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REPORT OF WORK COMPLETED – STOCKPILE CHARACTERIZATION	
<b>COGCC Location Name (ID)</b>	SAMPLE-67S92W /17SEnw (334872)
<b>Operator Location Name</b>	J17E
<b>Legal Description</b>	NWSE Sec. 17 T7S-R92W
<b>COGCC Spill/Release Point ID</b>	478578
<b>COGCC Remediation Project #</b>	17035
<b>Coordinates (Lat/Long)</b>	39.444880 / -107.686440
<b>County</b>	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 recent soil stockpile characterization activities at the J17E well pad (Location). The Location is 7.3 miles south-southwest of Silt, Colorado in Garfield County as illustrated in the attached Topographic Location 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 characterization, results of the characterization, and recommendations for how to proceed with this information.

## Background

On November 11, 2020, a release of an unknown amount of produced water was discovered after a failed pressure test of a dumpline. The release was confined to Location perimeter. The release was reported in a Colorado Oil and Gas Conservation Commission (COGCC) Form 19 (document 402537238). Remedial investigation activities have been ongoing since the incident with work being conducted by WSP USA Inc.

## Methodology

On April 30, 2021, Confluence conducted characterization sampling of the impacted stockpile at the Location. Using hand tools, five (5) representative composite samples were collected from the stockpile. Each composite sample represented approximately one-fifth of the stockpile. Five aliquots per sample were collected approximately 2 feet below the surface of the stockpile. Soil samples were collected in laboratory prepared jars, immediately placed on ice, and shipped for laboratory analysis of arsenic; barium; cadmium; chromium VI; nickel; selenium; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; 1-methylnaphthalene; 2-methylnaphthalene; fluorene; naphthalene; benzene, toluene, ethylbenzene, xylenes (BTEX); total petroleum hydrocarbons (TPH); pH; and sodium adsorption ratio (SAR).

On May 20, 2021, Confluence returned to the Location for additional characterization of the impacted stockpile. A total of 10 five-point composite samples were collected: two samples from each of five areas represented by the original sample locations. One sample from each stockpile area comprised of aliquots collected from the top 3 inches of the stockpile, and the second was collected from approximately 2 feet below the surface. Soil samples were handled as previously described and shipped for laboratory analysis of 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, and TPH. Stockpile and sample locations are illustrated in the attached Site Diagram.

## Results

These results summarize observations from onsite sampling efforts and associated laboratory analytical results. Collected spatial data is depicted in the attached Site Diagrams. Laboratory analytical reports are attached and summarized in the Laboratory Results Summary Table.

### Stockpile Sampling Results

Laboratory results of the April 30, 2021 stockpile characterization samples indicate COGCC Table 915-1 Protection of Groundwater Standards exceedances of TPH, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, SAR, pH, arsenic, barium, and selenium.

Laboratory results of the May 20, 2021 stockpile characterization samples indicate COGCC Table 915-1 Protection of Groundwater Standards exceedances of TPH, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene.

On June 6, 2021, Confluence's drone was used to measure the stockpiles and excavation area at the Location. At the time of the flight the sampled stockpile (Eastern Stockpile) was measured to be 968.76 cubic yards. The Western Stockpile was measured to be 688.92 cubic yards. The open excavation in the southwest corner of the pad was measured to be 2,046.35 cubic yards.

## Analysis and Recommendations

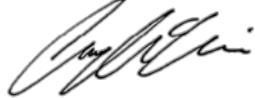
Laboratory results stockpile characterization samples indicate COGCC Table 915-1 Protection of Groundwater Standards exceedances of TPH, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, SAR, pH, arsenic, barium, and selenium. After the May 20, 2021 sampling event, the only TPH exceedance observed was in sample 20210520 - J17E (Comp\_1@2') at a concentration of 527 milligrams per kilogram (mg/kg). All five (5) stockpile sections demonstrated exceedances of 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene across both sampling events. In general, these concentrations were lower at the surface compared to the samples collected from 2 feet below the surface of the stockpile, indicating that exposure to the sun and the atmosphere may contribute to the reduction of these concentrations.

Based on this data, it appears that atmospheric exposure may accelerate the breakdown of polycyclic aromatic hydrocarbons (PAHs). Continued stockpile management practices such as tilling and mixing will continue to remediate the remaining volatile organic compounds such as TPH, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene, and may continue to reduce the concentrations of PAHs.



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 Map
- Site Diagram – Sample Locations
- Site Diagram – Overview
- Laboratory Results Summary Table
- Laboratory Analytical Reports



## Site Diagram Overview

**Caerus Oil & Gas LLC**

J17E

(SAMPLE-67S92W /17SENW)

COGCC Location ID: 334872

Garfield County

NWSE Sec. 17 T7S-R92W



### Legend




-  Eastern Stockpile – 06/04/2021
-  Western Stockpile– 06/04/2021
-  Excavation boundary – 06/04/2021

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: Andrew Smith on 06/07/2021.

Estimated Volume:  
688.92 Yards<sup>3</sup>

Estimated Volume:  
968.76 Yards<sup>3</sup>

Estimated Volume:  
2046.35 Yards<sup>3</sup>

100 ft

## Site Diagram Sample Locations

**Caerus Oil & Gas LLC**

J17E

(SAMPLE-67S92W /17SENW)

COGCC Location ID: 334872

Garfield County

NWSE Sec. 17 T7S-R92W



### Legend

- Eastern Stockpile Extent
- Composite Sample Aliquot

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: Andrew Smith on 06/07/2021.



Soil Screening and Remediation Limits			Organic Compounds (mg/kg [ppm])																				
COGCC Table 915-1 Groundwater Protection -->			500	NA	NA	NA	0.0026	0.69	0.78	9.9	0.0081	0.0087	0.55	5.8	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98
COGCC Table 915-1 Residential -->			500	NA	NA	NA	1.2	490	5.8	58	30	27	360	1800	1.1	0.11	1.1	11	110	0.11	240	240	1.1
Location	Sample Date	Sample ID	TPH (total volatile and extractable petroleum hydrocarbons) (GRO+DRO+ORO)	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C28) High Fraction	TPH-ORO (C28-C36) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total (sum of o-, m-, p- isomers)	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Acenaphthene	Anthracene	Benzo(A)anthracene	Benzo(A)pyrene	Benzo(B)fluoranthene	Benzo(K)fluoranthene	Chrysene	Dibenzo(A,H)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-C,D)pyrene
J17E	4/30/2021	20210430 - J17E_STOCKPILE (COMP_1)	977.00	315	529	133	<0.00800	0.0218	0.0228	4.25	5.15	4.37	<0.0600	<0.0600	<0.0600	<0.0600	0.00327	<0.0600	0.0114	<0.0600	0.0151	0.176	<0.0600
J17E	4/30/2021	20210430 - J17E_STOCKPILE (COMP_2)	770.99	2.99	441	327	<0.00100	<0.00500	<0.00250	0.00363	0.00665	0.394	0.0112	<0.0600	<0.0600	<0.0600	0.00197	<0.0600	0.00410	<0.0600	0.00690	0.0576	<0.0600
J17E	4/30/2021	20210430 - J17E_STOCKPILE (COMP_3)	414.83	7.23	322	85.6	<0.00100	<0.00500	<0.00250	0.00407	0.0122	0.753	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J17E	4/30/2021	20210430 - J17E_STOCKPILE (COMP_4)	416.17	2.17	303	111	<0.00100	<0.00500	<0.00250	0.00378	0.00380	0.382	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J17E	4/30/2021	20210430 - J17E_STOCKPILE (COMP_5)	197.734	0.334	71.4	126	<0.00100	<0.00500	<0.00250	<0.00650	<0.00500	0.00383	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J17E	5/20/2021	20210520 - J17E (Comp_1@3")	136.548	0.0481	78.8	57.7	NA	NA	NA	NA	NA	NA	0.00591	0.0278	<0.00600	<0.00600	0.00213	<0.00600	0.00478	<0.00600	0.00716	0.0183	<0.00600
J17E	5/20/2021	20210520 - J17E (Comp_1@2')	527	126	305	96.0	NA	NA	NA	NA	NA	NA	0.0131	0.0425	<0.00600	<0.00600	0.00190	<0.00600	0.00650	<0.00600	0.00817	0.0805	<0.00600
J17E	5/20/2021	20210520 - J17E (Comp_2@3")	104.872	0.272	64.8	39.8	NA	NA	NA	NA	NA	NA	0.00640	0.0346	<0.00600	<0.00600	0.00192	<0.00600	0.00520	<0.00600	0.00808	0.0204	<0.00600
J17E	5/20/2021	20210520 - J17E (Comp_2@2')	423.14	3.84	320	99.3	NA	NA	NA	NA	NA	NA	0.0131	0.0363	<0.00600	<0.00600	0.00178	<0.00600	0.00478	<0.00600	0.00757	0.0706	<0.00600
J17E	5/20/2021	20210520 - J17E (Comp_3@3")	162.41	1.81	99.5	61.1	NA	NA	NA	NA	NA	NA	0.00918	0.0385	<0.00600	<0.00600	0.00199	<0.00600	0.00668	<0.00600	0.00944	0.0442	<0.00600
J17E	5/20/2021	20210520 - J17E (Comp_3@2')	202.95	3.55	140	59.4	NA	NA	NA	NA	NA	NA	<0.00600	0.0403	<0.00600	<0.00600	<0.00600	<0.00600	0.00468	<0.00600	0.00810	0.0664	<0.00600
J17E	5/20/2021	20210520 - J17E (Comp_4@3")	111.224	0.524	66.2	44.5	NA	NA	NA	NA	NA	NA	0.00891	0.0455	<0.00600	<0.00600	0.00257	<0.00600	0.00675	<0.00600	0.0100	0.0256	<0.00600
J17E	5/20/2021	20210520 - J17E (Comp_4@2')	184.56	5.86	140	38.7	NA	NA	NA	NA	NA	NA	0.00851	0.0226	<0.00600	<0.00600	<0.00600	<0.00600	0.00314	<0.00600	0.00465	0.0368	<0.00600
J17E	5/20/2021	20210520 - J17E (Comp_5@3")	154.736	0.436	86.6	67.7	NA	NA	NA	NA	NA	NA	0.00685	0.0274	<0.00600	<0.00600	0.00206	<0.00600	0.00431	<0.00600	0.00689	0.0210	<0.00600
J17E	5/20/2021	20210520 - J17E (Comp_5@2')	165.59	0.890	92.5	72.2	NA	NA	NA	NA	NA	NA	0.00433	0.0165	<0.00600	<0.00600	<0.00600	<0.00600	0.00297	<0.00600	0.00519	0.00934	<0.00600

