therm Corr. Factor: ___oC
 Cooler 1 Corrected Temp: ___oC
 Comments:

Relinquished by/Company: (Signature) *Alex Slorby* Date/Time: **3/16/23 1200** Received by/Company: (Signature) *NA* Date/Time:
 Relinquished by/Company: (Signature) *NA* Date/Time: **3/16/23 1500** Received by/Company: (Signature) Date/Time:
 Relinquished by/Company: (Signature) Date/Time: Received by/Company: (Signature) *Ali* Date/Time: **3-17-23 915**

Date/Time: **E247**
 Acctnum:
 Template:
 Prelogin:
 PM:
 PB:

Trip Blank Received: Y N NA
 HCL MeOH TSP Other
 Non Conformance(s): Page: ___
 YES / NO of: ___

Caerus Oil and Gas

Sample Delivery Group: L1594222
Samples Received: 03/11/2023
Project Number:
Description: 5L Seperator Release

Report To: Brett M. , Jake J. , Blair R.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

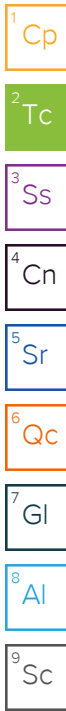
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

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

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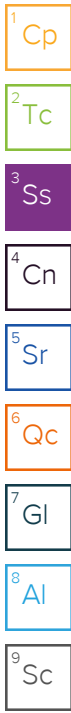


SAMPLE SUMMARY

20230309-5L(SB01)@ 10' - 10.5' L1594222-01 Solid

Collected by: Alex Slorby
 Collected date/time: 03/09/23 10:05
 Received date/time: 03/11/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2022038	1	03/16/23 12:55	03/16/23 12:55	ABL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2023088	1	03/15/23 09:20	03/15/23 12:11	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2023729	1	03/16/23 09:00	03/16/23 10:15	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2022871	1	03/15/23 10:22	03/15/23 18:38	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2023336	5	03/15/23 03:58	03/15/23 16:05	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2023047	1	03/14/23 10:52	03/14/23 16:59	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2022761	1	03/14/23 10:52	03/14/23 18:36	JBE	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2024944	1	03/17/23 17:57	03/18/23 01:44	JAS	Mt. Juliet, TN



20230309-5L(SB01)@ 20' - 21' L1594222-02 Solid

Collected by: Alex Slorby
 Collected date/time: 03/09/23 10:55
 Received date/time: 03/11/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2022038	1	03/16/23 12:58	03/16/23 12:58	ABL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2023107	1	03/15/23 21:00	03/15/23 23:09	KAD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2023729	1	03/16/23 09:00	03/16/23 10:15	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2022871	1	03/15/23 10:22	03/15/23 18:40	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2023336	5	03/15/23 03:58	03/15/23 16:18	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2023047	1	03/14/23 10:52	03/14/23 17:21	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2022761	1	03/14/23 10:52	03/14/23 18:55	JBE	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2024944	1	03/17/23 17:57	03/18/23 01:56	JAS	Mt. Juliet, TN

20230309-5L(SB01)@ 30.5' - 31.5' L1594222-03 Solid

Collected by: Alex Slorby
 Collected date/time: 03/09/23 13:15
 Received date/time: 03/11/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2022038	1	03/16/23 13:01	03/16/23 13:01	ABL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2023107	1	03/15/23 21:00	03/15/23 23:09	KAD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2023729	1	03/16/23 09:00	03/16/23 10:15	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2022871	1	03/15/23 10:22	03/15/23 18:43	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2023336	5	03/15/23 03:58	03/15/23 16:21	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2023047	1	03/14/23 10:52	03/14/23 17:44	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2022761	1	03/14/23 10:52	03/14/23 19:14	JBE	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2024944	1	03/17/23 17:57	03/18/23 01:44	JAS	Mt. Juliet, TN

CASE NARRATIVE

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



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.400		1	03/16/2023 12:55	WG2022038

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.46	T8	1	03/15/2023 12:11	WG2023088

Sample Narrative:

L1594222-01 WG2023088: 8.46 at 19.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	110		10.0	1	03/16/2023 10:15	WG2023729

Sample Narrative:

L1594222-01 WG2023729: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.129	J	0.0167	0.200	1	03/15/2023 18:38	WG2022871

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.33		0.100	1.00	5	03/15/2023 16:05	WG2023336

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0698	J	0.0217	0.100	1	03/14/2023 16:59	WG2023047
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	102			77.0-120		03/14/2023 16:59	WG2023047

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	0.00265	J	0.000880	0.00650	1	03/14/2023 18:36	WG2022761
(S) Toluene-d8	107			75.0-131		03/14/2023 18:36	WG2022761
(S) 4-Bromofluorobenzene	95.6			67.0-138		03/14/2023 18:36	WG2022761
(S) 1,2-Dichloroethane-d4	101			70.0-130		03/14/2023 18:36	WG2022761

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.14		1.61	4.00	1	03/18/2023 01:44	WG2024944
C28-C36 Motor Oil Range	3.62	J	0.274	4.00	1	03/18/2023 01:44	WG2024944
(S) <i>o</i> -Terphenyl	58.2			18.0-148		03/18/2023 01:44	WG2024944

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.388		1	03/16/2023 12:58	WG2022038

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.98	<u>T8</u>	1	03/15/2023 23:09	WG2023107

Sample Narrative:

L1594222-02 WG2023107: 7.98 at 20C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	105		10.0	1	03/16/2023 10:15	WG2023729

Sample Narrative:

L1594222-02 WG2023729: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.134	<u>J</u>	0.0167	0.200	1	03/15/2023 18:40	WG2022871

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.86		0.100	1.00	5	03/15/2023 16:18	WG2023336

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0909	<u>J</u>	0.0217	0.100	1	03/14/2023 17:21	WG2023047
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	101			77.0-120		03/14/2023 17:21	WG2023047

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	0.00193	<u>J</u>	0.000880	0.00650	1	03/14/2023 18:55	WG2022761
(S) Toluene-d8	106			75.0-131		03/14/2023 18:55	WG2022761
(S) 4-Bromofluorobenzene	97.3			67.0-138		03/14/2023 18:55	WG2022761
(S) 1,2-Dichloroethane-d4	103			70.0-130		03/14/2023 18:55	WG2022761

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.69		1.61	4.00	1	03/18/2023 01:56	WG2024944
C28-C36 Motor Oil Range	3.54	<u>J</u>	0.274	4.00	1	03/18/2023 01:56	WG2024944
(S) <i>o</i> -Terphenyl	61.4			18.0-148		03/18/2023 01:56	WG2024944

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.763		1	03/16/2023 13:01	WG2022038

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.41	<u>T8</u>	1	03/15/2023 23:09	WG2023107

Sample Narrative:

L1594222-03 WG2023107: 8.41 at 19.8C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	75.6		10.0	1	03/16/2023 10:15	WG2023729

Sample Narrative:

L1594222-03 WG2023729: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.146	<u>J</u>	0.0167	0.200	1	03/15/2023 18:43	WG2022871

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	2.94		0.100	1.00	5	03/15/2023 16:21	WG2023336

