



## **VIA ELECTRONIC MAIL –**

August 8, 2023

Jake Janicek  
EH&S Specialist  
Environmental Health and Safety  
Caerus Piceance LLC  
143 Diamond Avenue  
Parachute, Colorado 81635

**Subject: Investigative Drilling Assessment  
YCF 35-33-1 Loadout Line Leak  
Yellow Creek Field  
Rio Blanco County, Colorado**

Dear Mr. Janicek:

WSP USA Inc. (WSP), on behalf of Caerus Piceance LLC (Caerus), collected a produced water sampling and conducted investigative drilling assessment involving site-specific background soil sampling and confirmation soil sampling to address produced water impacts at the YCF 35-33-1 (Facility ID: 3166660) (Site). These activities were completed to delineate previously confirmed produced water impacts discovered on December 17, 2021 due to a loadout line leak. This document serves as a report of work completed (ROWC) which details all subsequent investigative assessment activities completed under Caerus Operator Number 10456. All previous investigative activities to date can be referenced under Colorado Oil and Gas Conservation Commission (COGCC) Remediation Project Number (RPN) 23230. The Site is located in the Caerus' Yellow Creek area of operation in Rio Blanco County, Colorado (Figure 1).

## **PRODUCED WATER SAMPLING – YCF 35-33-1**

On April 11, 2023, WSP personnel collected a produced water sample for process knowledge in an effort to provide analytical relief for future confirmation samples collected at the Site associated with the loadout line leak discovered on December 17, 2021. With the assistance of a Caerus representative, one produced water sample was collected from the southwestern tank (AIRS ID: 1030427002) at the YCF 35-33-1 using a thief hatch snake. The produced water sample [20230411-YCFSOURCE-(YCF 35-33-1-T)] was submitted to Pace Analytical of Mt. Juliet, Tennessee (Pace) on April 12, 2023 for laboratory analysis of arsenic and pH. The location of the produced water sample is displayed on Figure 2.

## **CONFIRMATION SAMPLING ACTIVITIES – YCF 35-33-1**

From May 11 through May 23, 2023, a WSP geologist performed an investigative drilling assessment to delineate the documented in-situ impacts associated with the loadout line leak at the Site. The assessment drilling activities were completed using a track mounted SIMCO 2800 drill rig equipped with solid stem auger and air coring capabilities operated by Colorado Drilling and Sampling (CD&S) of Montrose, Colorado. Two site-specific background soil borings were completed to total depths of 40 feet below ground surface (bgs) west and northwest of the pad surface. Seven assessment soil borings were advanced to total depths of 50 feet bgs. Of the seven assessment soil borings, four were located on the working pad surface (SB03 through SB06) and therefore were potholed to total depths ranging from 1.5 feet to 6 feet bgs to clear the locations of buried utilities. The locations were potholed using a hydro-vacuum truck operated by Western Slope Field Services, Inc. (WCO) of Rifle, Colorado on May 16,

WSP USA  
820 MEGAN AVENUE, UNIT B  
RIFLE CO 81650

Tel.: 970-285-9985  
wsp.com



2023, prior to any pad surface drilling activity. All soil boring locations and associated sample depths are shown on Figure 3.

All drilling oversight, confirmation soil sampling, and field screening activities were conducted by a WSP geologist who screened each borehole at every five-foot interval. Field screening activities consisted of inspecting the soil for the presence or absence of petroleum hydrocarbon odor and/or staining, characterizing the soil utilizing the United Soil Classification System, and field screening the soil head space using a photoionization detector (PID) to monitor for the presence or absence of volatile organic compounds. Discrete soil samples from all seven assessment borings were collected at every 10-foot depth interval, each boring terminus, and at intervals exhibiting elevated PID values. Five to seven discrete soil samples were submitted from each assessment soil boring. Discrete soil samples from each of the two site-specific background soil borings were collected at every 10-foot interval and at the boring terminus. Five site-specific soil samples were submitted from each background boring. Following sampling activities, all soil borings were backfilled using bentonite and drill cuttings. All soil samples were collected in clean laboratory-prepared containers and submitted to Pace for analysis. All confirmation soil samples were submitted under a previously approved suite (DN 403089339) which includes arsenic, barium, total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, total xylenes (BTEX), 1,2,4-trimethylbenzene (TMB), 1,3,5-TMB, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, and sodium adsorption ratio (SAR). Site-specific background samples were submitted for laboratory analysis of Table 915-1 metals, boron (water soluble), pH, SAR, and electrical conductivity (EC). The approved analyte list was evaluated under the COGCC Table 915-1 Protection of Groundwater Soil Screening Level Concentrations (PGSSLCs) and COGCC Table 915-1 Cleanup Concentrations (CCs). The soil boring logs are included in Enclosure A. A photolog of all drilling activities completed during the second quarter of 2023 is included in Enclosure B.

## ANALYTICAL RESULTS – YCF 35-33-1

Laboratory analytical results for the produced water sample collected on April 11, 2023 indicate that all analytes were either below the laboratory method detection limit or within the COGCC Table 915-1 CCs. The results are summarized in the table below.

### Summary of Produced Water Sample Analytical Results– April 11, 2023

Confirmation Soil Sample ID	COGCC Table 915-1 Contaminants of Concern	Units	COGCC Cleanup Concentrations	Confirmation Soil Sample Concentration
20230411-YCFSOURCE-(YCF 35-33-1-T)	pH	Unitless	6 – 8.3	7.41
	Arsenic	mg/kg	0.29 (M)	<0.100

Key:  
COGCC - Colorado Oil and Gas Conservation Commission

mg/kg - milligrams per kilogram  
M - maximum contaminant level based

Laboratory analytical results from the subsequent investigative assessment indicate that 41 of the 42 confirmation soil samples collected exceed the COGCC Table 915-1 CCs and/or PGSSLCs for Maximum Contaminant Level Based (M) and Risked Based (R). The documented exceedances for each confirmation sample are summarized in the table below.





### Summary of Confirmation Soil Analytical Exceedances – May 15 through 23, 2023

Confirmation Soil Sample ID	COGCC Table 915-1 Contaminants of Concern	Units	COGCC Cleanup Concentrations	Confirmation Soil Sample Concentration
20230515-YCF 35-33-1-(SB01)@3-5	Arsenic	mg/kg	0.29 (M)	<b>3.13</b>
	Barium	mg/kg	82 (M)	<b>186</b>
	SAR	unitless	<6	<b>12.7</b>
20230515-YCF 35-33-1-(SB01)@13-15	Arsenic	mg/kg	0.29 (M)	<b>3.11</b>
	Barium	mg/kg	82 (M)	<b>169</b>
20230515-YCF 35-33-1-(SB01)@23-25	Arsenic	mg/kg	0.29 (M)	<b>2.51</b>
	Barium	mg/kg	82 (M)	<b>166</b>
20230515-YCF 35-33-1-(SB01)@33-35	Arsenic	mg/kg	0.29 (M)	<b>4.30</b>
	Barium	mg/kg	82 (M)	<b>413</b>
20230515-YCF 35-33-1-(SB01)@43-45	Arsenic	mg/kg	0.29 (M)	<b>4.79</b>
	Barium	mg/kg	82 (M)	<b>212</b>
20230515-YCF 35-33-1-(SB01)@48-50	Arsenic	mg/kg	0.29 (M)	<b>3.48</b>
	Barium	mg/kg	82 (M)	<b>136</b>
	Benzene	mg/kg	0.0026 (M)	<b>0.00295</b>
	1,3,5-TMB	mg/kg	0.0087 (R)	<b>0.00877</b>
20230516-YCF 35-33-1-(SB02)@3-5	Arsenic	mg/kg	0.29 (M)	<b>5.61</b>
	Barium	mg/kg	82 (M)	<b>549</b>
	SAR	unitless	<6	<b>8.15</b>
20230516-YCF 35-33-1-(SB02)@13-15	Arsenic	mg/kg	0.29 (M)	<b>5.47</b>
	Barium	mg/kg	82 (M)	<b>1,440</b>
20230516-YCF 35-33-1-(SB02)@23-25	Arsenic	mg/kg	0.29 (M)	<b>3.54</b>
	Barium	mg/kg	82 (M)	<b>384</b>
20230516-YCF 35-33-1-(SB02)@33-35	Arsenic	mg/kg	0.29 (M)	<b>4.99</b>
	Barium	mg/kg	82 (M)	<b>301</b>
20230516-YCF 35-33-1-(SB02)@43-45	Arsenic	mg/kg	0.29 (M)	<b>3.06</b>
	Barium	mg/kg	82 (M)	<b>144</b>
	Benzene	mg/kg	0.0026 (M)	<b>0.00273</b>
20230516-YCF 35-33-1-(SB02)@48-50	Arsenic	mg/kg	0.29 (M)	<b>3.41</b>
	Barium	mg/kg	82 (M)	<b>244</b>
20230517-YCF 35-33-1-(SB03)@4-5	Arsenic	mg/kg	0.29 (M)	<b>2.74</b>
	Barium	mg/kg	82 (M)	<b>628</b>
	SAR	unitless	<6	<b>14.1</b>
20230517-YCF 35-33-1-(SB03)@13-15	Arsenic	mg/kg	0.29 (M)	<b>3.90</b>
	Barium	mg/kg	82 (M)	<b>149</b>
	SAR	unitless	<6	<b>8.32</b>
	1,3,5-TMB	mg/kg	0.0087 (R)	<b>0.0128</b>
20230517-YCF 35-33-1-(SB03)@23-25	Arsenic	mg/kg	0.29 (M)	<b>5.35</b>
	Barium	mg/kg	82 (M)	<b>341</b>
20230517-YCF 35-33-1-(SB03)@33-35	Arsenic	mg/kg	0.29 (M)	<b>4.20</b>
	Barium	mg/kg	82 (M)	<b>316</b>
	1,2,4-TMB	mg/kg	0.0081 (R)	<b>0.0129</b>
	1,3,5-TMB	mg/kg	0.0087 (R)	<b>0.0128</b>
	2-methylnaphthalene	mg/kg	0.019 (R)	<b>0.0269</b>
	Naphthalene	mg/kg	0.0038 (R)	<b>0.0293</b>

Key:  
mg/kg - milligrams per kilogram  
COGCC - Colorado Oil and Gas Conservation Commission  
M - maximum containment level