Soil Screening and Remediation Limits							Soil Suitability for Reclamation				Metals (mg/kg [ppm])													
Location	Sample Date	Sample ID					4	6	6-8.3	2	0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370				
			COGCC Table 915-1 Groundwater Protection -->				18	24	2	180	4	6	6-8.3	2	0.68	15000	71	0.3	3100	400	1500	390	390	23000
			COGCC Table 915-1 Residential -->				1- Methylnaphthalene	2- Methylnaphthalene	Naphthalene	Pyrene	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
J17E	4/30/2021	20210430 - J17E_STOCKPILE (COMP_1)	1.38	2.94	0.854	0.00939	NA	NA	8.20	8.97	NA	8.61	295	0.302	<1.0	NA	NA	12.5	<2.0	NA	NA			
J17E	4/30/2021	20210430 - J17E_STOCKPILE (COMP_2)	0.00665	0.394	0.0266	NA	NA	NA	5.12	9.08	NA	8.47	509	0.192	<1.0	NA	NA	16.3	<2.0	NA	NA			
J17E	4/30/2021	20210430 - J17E_STOCKPILE (COMP_3)	0.277	0.355	0.136	NA	NA	NA	5.82	9.17	NA	9.43	379	0.240	<1.0	NA	NA	13.1	<2.0	NA	NA			
J17E	4/30/2021	20210430 - J17E_STOCKPILE (COMP_4)	0.135	0.0650	0.0172	NA	NA	NA	5.23	9.09	NA	12.4	778	0.113	<1.0	NA	NA	15.4	0.916	NA	NA			
J17E	4/30/2021	20210430 - J17E_STOCKPILE (COMP_5)	0.0151	0.0269	0.0129	NA	NA	NA	1.87	8.82	NA	7.21	3820	<0.500	<1.0	NA	NA	13.5	0.923	NA	NA			
J17E	5/20/2021	20210520 - J17E (Comp_1@3")	0.0263	0.0461	0.0135	0.00668	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
J17E	5/20/2021	20210520 - J17E (Comp_1@2')	0.275	0.198	0.0645	0.00605	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
J17E	5/20/2021	20210520 - J17E (Comp_2@3")	0.0298	0.0413	0.00975	0.00688	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
J17E	5/20/2021	20210520 - J17E (Comp_2@2')	0.224	0.135	0.0314	0.00585	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
J17E	5/20/2021	20210520 - J17E (Comp_3@3")	0.0675	0.0834	0.0151	0.00723	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
J17E	5/20/2021	20210520 - J17E (Comp_3@2')	0.178	0.0868	0.0268	0.00664	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
J17E	5/20/2021	20210520 - J17E (Comp_4@3")	0.0350	0.0344	0.0110	0.00843	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
J17E	5/20/2021	20210520 - J17E (Comp_4@2')	0.0737	0.0412	0.0217	0.00387	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
J17E	5/20/2021	20210520 - J17E (Comp_5@3")	0.0265	0.0286	0.00691	0.00600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
J17E	5/20/2021	20210520 - J17E (Comp_5@2')	0.0149	0.0243	0.00774	0.00487	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			

**Caerus Oil and Gas**

Sample Delivery Group: L1346669  
Samples Received: 05/01/2021  
Project Number:  
Description:

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](http://www.pacenational.com)

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<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

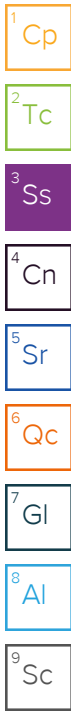
<sup>9</sup> Sc

# SAMPLE SUMMARY

## 20210430 - J17E\_STOCKPILE (COMP\_1) L1346669-01 Solid

Collected by: Andrew Smith  
 Collected date/time: 04/30/21 11:40  
 Received date/time: 05/01/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1663237	1	05/05/21 00:19	05/05/21 00:19	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1664719	1	05/04/21 15:10	05/06/21 00:37	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1664397	1	05/06/21 14:00	05/06/21 16:30	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1662794	1	05/02/21 16:26	05/03/21 10:41	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1663982	5	05/02/21 16:25	05/04/21 13:01	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1663842	100	05/03/21 14:14	05/05/21 02:33	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1663621	8	05/03/21 14:14	05/04/21 11:27	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1664164	8	05/03/21 14:14	05/04/21 22:32	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1662859	5	05/02/21 18:23	05/03/21 04:20	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1662867	1	05/03/21 09:25	05/03/21 18:04	AAT	Mt. Juliet, TN



## 20210430 - J17E\_STOCKPILE (COMP\_2) L1346669-02 Solid

Collected by: Andrew Smith  
 Collected date/time: 04/30/21 12:10  
 Received date/time: 05/01/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1663237	1	05/05/21 00:22	05/05/21 00:22	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1664719	1	05/04/21 15:10	05/06/21 00:42	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1664397	1	05/06/21 14:00	05/06/21 16:30	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1662794	1	05/02/21 16:26	05/03/21 10:44	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1663982	5	05/02/21 16:25	05/04/21 13:05	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1663842	1	05/03/21 14:14	05/05/21 01:05	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1663621	1	05/03/21 14:14	05/04/21 06:36	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1662859	10	05/02/21 18:23	05/03/21 12:40	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1662867	1	05/03/21 09:25	05/03/21 18:21	AAT	Mt. Juliet, TN

## 20210430 - J17E\_STOCKPILE (COMP\_3) L1346669-03 Solid

Collected by: Andrew Smith  
 Collected date/time: 04/30/21 12:30  
 Received date/time: 05/01/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1663237	1	05/05/21 00:25	05/05/21 00:25	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1664719	1	05/04/21 15:10	05/06/21 00:47	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1664397	1	05/06/21 14:00	05/06/21 16:30	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1662794	1	05/02/21 16:26	05/03/21 10:47	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1663982	5	05/02/21 16:25	05/04/21 13:08	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1663842	1	05/03/21 14:14	05/05/21 01:27	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1663621	1	05/03/21 14:14	05/04/21 06:57	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1662859	1	05/02/21 18:23	05/03/21 02:22	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1662867	1	05/03/21 09:25	05/03/21 18:38	AAT	Mt. Juliet, TN

## 20210430 - J17E\_STOCKPILE (COMP\_4) L1346669-04 Solid

Collected by: Andrew Smith  
 Collected date/time: 04/30/21 12:40  
 Received date/time: 05/01/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1663237	1	05/05/21 00:27	05/05/21 00:27	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1664719	1	05/04/21 15:10	05/06/21 00:52	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1664397	1	05/06/21 14:00	05/06/21 16:30	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1662794	1	05/02/21 16:26	05/03/21 10:50	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1663982	5	05/02/21 16:25	05/04/21 13:11	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1663842	1	05/03/21 14:14	05/05/21 01:49	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1663621	1	05/03/21 14:14	05/04/21 07:17	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1662859	1	05/02/21 18:23	05/03/21 02:35	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1662867	1	05/03/21 09:25	05/03/21 18:56	AAT	Mt. Juliet, TN

# SAMPLE SUMMARY

20210430 - J17E\_STOCKPILE (COMP\_5) L1346669-05 Solid  
 Collected by: Andrew Smith      Collected date/time: 04/30/21 12:55      Received date/time: 05/01/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1663237	1	05/05/21 00:30	05/05/21 00:30	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1664719	1	05/04/21 15:10	05/06/21 00:57	DGR	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1664397	1	05/06/21 14:00	05/06/21 16:30	SAC	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1662794	1	05/02/21 16:26	05/03/21 09:35	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1663982	5	05/02/21 16:25	05/04/21 12:37	TM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1663842	1	05/03/21 14:14	05/05/21 02:11	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1663621	1	05/03/21 14:14	05/04/21 07:38	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1662859	1	05/02/21 18:23	05/03/21 04:07	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1662867	1	05/03/21 09:25	05/03/21 19:13	AAT	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	8.20		1	05/05/2021 00:19	WG1663237

## Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	05/06/2021 00:37	<a href="#">WG1664719</a>

## Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.97	<u>T8</u>	1	05/06/2021 16:30	<a href="#">WG1664397</a>

## Sample Narrative:

L1346669-01 WG1664397: 8.97 at 22.2C

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	295		0.0852	0.500	1	05/03/2021 10:41	<a href="#">WG1662794</a>
Cadmium	0.302	<u>J</u>	0.0471	0.500	1	05/03/2021 10:41	<a href="#">WG1662794</a>
Nickel	12.5		0.132	2.00	1	05/03/2021 10:41	<a href="#">WG1662794</a>
Selenium	U		0.764	2.00	1	05/03/2021 10:41	<a href="#">WG1662794</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.61		0.100	1.00	5	05/04/2021 13:01	<a href="#">WG1663982</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	315		2.17	10.0	100	05/05/2021 02:33	<a href="#">WG1663842</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	97.5			77.0-120		05/05/2021 02:33	<a href="#">WG1663842</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.00374	0.00800	8	05/04/2021 11:27	<a href="#">WG1663621</a>
Toluene	0.0218	<u>J</u>	0.0104	0.0400	8	05/04/2021 22:32	<a href="#">WG1664164</a>
Ethylbenzene	0.0228		0.00590	0.0200	8	05/04/2021 11:27	<a href="#">WG1663621</a>
Xylenes, Total	4.25		0.00704	0.0520	8	05/04/2021 11:27	<a href="#">WG1663621</a>
1,2,4-Trimethylbenzene	5.15		0.0126	0.0400	8	05/04/2021 11:27	<a href="#">WG1663621</a>
1,3,5-Trimethylbenzene	4.37		0.0160	0.0400	8	05/04/2021 11:27	<a href="#">WG1663621</a>
(S) Toluene-d8	113			75.0-131		05/04/2021 11:27	<a href="#">WG1663621</a>
(S) Toluene-d8	102			75.0-131		05/04/2021 22:32	<a href="#">WG1664164</a>
(S) 4-Bromofluorobenzene	109			67.0-138		05/04/2021 11:27	<a href="#">WG1663621</a>
(S) 4-Bromofluorobenzene	139	<u>J1</u>		67.0-138		05/04/2021 22:32	<a href="#">WG1664164</a>
(S) 1,2-Dichloroethane-d4	106			70.0-130		05/04/2021 11:27	<a href="#">WG1663621</a>
(S) 1,2-Dichloroethane-d4	97.6			70.0-130		05/04/2021 22:32	<a href="#">WG1664164</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	529		8.05	20.0	5	05/03/2021 04:20	<a href="#">WG1662859</a>
C28-C36 Motor Oil Range	133		1.37	20.0	5	05/03/2021 04:20	<a href="#">WG1662859</a>
(S) o-Terphenyl	50.5			18.0-148		05/03/2021 04:20	<a href="#">WG1662859</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Acenaphthene	U		0.00209	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Acenaphthylene	U		0.00216	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Benzo(b)fluoranthene	0.00327	J	0.00153	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Chrysene	0.0114		0.00232	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Fluoranthene	0.0151		0.00227	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Fluorene	0.176		0.00205	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Naphthalene	0.854		0.00408	0.0200	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Phenanthrene	0.270		0.00231	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
Pyrene	0.00939		0.00200	0.00600	1	05/03/2021 18:04	<a href="#">WG1662867</a>
1-Methylnaphthalene	1.38		0.00449	0.0200	1	05/03/2021 18:04	<a href="#">WG1662867</a>
2-Methylnaphthalene	2.94		0.00427	0.0200	1	05/03/2021 18:04	<a href="#">WG1662867</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	05/03/2021 18:04	<a href="#">WG1662867</a>
(S) p-Terphenyl-d14	85.1			23.0-120		05/03/2021 18:04	<a href="#">WG1662867</a>
(S) Nitrobenzene-d5	1160	J1		14.0-149		05/03/2021 18:04	<a href="#">WG1662867</a>
(S) 2-Fluorobiphenyl	54.2			34.0-125		05/03/2021 18:04	<a href="#">WG1662867</a>