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

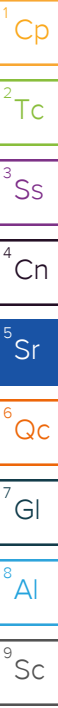
Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.603		0.0217	0.100	1	03/14/2023 17:44	WG2023047
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	107			77.0-120		03/14/2023 17:44	WG2023047

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	0.00105	<u>J</u>	0.000880	0.00650	1	03/14/2023 19:14	WG2022761
(S) Toluene-d8	108			75.0-131		03/14/2023 19:14	WG2022761
(S) 4-Bromofluorobenzene	95.9			67.0-138		03/14/2023 19:14	WG2022761
(S) 1,2-Dichloroethane-d4	106			70.0-130		03/14/2023 19:14	WG2022761

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.61	4.00	1	03/18/2023 01:44	WG2024944
C28-C36 Motor Oil Range	0.571	<u>J</u>	0.274	4.00	1	03/18/2023 01:44	WG2024944
(S) <i>o</i> -Terphenyl	56.4			18.0-148		03/18/2023 01:44	WG2024944



L1593699-132 Original Sample (OS) • Duplicate (DUP)

(OS) L1593699-132 03/15/23 12:11 • (DUP) R3901296-2 03/15/23 12:11

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
su	su			%		%
pH	7.36	7.40	1	0.542		1

Sample Narrative:

OS: 7.36 at 20.2C

DUP: 7.4 at 20.3C

L1593699-138 Original Sample (OS) • Duplicate (DUP)

(OS) L1593699-138 03/15/23 12:11 • (DUP) R3901296-3 03/15/23 12:11

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
su	su			%		%
pH	7.46	7.50	1	0.535		1

Sample Narrative:

OS: 7.46 at 19.5C

DUP: 7.5 at 19.8C

Laboratory Control Sample (LCS)

(LCS) R3901296-1 03/15/23 12:11

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
su	su		%	%	
pH	10.0	9.99	99.9	99.0-101	

Sample Narrative:

LCS: 9.99 at 20.5C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1593699-83 Original Sample (OS) • Duplicate (DUP)

(OS) L1593699-83 03/15/23 23:09 • (DUP) R3901596-2 03/15/23 23:09

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.42	7.42	1	0.000		1

Sample Narrative:

OS: 7.42 at 19.8C
 DUP: 7.42 at 19.9C

L1594222-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1594222-02 03/15/23 23:09 • (DUP) R3901596-3 03/15/23 23:09

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	7.98	7.98	1	0.000		1

Sample Narrative:

OS: 7.98 at 20C
 DUP: 7.98 at 19.9C

Laboratory Control Sample (LCS)

(LCS) R3901596-1 03/15/23 23:09

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.97	99.7	99.0-101	

Sample Narrative:

LCS: 9.97 at 20.1C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3901732-1 03/16/23 10:15

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1593416-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1593416-03 03/16/23 10:15 • (DUP) R3901732-3 03/16/23 10:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	5310	5230	1	1.52		20

Sample Narrative:

OS: at 25C
DUP: at 25C

L1594222-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1594222-03 03/16/23 10:15 • (DUP) R3901732-4 03/16/23 10:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	75.6	76.2	1	0.791		20

Sample Narrative:

OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3901732-2 03/16/23 10:15

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	1120	1210	108	85.0-115	

Sample Narrative:

LCS: at 25C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3901569-1 03/15/23 18:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3901569-2 03/15/23 18:03 • (LCSD) R3901569-3 03/15/23 18:05

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.19	1.18	119	118	80.0-120			0.839	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3901474-1 03/15/23 15:36

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

¹Cp

²Tc

³Ss

Laboratory Control Sample (LCS)

(LCS) R3901474-2 03/15/23 15:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	96.8	96.8	80.0-120	

⁴Cn

⁵Sr

L1594256-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1594256-01 03/15/23 15:42 • (MS) R3901474-5 03/15/23 15:52 • (MSD) R3901474-6 03/15/23 15:56

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 %
Arsenic	99.7	8.69	92.8	96.8	84.1	88.1	5	75.0-125			4.17	20

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3901049-2 03/14/23 14:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
^(S) a,a,a-Trifluorotoluene(FID)	103			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3901049-1 03/14/23 13:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.53	82.4	72.0-127	
^(S) a,a,a-Trifluorotoluene(FID)			108	77.0-120	

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

Method Blank (MB)

(MB) R3900867-2 03/14/23 11:48

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	99.5			75.0-131
(S) 4-Bromofluorobenzene	101			67.0-138
(S) 1,2-Dichloroethane-d4	117			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3900867-1 03/14/23 09:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Xylenes, Total	0.375	0.348	92.8	72.0-127	
(S) Toluene-d8			101	75.0-131	
(S) 4-Bromofluorobenzene			95.1	67.0-138	
(S) 1,2-Dichloroethane-d4			119	70.0-130	

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

Method Blank (MB)

(MB) R3902616-1 03/18/23 00:55

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	63.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3902616-2 03/18/23 08:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	25.7	51.4	50.0-150	
(S) o-Terphenyl			55.9	18.0-148	

L1594210-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1594210-01 03/18/23 00:55 • (MS) R3902616-3 03/18/23 01:06 • (MSD) R3902616-4 03/18/23 01:19

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	2.10	26.0	27.2	47.8	50.2	1	50.0-150	J6		4.51	20
(S) o-Terphenyl					50.8	56.9		18.0-148				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

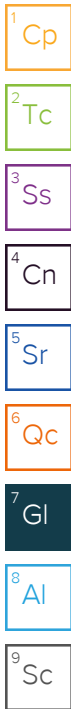
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



CHAIN-OF-CUSTODY Analytical Request Document

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

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

L1594222

ALL BOLD OUTLINED AREAS are for LAB USE ONLY

Company: Caerus Oil and Gas LLC
 Address: Info on file
 Report To: Jake Janicek, Brett Middleton, Blair Rollins
 Copy To: Chris McKisson, remediation@confluence-cc.com

Container Preservative Type **
 Lab Project Manager:

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

Customer Project Name/Number: 5L Separator Release
 State: County/City: Time Zone Collected:
 CO / Garfield []PT [X]MT []CT []ET
 Phone: Site/Facility ID #: 5L Compliance Monitoring?
 Email: [] Yes [X] No
 Collected By (print): Alex Slorby Purchase Order #: DW PWS ID #:
 Quote #: DW Location Code:
 Collected By (signature): Turnaround Date Required: Standard Immediately Packed on Ice:
 Turnaround [X] Yes [] No
 Sample Disposal: Rush: (Expedite Charges Apply) Field Filtered (if applicable):
 [] Dispose as appropriate [] Same Day [] Next Day [] Yes [] No
 [] Return [] 2 Day [] 3 Day
 [] Archive: [] 4 Day [] 5 Day Analysis:
 [] Hold:

Analyses		Lab Profile/Line:	
TPH (ORO, GRO, DRO)	Y	Lab Sample Receipt Checklist:	
pH, EC, SAR	Y	Custody Seals Present/Intact	Y <input checked="" type="checkbox"/> NA
Table 915-1 VOCs	Y	Custody Signatures Present	N NA
Table 915-1 PAHs	Y	Collector Signature Present	N NA
pH, EC, SAR	Y	Bottles Intact	N NA
Boron (Hot Water Soluble Soil)	Y	Correct Bottles	N NA
Arsenic	Y	Sufficient Volume	N NA
Xylenes	Y	Samples Received on Ice	N NA
		VOA - Headspace Acceptable	Y <input checked="" type="checkbox"/> NA
		USDA Regulated Soils	Y <input checked="" type="checkbox"/> NA
		Samples in Holding Time	N NA
		Residual Chlorine Present	Y <input checked="" type="checkbox"/> NA
		Cl Strips:	
		Sample pH Acceptable	Y <input checked="" type="checkbox"/> NA
		pH Strips:	
		Sulfide Present	Y <input checked="" type="checkbox"/> NA
		Lead Acetate Strips:	

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

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	Container Type: Plastic (P) or Glass (G)	TPH (ORO, GRO, DRO)	pH, EC, SAR	Table 915-1 VOCs	Table 915-1 PAHs	pH, EC, SAR	Boron (Hot Water Soluble Soil)	Arsenic	Xylenes
			Date	Time	Date	Time											
20230309-5L(SB01)@ 10' - 10.5'	SL	G			3/9/2023	1005		3	G/P	X	X			X	X	X	X
20230309-5L(SB01)@ 20' - 21'	SL	G			3/9/2023	1055		2	G	X	X			X	X	X	X
20230309-5L(SB01)@ 30.5' - 31.5'	SL	G			3/9/2023	1315		3	G/P	X	X			X	X	X	X

LAB USE ONLY:
 Lab Sample # / Comments:
 - 01
 - 02
 - 03

Customer Remarks / Special Conditions / Possible Hazards:
 Type of Ice Used: Wet Blue Dry None
 Packing Material Used:
 Radchem sample(s) screened (<500 cpm): N NA

SHORT HOLDS PRESENT (<72 hours): Y N/A
 Lab Tracking #: 5882 7564 6346
 Samples received via: FEDEX UPS Client Courier Pace Courier
 Lab Sample Temperature Info:
 Temp Blank Received: Y N NA
 Therm ID#: _____
 Cooler 1 Temp Upon Receipt: ___oC
 Cooler 1 Therm Corr. Factor: ___oC
 Cooler 1 Corrected Temp: ___oC
 Comments: GB47
 1.4 to = 1.4

Relinquished by/Company: (Signature) Date/Time: Received by/Company: (Signature) Date/Time:
 Relinquished by/Company: (Signature) Date/Time: Received by/Company: (Signature) Date/Time:
 Relinquished by/Company: (Signature) Date/Time: Received by/Company: (Signature) Date/Time:

1239
 Acctnum: _____
 Template: _____
 Prelogin: _____
 PM: _____
 PB: _____
 Trip Blank Received: Y N NA
 HCL MeOH TSP Other
 Non Conformance(s): Page: _____
 YES / NO of: _____



Caerus Oil and Gas

Sample Delivery Group: L1594210
Samples Received: 03/11/2023
Project Number:
Description: 5L Separator Release
Site: 5L
Report To: Brett M. , Jake J. , Blair R.
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:












Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

20230309-5L(SB01)@ 40'-41' L1594210-01 Solid

Collected by: Alex Slorby
 Collected date/time: 03/09/23 14:50
 Received date/time: 03/11/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2024243	1	03/19/23 19:49	03/19/23 19:49	ABL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2023034	1	03/15/23 21:16	03/16/23 16:16	DB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2024655	1	03/17/23 13:00	03/17/23 14:05	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2022871	1	03/15/23 10:22	03/15/23 18:35	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2023336	5	03/15/23 03:58	03/15/23 16:02	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2024700	1	03/14/23 10:17	03/16/23 15:31	NCC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2023879	1	03/14/23 10:17	03/15/23 23:32	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2024944	1	03/17/23 17:57	03/18/23 00:55	JAS	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.741		1	03/19/2023 19:49	WG2024243

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.72	T8	1	03/16/2023 16:16	WG2023034

Sample Narrative:

L1594210-01 WG2023034: 8.72 at 19.6C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	147		10.0	1	03/17/2023 14:05	WG2024655

Sample Narrative:

L1594210-01 WG2024655: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	03/15/2023 18:35	WG2022871

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.87		1.00	5	03/15/2023 16:02	WG2023336

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	03/16/2023 15:31	WG2024700
(S) a,a,a-Trifluorotoluene(FID)	99.9		77.0-120		03/16/2023 15:31	WG2024700

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Xylenes, Total	ND		0.00650	1	03/15/2023 23:32	WG2023879
(S) Toluene-d8	101		75.0-131		03/15/2023 23:32	WG2023879
(S) 4-Bromofluorobenzene	97.2		67.0-138		03/15/2023 23:32	WG2023879
(S) 1,2-Dichloroethane-d4	107		70.0-130		03/15/2023 23:32	WG2023879

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND	J6	4.00	1	03/18/2023 00:55	WG2024944
C28-C36 Motor Oil Range	ND		4.00	1	03/18/2023 00:55	WG2024944
(S) o-Terphenyl	42.2		18.0-148		03/18/2023 00:55	WG2024944

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1593699-148 Original Sample (OS) • Duplicate (DUP)

(OS) L1593699-148 03/16/23 16:16 • (DUP) R3901973-2 03/16/23 16:16

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
su	su			%		%
pH	7.33	7.37	1	0.544		1

Sample Narrative:

OS: 7.33 at 21.1C

DUP: 7.37 at 21C

L1593699-155 Original Sample (OS) • Duplicate (DUP)

(OS) L1593699-155 03/16/23 16:16 • (DUP) R3901973-3 03/16/23 16:16

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
su	su			%		%
pH	7.04	7.03	1	0.142		1

Sample Narrative:

OS: 7.04 at 19.8C

DUP: 7.03 at 19.8C

Laboratory Control Sample (LCS)

(LCS) R3901973-1 03/16/23 16:16

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

Sample Narrative:

LCS: 10.02 at 19.7C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3902364-1 03/17/23 14:05

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1594174-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1594174-03 03/17/23 14:05 • (DUP) R3902364-3 03/17/23 14:05

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	14400	14400	1	0.347		20

Sample Narrative:

OS: at 25C
DUP: at 25C

L1595219-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1595219-06 03/17/23 14:05 • (DUP) R3902364-4 03/17/23 14:05

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	1750	1750	1	0.514		20

Sample Narrative:

OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3902364-2 03/17/23 14:05

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	1120	1120	99.7	85.0-115	

Sample Narrative:

LCS: at 25C

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3901569-1 03/15/23 18:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3901569-2 03/15/23 18:03 • (LCSD) R3901569-3 03/15/23 18:05

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.19	1.18	119	118	80.0-120			0.839	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3901474-1 03/15/23 15:36

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

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3901474-2 03/15/23 15:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	96.8	96.8	80.0-120	