R - risk based  
**BOLD** - indicates result exceeds the COGCC protection of groundwater soil screening concentration level



**Summary of Confirmation Soil Analytical Exceedances – May 15 through 23, 2023 – Continued**

Confirmation Soil Sample ID	COGCC Table 915-1 Contaminants of Concern	Units	COGCC Cleanup Concentrations	Confirmation Soil Sample Concentration
<b>20230517-YCF 35-33-1-(SB03)@38-40</b>	Arsenic	mg/kg	0.29 (M)	<b>4.63</b>
	Barium	mg/kg	82 (M)	<b>357</b>
	1,2,4-TMB	mg/kg	0.0081 (R)	<b>0.0369</b>
	1,3,5-TMB	mg/kg	0.0087 (R)	<b>0.0296</b>
	1-methylnaphthalene	mg/kg	0.006 (R)	<b>0.0239</b>
	2-methylnaphthalene	mg/kg	0.019 (R)	<b>0.0882</b>
	Naphthalene	mg/kg	0.0038 (R)	<b>0.0919</b>
<b>20230517-YCF 35-33-1-(SB03)@43-45</b>	Arsenic	mg/kg	0.29 (M)	<b>4.16</b>
	Barium	mg/kg	82 (M)	<b>186</b>
	1,2,4-TMB	mg/kg	0.0081 (R)	<b>0.0128</b>
	1,3,5-TMB	mg/kg	0.0087 (R)	<b>0.0113</b>
	2-methylnaphthalene	mg/kg	0.019 (R)	<b>0.0507</b>
	Naphthalene	mg/kg	0.0038 (R)	<b>0.0968</b>
<b>20230517-YCF 35-33-1-(SB03)@48-50</b>	Arsenic	mg/kg	0.29 (M)	<b>2.79</b>
	Barium	mg/kg	82 (M)	<b>190</b>
<b>20230517-YCF 35-33-1-(SB04)@8-10</b>	Arsenic	mg/kg	0.29 (M)	<b>4.73</b>
	Barium	mg/kg	82 (M)	<b>303</b>
	SAR	unitless	<6	<b>17.1</b>
<b>20230518-YCF 35-33-1-(SB04)@13-15</b>	Arsenic	mg/kg	0.29 (M)	<b>2.71</b>
	Barium	mg/kg	82 (M)	<b>197</b>
	1,2,4-TMB	mg/kg	0.0081 (R)	<b>0.0114</b>
<b>20230518-YCF 35-33-1-(SB04)@23-25</b>	Arsenic	mg/kg	0.29 (M)	<b>11.1</b>
	Barium	mg/kg	82 (M)	<b>171</b>
<b>20230518-YCF 35-33-1-(SB04)@37-39</b>	Arsenic	mg/kg	0.29 (M)	<b>5.73</b>
	Barium	mg/kg	82 (M)	<b>263</b>
	1,2,4-TMB	mg/kg	0.0081 (R)	<b>0.116</b>
	1,3,5-TMB	mg/kg	0.0087 (R)	<b>0.182</b>
	2-methylnaphthalene	mg/kg	0.019 (R)	<b>0.0589</b>
<b>20230518-YCF 35-33-1-(SB04)@48-50</b>	Arsenic	mg/kg	0.29 (M)	<b>3.16</b>
	Barium	mg/kg	82 (M)	<b>168</b>
	Benzene	mg/kg	0.0026 (M)	<b>0.00559</b>
	1,3,5-TMB	mg/kg	0.0087 (R)	<b>0.0107</b>
<b>20230519-YCF 35-33-1-(SB05)@4-5</b>	SAR	unitless	<6	<b>17.8</b>
<b>20230519-YCF 35-33-1-(SB05)@13-15</b>	Arsenic	mg/kg	0.29 (M)	<b>2.34</b>
	Barium	mg/kg	82 (M)	<b>166</b>
	SAR	unitless	<6	<b>7.12</b>
<b>20230519-YCF 35-33-1-(SB05)@23-25</b>	Arsenic	mg/kg	0.29 (M)	<b>3.13</b>
	Barium	mg/kg	82 (M)	<b>331</b>
<b>20230519-YCF 35-33-1-(SB05)@33-35</b>	Arsenic	mg/kg	0.29 (M)	<b>3.71</b>
	Barium	mg/kg	82 (M)	<b>213</b>

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M - maximum containment level

R - risk based  
**BOLD** - indicates result exceeds the COGCC protection of groundwater soil screening concentration level



### Summary of Confirmation Soil Analytical Exceedances – May 15 through 23, 2023 - Continued

Confirmation Soil Sample ID	COGCC Table 915-1 Contaminants of Concern	Units	COGCC Cleanup Concentrations	Confirmation Soil Sample Concentration
20230519-YCF 35-33-1-(SB05)@41-43	Arsenic	mg/kg	0.29 (M)	<b>2.85</b>
	Barium	mg/kg	82 (M)	<b>160</b>
	Benzene	mg/kg	0.0026 (M)	<b>0.00388</b>
	1,2,4-TMB	mg/kg	0.0081 (R)	<b>0.0423</b>
	1,3,5-TMB	mg/kg	0.0087 (R)	<b>0.0413</b>
	1-methylnaphthalene	mg/kg	0.006 (R)	<b>0.00627</b>
	Naphthalene	mg/kg	0.0038 (R)	<b>0.0122</b>
20230519-YCF 35-33-1-(SB05)@48-50	Arsenic	mg/kg	0.29 (M)	<b>2.74</b>
	Barium	mg/kg	82 (M)	<b>182</b>
20230522-YCF 35-33-1-(SB06)@3-5	Arsenic	mg/kg	0.29 (M)	<b>2.65</b>
	Barium	mg/kg	82 (M)	<b>206</b>
	SAR	unitless	<6	<b>10.3</b>
20230522-YCF 35-33-1-(SB06)@13-15	Arsenic	mg/kg	0.29 (M)	<b>3.42</b>
	Barium	mg/kg	82 (M)	<b>218</b>
20230522-YCF 35-33-1-(SB06)@23-25	Arsenic	mg/kg	0.29 (M)	<b>4.03</b>
	Barium	mg/kg	82 (M)	<b>395</b>
20230522-YCF 35-33-1-(SB06)@32-34	Arsenic	mg/kg	0.29 (M)	<b>4.55</b>
	Barium	mg/kg	82 (M)	<b>355</b>
	1,2,4-TMB	mg/kg	0.0081 (R)	<b>0.0122</b>
	1,3,5-TMB	mg/kg	0.0087 (R)	<b>0.0128</b>
20230522-YCF 35-33-1-(SB06)@43-45	Arsenic	mg/kg	0.29 (M)	<b>10.3</b>
	Barium	mg/kg	82 (M)	<b>158</b>
	Benzene	mg/kg	0.0026 (M)	<b>0.00378</b>
	1,2,4-TMB	mg/kg	0.0081 (R)	<b>0.129</b>
	1,3,5-TMB	mg/kg	0.0087 (R)	<b>0.117</b>
	2-methylnaphthalene	mg/kg	0.019 (R)	<b>0.0652</b>
	Naphthalene	mg/kg	0.0038 (R)	<b>0.0208</b>
20230522-YCF 35-33-1-(SB06)@48-50	Arsenic	mg/kg	0.29 (M)	<b>3.00</b>
20230523-YCF 35-33-1-(SB07)@3-4	Arsenic	mg/kg	0.29 (M)	<b>4.96</b>
	Barium	mg/kg	82 (M)	<b>373</b>
20230523-YCF 35-33-1-(SB07)@23-25	Arsenic	mg/kg	0.29 (M)	<b>3.23</b>
	Barium	mg/kg	82 (M)	<b>131</b>
20230523-YCF 35-33-1-(SB07)@33-35	Arsenic	mg/kg	0.29 (M)	<b>6.62</b>
	Barium	mg/kg	82 (M)	<b>332</b>
20230523-YCF 35-33-1-(SB07)@42-44	Arsenic	mg/kg	0.29 (M)	<b>4.05</b>
	Barium	mg/kg	82 (M)	<b>98.0</b>
	Benzene	mg/kg	0.0026 (M)	<b>0.0157</b>
	1,2,4-TMB	mg/kg	0.0081 (R)	<b>0.0345</b>
	1,3,5-TMB	mg/kg	0.0087 (R)	<b>0.0359</b>
	2-methylnaphthalene	mg/kg	0.019 (R)	<b>0.0288</b>
20230523-YCF 35-33-1-(SB07)@48-50	Arsenic	mg/kg	0.29 (M)	<b>2.81</b>
	Barium	mg/kg	82 (M)	<b>405</b>

Key:  
mg/kg - milligrams per kilogram  
COGCC - Colorado Oil and Gas Conservation Commission  
M - maximum contaminant level based  
R - risk based

BOLD - indicates result exceeds the COGCC protection of groundwater soil screening concentration level  
TMB – trimethylbenzene  
SAR – sodium adsorption ratio



All other analytes were either below the laboratory method detection limit or within the COGCC Table 915-1 PGSSLCs and CCs. The confirmation soil boring locations and their associated exceedances are depicted on Figure 4.

Laboratory analytical results of the 10 site-specific background soil samples collected in proximity to the Site on May 11 and 12, 2023, indicate exceedances of the COGCC Table 915-1 CCs and PGSSLCs for M and R for arsenic, barium, hexavalent chromium, lead, pH, and SAR. The documented exceedances for each site-specific background soil sample are summarized in the table below.