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	5.12		1	05/05/2021 00:22	WG1663237

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	05/06/2021 00:42	<a href="#">WG1664719</a>

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.08	<u>T8</u>	1	05/06/2021 16:30	<a href="#">WG1664397</a>

Sample Narrative:

L1346669-02 WG1664397: 9.08 at 22C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	509		0.0852	0.500	1	05/03/2021 10:44	<a href="#">WG1662794</a>
Cadmium	0.192	<u>J</u>	0.0471	0.500	1	05/03/2021 10:44	<a href="#">WG1662794</a>
Nickel	16.3		0.132	2.00	1	05/03/2021 10:44	<a href="#">WG1662794</a>
Selenium	U		0.764	2.00	1	05/03/2021 10:44	<a href="#">WG1662794</a>

Metals (ICPMS) by Method 6020

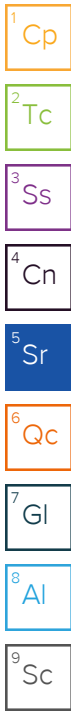
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.47		0.100	1.00	5	05/04/2021 13:05	<a href="#">WG1663982</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	2.99		0.0217	0.100	1	05/05/2021 01:05	<a href="#">WG1663842</a>
(S) a,a,a-Trifluorotoluene(FID)	92.5			77.0-120		05/05/2021 01:05	<a href="#">WG1663842</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	05/04/2021 06:36	<a href="#">WG1663621</a>
Toluene	U		0.00130	0.00500	1	05/04/2021 06:36	<a href="#">WG1663621</a>
Ethylbenzene	U		0.000737	0.00250	1	05/04/2021 06:36	<a href="#">WG1663621</a>
Xylenes, Total	0.00363	<u>J</u>	0.000880	0.00650	1	05/04/2021 06:36	<a href="#">WG1663621</a>
1,2,4-Trimethylbenzene	0.00665		0.00158	0.00500	1	05/04/2021 06:36	<a href="#">WG1663621</a>
1,3,5-Trimethylbenzene	0.394		0.00200	0.00500	1	05/04/2021 06:36	<a href="#">WG1663621</a>
(S) Toluene-d8	116			75.0-131		05/04/2021 06:36	<a href="#">WG1663621</a>
(S) 4-Bromofluorobenzene	121			67.0-138		05/04/2021 06:36	<a href="#">WG1663621</a>
(S) 1,2-Dichloroethane-d4	99.5			70.0-130		05/04/2021 06:36	<a href="#">WG1663621</a>



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	441		16.1	40.0	10	05/03/2021 12:40	<a href="#">WG1662859</a>
C28-C36 Motor Oil Range	327		2.74	40.0	10	05/03/2021 12:40	<a href="#">WG1662859</a>
(S) o-Terphenyl	275	<u>J1</u>		18.0-148		05/03/2021 12:40	<a href="#">WG1662859</a>

## Sample Narrative:

L1346669-02 WG1662859: Surrogate failure due to matrix interference

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Acenaphthene	0.0112		0.00209	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Acenaphthylene	U		0.00216	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Benzo(b)fluoranthene	0.00197	<u>J</u>	0.00153	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Chrysene	0.00410	<u>J</u>	0.00232	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Fluoranthene	0.00690		0.00227	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Fluorene	0.0576		0.00205	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Naphthalene	0.0266		0.00408	0.0200	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Phenanthrene	0.0794		0.00231	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
Pyrene	0.00602		0.00200	0.00600	1	05/03/2021 18:21	<a href="#">WG1662867</a>
1-Methylnaphthalene	0.196		0.00449	0.0200	1	05/03/2021 18:21	<a href="#">WG1662867</a>
2-Methylnaphthalene	0.117		0.00427	0.0200	1	05/03/2021 18:21	<a href="#">WG1662867</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	05/03/2021 18:21	<a href="#">WG1662867</a>
(S) p-Terphenyl-d14	90.1			23.0-120		05/03/2021 18:21	<a href="#">WG1662867</a>
(S) Nitrobenzene-d5	102			14.0-149		05/03/2021 18:21	<a href="#">WG1662867</a>
(S) 2-Fluorobiphenyl	78.4			34.0-125		05/03/2021 18:21	<a href="#">WG1662867</a>

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	5.82		1	05/05/2021 00:25	WG1663237

## Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	05/06/2021 00:47	<a href="#">WG1664719</a>

## Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.17	<u>T8</u>	1	05/06/2021 16:30	<a href="#">WG1664397</a>

## Sample Narrative:

L1346669-03 WG1664397: 9.17 at 22C

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	379		0.0852	0.500	1	05/03/2021 10:47	<a href="#">WG1662794</a>
Cadmium	0.240	<u>J</u>	0.0471	0.500	1	05/03/2021 10:47	<a href="#">WG1662794</a>
Nickel	13.1		0.132	2.00	1	05/03/2021 10:47	<a href="#">WG1662794</a>
Selenium	U		0.764	2.00	1	05/03/2021 10:47	<a href="#">WG1662794</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.43		0.100	1.00	5	05/04/2021 13:08	<a href="#">WG1663982</a>

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

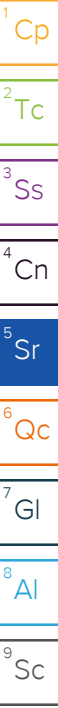
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	7.23		0.0217	0.100	1	05/05/2021 01:27	<a href="#">WG1663842</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.6			77.0-120		05/05/2021 01:27	<a href="#">WG1663842</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	05/04/2021 06:57	<a href="#">WG1663621</a>
Toluene	U		0.00130	0.00500	1	05/04/2021 06:57	<a href="#">WG1663621</a>
Ethylbenzene	U		0.000737	0.00250	1	05/04/2021 06:57	<a href="#">WG1663621</a>
Xylenes, Total	0.00407	<u>J</u>	0.000880	0.00650	1	05/04/2021 06:57	<a href="#">WG1663621</a>
1,2,4-Trimethylbenzene	0.0122		0.00158	0.00500	1	05/04/2021 06:57	<a href="#">WG1663621</a>
1,3,5-Trimethylbenzene	0.753		0.00200	0.00500	1	05/04/2021 06:57	<a href="#">WG1663621</a>
(S) Toluene-d8	117			75.0-131		05/04/2021 06:57	<a href="#">WG1663621</a>
(S) 4-Bromofluorobenzene	105			67.0-138		05/04/2021 06:57	<a href="#">WG1663621</a>
(S) 1,2-Dichloroethane-d4	95.6			70.0-130		05/04/2021 06:57	<a href="#">WG1663621</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	322		1.61	4.00	1	05/03/2021 02:22	<a href="#">WG1662859</a>
C28-C36 Motor Oil Range	85.6		0.274	4.00	1	05/03/2021 02:22	<a href="#">WG1662859</a>



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	56.0			18.0-148		05/03/2021 02:22	<a href="#">WG1662867</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Acenaphthene	0.0171		0.00209	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Acenaphthylene	U		0.00216	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Chrysene	0.00530	J	0.00232	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Fluoranthene	0.00677		0.00227	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Fluorene	0.0752		0.00205	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Naphthalene	0.136		0.00408	0.0200	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Phenanthrene	0.109		0.00231	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
Pyrene	0.00667		0.00200	0.00600	1	05/03/2021 18:38	<a href="#">WG1662867</a>
1-Methylnaphthalene	0.277		0.00449	0.0200	1	05/03/2021 18:38	<a href="#">WG1662867</a>
2-Methylnaphthalene	0.355		0.00427	0.0200	1	05/03/2021 18:38	<a href="#">WG1662867</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	05/03/2021 18:38	<a href="#">WG1662867</a>
(S) p-Terphenyl-d14	88.1			23.0-120		05/03/2021 18:38	<a href="#">WG1662867</a>
(S) Nitrobenzene-d5	290	J1		14.0-149		05/03/2021 18:38	<a href="#">WG1662867</a>
(S) 2-Fluorobiphenyl	74.4			34.0-125		05/03/2021 18:38	<a href="#">WG1662867</a>

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	5.23		1	05/05/2021 00:27	WG1663237

## Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	05/06/2021 00:52	<a href="#">WG1664719</a>

## Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.09	<u>T8</u>	1	05/06/2021 16:30	<a href="#">WG1664397</a>

## Sample Narrative:

L1346669-04 WG1664397: 9.09 at 21.7C

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	778		0.0852	0.500	1	05/03/2021 10:50	<a href="#">WG1662794</a>
Cadmium	0.113	<u>J</u>	0.0471	0.500	1	05/03/2021 10:50	<a href="#">WG1662794</a>
Nickel	15.4		0.132	2.00	1	05/03/2021 10:50	<a href="#">WG1662794</a>
Selenium	0.916	<u>J</u>	0.764	2.00	1	05/03/2021 10:50	<a href="#">WG1662794</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	12.4		0.100	1.00	5	05/04/2021 13:11	<a href="#">WG1663982</a>