4 Cn

5 Sr

L1594256-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1594256-01 03/15/23 15:42 • (MS) R3901474-5 03/15/23 15:52 • (MSD) R3901474-6 03/15/23 15:56

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 %
Arsenic	99.7	8.69	92.8	96.8	84.1	88.1	5	75.0-125			4.17	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3902797-2 03/16/23 11:51

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
^(S) a,a,a-Trifluorotoluene(FID)	103			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3902797-1 03/16/23 10:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.34	97.1	72.0-127	
^(S) a,a,a-Trifluorotoluene(FID)			107	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3901729-2 03/15/23 22:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	99.1			75.0-131
(S) 4-Bromofluorobenzene	96.0			67.0-138
(S) 1,2-Dichloroethane-d4	108			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3901729-1 03/15/23 19:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Xylenes, Total	0.375	0.317	84.5	72.0-127	
(S) Toluene-d8			95.0	75.0-131	
(S) 4-Bromofluorobenzene			101	67.0-138	
(S) 1,2-Dichloroethane-d4			114	70.0-130	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Method Blank (MB)

(MB) R3902616-1 03/18/23 00:55

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	63.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3902616-2 03/18/23 08:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	25.7	51.4	50.0-150	
(S) o-Terphenyl			55.9	18.0-148	

L1594210-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1594210-01 03/18/23 00:55 • (MS) R3902616-3 03/18/23 01:06 • (MSD) R3902616-4 03/18/23 01:19

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	ND	26.0	27.2	47.8	50.2	1	50.0-150	J6		4.51	20
(S) o-Terphenyl					50.8	56.9		18.0-148				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

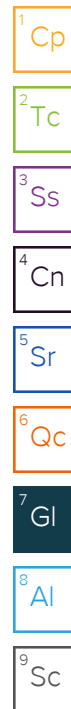
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

MDL	Method Detection Limit.
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

J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

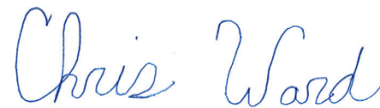
⁸ Al

⁹ Sc

Caerus Oil and Gas

Sample Delivery Group: L1496498
Samples Received: 05/20/2022
Project Number:
Description: Rulison 5L
Site: RULISON 5L
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

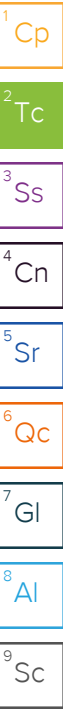


Pace Analytical National

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

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SAMPLE SUMMARY

20220519-SL-POR@6' L1496498-01 Solid

Collected by: Alex Slorby
 Collected date/time: 05/19/22 08:05
 Received date/time: 05/20/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1869122	1	05/26/22 14:28	05/26/22 14:28	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1869754	1	05/25/22 18:00	05/26/22 15:26	SCM	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1869997	1	05/26/22 10:00	05/27/22 10:20	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1869906	1	05/26/22 11:20	05/26/22 18:54	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1870541	1	05/27/22 07:34	05/27/22 12:26	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1869120	1	05/25/22 00:36	05/26/22 15:28	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1870542	5	05/27/22 07:30	05/27/22 13:41	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1868796	1000	05/23/22 15:41	05/24/22 18:50	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1869139	80	05/23/22 15:41	05/25/22 07:07	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1872685	5	06/02/22 09:28	06/02/22 14:25	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1871688	1	05/30/22 17:02	05/31/22 07:13	AMG	Mt. Juliet, TN

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

20220519-SL-PHW@8.5' L1496498-02 Solid

Collected by: Alex Slorby
 Collected date/time: 05/19/22 11:20
 Received date/time: 05/20/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1869122	1	05/26/22 14:31	05/26/22 14:31	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1869754	1	05/25/22 18:00	05/26/22 15:31	SCM	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1869997	1	05/26/22 10:00	05/27/22 10:20	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1869906	1	05/26/22 11:20	05/26/22 18:54	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1870541	1	05/27/22 07:34	05/27/22 12:28	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1869120	1	05/25/22 00:36	05/26/22 15:31	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1870542	5	05/27/22 07:30	05/27/22 13:44	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1868642	1	05/23/22 15:41	05/24/22 12:47	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1869139	1	05/23/22 15:41	05/25/22 05:51	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1872685	1	06/02/22 09:28	06/02/22 13:06	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1871688	1	05/30/22 17:02	05/31/22 07:31	AMG	Mt. Juliet, TN

20220519-SL-PHE3@6.5' L1496498-03 Solid

Collected by: Alex Slorby
 Collected date/time: 05/19/22 12:15
 Received date/time: 05/20/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1869122	1	05/26/22 14:34	05/26/22 14:34	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1869754	1	05/25/22 18:00	05/26/22 15:37	SCM	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1869997	1	05/26/22 10:00	05/27/22 10:20	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1869906	1	05/26/22 11:20	05/26/22 18:54	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1870541	1	05/27/22 07:34	05/27/22 12:31	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1869120	1	05/25/22 00:36	05/26/22 15:33	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1870542	5	05/27/22 07:30	05/27/22 13:48	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1868642	1	05/23/22 15:41	05/24/22 13:07	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1869139	1	05/23/22 15:41	05/25/22 06:10	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1872685	1	06/02/22 09:28	06/02/22 13:45	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1871688	1	05/30/22 17:02	05/31/22 07:48	AMG	Mt. Juliet, TN

20220519-SL-PHN@7' L1496498-04 Solid

Collected by: Alex Slorby
 Collected date/time: 05/19/22 12:55
 Received date/time: 05/20/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1869122	1	05/26/22 14:37	05/26/22 14:37	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1869754	1	05/25/22 18:00	05/26/22 15:42	SCM	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1869997	1	05/26/22 10:00	05/27/22 10:20	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1869906	1	05/26/22 11:20	05/26/22 18:54	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1870541	1	05/27/22 07:34	05/27/22 12:34	CCE	Mt. Juliet, TN

SAMPLE SUMMARY

20220519-SL-PHN@7' L1496498-04 Solid

Collected by: Alex Slorby
 Collected date/time: 05/19/22 12:55
 Received date/time: 05/20/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1869120	1	05/25/22 00:36	05/26/22 15:36	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1870542	5	05/27/22 07:30	05/27/22 13:51	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1868642	1	05/23/22 15:41	05/24/22 13:28	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1869139	1	05/23/22 15:41	05/25/22 06:29	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1872685	1	06/02/22 09:28	06/02/22 13:19	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1871688	1	05/30/22 17:02	05/31/22 08:06	AMG	Mt. Juliet, TN

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

CASE NARRATIVE

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



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	59.3		1	05/26/2022 14:28	WG1869122

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/26/2022 15:26	WG1869754

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.29	<u>T8</u>	1	05/27/2022 10:20	WG1869997

Sample Narrative:

L1496498-01 WG1869997: 8.29 at 20.4C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	4660		10.0	1	05/26/2022 18:54	WG1869906

Sample Narrative:

L1496498-01 WG1869906: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	609		0.500	1	05/27/2022 12:26	WG1870541
Cadmium	ND		0.500	1	05/27/2022 12:26	WG1870541
Copper	15.4		2.00	1	05/27/2022 12:26	WG1870541
Lead	9.54		0.500	1	05/27/2022 12:26	WG1870541
Nickel	24.8		2.00	1	05/27/2022 12:26	WG1870541
Selenium	ND		2.00	1	05/27/2022 12:26	WG1870541
Silver	ND		1.00	1	05/27/2022 12:26	WG1870541
Zinc	40.1		5.00	1	05/27/2022 12:26	WG1870541

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	2.18		0.200	1	05/26/2022 15:28	WG1869120

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.69		1.00	5	05/27/2022 13:41	WG1870542

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	2990		100	1000	05/24/2022 18:50	WG1868796
(S) a,a,a-Trifluorotoluene(FID)	85.8		77.0-120		05/24/2022 18:50	WG1868796

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.192		0.0800	80	05/25/2022 07:07	WG1869139
Toluene	2.27		0.400	80	05/25/2022 07:07	WG1869139
Ethylbenzene	0.200		0.200	80	05/25/2022 07:07	WG1869139
Xylenes, Total	104		0.520	80	05/25/2022 07:07	WG1869139
1,2,4-Trimethylbenzene	26.9		0.400	80	05/25/2022 07:07	WG1869139
1,3,5-Trimethylbenzene	27.0		0.400	80	05/25/2022 07:07	WG1869139
(S) Toluene-d8	100		75.0-131		05/25/2022 07:07	WG1869139
(S) 4-Bromofluorobenzene	102		67.0-138		05/25/2022 07:07	WG1869139
(S) 1,2-Dichloroethane-d4	102		70.0-130		05/25/2022 07:07	WG1869139

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	798		20.0	5	06/02/2022 14:25	WG1872685
C28-C36 Motor Oil Range	ND		20.0	5	06/02/2022 14:25	WG1872685
(S) o-Terphenyl	116		18.0-148		06/02/2022 14:25	WG1872685

Sample Narrative:

L1496498-01 WG1872685: Dilution due to matrix.

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	0.0323		0.00600	1	05/31/2022 07:13	WG1871688
Anthracene	ND		0.00600	1	05/31/2022 07:13	WG1871688
Benzo(a)anthracene	ND		0.00600	1	05/31/2022 07:13	WG1871688
Benzo(b)fluoranthene	ND		0.00600	1	05/31/2022 07:13	WG1871688
Benzo(k)fluoranthene	ND		0.00600	1	05/31/2022 07:13	WG1871688
Benzo(a)pyrene	ND		0.00600	1	05/31/2022 07:13	WG1871688
Chrysene	ND		0.00600	1	05/31/2022 07:13	WG1871688
Dibenz(a,h)anthracene	ND		0.00600	1	05/31/2022 07:13	WG1871688
Fluoranthene	ND		0.00600	1	05/31/2022 07:13	WG1871688
Fluorene	0.0798		0.00600	1	05/31/2022 07:13	WG1871688
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	05/31/2022 07:13	WG1871688
1-Methylnaphthalene	0.745		0.0200	1	05/31/2022 07:13	WG1871688
2-Methylnaphthalene	2.30		0.0200	1	05/31/2022 07:13	WG1871688
Naphthalene	0.758		0.0200	1	05/31/2022 07:13	WG1871688
Pyrene	ND		0.00600	1	05/31/2022 07:13	WG1871688
(S) p-Terphenyl-d14	95.7		23.0-120		05/31/2022 07:13	WG1871688
(S) Nitrobenzene-d5	495	J1	14.0-149		05/31/2022 07:13	WG1871688
(S) 2-Fluorobiphenyl	87.3		34.0-125		05/31/2022 07:13	WG1871688

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.557		1	05/26/2022 14:31	WG1869122

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/26/2022 15:31	WG1869754

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.41	<u>T8</u>	1	05/27/2022 10:20	WG1869997

Sample Narrative:

L1496498-02 WG1869997: 8.41 at 21.2C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	223		10.0	1	05/26/2022 18:54	WG1869906

Sample Narrative:

L1496498-02 WG1869906: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	177		0.500	1	05/27/2022 12:28	WG1870541
Cadmium	ND		0.500	1	05/27/2022 12:28	WG1870541
Copper	15.2		2.00	1	05/27/2022 12:28	WG1870541
Lead	7.33		0.500	1	05/27/2022 12:28	WG1870541
Nickel	27.7		2.00	1	05/27/2022 12:28	WG1870541
Selenium	ND		2.00	1	05/27/2022 12:28	WG1870541
Silver	ND		1.00	1	05/27/2022 12:28	WG1870541
Zinc	28.9		5.00	1	05/27/2022 12:28	WG1870541

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	05/26/2022 15:31	WG1869120

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.63		1.00	5	05/27/2022 13:44	WG1870542

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/24/2022 12:47	WG1868642
(S) a,a,a-Trifluorotoluene(FID)	98.1		77.0-120		05/24/2022 12:47	WG1868642

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00168		0.00100	1	05/25/2022 05:51	WG1869139
Toluene	0.0250		0.00500	1	05/25/2022 05:51	WG1869139
Ethylbenzene	ND		0.00250	1	05/25/2022 05:51	WG1869139
Xylenes, Total	0.0742		0.00650	1	05/25/2022 05:51	WG1869139
1,2,4-Trimethylbenzene	0.00620		0.00500	1	05/25/2022 05:51	WG1869139
1,3,5-Trimethylbenzene	0.00535		0.00500	1	05/25/2022 05:51	WG1869139
(S) Toluene-d8	102		75.0-131		05/25/2022 05:51	WG1869139
(S) 4-Bromofluorobenzene	104		67.0-138		05/25/2022 05:51	WG1869139
(S) 1,2-Dichloroethane-d4	94.6		70.0-130		05/25/2022 05:51	WG1869139

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/02/2022 13:06	WG1872685
C28-C36 Motor Oil Range	ND		4.00	1	06/02/2022 13:06	WG1872685
(S) o-Terphenyl	48.6		18.0-148		06/02/2022 13:06	WG1872685

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	05/31/2022 07:31	WG1871688
Anthracene	ND		0.00600	1	05/31/2022 07:31	WG1871688
Benzo(a)anthracene	ND		0.00600	1	05/31/2022 07:31	WG1871688
Benzo(b)fluoranthene	ND		0.00600	1	05/31/2022 07:31	WG1871688
Benzo(k)fluoranthene	ND		0.00600	1	05/31/2022 07:31	WG1871688
Benzo(a)pyrene	ND		0.00600	1	05/31/2022 07:31	WG1871688
Chrysene	ND		0.00600	1	05/31/2022 07:31	WG1871688
Dibenz(a,h)anthracene	ND		0.00600	1	05/31/2022 07:31	WG1871688
Fluoranthene	ND		0.00600	1	05/31/2022 07:31	WG1871688
Fluorene	ND		0.00600	1	05/31/2022 07:31	WG1871688
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	05/31/2022 07:31	WG1871688
1-Methylnaphthalene	ND		0.0200	1	05/31/2022 07:31	WG1871688
2-Methylnaphthalene	ND		0.0200	1	05/31/2022 07:31	WG1871688
Naphthalene	ND		0.0200	1	05/31/2022 07:31	WG1871688
Pyrene	ND		0.00600	1	05/31/2022 07:31	WG1871688
(S) p-Terphenyl-d14	47.5		23.0-120		05/31/2022 07:31	WG1871688
(S) Nitrobenzene-d5	47.7		14.0-149		05/31/2022 07:31	WG1871688
(S) 2-Fluorobiphenyl	47.8		34.0-125		05/31/2022 07:31	WG1871688