#### Summary of Background Soil Analytical Exceedances – May 11 through 12, 2023

Confirmation Soil Sample ID	COGCC Table 915-1 Contaminant of Concern	Units	COGCC Cleanup Concentrations	Confirmation Soil Sample Concentration
<b>20230511-YCFBG-(YCF 35-33-1-W)@3-4.5</b>	Arsenic	mg/kg	0.29 (M)	<b>4.68</b>
	Barium	mg/kg	82 (M)	<b>509</b>
	pH	SU	6 – 8.3	<b>9.09</b>
<b>20230511-YCFBG-(YCF 35-33-1-W)@13-15</b>	Arsenic	mg/kg	0.29 (M)	<b>7.15</b>
	Barium	mg/kg	82 (M)	<b>417</b>
	pH	SU	6 – 8.3	<b>9.17</b>
<b>20230511-YCFBG-(YCF 35-33-1-W)@23-25</b>	Arsenic	mg/kg	0.29 (M)	<b>3.32</b>
	Barium	mg/kg	82 (M)	<b>264</b>
	Lead	mg/kg	14 (M)	<b>15.2</b>
	pH	SU	6 – 8.3	<b>8.77</b>
<b>20230511-YCFBG-(YCF 35-33-1-W)@33-35</b>	Arsenic	mg/kg	0.29 (M)	<b>4.89</b>
	Barium	mg/kg	82 (M)	<b>322</b>
	Lead	mg/kg	14 (M)	<b>14.8</b>
	pH	SU	6 – 8.3	<b>8.65</b>
<b>20230511-YCFBG-(YCF 35-33-1-W)@38-40</b>	Arsenic	mg/kg	0.29 (M)	<b>5.45</b>
	Barium	mg/kg	82 (M)	<b>218</b>
	pH	SU	6 – 8.3	<b>8.58</b>
<b>20230511-YCFBG-(YCF 35-33-1-NW)@3-5</b>	Arsenic	mg/kg	0.29 (M)	<b>6.13</b>
	Barium	mg/kg	82 (M)	<b>290</b>
	Chromium (VI)	mg/kg	0.00067 (R)	<b>1.36</b>
	Lead	mg/kg	14 (M)	<b>17.2</b>
	SAR	unitless	<6	<b>13.8</b>
<b>20230511-YCFBG-(YCF 35-33-1-NW)@13-15</b>	Arsenic	mg/kg	0.29 (M)	<b>2.78</b>
	Barium	mg/kg	82 (M)	<b>212</b>
	pH	SU	6 – 8.3	<b>9.02</b>
<b>20230511-YCFBG-(YCF 35-33-1-NW)@23-25</b>	Arsenic	mg/kg	0.29 (M)	<b>5.17</b>
	Barium	mg/kg	82 (M)	<b>418</b>
	pH	SU	6 – 8.3	<b>9.01</b>
<b>20230511-YCFBG-(YCF 35-33-1-NW)@33-35</b>	Arsenic	mg/kg	0.29 (M)	<b>3.42</b>
	Barium	mg/kg	82 (M)	<b>138</b>
	pH	SU	6 – 8.3	<b>9.10</b>
<b>20230511-YCFBG-(YCF 35-33-1-W)@38-40</b>	Arsenic	mg/kg	0.29 (M)	<b>3.05</b>
	Barium	mg/kg	82 (M)	<b>162</b>
	pH	SU	6 – 8.3	<b>8.83</b>

Key:  
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M - maximum containment level  
R - risk based

**BOLD** - indicates result exceeds the COGCC protection of groundwater soil screening concentration level  
SAR - sodium adsorption ratio



All other analytes were either below the laboratory method detection limit or within the COGCC Table 915-1 PGSSLCs and CCs. The laboratory analytical results are included in Enclosure C and summarized in Table 1. Site-specific background soil boring locations and their associated exceedances are depicted on Figure 5.

## CONCLUSIONS – YCF 35-33-1

Based on the analytical data provided from the subsequent investigation activities conducted at the Site during the second quarter of 2023, there are COGCC Table 915-1 exceedances of arsenic, barium, SAR, benzene, 1,2,4-TMB, 1,3,5-TMB, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene associated with the load outline leak discovered in December of 2021. To address these exceedances and previously confirmed shallow exceedances, WSP recommends that Caerus attempt to removal all delineated impacted material to the southern and western extents of the production tank secondary containment and beneath the secondary containment berm through mechanical excavation. Based on the subsurface drilling assessment surrounding the secondary containment completed between May 11 and May 23, 2023, vertical and lateral delineation of the loadout line release has been achieved. Caerus should schedule the source removal activities to coincide with installation of an updated lined secondary containment located in a different area of the pad location so that all tanks and production equipment are removed to allow for safe and efficient removal of the defined plume. Prior to source removal activities, Caerus should request that the Director consider relief concerning the assessment of a potential pathway to groundwater per COGCC Table 915-1 footnote 7 and provide a determination to continue this project using Residential Soil Screening Level Concentrations (RSSLCs) based on the information provided in the COGCC Supplemental Site Investigation and Remediation Workplan Document Number 403475435 “Operator Comment” section. WSP also recommends that Caerus request the COGCC Director to collect all future soil samples under a reduced analytical suite to include TPH, BTEX, 1,2,4-TMB, 1,3,5-TMB, naphthalene, and SAR since all other analytes from all investigative activities complete at the Site to date were detected with concentrations below the COGCC Table 915-1 RSSLCs. Previously reported investigative soil analytical results are provided in the attached Table 2 and the laboratory analytical results are included in Enclosure C. Additional information associated with this previous investigation can be referenced in DNs 403050192 and 403089339.

Please contact us at (970) 618-4514 or (970) 658-7025 if you have any questions regarding this report or require additional information.

Kind regards,

A handwritten signature in blue ink, appearing to read 'D. Held'.

Dustin Held  
Sr. Consultant, Environmental Geologist

A handwritten signature in blue ink, appearing to read 'Parker Coit'.

Parker Coit, P.G.  
Lead Consultant, Geologist

Encl.

## FIGURES



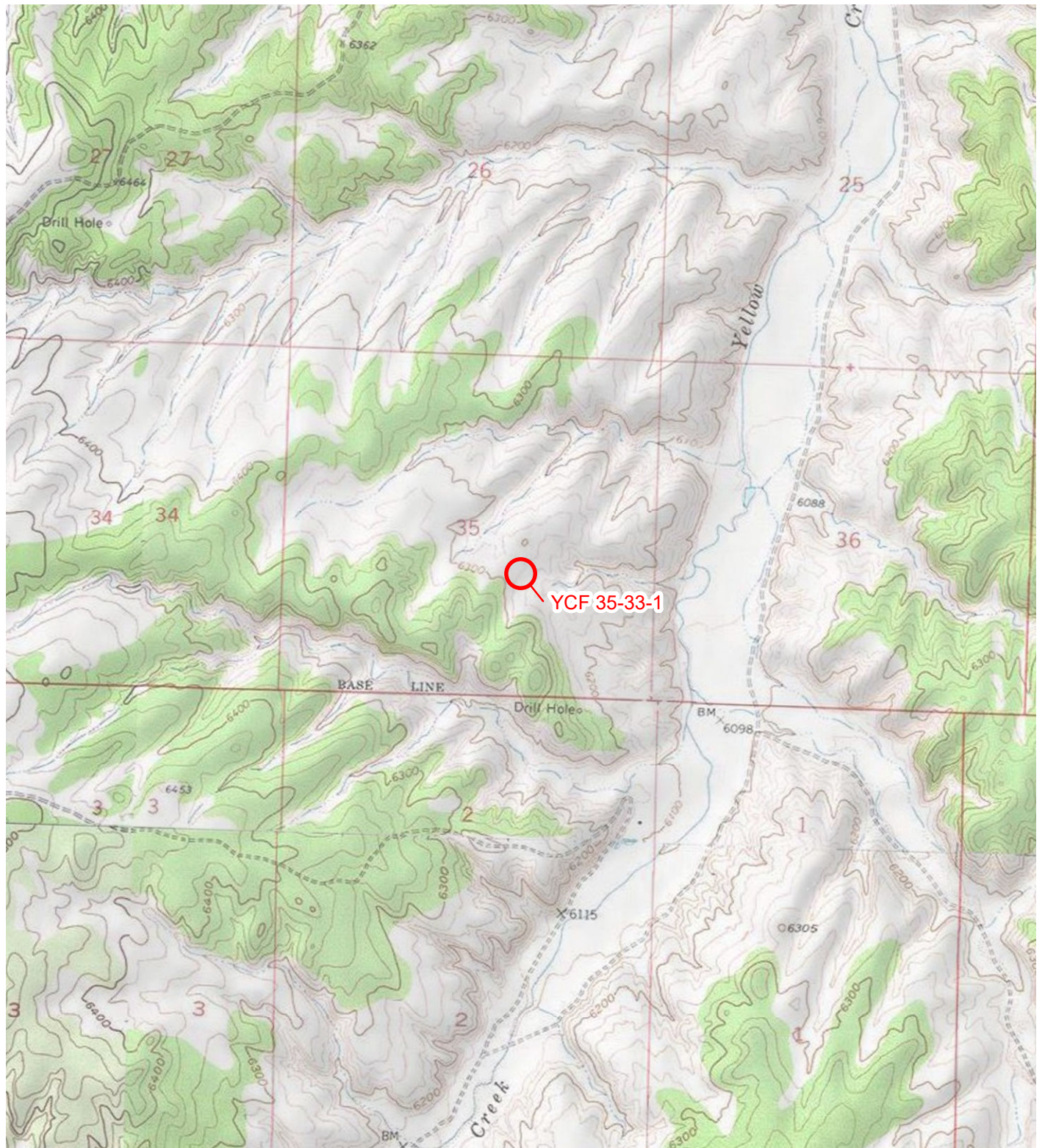
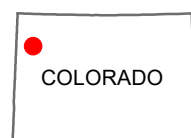
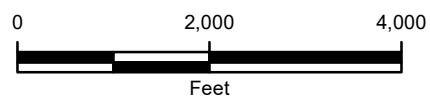


IMAGE COURTESY OF ESRI/USGS

# LEGEND

 SITE LOCATION



**FIGURE 1**  
**SITE LOCATION MAP**  
**YCF 35-33-1**  
**NWSE SEC 35-T1S-R98W**  
**RIO BLANCO COUNTY, COLORADO**  
**CAERUS PICEANCE LLC**





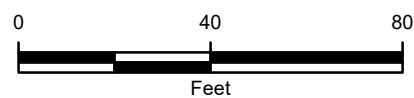




IMAGE COURTESY OF GOOGLE EARTH (2015)

## LEGEND

-  PRODUCED WATER SAMPLE
-  RELEASE FOOTPRINT (4/19/2022)



**FIGURE 2**  
**PRODUCED WATER TANK SAMPLE LOCATION MAP**  
**YCF 35-33-1**  
**NWSE SEC 35-T1S-R98W**  
**RIO BLANCO COUNTY, COLORADO**  
**CAERUS PICEANCE LLC**