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

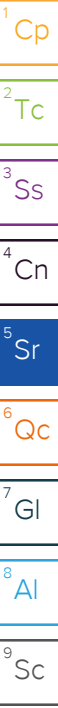
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	2.17		0.0217	0.100	1	05/05/2021 01:49	<a href="#">WG1663842</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.1			77.0-120		05/05/2021 01:49	<a href="#">WG1663842</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	05/04/2021 07:17	<a href="#">WG1663621</a>
Toluene	U		0.00130	0.00500	1	05/04/2021 07:17	<a href="#">WG1663621</a>
Ethylbenzene	U		0.000737	0.00250	1	05/04/2021 07:17	<a href="#">WG1663621</a>
Xylenes, Total	0.00378	<u>J</u>	0.000880	0.00650	1	05/04/2021 07:17	<a href="#">WG1663621</a>
1,2,4-Trimethylbenzene	0.00380	<u>J</u>	0.00158	0.00500	1	05/04/2021 07:17	<a href="#">WG1663621</a>
1,3,5-Trimethylbenzene	0.382		0.00200	0.00500	1	05/04/2021 07:17	<a href="#">WG1663621</a>
(S) Toluene-d8	115			75.0-131		05/04/2021 07:17	<a href="#">WG1663621</a>
(S) 4-Bromofluorobenzene	122			67.0-138		05/04/2021 07:17	<a href="#">WG1663621</a>
(S) 1,2-Dichloroethane-d4	103			70.0-130		05/04/2021 07:17	<a href="#">WG1663621</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	303		1.61	4.00	1	05/03/2021 02:35	<a href="#">WG1662859</a>
C28-C36 Motor Oil Range	111		0.274	4.00	1	05/03/2021 02:35	<a href="#">WG1662859</a>



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	70.5			18.0-148		05/03/2021 02:35	<a href="#">WG1662869</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Acenaphthene	0.0108		0.00209	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Acenaphthylene	U		0.00216	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Benzo(a)anthracene	0.00316	U	0.00173	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Benzo(a)pyrene	0.00217	U	0.00179	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Benzo(b)fluoranthene	0.00424	U	0.00153	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Benzo(g,h,i)perylene	0.00196	U	0.00177	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Chrysene	0.00574	U	0.00232	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Fluoranthene	0.0106		0.00227	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Fluorene	0.0491		0.00205	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Naphthalene	0.0172	U	0.00408	0.0200	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Phenanthrene	0.0671		0.00231	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
Pyrene	0.00898		0.00200	0.00600	1	05/03/2021 18:56	<a href="#">WG1662867</a>
1-Methylnaphthalene	0.135		0.00449	0.0200	1	05/03/2021 18:56	<a href="#">WG1662867</a>
2-Methylnaphthalene	0.0650		0.00427	0.0200	1	05/03/2021 18:56	<a href="#">WG1662867</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	05/03/2021 18:56	<a href="#">WG1662867</a>
(S) p-Terphenyl-d14	86.3			23.0-120		05/03/2021 18:56	<a href="#">WG1662867</a>
(S) Nitrobenzene-d5	100			14.0-149		05/03/2021 18:56	<a href="#">WG1662867</a>
(S) 2-Fluorobiphenyl	74.3			34.0-125		05/03/2021 18:56	<a href="#">WG1662867</a>

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	1.87		1	05/05/2021 00:30	WG1663237

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	05/06/2021 00:57	<a href="#">WG1664719</a>

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.82	<u>T8</u>	1	05/06/2021 16:30	<a href="#">WG1664397</a>

Sample Narrative:

L1346669-05 WG1664397: 8.82 at 22.1C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	3820	<u>O1 V</u>	0.0852	0.500	1	05/03/2021 09:35	<a href="#">WG1662794</a>
Cadmium	U		0.0471	0.500	1	05/03/2021 09:35	<a href="#">WG1662794</a>
Nickel	13.5	<u>O1</u>	0.132	2.00	1	05/03/2021 09:35	<a href="#">WG1662794</a>
Selenium	0.923	<u>J</u>	0.764	2.00	1	05/03/2021 09:35	<a href="#">WG1662794</a>

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.21	<u>O1</u>	0.100	1.00	5	05/04/2021 12:37	<a href="#">WG1663982</a>

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

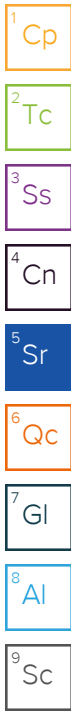
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.334		0.0217	0.100	1	05/05/2021 02:11	<a href="#">WG1663842</a>
(S) a,a,a-Trifluorotoluene(FID)	91.1			77.0-120		05/05/2021 02:11	<a href="#">WG1663842</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	05/04/2021 07:38	<a href="#">WG1663621</a>
Toluene	U		0.00130	0.00500	1	05/04/2021 07:38	<a href="#">WG1663621</a>
Ethylbenzene	U		0.000737	0.00250	1	05/04/2021 07:38	<a href="#">WG1663621</a>
Xylenes, Total	U		0.000880	0.00650	1	05/04/2021 07:38	<a href="#">WG1663621</a>
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	05/04/2021 07:38	<a href="#">WG1663621</a>
1,3,5-Trimethylbenzene	0.00383	<u>J</u>	0.00200	0.00500	1	05/04/2021 07:38	<a href="#">WG1663621</a>
(S) Toluene-d8	111			75.0-131		05/04/2021 07:38	<a href="#">WG1663621</a>
(S) 4-Bromofluorobenzene	99.6			67.0-138		05/04/2021 07:38	<a href="#">WG1663621</a>
(S) 1,2-Dichloroethane-d4	94.9			70.0-130		05/04/2021 07:38	<a href="#">WG1663621</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	71.4		1.61	4.00	1	05/03/2021 04:07	<a href="#">WG1662859</a>
C28-C36 Motor Oil Range	126		0.274	4.00	1	05/03/2021 04:07	<a href="#">WG1662859</a>



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) o-Terphenyl	26.7			18.0-148		05/03/2021 04:07	<a href="#">WG1662867</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Acenaphthene	U		0.00209	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Acenaphthylene	U		0.00216	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Chrysene	U		0.00232	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Fluoranthene	U		0.00227	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Fluorene	0.00487	U	0.00205	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Naphthalene	0.0129	U	0.00408	0.0200	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Phenanthrene	0.0108		0.00231	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
Pyrene	0.00245	U	0.00200	0.00600	1	05/03/2021 19:13	<a href="#">WG1662867</a>
1-Methylnaphthalene	0.0151	U	0.00449	0.0200	1	05/03/2021 19:13	<a href="#">WG1662867</a>
2-Methylnaphthalene	0.0269		0.00427	0.0200	1	05/03/2021 19:13	<a href="#">WG1662867</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	05/03/2021 19:13	<a href="#">WG1662867</a>
(S) p-Terphenyl-d14	87.1			23.0-120		05/03/2021 19:13	<a href="#">WG1662867</a>
(S) Nitrobenzene-d5	87.3			14.0-149		05/03/2021 19:13	<a href="#">WG1662867</a>
(S) 2-Fluorobiphenyl	76.0			34.0-125		05/03/2021 19:13	<a href="#">WG1662867</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3651337-1 05/05/21 21:40

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Hexavalent Chromium	U		0.255	1.00

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

L1345726-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1345726-01 05/05/21 22:29 • (DUP) R3651337-3 05/05/21 22:37

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	0.296	0.278	1	6.24	U	20

L1346669-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1346669-05 05/06/21 00:57 • (DUP) R3651337-8 05/06/21 01:03

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	U	U	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3651337-2 05/05/21 21:47

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Hexavalent Chromium	10.0	10.6	106	80.0-120	

L1346241-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1346241-09 05/05/21 23:50 • (MS) R3651337-4 05/05/21 23:55 • (MSD) R3651337-5 05/06/21 00:00

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	U	14.7	15.3	73.6	76.6	1	75.0-125	J6		3.99	20

L1345050-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1345050-04 05/06/21 16:30 • (DUP) R3651309-2 05/06/21 16:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
su	su	su		%		%
pH	7.84	7.81	1	0.383		1

Sample Narrative:

OS: 7.84 at 24.1C  
DUP: 7.81 at 23.2C

L1346669-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1346669-05 05/06/21 16:30 • (DUP) R3651309-3 05/06/21 16:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
su	su	su		%		%
pH	8.82	8.80	1	0.227		1

Sample Narrative:

OS: 8.82 at 22.1C  
DUP: 8.8 at 22.1C

Laboratory Control Sample (LCS)

(LCS) R3651309-1 05/06/21 16:30

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: 10.03 at 21.9C

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3649548-1 05/03/21 09:30

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
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00

Laboratory Control Sample (LCS)

(LCS) R3649548-2 05/03/21 09:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	97.7	97.7	80.0-120	
Cadmium	100	93.4	93.4	80.0-120	
Nickel	100	95.8	95.8	80.0-120	
Selenium	100	95.9	95.9	80.0-120	

L1346669-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1346669-05 05/03/21 09:35 • (MS) R3649548-5 05/03/21 09:44 • (MSD) R3649548-6 05/03/21 09:47

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 %
Barium	100	3820	2650	2960	0.000	0.000	1	75.0-125	V	V	11.3	20
Cadmium	100	U	88.0	95.6	88.0	95.6	1	75.0-125			8.24	20
Nickel	100	13.5	107	114	93.4	101	1	75.0-125			6.47	20
Selenium	100	0.923	90.3	100	89.4	99.1	1	75.0-125			10.2	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3650080-1 05/04/21 12:31

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

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

Laboratory Control Sample (LCS)

(LCS) R3650080-2 05/04/21 12:34

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	110	110	80.0-120	

<sup>4</sup>Cn

<sup>5</sup>Sr

L1346669-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1346669-05 05/04/21 12:37 • (MS) R3650080-5 05/04/21 12:47 • (MSD) R3650080-6 05/04/21 12:51

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	7.21	101	106	93.8	98.5	5	75.0-125			4.60	20

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3650286-2 05/04/21 16:43

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)	95.4			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3650286-1 05/04/21 15:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.21	113	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			115	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) R3650125-3 05/04/21 02:46

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	115			75.0-131
(S) 4-Bromofluorobenzene	92.4			67.0-138
(S) 1,2-Dichloroethane-d4	91.9			70.0-130

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

(LCS) R3650125-1 05/04/21 01:22 • (LCSD) R3650125-2 05/04/21 01:43

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Benzene	0.125	0.104	0.105	83.2	84.0	70.0-123			0.957	20
Ethylbenzene	0.125	0.112	0.111	89.6	88.8	74.0-126			0.897	20
Toluene	0.125	0.118	0.119	94.4	95.2	75.0-121			0.844	20
1,2,4-Trimethylbenzene	0.125	0.112	0.112	89.6	89.6	70.0-126			0.000	20
1,3,5-Trimethylbenzene	0.125	0.108	0.107	86.4	85.6	73.0-127			0.930	20
Xylenes, Total	0.375	0.318	0.323	84.8	86.1	72.0-127			1.56	20
(S) Toluene-d8				108	107	75.0-131				
(S) 4-Bromofluorobenzene				96.5	97.1	67.0-138				
(S) 1,2-Dichloroethane-d4				105	104	70.0-130				

L1346669-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1346669-01 05/04/21 11:27 • (MS) R3650125-4 05/04/21 12:41 • (MSD) R3650125-5 05/04/21 13:03