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.627		1	05/26/2022 14:34	WG1869122

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/26/2022 15:37	WG1869754

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.42	<u>T8</u>	1	05/27/2022 10:20	WG1869997

Sample Narrative:

L1496498-03 WG1869997: 8.42 at 20.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	222		10.0	1	05/26/2022 18:54	WG1869906

Sample Narrative:

L1496498-03 WG1869906: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	144		0.500	1	05/27/2022 12:31	WG1870541
Cadmium	ND		0.500	1	05/27/2022 12:31	WG1870541
Copper	17.1		2.00	1	05/27/2022 12:31	WG1870541
Lead	8.14		0.500	1	05/27/2022 12:31	WG1870541
Nickel	33.2		2.00	1	05/27/2022 12:31	WG1870541
Selenium	ND		2.00	1	05/27/2022 12:31	WG1870541
Silver	ND		1.00	1	05/27/2022 12:31	WG1870541
Zinc	36.1		5.00	1	05/27/2022 12:31	WG1870541

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	05/26/2022 15:33	WG1869120

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.54		1.00	5	05/27/2022 13:48	WG1870542

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/24/2022 13:07	WG1868642
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	97.4		77.0-120		05/24/2022 13:07	WG1868642

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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	05/25/2022 06:10	WG1869139
Toluene	ND		0.00500	1	05/25/2022 06:10	WG1869139
Ethylbenzene	ND		0.00250	1	05/25/2022 06:10	WG1869139
Xylenes, Total	0.0350		0.00650	1	05/25/2022 06:10	WG1869139
1,2,4-Trimethylbenzene	0.00528		0.00500	1	05/25/2022 06:10	WG1869139
1,3,5-Trimethylbenzene	0.00655		0.00500	1	05/25/2022 06:10	WG1869139
(S) Toluene-d8	101		75.0-131		05/25/2022 06:10	WG1869139
(S) 4-Bromofluorobenzene	100		67.0-138		05/25/2022 06:10	WG1869139
(S) 1,2-Dichloroethane-d4	95.6		70.0-130		05/25/2022 06:10	WG1869139

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/02/2022 13:45	WG1872685
C28-C36 Motor Oil Range	6.98		4.00	1	06/02/2022 13:45	WG1872685
(S) o-Terphenyl	64.4		18.0-148		06/02/2022 13:45	WG1872685

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	05/31/2022 07:48	WG1871688
Anthracene	ND		0.00600	1	05/31/2022 07:48	WG1871688
Benzo(a)anthracene	ND		0.00600	1	05/31/2022 07:48	WG1871688
Benzo(b)fluoranthene	ND		0.00600	1	05/31/2022 07:48	WG1871688
Benzo(k)fluoranthene	ND		0.00600	1	05/31/2022 07:48	WG1871688
Benzo(a)pyrene	ND		0.00600	1	05/31/2022 07:48	WG1871688
Chrysene	ND		0.00600	1	05/31/2022 07:48	WG1871688
Dibenz(a,h)anthracene	ND		0.00600	1	05/31/2022 07:48	WG1871688
Fluoranthene	ND		0.00600	1	05/31/2022 07:48	WG1871688
Fluorene	ND		0.00600	1	05/31/2022 07:48	WG1871688
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	05/31/2022 07:48	WG1871688
1-Methylnaphthalene	ND		0.0200	1	05/31/2022 07:48	WG1871688
2-Methylnaphthalene	ND		0.0200	1	05/31/2022 07:48	WG1871688
Naphthalene	ND		0.0200	1	05/31/2022 07:48	WG1871688
Pyrene	ND		0.00600	1	05/31/2022 07:48	WG1871688
(S) p-Terphenyl-d14	71.8		23.0-120		05/31/2022 07:48	WG1871688
(S) Nitrobenzene-d5	63.4		14.0-149		05/31/2022 07:48	WG1871688
(S) 2-Fluorobiphenyl	58.4		34.0-125		05/31/2022 07:48	WG1871688

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.633		1	05/26/2022 14:37	WG1869122

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/26/2022 15:42	WG1869754

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.20	<u>T8</u>	1	05/27/2022 10:20	WG1869997

Sample Narrative:

L1496498-04 WG1869997: 8.2 at 20.8C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	236		10.0	1	05/26/2022 18:54	WG1869906

Sample Narrative:

L1496498-04 WG1869906: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	171		0.500	1	05/27/2022 12:34	WG1870541
Cadmium	ND		0.500	1	05/27/2022 12:34	WG1870541
Copper	14.0		2.00	1	05/27/2022 12:34	WG1870541
Lead	10.8		0.500	1	05/27/2022 12:34	WG1870541
Nickel	21.5		2.00	1	05/27/2022 12:34	WG1870541
Selenium	ND		2.00	1	05/27/2022 12:34	WG1870541
Silver	ND		1.00	1	05/27/2022 12:34	WG1870541
Zinc	42.8		5.00	1	05/27/2022 12:34	WG1870541

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.207		0.200	1	05/26/2022 15:36	WG1869120

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.82		1.00	5	05/27/2022 13:51	WG1870542

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	1.15		0.100	1	05/24/2022 13:28	WG1868642
(S) a,a,a-Trifluorotoluene(FID)	96.0		77.0-120		05/24/2022 13:28	WG1868642

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00188		0.00100	1	05/25/2022 06:29	WG1869139
Toluene	ND		0.00500	1	05/25/2022 06:29	WG1869139
Ethylbenzene	ND		0.00250	1	05/25/2022 06:29	WG1869139
Xylenes, Total	0.0638		0.00650	1	05/25/2022 06:29	WG1869139
1,2,4-Trimethylbenzene	0.0143		0.00500	1	05/25/2022 06:29	WG1869139
1,3,5-Trimethylbenzene	0.0144		0.00500	1	05/25/2022 06:29	WG1869139
(S) Toluene-d8	101		75.0-131		05/25/2022 06:29	WG1869139
(S) 4-Bromofluorobenzene	102		67.0-138		05/25/2022 06:29	WG1869139
(S) 1,2-Dichloroethane-d4	96.5		70.0-130		05/25/2022 06:29	WG1869139

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/02/2022 13:19	WG1872685
C28-C36 Motor Oil Range	4.28		4.00	1	06/02/2022 13:19	WG1872685
(S) o-Terphenyl	57.7		18.0-148		06/02/2022 13:19	WG1872685