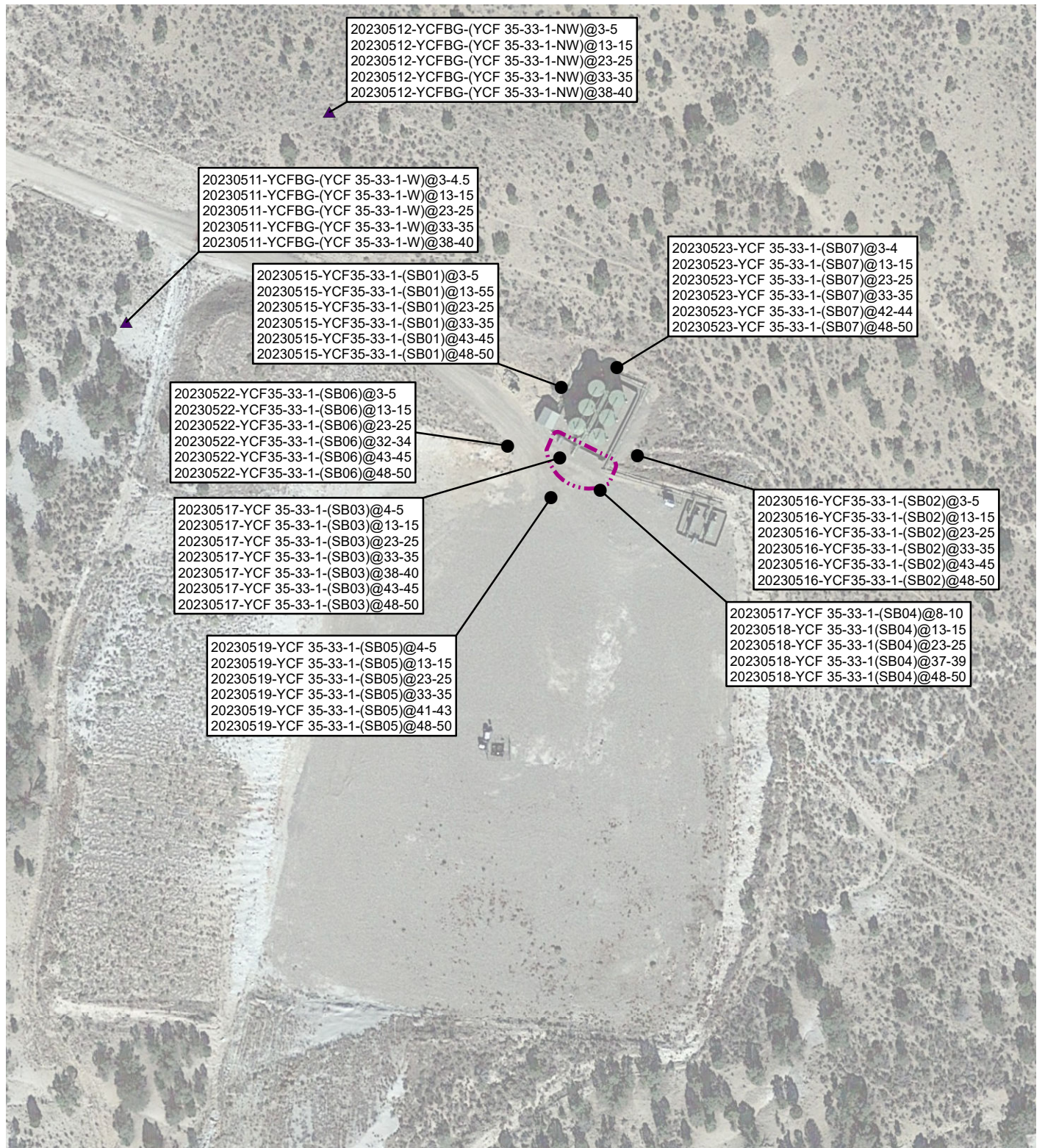
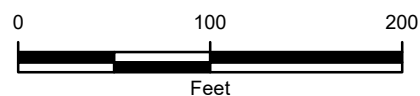


IMAGE COURTESY OF GOOGLE EARTH (2015)

## LEGEND

- SOIL BORING
- ▲ SITE-SPECIFIC BACKGROUND SOIL BORING
- RELEASE FOOTPRINT (4/19/2022)



**FIGURE 3**  
**SITE MAP**  
**YCF 35-33-1**  
**NWSE SEC 35-T1S-R98W**  
**RIO BLANCO COUNTY, COLORADO**  
**CAERUS PICEANCE LLC**





20230522-YCF35-33-1-(SB06)@3-5  
5/22/2023  
AS: **2.65**  
BA: **206**  
SAR: **10.3**  
20230522-YCF35-33-1-(SB06)@13-15  
5/22/2023  
AS: **3.42**  
BA: **218**  
20230522-YCF35-33-1-(SB06)@23-25  
5/22/2023  
AS: **4.03**  
BA: **395**  
20230522-YCF35-33-1-(SB06)@32-34  
5/22/2023  
AS: **4.55**  
BA: **355**  
1,2,4-TRI: **0.0122**  
1,3,5-TRI: **0.0128**  
20230522-YCF35-33-1-(SB06)@43-45  
5/22/2023  
AS: **10.3**  
BA: **158**  
B: **0.00378**  
1,2,4-TRI: **0.129**  
1,3,5-TRI: **0.117**  
2-ME: **0.0652**  
NAPH: **0.0208**  
20230522-YCF35-33-1-(SB06)@48-50  
5/22/2023  
AS: **3.00**

20230515-YCF35-33-1-(SB01)@3-5  
5/15/2023  
AS: **3.13**  
BA: **186**  
SAR: **12.7**  
20230515-YCF35-33-1-(SB01)@13-15  
5/15/2023  
AS: **3.11**  
BA: **169**  
20230515-YCF35-33-1-(SB01)@23-25  
5/15/2023  
AS: **2.51**  
BA: **166**  
20230515-YCF35-33-1-(SB01)@33-35  
5/15/2023  
AS: **4.30**  
BA: **413**  
20230515-YCF35-33-1-(SB01)@43-45  
5/15/2023  
AS: **4.79**  
BA: **2.12**  
20230515-YCF35-33-1-(SB01)@48-50  
5/15/2023  
AS: **3.48**  
BA: **136**  
B: **0.00295**  
1,3,5-TRI: **0.00877**

20230523-YCF 35-33-1-(SB07)@3-4  
5/23/2023  
AS: **4.96**  
BA: **373**  
20230523-YCF 35-33-1-(SB07)@13-15  
5/23/2023  
AS: **<1.00**  
BA: **<2.50**  
20230523-YCF 35-33-1-(SB07)@23-25  
5/23/2023  
AS: **2.32**  
BA: **131**  
20230523-YCF 35-33-1-(SB07)@33-35  
5/23/2023  
AS: **6.62**  
BA: **332**  
20230523-YCF 35-33-1-(SB07)@42-44  
5/23/2023  
AS: **4.05**  
BA: **98.0**  
B: **0.0157**  
1,2,4-TRI: **0.0345**  
1,3,5-TRI: **0.0359**  
2-ME: **0.0288**  
20230523-YCF 35-33-1-(SB07)@48-50  
5/23/2023  
AS: **2.81**  
BA: **405**

20230516-YCF35-33-1-(SB02)@3-5  
5/16/2023  
AS: **5.61**  
BA: **549**  
SAR: **8.15**  
20230516-YCF35-33-1-(SB02)@13-15  
5/16/2023  
AS: **5.47**  
BA: **1,440**  
20230516-YCF35-33-1-(SB02)@23-25  
5/16/2023  
AS: **3.54**  
BA: **384**  
20230516-YCF35-33-1-(SB02)@33-35  
5/16/2023  
AS: **4.99**  
BA: **301**  
20230516-YCF35-33-1-(SB02)@43-45  
5/16/2023  
AS: **3.06**  
BA: **144**  
B: **0.00273**  
20230516-YCF35-33-1-(SB02)@48-50  
5/16/2023  
AS: **3.14**  
BA: **244**

20230517-YCF 35-33-1-(SB04)@8-10  
5/18/2023  
AS: **4.73**  
BA: **303**  
SAR: **17.1**  
20230518-YCF 35-33-1-(SB04)@13-15  
5/18/2023  
AS: **2.71**  
BA: **197**  
1,2,4-TRI: **0.0114**  
20230518-YCF 35-33-1-(SB04)@23-25  
5/18/2023  
AS: **11.1**  
BA: **171**  
20230518-YCF 35-33-1-(SB04)@37-39  
5/18/2023  
AS: **5.73**  
BA: **263**  
1,2,4-TRI: **0.116**  
1,3,5-TRI: **0.182**  
2-ME: **0.0589**  
20230518-YCF 35-33-1-(SB04)@48-50  
5/18/2023  
AS: **3.16**  
BA: **168**  
B: **0.00559**  
1,3,5-TRI: **0.0107**

20230517-YCF 35-33-1-(SB03)@4-5  
5/17/2023  
AS: **2.74**  
BA: **628**  
SAR: **14.1**  
20230517-YCF 35-33-1-(SB03)@13-15  
5/17/2023  
AS: **3.90**  
BA: **149**  
SAR: **8.32**  
1,3,5-TRI: **0.0128**  
20230517-YCF 35-33-1-(SB03)@23-25  
5/17/2023  
AS: **5.35**  
BA: **341**  
20230517-YCF 35-33-1-(SB03)@33-35  
5/17/2023  
AS: **4.20**  
BA: **316**  
20230517-YCF 35-33-1-(SB03)@38-40  
5/17/2023  
AS: **4.63**  
BA: **357**  
1,2,4-TRI: **0.0369**  
1,3,5-TRI: **0.0296**  
1-ME: **0.0239**  
2-ME: **0.0882**  
NAPH: **0.0919**  
20230517-YCF 35-33-1-(SB03)@43-45  
5/17/2023  
AS: **4.16**  
BA: **186**  
1,2,4-TRI: **0.0128**  
1,3,5-TRI: **0.0113**  
1-ME: **0.0507**  
2-ME: **0.0968**  
20230517-YCF 35-33-1-(SB03)@48-50  
5/17/2023  
AS: **2.79**  
BA: **190**