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzene	1.00	U	0.770	0.880	77.0	88.0	8	10.0-149			13.3	37
Ethylbenzene	1.00	0.0228	0.872	0.979	84.9	95.6	8	10.0-160			11.6	38
Toluene	1.00	0.0344	0.901	0.983	86.7	94.9	8	10.0-156			8.70	38
1,2,4-Trimethylbenzene	1.00	5.15	6.16	6.50	101	135	8	10.0-160			5.37	36
1,3,5-Trimethylbenzene	1.00	4.37	5.28	5.55	91.0	118	8	10.0-160			4.99	38
Xylenes, Total	3.00	4.25	7.43	7.57	106	111	8	10.0-160			1.87	38
(S) Toluene-d8					110	105		75.0-131				
(S) 4-Bromofluorobenzene					120	121		67.0-138				
(S) 1,2-Dichloroethane-d4					114	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) R3650467-3 05/04/21 16:58

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Toluene	U		0.00130	0.00500
(S) Toluene-d8	105			75.0-131
(S) 4-Bromofluorobenzene	102			67.0-138
(S) 1,2-Dichloroethane-d4	93.4			70.0-130

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

(LCS) R3650467-1 05/04/21 14:50 • (LCSD) R3650467-2 05/04/21 15:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Toluene	0.125	0.127	0.113	102	90.4	75.0-121			11.7	20
(S) Toluene-d8				100	101	75.0-131				
(S) 4-Bromofluorobenzene				104	106	67.0-138				
(S) 1,2-Dichloroethane-d4				95.7	98.4	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) R3649398-1 05/02/21 23:46

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	0.891	J	0.274	4.00
(S) o-Terphenyl	74.5			18.0-148

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3649841-2 05/03/21 14:17

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	84.5			14.0-149
(S) 2-Fluorobiphenyl	84.5			34.0-125
(S) p-Terphenyl-d14	98.8			23.0-120

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R3649841-1 05/03/21 14:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0626	78.3	50.0-126	
Acenaphthene	0.0800	0.0626	78.3	50.0-120	
Acenaphthylene	0.0800	0.0646	80.7	50.0-120	
Benzo(a)anthracene	0.0800	0.0627	78.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0587	73.4	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0666	83.3	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0665	83.1	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0642	80.3	49.0-125	
Chrysene	0.0800	0.0660	82.5	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0654	81.8	47.0-125	
Fluoranthene	0.0800	0.0640	80.0	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3649841-1 05/03/21 14:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0633	79.1	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0633	79.1	46.0-125	
Naphthalene	0.0800	0.0600	75.0	50.0-120	
Phenanthrene	0.0800	0.0645	80.6	47.0-120	
Pyrene	0.0800	0.0661	82.6	43.0-123	
1-Methylnaphthalene	0.0800	0.0623	77.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0595	74.4	50.0-120	
2-Chloronaphthalene	0.0800	0.0632	79.0	50.0-120	
(S) Nitrobenzene-d5			87.2	14.0-149	
(S) 2-Fluorobiphenyl			84.3	34.0-125	
(S) p-Terphenyl-d14			97.8	23.0-120	

L1345577-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1345577-04 05/03/21 20:05 • (MS) R3649841-3 05/03/21 20:23 • (MSD) R3649841-4 05/03/21 20:40

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0788	2.44	0.0557	0.0631	0.000	0.000	1	10.0-145	✓	✓	12.5	30
Acenaphthene	0.0788	0.432	0.0498	0.0407	0.000	0.000	1	14.0-127	✓	✓	20.1	27
Acenaphthylene	0.0788	0.271	0.0548	0.0520	0.000	0.000	1	21.0-124	J6	J6	5.24	25
Benzo(a)anthracene	0.0788	5.70	0.0944	0.0978	0.000	0.000	1	10.0-139	✓	✓	3.54	30
Benzo(a)pyrene	0.0788	4.29	0.0933	0.0860	0.000	0.000	1	10.0-141	✓	✓	8.14	31
Benzo(b)fluoranthene	0.0788	5.50	0.121	0.106	0.000	0.000	1	10.0-140	✓	✓	13.2	36
Benzo(g,h,i)perylene	0.0788	2.72	0.0872	0.0688	0.000	0.000	1	10.0-140	✓	✓	23.6	33
Benzo(k)fluoranthene	0.0788	2.06	0.0717	0.0654	0.000	0.000	1	10.0-137	✓	✓	9.19	31
Chrysene	0.0788	5.31	0.101	0.0968	0.000	0.000	1	10.0-145	✓	✓	4.25	30
Dibenz(a,h)anthracene	0.0788	0.647	0.0539	0.0457	0.000	0.000	1	10.0-132	✓	✓	16.5	31
Fluoranthene	0.0788	10.6	0.151	0.151	0.000	0.000	1	10.0-153	✓	✓	0.000	33
Fluorene	0.0788	1.26	0.0510	0.0426	0.000	0.000	1	11.0-130	✓	✓	17.9	29
Indeno(1,2,3-cd)pyrene	0.0788	3.07	0.0862	0.0712	0.000	0.000	1	10.0-137	✓	✓	19.1	32
Naphthalene	0.0788	0.145	0.0476	0.0446	0.000	0.000	1	10.0-135	J6	J6	6.51	27
Phenanthrene	0.0788	10.0	0.0938	0.0826	0.000	0.000	1	10.0-144	✓	✓	12.7	31
Pyrene	0.0788	9.38	0.134	0.131	0.000	0.000	1	10.0-148	✓	✓	2.26	35
1-Methylnaphthalene	0.0788	0.144	0.0482	0.0411	0.000	0.000	1	10.0-142	J6	J6	15.9	28
2-Methylnaphthalene	0.0788	0.123	0.0459	0.0398	0.000	0.000	1	10.0-137	J6	J6	14.2	28
2-Chloronaphthalene	0.0788	U	0.0469	0.0398	59.5	50.5	1	29.0-120			16.4	24
(S) Nitrobenzene-d5					64.6	61.4		14.0-149				
(S) 2-Fluorobiphenyl					60.0	54.9		34.0-125				
(S) p-Terphenyl-d14					67.1	59.7		23.0-120				

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.

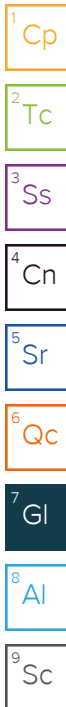
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. 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.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.



# 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 <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	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 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

\* 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.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

**Caerus Oil and Gas Info on file**

Billing Information:  
**Caerus Oil and Gas Info on file**

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page \_\_\_ of \_\_\_  
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615-758-5858  
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Email To: [jjanicek@caerussollandgas.com](mailto:jjanicek@caerussollandgas.com);  
[remediation@confluence-cc.com](mailto:remediation@confluence-cc.com)

Project Description:  
**J17E Stockpile**

City/State Collected: **Colorado** Please Circle: PT  
 MT  CT  ET

Phone: **970-778-2314**

Client Project #

Lab Project #

Collected by (print):  
**Andrew Smith**

Site/Facility ID #

P.O. #

Collected by (signature):  
*AS*

**Rush?** (Lab MUST Be Notified)  
\_\_\_ Same Day \_\_\_ Five Day  
\_\_\_ Next Day \_\_\_ 8 Day (Rad Only)  
 Two Day \_\_\_ 10 Day (Rad Only)  
\_\_\_ Three Day

Quote #  
**\*\*\*2-DAY TAT\*\*\***

Immediately Packed on Ice:  
N \_\_\_ Y

No. of Cntrs

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs
20210430 - J17E_STOCKPILE (Aliquot_1)	Comp	SS	-	4-30-21	1140	3
20210430 - J17E_STOCKPILE (Aliquot_2)	Comp	SS	-	4-30-21	1210	3
20210430 - J17E_STOCKPILE (Aliquot_3)	Comp	SS	-	4-30-21	1230	3
20210430 - J17E_STOCKPILE (Aliquot_4)	Comp	SS	-	4-30-21	1240	3
20210430 - J17E_STOCKPILE (Aliquot_5)	Comp	SS	-	4-30-21	1255	3

BTEX	TPH (ORO,GRO,DRO)	Arsenic, Barium, Cadmium, Chromium VI, Nickel, Selenium	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	SAR, pH	1-methylnaphthalene	2-methylnaphthalene	Fluorene	Naphthalene
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	X	X	X	X
X	X	X	X	X	X	X	X	X	X

SDG # **L13 416669**  
**D055**

Acctnum:  
Template:  
Prelogin:  
PM:  
PB:

Remarks	Sample # (lab only)
	-01
	02
	03
	04
	05

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

Remarks: **2-Day Turn Around Time**

pH \_\_\_\_\_ Temp \_\_\_\_\_  
Other \_\_\_\_\_

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

Relinquished by: (Signature) *AS*

Date: **4-30-21**

Time: **1600**

Received by: (Signature) *[Signature]*

Trip Blank Received: Yes/No  
HCL / MeOH  
TBR

Relinquished by: (Signature) *[Signature]*

Date: **4/30/21**

Time: **1700**

Received by: (Signature) *[Signature]*

Temp: *AS* Bottles Received: **15-802**  
**013-12-201**

If preservation required by Login: Date/Time

Relinquished by: (Signature) *[Signature]*

Date:

Time:

Received for lab by: (Signature) *[Signature]*

Date: **5/1/21** Time: **1000**

Hold: Condition: NCF  
 OK

May 31, 2021

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: L1356862  
Samples Received: 05/22/2021  
Project Number: J17E  
Description: J17E Dumpline Release  
Site: J17E  
Report To: Jake Janicek; Chris McKisson  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



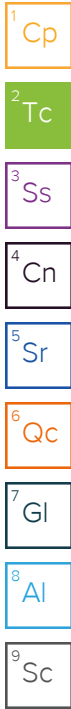
Chris Ward  
Project Manager

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](http://www.pacenational.com)

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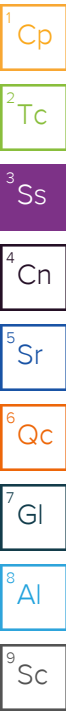


# SAMPLE SUMMARY

## 20210520-J17E (COMP\_1@3") L1356862-01 Solid

Collected by Andrew Smith      Collected date/time 05/20/21 13:05      Received date/time 05/22/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1678515	1	05/25/21 16:45	05/27/21 12:17	TPR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1677114	1	05/26/21 08:14	05/26/21 21:09	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1677369	1	05/27/21 08:28	05/27/21 14:51	LEA	Mt. Juliet, TN