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	05/31/2022 08:06	WG1871688
Anthracene	ND		0.00600	1	05/31/2022 08:06	WG1871688
Benzo(a)anthracene	ND		0.00600	1	05/31/2022 08:06	WG1871688
Benzo(b)fluoranthene	ND		0.00600	1	05/31/2022 08:06	WG1871688
Benzo(k)fluoranthene	ND		0.00600	1	05/31/2022 08:06	WG1871688
Benzo(a)pyrene	ND		0.00600	1	05/31/2022 08:06	WG1871688
Chrysene	ND		0.00600	1	05/31/2022 08:06	WG1871688
Dibenz(a,h)anthracene	ND		0.00600	1	05/31/2022 08:06	WG1871688
Fluoranthene	ND		0.00600	1	05/31/2022 08:06	WG1871688
Fluorene	ND		0.00600	1	05/31/2022 08:06	WG1871688
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	05/31/2022 08:06	WG1871688
1-Methylnaphthalene	ND		0.0200	1	05/31/2022 08:06	WG1871688
2-Methylnaphthalene	ND		0.0200	1	05/31/2022 08:06	WG1871688
Naphthalene	ND		0.0200	1	05/31/2022 08:06	WG1871688
Pyrene	ND		0.00600	1	05/31/2022 08:06	WG1871688
(S) p-Terphenyl-d14	57.6		23.0-120		05/31/2022 08:06	WG1871688
(S) Nitrobenzene-d5	73.0		14.0-149		05/31/2022 08:06	WG1871688
(S) 2-Fluorobiphenyl	42.5		34.0-125		05/31/2022 08:06	WG1871688

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3796712-1 05/26/22 13:53

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Hexavalent Chromium	U		0.255	1.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1496238-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1496238-13 05/26/22 14:03 • (DUP) R3796712-3 05/26/22 14:08

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	0.000		20

L1496507-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1496507-01 05/26/22 16:18 • (DUP) R3796712-8 05/26/22 16:23

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3796712-2 05/26/22 13:58

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Hexavalent Chromium	10.0	9.56	95.6	80.0-120	

L1496238-21 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1496238-21 05/26/22 15:00 • (MS) R3796712-4 05/26/22 15:05 • (MSD) R3796712-5 05/26/22 15:11

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Hexavalent Chromium	20.0	ND	20.2	19.7	101	98.3	1	75.0-125			2.64	20

L1496238-21 Original Sample (OS) • Matrix Spike (MS)

(OS) L1496238-21 05/26/22 15:00 • (MS) R3796712-6 05/26/22 15:16

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Hexavalent Chromium	687	ND	689	100	50	75.0-125	

L1496512-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1496512-02 05/27/22 10:20 • (DUP) R3796873-2 05/27/22 10:20

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	7.82	7.85	1	0.383		1

Sample Narrative:

OS: 7.82 at 20.9C
DUP: 7.85 at 20.5C

L1496535-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1496535-07 05/27/22 10:20 • (DUP) R3796873-3 05/27/22 10:20

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	8.03	8.01	1	0.249		1

Sample Narrative:

OS: 8.03 at 21.2C
DUP: 8.01 at 21.2C

Laboratory Control Sample (LCS)

(LCS) R3796873-1 05/27/22 10:20

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
pH	10.0	9.94	99.4	99.0-101	

Sample Narrative:

LCS: 9.94 at 21.1C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3796648-1 05/26/22 18:54

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1496498-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1496498-01 05/26/22 18:54 • (DUP) R3796648-3 05/26/22 18:54

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	4660	4770	1	2.33		20

Sample Narrative:

OS: at 25C
DUP: at 25C

L1496507-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1496507-01 05/26/22 18:54 • (DUP) R3796648-4 05/26/22 18:54

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	1570	1560	1	0.767		20

Sample Narrative:

OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3796648-2 05/26/22 18:54

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	268	279	104	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3796973-1 05/27/22 12:17

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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

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

(LCS) R3796973-2 05/27/22 12:20 • (LCSD) R3796973-3 05/27/22 12:23

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 %
Barium	100	103	103	103	103	80.0-120			0.111	20
Cadmium	100	99.2	99.1	99.2	99.1	80.0-120			0.0527	20
Copper	100	101	101	101	101	80.0-120			0.480	20
Lead	100	99.1	99.0	99.1	99.0	80.0-120			0.126	20
Nickel	100	99.4	99.5	99.4	99.5	80.0-120			0.0665	20
Selenium	100	101	100	101	100	80.0-120			0.900	20
Silver	20.0	17.9	18.1	89.5	90.3	80.0-120			0.858	20
Zinc	100	95.9	96.0	95.9	96.0	80.0-120			0.0563	20

⁷ Gl

⁸ Al

⁹ Sc

Method Blank (MB)

(MB) R3796739-1 05/26/22 14:28

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3796739-2 05/26/22 14:47 • (LCSD) R3796739-3 05/26/22 14:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.07	1.08	107	108	80.0-120			0.825	20

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

Method Blank (MB)

(MB) R3796946-1 05/27/22 13:28

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) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3796946-2 05/27/22 13:31 • (LCSD) R3796946-3 05/27/22 13:34

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	100	92.1	94.1	92.1	94.1	80.0-120			2.10	20

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

Method Blank (MB)

(MB) R3795772-2 05/24/22 11:13

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	96.9			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3795772-1 05/24/22 10:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.21	94.7	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	

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

Method Blank (MB)

(MB) R3796249-1 05/24/22 13:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.543	2.50
^(S) a,a,a-Trifluorotoluene(FID)	104			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3796249-2 05/24/22 14:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.43	98.7	72.0-127	
^(S) a,a,a-Trifluorotoluene(FID)			103	77.0-120	

L1496512-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1496512-02 05/24/22 20:25 • (MS) R3796249-3 05/24/22 20:54 • (MSD) R3796249-4 05/24/22 21:21

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	1100	182	1050	1010	78.9	75.3	200	10.0-151			3.88	28
^(S) a,a,a-Trifluorotoluene(FID)					105	103		77.0-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3795896-2 05/25/22 05:32

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	99.3			75.0-131
(S) 4-Bromofluorobenzene	103			67.0-138
(S) 1,2-Dichloroethane-d4	94.8			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3795896-1 05/25/22 04:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.118	94.4	70.0-123	
Toluene	0.125	0.121	96.8	75.0-121	
Ethylbenzene	0.125	0.122	97.6	74.0-126	
Xylenes, Total	0.375	0.374	99.7	72.0-127	
1,2,4-Trimethylbenzene	0.125	0.124	99.2	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.124	99.2	73.0-127	
(S) Toluene-d8			99.2	75.0-131	
(S) 4-Bromofluorobenzene			106	67.0-138	
(S) 1,2-Dichloroethane-d4			106	70.0-130	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3798784-1 06/02/22 12:40

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
<i>(S) o-Terphenyl</i>	84.5			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3798784-2 06/02/22 12:53

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	30.2	60.4	50.0-150	
<i>(S) o-Terphenyl</i>			81.5	18.0-148	

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

Method Blank (MB)

(MB) R3797709-2 05/31/22 06:55

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00209	0.00600
Anthracene	U		0.00230	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	88.4			23.0-120
(S) Nitrobenzene-d5	72.9			14.0-149
(S) 2-Fluorobiphenyl	77.1			34.0-125

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS)