20230519-YCF 35-33-1-(SB05)@4-5  
5/19/2023  
SAR: **17.8**  
20230519-YCF 35-33-1-(SB05)@13-15  
5/19/2023  
AS: **2.34**  
BA: **166**  
SAR: **7.12**  
20230519-YCF 35-33-1-(SB05)@23-25  
5/19/2023  
AS: **3.13**  
BA: **331**  
20230519-YCF 35-33-1-(SB05)@33-35  
5/19/2023  
AS: **3.71**  
BA: **213**  
20230519-YCF 35-33-1-(SB05)@41-43  
5/19/2023  
AS: **2.85**  
BA: **160**  
B: **0.00388**  
1,2,4-TRI: **0.0423**  
1,3,5-TRI: **0.0413**  
20230519-YCF 35-33-1-(SB05)@48-50  
5/19/2023  
AS: **2.74**  
BA: **182**

SAMPLE ID@DEPTH BELOW GROUND SURFACE IN FEET  
SAMPLE DATE  
AS: ARSENIC (mg/kg)  
BA: BARIUM (mg/kg)  
SAR: SODIUM ABSORPTION RATIO (UNITLESS)  
B: BENZENE (mg/kg)  
1,2,4-TRI: 1,2,4-TRIMETHYLBENZENE (mg/kg)  
1,3,5-TRI: 1,3,5-TRIMETHYLBENZENE (mg/kg)  
1-ME: 1-METHYLNAPHTHALENE (mg/kg)  
2-ME: 2-METHYLNAPHTHALENE (mg/kg)  
NAPH: NAPHTHALENE (mg/kg)  
mg/kg: MILLIGRAMS PER KILOGRAM  
<: INDICATED VALUE REPRESENTS METHOD DETECTION  
LIMIT (MDL) RESULT THAT IS GREATER THAN THE COGCC  
PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL  
CONCENTRATIONS  
**BOLD**: INDICATES THE RESULT EXCEEDS THE COGCC  
PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL  
CONCENTRATIONS

## LEGEND

- SOIL BORING
- RELEASE FOOTPRINT (4/19/2022)

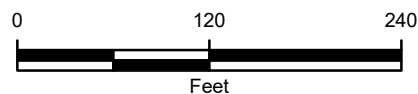
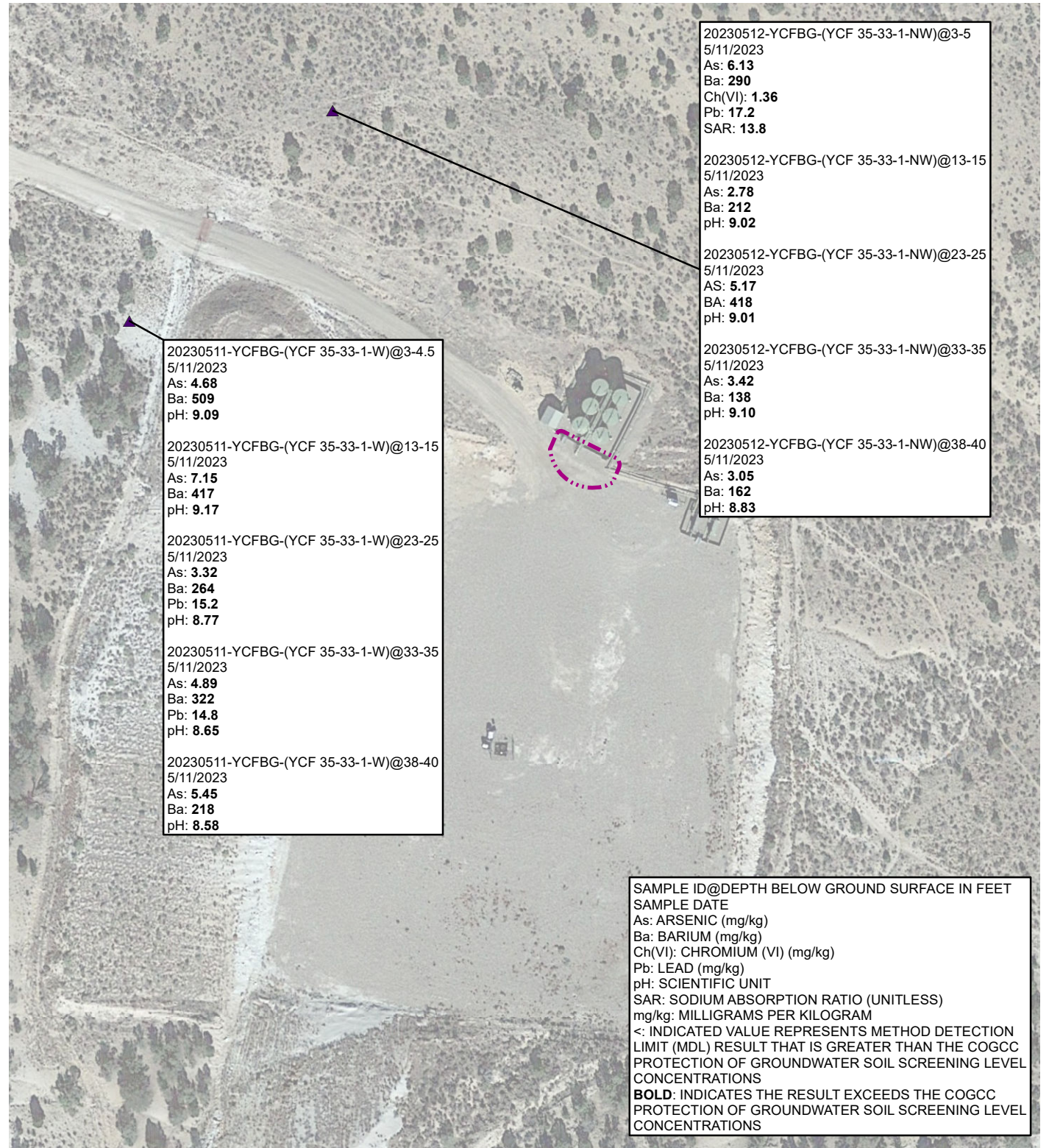


FIGURE 4  
SOIL BORING ANALYTICAL EXCEEDENCES  
YCF 35-33-1  
NWSE SEC 35-T1S-R98W  
RIO BLANCO COUNTY, COLORADO  
CAERUS PICEANCE LLC







## LEGEND

- ▲ SITE-SPECIFIC BACKGROUND SOIL BORING
- RELEASE FOOTPRINT (4/19/2022)

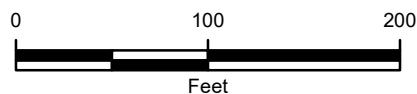


FIGURE 5  
BACKGROUND SOIL BORING ANALYTICAL EXCEEDENCES  
YCF 35-33-1  
NWSE SEC 35-T1S-R98W  
RIO BLANCO COUNTY, COLORADO  
CAERUS PICEANCE LLC



TABLE

TABLE 1

SOIL ANALYTICAL RESULTS

YCF 35-33-1

RIO BLANCO, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES					
				20230515-YCF 35-33-1-(SB01)@3-5	20230515-YCF 35-33-1-(SB01)@13-15	20230515-YCF 35-33-1-(SB01)@23-25	20230515-YCF 35-33-1-(SB01)@33-35	20230515-YCF 35-33-1-(SB01)@43-45	20230515-YCF 35-33-1-(SB01)@48-50
Sample Date				5/15/2023	5/15/2023	5/15/2023	5/15/2023	5/15/2023	5/15/2023
Sample Depth /Range (feet)				3-5	13-15	23-25	33-35	43-45	48-50
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	3.13	3.11	2.51	4.30	4.79	3.48
Barium	15,000	82 (M)	mg/kg	186	169	166	413	212	136
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Selenium	390	0.26 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	NA	NA	NA	NA	NA	NA
SAR	<6	<6	unitless	12.7	3.35	3.13	2.53	3.09	3.12
TPH-GRO			mg/kg	<0.100	<0.100	<0.100	0.168	0.123	<0.100
TPH-DRO			mg/kg	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00
TPH-ORO			mg/kg	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00
TPH	500	500	mg/kg	<4.00	<4.00	<4.00	0.168	0.123	<4.00
Benzene	1.2	0.0026 (M)	mg/kg	<0.00100	<0.00100	<0.00100	0.00155	<0.00100	0.00295
Toluene	490	0.69 (M)	mg/kg	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Ethylbenzene	5.8	0.78 (M)	mg/kg	<0.00250	<0.00250	<0.00250	<0.00250	<0.00250	0.00587
Total Xylenes	58	9.9 (M)	mg/kg	<0.00650	0.00673	<0.00650	0.0131	<0.00650	0.0112
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	<0.00500	<0.00500	<0.00500	0.0067	<0.00500	0.00603
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	<0.00500	<0.00500	<0.00500	0.00603	<0.00500	0.00877
Acenaphthene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Anthracene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
2-methylnaphthalene	24	0.019 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
Naphthalene	2	0.0038 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA

NOTES:

**BOLD** - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

SU - standard unit

TPH-ORO - total petroleum hydrocarbons- oil range organics

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maximum contaminant level (M)

M- based MCL

TABLE 1

SOIL ANALYTICAL RESULTS

YCF 35-33-1

RIO BLANCO, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES					
				20230516-YCF 35-33-1-(SB02)@3-5	20230516-YCF 35-33-1-(SB02)@13-15	20230516-YCF 35-33-1-(SB02)@23-25	20230516-YCF 35-33-1-(SB02)@33-35	20230516-YCF 35-33-1-(SB02)@43-45	20230516-YCF 35-33-1-(SB02)@48-50
Sample Date				5/16/2023	5/16/2023	5/16/2023	5/16/2023	5/16/2023	5/16/2023
Sample Depth /Range (feet)				3-5	13-15	23-25	33-35	43-45	48-50
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	5.61	5.47	3.54	4.99	3.06	3.41
Barium	15,000	82 (M)	mg/kg	549	1,440	384	301	144	244
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Selenium	390	0.26 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	NA	NA	NA	NA	NA	NA
SAR	<6	<6	unitless	8.15	5.75	3.43	4.00	3.60	3.49
TPH-GRO			mg/kg	<0.100	<0.100	<0.100	0.121	<0.100	<0.100
TPH-DRO			mg/kg	<4.00	<4.00	<4.00	<4.00	5.19	8.79
TPH-ORO			mg/kg	<4.00	<4.00	<4.00	<4.00	11.3	18.1
TPH	500	500	mg/kg	<4.00	<4.00	<4.00	0.121	16.49	26.89
Benzene	1.2	0.0026 (M)	mg/kg	<0.00100	<0.00100	<0.00100	<0.00100	0.00273	<0.00100
Toluene	490	0.69 (M)	mg/kg	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Ethylbenzene	5.8	0.78 (M)	mg/kg	<0.00250	<0.00250	<0.00250	<0.00250	<0.00250	<0.00250
Total Xylenes	58	9.9 (M)	mg/kg	<0.00650	<0.00650	<0.00650	<0.00650	<0.00650	<0.00650
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Acenaphthene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Anthracene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
2-methylnaphthalene	24	0.019 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
Naphthalene	2	0.0038 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA

NOTES:

**BOLD** - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

SU - standard unit

TPH-ORO - total petroleum hydrocarbons- oil range organics

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maximum contaminant level (M)

M- based MCL



TABLE 1

SOIL ANALYTICAL RESULTS

YCF 35-33-1

RIO BLANCO, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES					
				20230517-YCF 35-33-1-(SB03)@4-5	20230517-YCF 35-33-1-(SB03)@13-15	20230517-YCF 35-33-1-(SB03)@23-25	20230517-YCF 35-33-1-(SB03)@33-35	20230517-YCF 35-33-1-(SB03)@38-40	20230517-YCF 35-33-1-(SB03)@43-45
Sample Date				5/17/2023	5/17/2023	5/17/2023	5/17/2023	5/17/2023	5/17/2023
Sample Depth /Range (feet)				4-5	13-15	23-25	33-35	38-40	43-45
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	2.74	3.90	5.35	4.20	4.63	4.16
Barium	15,000	82 (M)	mg/kg	628	149	341	316	357	186
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Selenium	390	0.26 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	NA	NA	NA	NA	NA	NA
SAR	<6	<6	unitless	14.1	8.32	4.29	4.05	3.04	1.65
TPH-GRO			mg/kg	<0.100	0.119	<0.100	0.174	0.561	0.224
TPH-DRO			mg/kg	<4.00	<4.00	<4.00	4.92	13.3	7.97
TPH-ORO			mg/kg	<4.00	<4.00	<4.00	<4.00	<4.00	4.97
TPH	500	500	mg/kg	<4.00	0.119	<4.00	5.094	13.861	13.164
Benzene	1.2	0.0026 (M)	mg/kg	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	0.00160
Toluene	490	0.69 (M)	mg/kg	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0101
Ethylbenzene	5.8	0.78 (M)	mg/kg	<0.00250	<0.00250	<0.00250	<0.00250	<0.00250	<0.00250
Total Xylenes	58	9.9 (M)	mg/kg	<0.00650	<0.00650	<0.00650	0.0192	0.0191	0.0294
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	<0.00500	<0.00500	<0.00500	0.0129	0.0369	0.0128
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	<0.00500	0.0128	<0.00500	0.0128	0.0296	0.0113
Acenaphthene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Anthracene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	0.0239	<0.0200
2-methylnaphthalene	24	0.019 (R)	mg/kg	<0.0200	<0.0200	<0.0200	0.0269	0.0882	0.0507
Naphthalene	2	0.0038 (R)	mg/kg	<0.0200	<0.0200	<0.0200	0.0293	0.0919	0.0968
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA

NOTES:

**BOLD** - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

SU - standard unit

TPH-ORO - total petroleum hydrocarbons- oil range organics

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maximum contaminant level (M)

M- based MCL

TABLE 1

SOIL ANALYTICAL RESULTS

YCF 35-33-1

RIO BLANCO, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES					
				20230517-YCF 35-33-1-(SB03)@48-50	20230517-YCF 35-33-1-(SB04)@8-10	20230518-YCF 35-33-1-(SB04)@13-15	20230518-YCF 35-33-1-(SB04)@23-25	20230518-YCF 35-33-1-(SB04)@37-39	20230518-YCF 35-33-1-(SB04)@48-50
Sample Date				5/17/2023	5/17/2023	5/18/2023	5/18/2023	5/18/2023	5/18/2023
Sample Depth /Range (feet)				48-50	8-10	13-15	23-25	37-39	48-50
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	2.79	4.73	2.71	11.1	5.73	3.16
Barium	15,000	82 (M)	mg/kg	190	303	197	171	263	168
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Selenium	390	0.26 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	NA	NA	NA	NA	NA	NA
SAR	<6	<6	unitless	2.45	17.1	4.50	5.67	4.01	3.49
TPH-GRO			mg/kg	<0.100	<0.100	0.156	0.108	7.64	<0.100
TPH-DRO			mg/kg	5.22	<0.400	5.05	10.80	17.8	4.99
TPH-ORO			mg/kg	10.6	<0.400	6.12	<4.00	<4.00	8.31
TPH	500	500	mg/kg	15.82	<0.400	11.326	10.908	25.44	13.30
Benzene	1.2	0.0026 (M)	mg/kg	0.00158	<0.00100	<0.00100	<0.00100	<0.00100	0.00559
Toluene	490	0.69 (M)	mg/kg	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0259
Ethylbenzene	5.8	0.78 (M)	mg/kg	0.00325	<0.00250	<0.00250	<0.00250	<0.00250	0.00629
Total Xylenes	58	9.9 (M)	mg/kg	0.00735	<0.00650	<0.00650	<0.00650	0.201	0.0400
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	<0.00500	<0.00500	0.0114	<0.00500	0.116	0.00582
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	<0.00500	<0.00500	0.00537	0.00532	0.182	0.0107
Acenaphthene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Anthracene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
2-methylnaphthalene	24	0.019 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	0.0589	<0.0200
Naphthalene	2	0.0038 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA

NOTES:

**BOLD** - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

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TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maximum contaminant level (M)

M- based MCL

TABLE 1

SOIL ANALYTICAL RESULTS

YCF 35-33-1

RIO BLANCO, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES					
				20230519-YCF 35-33-1-(SB05)@4-5	20230519-YCF 35-33-1-(SB05)@13-15	20230519-YCF 35-33-1-(SB05)@23-25	20230519-YCF 35-33-1-(SB05)@33-35	20230519-YCF 35-33-1-(SB05)@41-43	20230519-YCF 35-33-1-(SB05)@48-50
Sample Date				5/19/2023	5/19/2023	5/19/2023	5/19/2023	5/19/2023	5/19/2023
Sample Depth /Range (feet)				4-5	13-15	23-25	33-35	41-43	48-50
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	0.150	2.34	3.13	3.71	2.85	2.74
Barium	15,000	82 (M)	mg/kg	14.4	166	331	213	160	182
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Selenium	390	0.26 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	NA	NA	NA	NA	NA	NA
SAR	<6	<6	unitless	17.8	7.12	4.25	3.53	3.35	3.44
TPH-GRO			mg/kg	0.123	<0.100	0.0222	0.0620	0.589	0.0301
TPH-DRO			mg/kg	5.24	3.12	1.75	2.84	6.81	6.17
TPH-ORO			mg/kg	<4.00	1.79	1.39	2.49	8.63	12.8
TPH	500	500	mg/kg	5.363	4.91	3.162	5.392	16.029	18.97
Benzene	1.2	0.0026 (M)	mg/kg	<0.00100	<0.00100	<0.00100	<0.00100	0.00388	<0.00100
Toluene	490	0.69 (M)	mg/kg	0.00208	0.00220	0.00175	0.00218	0.0121	0.00220
Ethylbenzene	5.8	0.78 (M)	mg/kg	<0.00250	<0.00250	0.00168	0.00168	0.0121	0.00220
Total Xylenes	58	9.9 (M)	mg/kg	0.00353	0.00300	0.00345	0.00373	0.0782	0.00443
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	<0.00500	<0.00500	<0.00500	<0.00500	0.0423	<0.00500
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	<0.00500	<0.00500	<0.00500	<0.00500	0.0413	<0.00500
Acenaphthene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Anthracene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	0.00627	<0.0200
2-methylnaphthalene	24	0.019 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	0.0169	<0.0200
Naphthalene	2	0.0038 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	0.0122	<0.0200
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA

NOTES:

**BOLD** - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

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TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maximum contaminant level (M)

M- based MCL

TABLE 1

SOIL ANALYTICAL RESULTS

YCF 35-33-1

RIO BLANCO, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES					
				20230522-YCF 35-33-1-(SB06)@3-5	20230522-YCF 35-33-1-(SB06)@13-15	20230522-YCF 35-33-1-(SB06)@23-25	20230522-YCF 35-33-1-(SB06)@32-34	20230522-YCF 35-33-1-(SB06)@43-45	20230522-YCF 35-33-1-(SB06)@48-50
Sample Date				5/22/2023	5/22/2023	5/22/2023	5/22/2023	5/22/2023	5/22/2023
Sample Depth /Range (feet)				3-5	13-15	23-25	32-34	43-45	48-50
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	<b>2.65</b>	<b>3.42</b>	<b>4.03</b>	<b>4.55</b>	<b>10.3</b>	<b>3.00</b>
Barium	15,000	82 (M)	mg/kg	<b>206</b>	<b>218</b>	<b>395</b>	<b>355</b>	<b>158</b>	4.05
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Selenium	390	0.26 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	NA	NA	NA	NA	NA	NA
SAR	<6	<6	unitless	<b>10.3</b>	3.82	3.71	3.90	3.53	4.05
TPH-GRO			mg/kg	0.402	<0.100	<0.100	0.678	5.50	0.289
TPH-DRO			mg/kg	<4.00	<4.00	<4.00	6.50	23.1	8.58
TPH-ORO			mg/kg	<4.00	<4.00	<4.00	<4.00	5.06	11.3
TPH	500	500	mg/kg	0.402	<4.00	<4.00	7.178	33.66	20.169
Benzene	1.2	0.0026 (M)	mg/kg	<0.00100	<0.00100	<0.00100	0.00195	<b>0.00378</b>	<0.00100
Toluene	490	0.69 (M)	mg/kg	<0.00500	<0.00500	<0.00500	<0.00500	0.0121	<0.00500
Ethylbenzene	5.8	0.78 (M)	mg/kg	<0.00250	<0.00250	<0.00250	0.00278	0.0139	<0.00250
Total Xylenes	58	9.9 (M)	mg/kg	<0.00650	<0.00650	<0.00650	0.0242	0.140	<0.00650
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	<0.00500	<0.00500	<0.00500	<b>0.0122</b>	<b>0.129</b>	<0.00500
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	<0.00500	<0.00500	<0.00500	<b>0.0128</b>	<b>0.117</b>	<0.00500
Acenaphthene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Anthracene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
2-methylnaphthalene	24	0.019 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	<b>0.0652</b>	<0.0200
Naphthalene	2	0.0038 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	<b>0.0208</b>	<0.0200
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA

**NOTES:**  
**BOLD** - indicates result exceeds the COGCC residential soil screening level concentrations  
COGCC - Colorado Oil and Gas Conservation Commission  
EC- electrical conductivity  
mg/l - milligrams per liter  
mg/kg - milligrams per kilogram  
mmhos/cm - millimhos per centimeter  
SAR - sodium adsorption ratio  
SU - standard unit  
TPH-ORO - total petroleum hydrocarbons- oil range organics  
TPH-GRO - total petroleum hydrocarbons-gasoline range organics  
TPH-DRO - total petroleum hydrocarbons-diesel range organics  
TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO  
NA - analyte not analyzed  
ND - analyte not detected  
R - risk based  
MCL - maximum contaminant level (M)  
M- based MCL

TABLE 1

SOIL ANALYTICAL RESULTS

YCF 35-33-1

RIO BLANCO, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES					
				20230523-YCF 35-33-1-(SB07)@3-4	20230523-YCF 35-33-1-(SB07)@13-15	20230523-YCF 35-33-1-(SB07)@23-25	20230523-YCF 35-33-1-(SB07)@33-35	20230523-YCF 35-33-1-(SB07)@42-44	20230523-YCF 35-33-1-(SB07)@48-50
Sample Date				5/23/2023	5/23/2023	5/23/2023	5/23/2023	5/23/2023	5/23/2023
Sample Depth /Range (feet)				3-4	13-15	23-25	33-35	42-44	48-50
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	4.96	<1.00	3.23	6.62	4.05	2.81
Barium	15,000	82 (M)	mg/kg	373	<2.50	131	332	98.0	405
Boron	2	2	mg/l	NA	NA	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Selenium	390	0.26 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	NA	NA	NA	NA	NA	NA
SAR	<6	<6	unitless	4.97	1.62	1.62	1.69	1.24	1.76
TPH-GRO			mg/kg	<0.100	<0.100	0.107	<0.100	2.36	<0.100
TPH-DRO			mg/kg	<4.00	<4.00	<4.00	4.12	9.26	10.6
TPH-ORO			mg/kg	<4.00	<4.00	<4.00	<4.00	<4.00	17.8
TPH	500	500	mg/kg	<4.00	<4.00	0.107	4.12	11.62	28.4
Benzene	1.2	0.0026 (M)	mg/kg	<0.00100	<0.00100	<0.00100	<0.00100	0.0157	<0.00100
Toluene	490	0.69 (M)	mg/kg	<0.00500	<0.00500	<0.00500	<0.00500	0.0638	<0.00500
Ethylbenzene	5.8	0.78 (M)	mg/kg	<0.00250	<0.00250	<0.00250	<0.00250	0.00560	<0.00250
Total Xylenes	58	9.9 (M)	mg/kg	<0.00650	<0.00650	<0.00650	<0.00650	0.100	<0.00650
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	<0.00500	<0.00500	<0.00500	<0.00500	0.0345	<0.00500
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	<0.00500	<0.00500	<0.00500	<0.00500	0.0359	<0.00500
Acenaphthene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Anthracene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	NA	NA	NA	NA	NA	NA
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
2-methylnaphthalene	24	0.019 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	0.0288	<0.0200
Naphthalene	2	0.0038 (R)	mg/kg	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA	NA

NOTES:

**BOLD** - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

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TPH-ORO - total petroleum hydrocarbons- oil range organics

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maximum contaminant level (M)

M- based MCL

TABLE 1

SOIL ANALYTICAL RESULTS

YCF 35-33-1

RIO BLANCO, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	BACKGROUND SOIL SAMPLES				
				20230511-YCFBG-(YCF 35-33-1-W)@3-4.5	20230511-YCFBG-(YCF 35-33-1-W)@13-15	20230511-YCFBG-(YCF 35-33-1-W)@23-25	20230511-YCFBG-(YCF 35-33-1-W)@33-35	20230511-YCFBG-(YCF 35-33-1-W)@38-40
Sample Date				5/11/2023	5/11/2023	5/11/2023	5/11/2023	5/11/2023
Sample Depth /Range (feet)				3-4.5	13-15	23-25	33-35	38-40
Sample Type				Background	Background	Background	Background	Background
Arsenic	0.68	0.29 (M)	mg/kg	<b>4.68</b>	<b>7.15</b>	<b>3.32</b>	<b>4.89</b>	<b>5.45</b>
Barium	15,000	82 (M)	mg/kg	<b>509</b>	<b>417</b>	<b>264</b>	<b>322</b>	<b>218</b>
Boron	2	2	mg/l	<0.200	<0.200	<0.200	<0.200	<0.200
Cadmium	71	0.38 (M)	mg/kg	<1.00	<1.00	<1.00	<1.00	<1.00
Chromium (VI)	0.3	0.00067 (R)	mg/kg	<1.00	<1.00	<1.00	<1.00	<1.00
Copper	3,100	46 (M)	mg/kg	11.1	7.01	17.7	18.5	16.7
Lead	400	14 (M)	mg/kg	6.94	5.96	<b>15.2</b>	<b>14.8</b>	13.7
Nickel	1,500	26 (R)	mg/kg	10.9	7.11	18.2	19.5	16.6
Selenium	390	0.26 (M)	mg/kg	<2.50	<2.50	<2.50	<2.50	<2.50
Silver	390	0.8 (R)	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Zinc	23,000	370 (R)	mg/kg	30.0	28.8	51.0	49.7	49.1
EC	<4	<4	mmhos/cm	0.141	0.198	0.183	0.202	0.275
pH	6 - 8.3	6 - 8.3	SU	<b>9.09</b>	<b>9.17</b>	<b>8.77</b>	<b>8.65</b>	<b>8.58</b>
SAR	<6	<6	unitless	1.34	1.28	1.63	1.92	2.02
TPH-GRO			mg/kg	NA	NA	NA	NA	NA
TPH-DRO			mg/kg	NA	NA	NA	NA	NA
TPH-ORO			mg/kg	NA	NA	NA	NA	NA
TPH	500	500	mg/kg	NA	NA	NA	NA	NA
Benzene	1.2	0.0026 (M)	mg/kg	NA	NA	NA	NA	NA
Toluene	490	0.69 (M)	mg/kg	NA	NA	NA	NA	NA
Ethylbenzene	5.8	0.78 (M)	mg/kg	NA	NA	NA	NA	NA
Total Xylenes	58	9.9 (M)	mg/kg	NA	NA	NA	NA	NA
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	NA	NA	NA	NA	NA
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	NA	NA	NA	NA	NA
Acenaphthene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA
Anthracene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	NA	NA	NA	NA	NA
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	NA	NA	NA	NA	NA
2-methylnaphthalene	24	0.019 (R)	mg/kg	NA	NA	NA	NA	NA
Naphthalene	2	0.0038 (R)	mg/kg	NA	NA	NA	NA	NA
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA

NOTES:

**BOLD** - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

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TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maximum contaminant level (M)

M- based MCL

TABLE 1

SOIL ANALYTICAL RESULTS

YCF 35-33-1

RIO BLANCO, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	BACKGROUND SOIL SAMPLES				
				20230511-YCFBG-(YCF 35-33-1- NW)@3-5	20230511-YCFBG-(YCF 35-33-1- NW)@13-15	20230511-YCFBG-(YCF 35-33-1- NW)@23-25	20230511-YCFBG-(YCF 35-33-1- NW)@33-35	20230511-YCFBG-(YCF 35-33-1-W)@38- 40
Sample Date				5/12/2023	5/12/2023	5/12/2023	5/12/2023	5/12/2023
Sample Depth /Range (feet)				3-5	13-15	23-25	33-35	38-40
Sample Type				Background	Background	Background	Background	Background
Arsenic	0.68	0.29 (M)	mg/kg	<b>6.13</b>	<b>2.78</b>	<b>5.17</b>	<b>3.42</b>	<b>3.05</b>
Barium	15,000	82 (M)	mg/kg	<b>290</b>	<b>212</b>	<b>418</b>	<b>138</b>	<b>162</b>
Boron	2	2	mg/l	0.611	0.509	0.510	0.445	0.566
Cadmium	71	0.38 (M)	mg/kg	<1.00	<1.00	<1.00	<1.00	<1.00
Chromium (VI)	0.3	0.00067 (R)	mg/kg	<b>1.36</b>	<1.00	<1.00	<1.00	<1.00
Copper	3,100	46 (M)	mg/kg	30.0	12.6	13.6	14.6	15.8
Lead	400	14 (M)	mg/kg	<b>17.2</b>	12.2	13.4	11.9	12.6
Nickel	1,500	26 (R)	mg/kg	25.0	12.4	16.0	13.5	14.2
Selenium	390	0.26 (M)	mg/kg	<2.50	<2.50	<2.50	<2.50	<2.50
Silver	390	0.8 (R)	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500
Zinc	23,000	370 (R)	mg/kg	56.6	41.6	46.0	42.0	44.2
EC	<4	<4	mmhos/cm	3.530	0.311	0.376	0.229	0.488
pH	6 - 8.3	6 - 8.3	SU	8.13	<b>9.02</b>	<b>9.01</b>	<b>9.10</b>	<b>8.83</b>
SAR	<6	<6	unitless	<b>13.8</b>	4.62	4.99	3.46	3.59
TPH-GRO			mg/kg	NA	NA	NA	NA	NA
TPH-DRO			mg/kg	NA	NA	NA	NA	NA
TPH-ORO			mg/kg	NA	NA	NA	NA	NA
TPH	500	500	mg/kg	NA	NA	NA	NA	NA
Benzene	1.2	0.0026 (M)	mg/kg	NA	NA	NA	NA	NA
Toluene	490	0.69 (M)	mg/kg	NA	NA	NA	NA	NA
Ethylbenzene	5.8	0.78 (M)	mg/kg	NA	NA	NA	NA	NA
Total Xylenes	58	9.9 (M)	mg/kg	NA	NA	NA	NA	NA
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	NA	NA	NA	NA	NA
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	NA	NA	NA	NA	NA
Acenaphthene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA	NA
Anthracene	360	0.55 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	NA	NA	NA	NA	NA
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	NA	NA	NA	NA	NA
2-methylnaphthalene	24	0.019 (R)	mg/kg	NA	NA	NA	NA	NA
Naphthalene	2	0.0038 (R)	mg/kg	NA	NA	NA	NA	NA
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA	NA