## 20210520-J17E (COMP\_1@2") L1356862-02 Solid

Collected by Andrew Smith      Collected date/time 05/20/21 13:35      Received date/time 05/22/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1678515	100	05/25/21 16:45	05/27/21 14:07	TPR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1677114	1	05/26/21 08:14	05/26/21 21:22	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1677369	1	05/27/21 08:28	05/27/21 15:11	LEA	Mt. Juliet, TN

## 20210520-J17E (COMP\_2@3") L1356862-03 Solid

Collected by Andrew Smith      Collected date/time 05/20/21 13:10      Received date/time 05/22/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1678515	1	05/25/21 16:45	05/27/21 12:39	TPR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1677114	1	05/26/21 08:14	05/26/21 17:04	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1677369	1	05/27/21 08:28	05/27/21 15:31	LEA	Mt. Juliet, TN

## 20210520-J17E (COMP\_2@2") L1356862-04 Solid

Collected by Andrew Smith      Collected date/time 05/20/21 13:50      Received date/time 05/22/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1677454	1	05/25/21 16:45	05/26/21 04:25	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1677114	1	05/26/21 08:14	05/26/21 21:49	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1677369	1	05/27/21 08:28	05/27/21 15:50	LEA	Mt. Juliet, TN

## 20210520-J17E (COMP\_3@3") L1356862-05 Solid

Collected by Andrew Smith      Collected date/time 05/20/21 13:15      Received date/time 05/22/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1677454	1	05/25/21 16:45	05/26/21 04:47	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1677114	1	05/26/21 08:14	05/26/21 18:03	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1677369	1	05/27/21 08:28	05/27/21 16:10	LEA	Mt. Juliet, TN

## 20210520-J17E (COMP\_3@2") L1356862-06 Solid

Collected by Andrew Smith      Collected date/time 05/20/21 14:10      Received date/time 05/22/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1677454	1	05/25/21 16:45	05/26/21 05:09	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1677114	1	05/26/21 08:14	05/26/21 18:17	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1677369	1	05/27/21 08:28	05/27/21 16:30	LEA	Mt. Juliet, TN

# SAMPLE SUMMARY

## 20210520-J17E (COMP\_4@3") L1356862-07 Solid

Collected by: Andrew Smith  
 Collected date/time: 05/20/21 13:20  
 Received date/time: 05/22/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1677454	1.01	05/25/21 16:45	05/26/21 05:31	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1677114	1	05/26/21 08:14	05/26/21 17:23	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1677369	1	05/27/21 08:28	05/27/21 16:50	LEA	Mt. Juliet, TN

## 20210520-J17E (COMP\_4@2") L1356862-08 Solid

Collected by: Andrew Smith  
 Collected date/time: 05/20/21 14:25  
 Received date/time: 05/22/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1677454	1	05/25/21 16:45	05/26/21 05:53	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1677114	1	05/26/21 08:14	05/26/21 20:15	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1677369	1	05/27/21 08:28	05/27/21 17:10	LEA	Mt. Juliet, TN

## 20210520-J17E (COMP\_5@3") L1356862-09 Solid

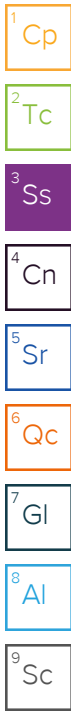
Collected by: Andrew Smith  
 Collected date/time: 05/20/21 13:25  
 Received date/time: 05/22/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1677454	1	05/25/21 16:45	05/26/21 06:15	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1677114	1	05/26/21 08:14	05/26/21 17:36	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1677369	1	05/27/21 08:28	05/27/21 17:30	LEA	Mt. Juliet, TN

## 20210520-J17E (COMP\_5@2") L1356862-10 Solid

Collected by: Andrew Smith  
 Collected date/time: 05/20/21 14:35  
 Received date/time: 05/22/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1677454	1	05/25/21 16:45	05/26/21 06:38	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1677114	1	05/26/21 08:14	05/26/21 22:41	CAG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1677369	1	05/27/21 08:28	05/27/21 17:50	LEA	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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	0.0481	J	0.0217	0.100	1	05/27/2021 12:17	<a href="#">WG1678515</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	91.8			77.0-120		05/27/2021 12:17	<a href="#">WG1678515</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	78.8		1.61	4.00	1	05/26/2021 21:09	<a href="#">WG1677114</a>
C28-C36 Motor Oil Range	57.7		0.274	4.00	1	05/26/2021 21:09	<a href="#">WG1677114</a>
(S) <i>o</i> -Terphenyl	60.8			18.0-148		05/26/2021 21:09	<a href="#">WG1677114</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Anthracene	0.0278		0.00230	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Acenaphthene	0.00591	J	0.00209	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Acenaphthylene	U		0.00216	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Benzo(b)fluoranthene	0.00213	J	0.00153	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Chrysene	0.00478	J	0.00232	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Fluoranthene	0.00716		0.00227	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Fluorene	0.0183		0.00205	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Naphthalene	0.0135	J	0.00408	0.0200	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Phenanthrene	0.0361		0.00231	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
Pyrene	0.00668		0.00200	0.00600	1	05/27/2021 14:51	<a href="#">WG1677369</a>
1-Methylnaphthalene	0.0263		0.00449	0.0200	1	05/27/2021 14:51	<a href="#">WG1677369</a>
2-Methylnaphthalene	0.0461		0.00427	0.0200	1	05/27/2021 14:51	<a href="#">WG1677369</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	05/27/2021 14:51	<a href="#">WG1677369</a>
(S) <i>p</i> -Terphenyl- <i>d</i> 14	77.0			23.0-120		05/27/2021 14:51	<a href="#">WG1677369</a>
(S) Nitrobenzene- <i>d</i> 5	75.8			14.0-149		05/27/2021 14:51	<a href="#">WG1677369</a>
(S) 2-Fluorobiphenyl	67.8			34.0-125		05/27/2021 14:51	<a href="#">WG1677369</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	126		2.17	10.0	100	05/27/2021 14:07	<a href="#">WG1678515</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	99.3			77.0-120		05/27/2021 14:07	<a href="#">WG1678515</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	305		1.61	4.00	1	05/26/2021 21:22	<a href="#">WG1677114</a>
C28-C36 Motor Oil Range	96.0		0.274	4.00	1	05/26/2021 21:22	<a href="#">WG1677114</a>
(S) <i>o</i> -Terphenyl	84.4			18.0-148		05/26/2021 21:22	<a href="#">WG1677114</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Anthracene	0.0425		0.00230	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Acenaphthene	0.0131		0.00209	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Acenaphthylene	U		0.00216	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Benzo(b)fluoranthene	0.00190	<u>J</u>	0.00153	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Chrysene	0.00650		0.00232	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Fluoranthene	0.00817		0.00227	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Fluorene	0.0805		0.00205	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Naphthalene	0.0645		0.00408	0.0200	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Phenanthrene	0.106		0.00231	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
Pyrene	0.00605		0.00200	0.00600	1	05/27/2021 15:11	<a href="#">WG1677369</a>
1-Methylnaphthalene	0.275		0.00449	0.0200	1	05/27/2021 15:11	<a href="#">WG1677369</a>
2-Methylnaphthalene	0.198		0.00427	0.0200	1	05/27/2021 15:11	<a href="#">WG1677369</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	05/27/2021 15:11	<a href="#">WG1677369</a>
(S) <i>p</i> -Terphenyl- <i>d</i> 14	79.2			23.0-120		05/27/2021 15:11	<a href="#">WG1677369</a>
(S) Nitrobenzene- <i>d</i> 5	0.000	<u>J2</u>		14.0-149		05/27/2021 15:11	<a href="#">WG1677369</a>
(S) 2-Fluorobiphenyl	73.6			34.0-125		05/27/2021 15:11	<a href="#">WG1677369</a>

## Sample Narrative:

L1356862-02 WG1677369: Surrogate failure due to matrix interference

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	0.272		0.0217	0.100	1	05/27/2021 12:39	<a href="#">WG1678515</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	93.0			77.0-120		05/27/2021 12:39	<a href="#">WG1678515</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	64.8		1.61	4.00	1	05/26/2021 17:04	<a href="#">WG1677114</a>
C28-C36 Motor Oil Range	39.8		0.274	4.00	1	05/26/2021 17:04	<a href="#">WG1677114</a>
(S) <i>o</i> -Terphenyl	37.8			18.0-148		05/26/2021 17:04	<a href="#">WG1677114</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Anthracene	0.0346		0.00230	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Acenaphthene	0.00640		0.00209	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Acenaphthylene	U		0.00216	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Benzo(b)fluoranthene	0.00192	J	0.00153	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Chrysene	0.00520	J	0.00232	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Fluoranthene	0.00808		0.00227	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Fluorene	0.0204		0.00205	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Naphthalene	0.00975	J	0.00408	0.0200	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Phenanthrene	0.0410		0.00231	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
Pyrene	0.00688		0.00200	0.00600	1	05/27/2021 15:31	<a href="#">WG1677369</a>
1-Methylnaphthalene	0.0298		0.00449	0.0200	1	05/27/2021 15:31	<a href="#">WG1677369</a>
2-Methylnaphthalene	0.0413		0.00427	0.0200	1	05/27/2021 15:31	<a href="#">WG1677369</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	05/27/2021 15:31	<a href="#">WG1677369</a>
(S) <i>p</i> -Terphenyl-d14	74.9			23.0-120		05/27/2021 15:31	<a href="#">WG1677369</a>
(S) Nitrobenzene-d5	75.6			14.0-149		05/27/2021 15:31	<a href="#">WG1677369</a>
(S) 2-Fluorobiphenyl	65.9			34.0-125		05/27/2021 15:31	<a href="#">WG1677369</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	3.84		0.0217	0.100	1	05/26/2021 04:25	<a href="#">WG1677454</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	91.4			77.0-120		05/26/2021 04:25	<a href="#">WG1677454</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	320		1.61	4.00	1	05/26/2021 21:49	<a href="#">WG1677114</a>
C28-C36 Motor Oil Range	99.3		0.274	4.00	1	05/26/2021 21:49	<a href="#">WG1677114</a>
(S) <i>o</i> -Terphenyl	68.6			18.0-148		05/26/2021 21:49	<a href="#">WG1677114</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Anthracene	0.0363		0.00230	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Acenaphthene	0.0131		0.00209	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Acenaphthylene	U		0.00216	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Benzo(b)fluoranthene	0.00178	J	0.00153	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Chrysene	0.00478	J	0.00232	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Fluoranthene	0.00757		0.00227	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Fluorene	0.0706		0.00205	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Naphthalene	0.0314		0.00408	0.0200	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Phenanthrene	0.0934		0.00231	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
Pyrene	0.00585	J	0.00200	0.00600	1	05/27/2021 15:50	<a href="#">WG1677369</a>
1-Methylnaphthalene	0.224		0.00449	0.0200	1	05/27/2021 15:50	<a href="#">WG1677369</a>
2-Methylnaphthalene	0.135		0.00427	0.0200	1	05/27/2021 15:50	<a href="#">WG1677369</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	05/27/2021 15:50	<a href="#">WG1677369</a>
(S) <i>p</i> -Terphenyl-d14	73.0			23.0-120		05/27/2021 15:50	<a href="#">WG1677369</a>
(S) Nitrobenzene-d5	0.000	J2		14.0-149		05/27/2021 15:50	<a href="#">WG1677369</a>
(S) 2-Fluorobiphenyl	68.6			34.0-125		05/27/2021 15:50	<a href="#">WG1677369</a>