(LCS) R3797709-1 05/31/22 06:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0582	72.8	50.0-120	
Anthracene	0.0800	0.0552	69.0	50.0-126	
Benzo(a)anthracene	0.0800	0.0564	70.5	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0619	77.4	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0607	75.9	49.0-125	
Benzo(a)pyrene	0.0800	0.0504	63.0	42.0-120	
Chrysene	0.0800	0.0590	73.8	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0568	71.0	47.0-125	
Fluoranthene	0.0800	0.0565	70.6	49.0-129	
Fluorene	0.0800	0.0597	74.6	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0548	68.5	46.0-125	
1-Methylnaphthalene	0.0800	0.0571	71.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0550	68.8	50.0-120	
Naphthalene	0.0800	0.0558	69.8	50.0-120	
Pyrene	0.0800	0.0602	75.3	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3797709-1 05/31/22 06:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			101	23.0-120	
(S) Nitrobenzene-d5			90.0	14.0-149	
(S) 2-Fluorobiphenyl			87.6	34.0-125	

L1496498-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1496498-04 05/31/22 08:06 • (MS) R3797709-3 05/31/22 08:24 • (MSD) R3797709-4 05/31/22 08:42

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 %
Acenaphthene	0.0800	ND	0.0353	0.0430	44.1	53.8	1	14.0-127			19.7	27
Anthracene	0.0800	ND	0.0338	0.0412	42.3	51.5	1	10.0-145			19.7	30
Benzo(a)anthracene	0.0800	ND	0.0341	0.0385	42.6	48.1	1	10.0-139			12.1	30
Benzo(b)fluoranthene	0.0800	ND	0.0328	0.0389	41.0	48.6	1	10.0-140			17.0	36
Benzo(k)fluoranthene	0.0800	ND	0.0364	0.0407	45.5	50.9	1	10.0-137			11.2	31
Benzo(a)pyrene	0.0800	ND	0.0341	0.0379	42.6	47.4	1	10.0-141			10.6	31
Chrysene	0.0800	ND	0.0394	0.0431	49.3	53.9	1	10.0-145			8.97	30
Dibenz(a,h)anthracene	0.0800	ND	0.0389	0.0412	48.6	51.5	1	10.0-132			5.74	31
Fluoranthene	0.0800	ND	0.0317	0.0390	39.6	48.8	1	10.0-153			20.7	33
Fluorene	0.0800	ND	0.0364	0.0437	45.5	54.6	1	11.0-130			18.2	29
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0350	0.0379	43.8	47.4	1	10.0-137			7.96	32
1-Methylnaphthalene	0.0800	ND	0.0364	0.0436	45.5	54.5	1	10.0-142			18.0	28
2-Methylnaphthalene	0.0800	ND	0.0357	0.0425	44.6	53.1	1	10.0-137			17.4	28
Naphthalene	0.0800	ND	0.0376	0.0437	47.0	54.6	1	10.0-135			15.0	27
Pyrene	0.0800	ND	0.0349	0.0424	43.6	53.0	1	10.0-148			19.4	35
(S) p-Terphenyl-d14					63.3	69.4		23.0-120				
(S) Nitrobenzene-d5					67.1	68.3		14.0-149				
(S) 2-Fluorobiphenyl					53.7	62.5		34.0-125				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

MDL	Method Detection Limit.
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

J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
T8	Sample(s) received past/too close to holding time expiration.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

¹ Cp

² Tc

³ Ss

⁴ Cn

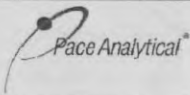
⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



CHAIN-OF-CUSTODY Analytical Request Document

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

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

ALL BOLD OUTLINED AREAS are for LAB USE ONLY

Company: Caerus Oil and Gas LLC		Billing Information:	
Address: Info on file		Info on file	
Report To: Jake Janicek, Brett Middleton, Blair Rollins		Email To: info on file	
Copy To: Chris McKisson, remediation@confluence-cc.com		Site Collection Info/Address:	
Customer Project Name/Number: Rulison SL	State: County/City:	Time Zone Collected:	
Phone:	Site/Facility ID #:	Compliance Monitoring?	
Email:	Rulison SL	[] Yes [X] No	
Collected By (print): Alex Slorby	Purchase Order #:	DW PWS ID #:	
Collected By (signature): <i>Alex Slorby</i>	Quote #:	DW Location Code:	
Sample Disposal:	Turnaround Date Required: Standard 5 Day	Immediately Packed on Ice:	
[] Dispose as appropriate	[] Same Day [] Next Day	[X] Yes [] No	
[] Return	[] 2 Day [] 3 Day	Field Filtered (if applicable):	
[] Archive:	[] 4 Day [] 5 Day	[] Yes [] No	
[] Hold:		Analysis: _____	

Container Preservative Type **

Lab Project Manager:

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

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

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	Container Type: Plastic (P) or Glass (G)	Table 915-1 VOCs	TPH (ORO, GRO, DRO)	Table 915-1 Metals	Table 915-1 PAHs	EC, SAR, Arsenic	Boron (Hot Water Soluble Soil)
			Date	Time	Date	Time									
PFX:20220519-SL-															
POR@16'	SL	G	5/19/22	0805			2	G	X	X	X	X	X	X	X
PHW@8.5'	SL	G	5/19/22	1120			2	G	X	X	X	X	X	X	X
PHE3@6.5'	SL	G	5/19/22	1215			2	G	X	X	X	X	X	X	X
PHN@7'	SL	G	5/19/22	1255			2	G	X	X	X	X	X	X	X

Analyses

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact Y N NA

Custody Signatures Present Y N NA

Collector Signature Present Y N NA

Bottles Intact Y N NA

Correct Bottles Y N NA

Sufficient Volume Y N NA

Samples Received on Ice Y N NA

VOA - Headspace Acceptable Y N NA

USDA Regulated Soils Y N NA

Samples in Holding Time Y N NA

Residual Chlorine Present Y N NA

Cl Strips: _____

Sample pH Acceptable Y N NA

pH Strips: _____

Sulfide Present Y N NA

Lead Acetate Strips: _____

LAB USE ONLY:

Lab Sample # / Comments:

L1496498

-01

-02

-03

-04

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used: Wet Blue Dry None

Packing Material Used: **5755 8084 8753**

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #:

Samples received via:

FEDEX UPS Client Courier Pace Courier

LAB Sample Temperature Info:

Temp Blank Received: Y N NA

Therm ID#:

Cooler 1 Temp Upon Receipt: ___oC

Cooler 1 Therm Corr. Factor: ___oC

Cooler 1 Corrected Temp: ___oC

Comments: **UNAT**

Relinquished by/Company: (Signature) *Alex Slorby* Date/Time: **5/19/22 1700**

Relinquished by/Company: (Signature) *[Signature]* Date/Time: **5/19/22 1730**

Relinquished by/Company: (Signature) *[Signature]* Date/Time: _____

Date/Time: _____

Date/Time: _____

Date/Time: **5/20/22 900**

Acctnum:

Template:

Prelogin:

PM:

PB:

Trip Blank Received: Y N NA

HCL MeOH TSP Other

Non Conformance(s): _____ Page: _____

YES / NO of: _____

G115