## Sample Narrative:

L1356862-04 WG1677369: Surrogate failure due to matrix interference

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	1.81		0.0217	0.100	1	05/26/2021 04:47	<a href="#">WG1677454</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	91.1			77.0-120		05/26/2021 04:47	<a href="#">WG1677454</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	99.5		1.61	4.00	1	05/26/2021 18:03	<a href="#">WG1677114</a>
C28-C36 Motor Oil Range	61.1		0.274	4.00	1	05/26/2021 18:03	<a href="#">WG1677114</a>
(S) <i>o</i> -Terphenyl	63.5			18.0-148		05/26/2021 18:03	<a href="#">WG1677114</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Anthracene	0.0385		0.00230	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Acenaphthene	0.00918		0.00209	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Acenaphthylene	U		0.00216	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Benzo(b)fluoranthene	0.00199	J	0.00153	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Chrysene	0.00668		0.00232	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Fluoranthene	0.00944		0.00227	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Fluorene	0.0442		0.00205	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Naphthalene	0.0151	J	0.00408	0.0200	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Phenanthrene	0.0786		0.00231	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
Pyrene	0.00723		0.00200	0.00600	1	05/27/2021 16:10	<a href="#">WG1677369</a>
1-Methylnaphthalene	0.0675		0.00449	0.0200	1	05/27/2021 16:10	<a href="#">WG1677369</a>
2-Methylnaphthalene	0.0834		0.00427	0.0200	1	05/27/2021 16:10	<a href="#">WG1677369</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	05/27/2021 16:10	<a href="#">WG1677369</a>
(S) <i>p</i> -Terphenyl- <i>d</i> 14	76.5			23.0-120		05/27/2021 16:10	<a href="#">WG1677369</a>
(S) Nitrobenzene- <i>d</i> 5	79.8			14.0-149		05/27/2021 16:10	<a href="#">WG1677369</a>
(S) 2-Fluorobiphenyl	65.6			34.0-125		05/27/2021 16:10	<a href="#">WG1677369</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	3.55		0.0217	0.100	1	05/26/2021 05:09	<a href="#">WG1677454</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.4			77.0-120		05/26/2021 05:09	<a href="#">WG1677454</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	140		1.61	4.00	1	05/26/2021 18:17	<a href="#">WG1677114</a>
C28-C36 Motor Oil Range	59.4		0.274	4.00	1	05/26/2021 18:17	<a href="#">WG1677114</a>
(S) <i>o</i> -Terphenyl	44.4			18.0-148		05/26/2021 18:17	<a href="#">WG1677114</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Anthracene	0.0403		0.00230	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Acenaphthene	U		0.00209	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Acenaphthylene	U		0.00216	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Chrysene	0.00468	J	0.00232	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Fluoranthene	0.00810		0.00227	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Fluorene	0.0664		0.00205	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Naphthalene	0.0268		0.00408	0.0200	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Phenanthrene	0.0976		0.00231	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
Pyrene	0.00664		0.00200	0.00600	1	05/27/2021 16:30	<a href="#">WG1677369</a>
1-Methylnaphthalene	0.178		0.00449	0.0200	1	05/27/2021 16:30	<a href="#">WG1677369</a>
2-Methylnaphthalene	0.0868		0.00427	0.0200	1	05/27/2021 16:30	<a href="#">WG1677369</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	05/27/2021 16:30	<a href="#">WG1677369</a>
(S) <i>p</i> -Terphenyl- <i>d</i> 14	75.8			23.0-120		05/27/2021 16:30	<a href="#">WG1677369</a>
(S) Nitrobenzene- <i>d</i> 5	0.000	J2		14.0-149		05/27/2021 16:30	<a href="#">WG1677369</a>
(S) 2-Fluorobiphenyl	71.7			34.0-125		05/27/2021 16:30	<a href="#">WG1677369</a>

## Sample Narrative:

L1356862-06 WG1677369: Surrogate failure due to matrix interference

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	0.524		0.0219	0.101	1.01	05/26/2021 05:31	<a href="#">WG1677454</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	91.2			77.0-120		05/26/2021 05:31	<a href="#">WG1677454</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	66.2		1.61	4.00	1	05/26/2021 17:23	<a href="#">WG1677114</a>
C28-C36 Motor Oil Range	44.5		0.274	4.00	1	05/26/2021 17:23	<a href="#">WG1677114</a>
(S) <i>o</i> -Terphenyl	45.3			18.0-148		05/26/2021 17:23	<a href="#">WG1677114</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Anthracene	0.0455		0.00230	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Acenaphthene	0.00891		0.00209	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Acenaphthylene	U		0.00216	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Benzo(b)fluoranthene	0.00257	J	0.00153	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Chrysene	0.00675		0.00232	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Fluoranthene	0.0100		0.00227	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Fluorene	0.0256		0.00205	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Naphthalene	0.0110	J	0.00408	0.0200	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Phenanthrene	0.0543		0.00231	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
Pyrene	0.00843		0.00200	0.00600	1	05/27/2021 16:50	<a href="#">WG1677369</a>
1-Methylnaphthalene	0.0350		0.00449	0.0200	1	05/27/2021 16:50	<a href="#">WG1677369</a>
2-Methylnaphthalene	0.0344		0.00427	0.0200	1	05/27/2021 16:50	<a href="#">WG1677369</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	05/27/2021 16:50	<a href="#">WG1677369</a>
(S) <i>p</i> -Terphenyl-d14	78.9			23.0-120		05/27/2021 16:50	<a href="#">WG1677369</a>
(S) Nitrobenzene-d5	86.1			14.0-149		05/27/2021 16:50	<a href="#">WG1677369</a>
(S) 2-Fluorobiphenyl	69.2			34.0-125		05/27/2021 16:50	<a href="#">WG1677369</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	5.86		0.0217	0.100	1	05/26/2021 05:53	<a href="#">WG1677454</a>
(S) a,a,a-Trifluorotoluene(FID)	92.1			77.0-120		05/26/2021 05:53	<a href="#">WG1677454</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	140	<a href="#">J3 J6</a>	1.61	4.00	1	05/26/2021 20:15	<a href="#">WG1677114</a>
C28-C36 Motor Oil Range	38.7		0.274	4.00	1	05/26/2021 20:15	<a href="#">WG1677114</a>
(S) o-Terphenyl	48.4			18.0-148		05/26/2021 20:15	<a href="#">WG1677114</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Anthracene	0.0226		0.00230	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Acenaphthene	0.00851		0.00209	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Acenaphthylene	U		0.00216	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Chrysene	0.00314	<a href="#">J</a>	0.00232	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Fluoranthene	0.00465	<a href="#">J</a>	0.00227	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Fluorene	0.0368		0.00205	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Naphthalene	0.0217		0.00408	0.0200	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Phenanthrene	0.0503		0.00231	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
Pyrene	0.00387	<a href="#">J</a>	0.00200	0.00600	1	05/27/2021 17:10	<a href="#">WG1677369</a>
1-Methylnaphthalene	0.0737		0.00449	0.0200	1	05/27/2021 17:10	<a href="#">WG1677369</a>
2-Methylnaphthalene	0.0412		0.00427	0.0200	1	05/27/2021 17:10	<a href="#">WG1677369</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	05/27/2021 17:10	<a href="#">WG1677369</a>
(S) p-Terphenyl-d14	70.7			23.0-120		05/27/2021 17:10	<a href="#">WG1677369</a>
(S) Nitrobenzene-d5	0.000	<a href="#">J2</a>		14.0-149		05/27/2021 17:10	<a href="#">WG1677369</a>
(S) 2-Fluorobiphenyl	66.3			34.0-125		05/27/2021 17:10	<a href="#">WG1677369</a>

Sample Narrative:

L1356862-08 WG1677369: Surrogate failure due to matrix interference

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

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	0.436		0.0217	0.100	1	05/26/2021 06:15	<a href="#">WG1677454</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	90.8			77.0-120		05/26/2021 06:15	<a href="#">WG1677454</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	86.6		1.61	4.00	1	05/26/2021 17:36	<a href="#">WG1677114</a>
C28-C36 Motor Oil Range	67.7		0.274	4.00	1	05/26/2021 17:36	<a href="#">WG1677114</a>
(S) <i>o</i> -Terphenyl	51.4			18.0-148		05/26/2021 17:36	<a href="#">WG1677114</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Anthracene	0.0274		0.00230	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Acenaphthene	0.00685		0.00209	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Acenaphthylene	U		0.00216	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Benzo(b)fluoranthene	0.00206	J	0.00153	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Chrysene	0.00431	J	0.00232	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Fluoranthene	0.00689		0.00227	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Fluorene	0.0210		0.00205	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Naphthalene	0.00691	J	0.00408	0.0200	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Phenanthrene	0.0408		0.00231	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
Pyrene	0.00600	J	0.00200	0.00600	1	05/27/2021 17:30	<a href="#">WG1677369</a>
1-Methylnaphthalene	0.0265		0.00449	0.0200	1	05/27/2021 17:30	<a href="#">WG1677369</a>
2-Methylnaphthalene	0.0286		0.00427	0.0200	1	05/27/2021 17:30	<a href="#">WG1677369</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	05/27/2021 17:30	<a href="#">WG1677369</a>
(S) <i>p</i> -Terphenyl- <i>d</i> 14	84.2			23.0-120		05/27/2021 17:30	<a href="#">WG1677369</a>
(S) Nitrobenzene- <i>d</i> 5	84.2			14.0-149		05/27/2021 17:30	<a href="#">WG1677369</a>
(S) 2-Fluorobiphenyl	73.7			34.0-125		05/27/2021 17:30	<a href="#">WG1677369</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	0.890		0.0217	0.100	1	05/26/2021 06:38	<a href="#">WG1677454</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.8			77.0-120		05/26/2021 06:38	<a href="#">WG1677454</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	92.5		1.61	4.00	1	05/26/2021 22:41	<a href="#">WG1677114</a>
C28-C36 Motor Oil Range	72.2		0.274	4.00	1	05/26/2021 22:41	<a href="#">WG1677114</a>
(S) <i>o</i> -Terphenyl	64.7			18.0-148		05/26/2021 22:41	<a href="#">WG1677114</a>

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Anthracene	0.0165		0.00230	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Acenaphthene	0.00433	J	0.00209	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Acenaphthylene	U		0.00216	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Chrysene	0.00297	J	0.00232	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Fluoranthene	0.00519	J	0.00227	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Fluorene	0.00934		0.00205	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Naphthalene	0.00774	J	0.00408	0.0200	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Phenanthrene	0.0236		0.00231	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
Pyrene	0.00487	J	0.00200	0.00600	1	05/27/2021 17:50	<a href="#">WG1677369</a>
1-Methylnaphthalene	0.0149	J	0.00449	0.0200	1	05/27/2021 17:50	<a href="#">WG1677369</a>
2-Methylnaphthalene	0.0243		0.00427	0.0200	1	05/27/2021 17:50	<a href="#">WG1677369</a>
2-Chloronaphthalene	0.0131	J	0.00466	0.0200	1	05/27/2021 17:50	<a href="#">WG1677369</a>
(S) <i>p</i> -Terphenyl- <i>d</i> 14	80.2			23.0-120		05/27/2021 17:50	<a href="#">WG1677369</a>
(S) Nitrobenzene- <i>d</i> 5	90.8			14.0-149		05/27/2021 17:50	<a href="#">WG1677369</a>
(S) 2-Fluorobiphenyl	74.0			34.0-125		05/27/2021 17:50	<a href="#">WG1677369</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3659912-2 05/26/21 00:57

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)	97.9			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3659912-1 05/26/21 00:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.09	92.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			112	77.0-120	

L1356791-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1356791-09 05/26/21 08:50 • (MS) R3659912-3 05/26/21 09:12 • (MSD) R3659912-4 05/26/21 09:34

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	1380	1020	2370	2590	97.8	114	250	10.0-151			8.87	28
(S) a,a,a-Trifluorotoluene(FID)					113	116		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) R3660798-2 05/27/21 11:25

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)	99.6			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3660798-1 05/27/21 10:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.14	93.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			112	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) R3660008-1 05/26/21 15:51

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>	76.3			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3660008-2 05/26/21 16:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	37.9	75.8	50.0-150	
<i>(S) o-Terphenyl</i>			62.3	18.0-148	

L1356862-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1356862-08 05/26/21 20:15 • (MS) R3660008-3 05/26/21 20:29 • (MSD) R3660008-4 05/26/21 20:42

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 %
C10-C28 Diesel Range	48.2	140	121	167	0.000	56.6	1	50.0-150	J6	J3	31.9	20
<i>(S) o-Terphenyl</i>					46.9	55.2		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) R3660066-2 05/27/21 12:52

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	66.9			14.0-149
(S) 2-Fluorobiphenyl	66.5			34.0-125
(S) p-Terphenyl-d14	75.2			23.0-120

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R3660066-1 05/27/21 12:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0771	96.4	50.0-126	
Acenaphthene	0.0800	0.0768	96.0	50.0-120	
Acenaphthylene	0.0800	0.0835	104	50.0-120	
Benzo(a)anthracene	0.0800	0.0785	98.1	45.0-120	
Benzo(a)pyrene	0.0800	0.0677	84.6	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0674	84.3	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0667	83.4	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0677	84.6	49.0-125	
Chrysene	0.0800	0.0765	95.6	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0728	91.0	47.0-125	
Fluoranthene	0.0800	0.0819	102	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3660066-1 05/27/21 12:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0829	104	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0736	92.0	46.0-125	
Naphthalene	0.0800	0.0695	86.9	50.0-120	
Phenanthrene	0.0800	0.0734	91.8	47.0-120	
Pyrene	0.0800	0.0713	89.1	43.0-123	
1-Methylnaphthalene	0.0800	0.0733	91.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0689	86.1	50.0-120	
2-Chloronaphthalene	0.0800	0.0704	88.0	50.0-120	
(S) Nitrobenzene-d5			82.6	14.0-149	
(S) 2-Fluorobiphenyl			78.2	34.0-125	
(S) p-Terphenyl-d14			85.7	23.0-120	

L1356704-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1356704-01 05/27/21 13:11 • (MS) R3660066-3 05/27/21 13:31 • (MSD) R3660066-4 05/27/21 13:51

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0800	U	0.0737	0.0703	92.1	89.2	1	10.0-145			4.72	30
Acenaphthene	0.0800	U	0.0745	0.0723	93.1	91.8	1	14.0-127			3.00	27
Acenaphthylene	0.0800	U	0.0791	0.0773	98.9	98.1	1	21.0-124			2.30	25
Benzo(a)anthracene	0.0800	U	0.0769	0.0740	96.1	93.9	1	10.0-139			3.84	30
Benzo(a)pyrene	0.0800	U	0.0707	0.0693	88.4	87.9	1	10.0-141			2.00	31
Benzo(b)fluoranthene	0.0800	U	0.0706	0.0676	88.3	85.8	1	10.0-140			4.34	36
Benzo(g,h,i)perylene	0.0800	U	0.0671	0.0656	83.9	83.2	1	10.0-140			2.26	33
Benzo(k)fluoranthene	0.0800	U	0.0679	0.0671	84.9	85.2	1	10.0-137			1.19	31
Chrysene	0.0800	U	0.0759	0.0749	94.9	95.1	1	10.0-145			1.33	30
Dibenz(a,h)anthracene	0.0800	U	0.0724	0.0713	90.5	90.5	1	10.0-132			1.53	31
Fluoranthene	0.0800	U	0.0824	0.0788	103	100	1	10.0-153			4.47	33
Fluorene	0.0800	U	0.0809	0.0756	101	95.9	1	11.0-130			6.77	29
Indeno(1,2,3-cd)pyrene	0.0800	U	0.0722	0.0705	90.3	89.5	1	10.0-137			2.38	32
Naphthalene	0.0800	U	0.0689	0.0668	86.1	84.8	1	10.0-135			3.10	27
Phenanthrene	0.0800	U	0.0732	0.0715	91.5	90.7	1	10.0-144			2.35	31
Pyrene	0.0800	U	0.0709	0.0694	88.6	88.1	1	10.0-148			2.14	35
1-Methylnaphthalene	0.0800	U	0.0734	0.0714	91.8	90.6	1	10.0-142			2.76	28
2-Methylnaphthalene	0.0800	U	0.0687	0.0661	85.9	83.9	1	10.0-137			3.86	28
2-Chloronaphthalene	0.0800	U	0.0675	0.0665	84.4	84.4	1	29.0-120			1.49	24
(S) Nitrobenzene-d5					84.3	82.5		14.0-149				
(S) 2-Fluorobiphenyl					80.8	77.5		34.0-125				
(S) p-Terphenyl-d14					90.6	87.7		23.0-120				

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.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc

# ACCREDITATIONS & LOCATIONS

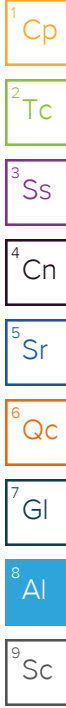
## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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 <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	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 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

\* 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**  
Info on file

Billing information:  
**Caerus Oil and Gas**  
Info on file

Pres Chk	Analysis / Container / Preservative									

Chain of Custody Page \_\_\_ of \_\_\_  
12065 Lebanon Rd Mount Juliet, TN 37122 Phone:  
615-758-5858  
Phone: 800-767-5859  
Fax: 615-758-5859

Report to:  
**Jake Janicek; Chris McKisson**

Email To: [jjanicek@caerusoilandgas.com](mailto:jjanicek@caerusoilandgas.com);  
[remediation@confluence-cc.com](mailto:remediation@confluence-cc.com)

Project Description:  
**J17E**

City/State  
Collected: **Colorado** Please Circle:  
 MT  CT  ET

Phone: **970-778-2314**

Client Project #

Lab Project #

Collected by (print):  
**Andrew Smith**

Site/Facility ID #

P.O. #

Collected by (signature):  
*AS*

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

Quote #

Immediately Packed on Ice:  
N \_\_\_ Y

Date Results Needed  
**3-Day TAT**

No. of  
Cnts

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cnts	TPH (GRO, DRO, ORO)	1-methylnaphthalene	2-methylnaphthalene	Naphthalene
20210520 - J17E (Comp_1@3")	Comp	SS	3"	5-20-21	1305	2	X	X	X	X
20210520 - J17E (Comp_1@2')	Comp	SS	2'	5-20-21	1335	2	X	X	X	X
20210520 - J17E (Comp_2@3")	Comp	SS	3"	5-20-21	1310	2	X	X	X	X
20210520 - J17E (Comp_2@2')	Comp	SS	2'	5-20-21	1350	2	X	X	X	X
20210520 - J17E (Comp_3@3")	Comp	SS	3"	5-20-21	1315	2	X	X	X	X
20210520 - J17E (Comp_3@2')	Comp	SS	2'	5-20-21	1410	2	X	X	X	X
20210520 - J17E (Comp_4@3")	Comp	SS	3"	5-20-21	1320	2	X	X	X	X
20210520 - J17E (Comp_4@2')	Comp	SS	2'	5-20-21	1425	2	X	X	X	X
20210520 - J17E (Comp_5@3")	Comp	SS	3"	5-20-21	1325	2	X	X	X	X
20210520 - J17E (Comp_5@2')	Comp	SS	2'	5-20-21	1435	2	X	X	X	X

TPH (GRO, DRO, ORO)

1-methylnaphthalene

2-methylnaphthalene

Naphthalene

SDG # *U35L062*  
**A164**

Acctnum:  
Template:  
Prelogin:  
PM:  
PB:

Shipped Via:  
Remarks Sample # (lab only)

*-01*  
*-02*  
*-03*  
*-04*  
*-05*  
*-06*  
*-07*  
*-08*  
*-09*  
*-10*

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

Remarks: **\*\*\*\*\*3-Day TAT\*\*\*\***  
Samples returned via:  
UPS FedEx Courier

Tracking #  
pH \_\_\_\_\_ Temp \_\_\_\_\_  
Other \_\_\_\_\_

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

Relinquished by: (Signature) *AS*

Date: **5-21-21**

Time: *1330*

Received by: (Signature) *[Signature]*

Trip Blank Received: Yes/No  
HCL / MeOH  
TBR

Relinquished by: (Signature) *[Signature]*

Date: *5/21/21*

Time: *1700*

Received by: (Signature) *[Signature]*

Temp: *87°C* Bottles Received: *20*

Relinquished by: (Signature) *[Signature]*

Date: *5-22-21*

Time: *0930*

Received for lab by: (Signature) *[Signature]*

Date: *5-22-21* Time: *0930*

Hold: Condition: NCF  
*1 OK*