NOTES:

**BOLD** - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

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TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maximum contaminant level (M)

M- based MCL



TABLE 2

SOIL ANALYTICAL RESULTS

YCF 35-33-1

RIO BLANCO, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES			
				20220419 - YCF 35-33-1 (POCA)	20220419 - YCF 35-33-1 (POCA) @ 2'	20220419 - YCF 35-33-1 (POCB)	20220419 - YCF 35-33-1 (POCB) @ 2'
Sample Date				4/19/2022	4/19/2022	4/19/2022	4/19/2022
Sample Depth /Range (feet)				1	2	1	2
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	4.45	4.88	4.32	5.13
Barium	15,000	82 (M)	mg/kg	406	408	170	341
Boron	2	2	mg/l	1.06	0.853	0.244	0.437
Cadmium	71	0.38 (M)	mg/kg	ND	ND	ND	ND
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	10.7	10.5	12.5	12.9
Lead	400	14 (M)	mg/kg	6.91	8.08	5.58	7.76
Nickel	1,500	26 (R)	mg/kg	9.43	10.9	17.9	11.8
Selenium	390	0.26 (M)	mg/kg	ND	ND	ND	ND
Silver	390	0.8 (R)	mg/kg	ND	ND	ND	ND
Zinc	23,000	370 (R)	mg/kg	27.0	30.5	26.5	26.8
EC	<4	<4	mmhos/cm	0.743	0.673	0.360	0.418
pH	6 - 8.3	6 - 8.3	SU	7.64	8.05	7.56	7.53
SAR	<6	<6	unitless	4.17	2.70	1.58	0.639
TPH-GRO			mg/kg	3,410	984	0.605	6.40
TPH-DRO			mg/kg	1,880	368	7.30	9.15
TPH-ORO			mg/kg	45.8	12.8	7.04	8.67
TPH	500	500	mg/kg	5,335.8	1,364.8	14.9	24.22
Benzene	1.2	0.0026 (M)	mg/kg	0.931	0.129	ND	ND
Toluene	490	0.69 (M)	mg/kg	90.4	8.28	ND	0.0151
Ethylbenzene	5.8	0.78 (M)	mg/kg	12.6	2.73	ND	0.00473
Total Xylenes	58	9.9 (M)	mg/kg	403	72.1	0.0129	0.133
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	73.0	14.3	ND	0.0294
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	49.2	14.0	0.0261	0.0519
Acenaphthene	1,800	5.8 (R)	mg/kg	0.222	0.0397	ND	ND
Anthracene	360	0.55 (R)	mg/kg	ND	ND	ND	ND
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	ND	ND	ND	ND
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	ND	ND	ND	ND
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	ND	ND	ND	ND
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	ND	ND	ND	ND
Chrysene	110	9 (R)	mg/kg	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	ND	ND	ND	ND
Fluoranthene	240	8.9 (R)	mg/kg	ND	ND	ND	ND
Fluorene	240	0.54 (R)	mg/kg	0.459	0.0840	ND	ND
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	mg/kg	ND	ND	ND	ND
1-methylnaphthalene	18	0.006 (R)	mg/kg	2.67	0.553	ND	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	11.3	1.88	0.0242	ND
Naphthalene	2	0.0038 (R)	mg/kg	4.67	0.767	ND	ND
Pyrene	180	1.3 (R)	mg/kg	ND	ND	ND	ND

NOTES:

**BOLD** - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

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mg/l - milligrams per liter

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TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maximum contaminant level (M)

M - based MCL

TABLE 2

SOIL ANALYTICAL RESULTS

YCF 35-33-1

RIO BLANCO, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES			
				20220419 - YCF 35-33-1 (POCC)	20220419 - YCF 35-33-1 (POCC) @ 2'	20220419 - YCF 35-33-1 (POCD)	20220419 - YCF 35-33-1 (POCD) @ 2'
Sample Date				4/19/2022	4/19/2022	4/19/2022	4/19/2022
Sample Depth /Range (feet)				1	2	1	2
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	<b>2.36</b>	<b>4.45</b>	<b>6.13</b>	<b>4.80</b>
Barium	15,000	82 (M)	mg/kg	81.2	<b>242</b>	<b>389</b>	<b>312</b>
Boron	2	2	mg/l	ND	0.496	0.314	0.482
Cadmium	71	0.38 (M)	mg/kg	ND	ND	ND	ND
Chromium (VI)	0.3	0.00067 (R)	mg/kg	ND	ND	ND	ND
Copper	3,100	46 (M)	mg/kg	6.44	15.5	16.5	16.3
Lead	400	14 (M)	mg/kg	2.89	10.7	9.72	9.88
Nickel	1,500	26 (R)	mg/kg	18.9	14.1	16.6	14.1
Selenium	390	0.26 (M)	mg/kg	ND	ND	ND	ND
Silver	390	0.8 (R)	mg/kg	ND	ND	ND	ND
Zinc	23,000	370 (R)	mg/kg	17.3	34.8	35.4	34.8
EC	<4	<4	mmhos/cm	0.322	0.369	1.840	1.270
pH	6 - 8.3	6 - 8.3	SU	7.76	7.71	7.32	7.80
SAR	<6	<6	unitless	0.743	0.926	3.49	<b>7.76</b>
TPH-GRO			mg/kg	0.169	0.303	3,040	243
TPH-DRO			mg/kg	ND	4.13	2,070	146
TPH-ORO			mg/kg	5.79	5.33	23.1	7.30
TPH	500	500	mg/kg	5.96	9.763	<b>5,133.1</b>	396.30
Benzene	1.2	0.0026 (M)	mg/kg	ND	ND	<b>0.931</b>	ND
Toluene	490	0.69 (M)	mg/kg	ND	ND	<b>62.2</b>	0.0921
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	<b>12.9</b>	0.0449
Total Xylenes	58	9.9 (M)	mg/kg	0.0321	ND	<b>270</b>	4.28
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	ND	ND	<b>57.9</b>	<b>2.31</b>
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	<b>0.0519</b>	<b>0.0219</b>	<b>57.6</b>	<b>4.38</b>
Acenaphthene	1,800	5.8 (R)	mg/kg	ND	ND	0.167	0.0118
Anthracene	360	0.55 (R)	mg/kg	ND	ND	ND	ND
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	ND	ND	ND	ND
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	ND	ND	ND	ND
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	ND	ND	ND	ND
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	ND	ND	ND	ND
Chrysene	110	9 (R)	mg/kg	ND	ND	ND	ND
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	ND	ND	ND	ND
Fluoranthene	240	8.9 (R)	mg/kg	ND	ND	ND	ND
Fluorene	240	0.54 (R)	mg/kg	ND	ND	0.357	0.0263
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	mg/kg	ND	ND	ND	ND
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	<b>2.04</b>	<b>0.210</b>
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	<b>8.67</b>	<b>0.587</b>
Naphthalene	2	0.0038 (R)	mg/kg	ND	<b>0.0217</b>	<b>3.09</b>	<b>0.179</b>
Pyrene	180	1.3 (R)	mg/kg	ND	ND	ND	ND

NOTES:

**BOLD** - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

SU - standard unit

TPH-ORO - total petroleum hydrocarbons- oil range organics

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maximum contaminant level (M)

M - based MCL

TABLE 2

SOIL ANALYTICAL RESULTS

YCF 35-33-1

RIO BLANCO, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES			
				20220601-YCF 35-33-1 (PH01) @ 2'-4'	20220601-YCF 35-33-1 (PH02) @ 4.5'	20220601-YCF 35-33-1 (PH03) @ 2'-4'	20220601-YCF 35-33-1 (PH04) @ 2'
Sample Date				6/1/2022	6/1/2022	6/1/2022	6/1/2022
Sample Depth /Range (feet)				2-4	4.5	2-4	2
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	3.55	5.76	5.15	5.11
Barium	15,000	82 (M)	mg/kg	374	324	443	258
Boron	2	2	mg/l	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	mg/kg	NA	NA	NA	NA
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	NA	NA	NA	NA
Selenium	390	0.26 (M)	mg/kg	NA	NA	NA	NA
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	NA	NA	NA	NA
SAR	<6	<6	unitless	4.61	11.2	3.35	17.0
TPH-GRO			mg/kg	2,060	ND	2,270	0.287
TPH-DRO			mg/kg	2,060	ND	2,890	4.29
TPH-ORO			mg/kg	104	ND	35.8	ND
TPH	500	500	mg/kg	4,224	ND	5,195.8	4.577
Benzene	1.2	0.0026 (M)	mg/kg	0.935	ND	1.52	ND
Toluene	490	0.69 (M)	mg/kg	36.1	ND	40.2	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	9.08	ND	7.10	ND
Total Xylenes	58	9.9 (M)	mg/kg	209	ND	310	0.0192
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	47.4	ND	89.7	0.00587
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	46.1	0.0178	90.8	0.00671
Acenaphthene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA
Anthracene	360	0.55 (R)	mg/kg	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	NA	NA	NA	NA
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	3.18	ND	3.73	ND
2-methylnaphthalene	24	0.019 (R)	mg/kg	12.8	ND	14.7	ND
Naphthalene	2	0.0038 (R)	mg/kg	5.14	ND	6.18	ND
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA

NOTES:

**BOLD** - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

SU - standard unit

TPH-ORO - total petroleum hydrocarbons- oil range organics

TPH-GRO - total petroleum hydrocarbons-gasoline range organics

TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

ND - analyte not detected

R - risk based

MCL - maximum contaminant level (M)

M - based MCL

TABLE 2

SOIL ANALYTICAL RESULTS

YCF 35-33-1

RIO BLANCO, COLORADO

CAERUS PICEANCE LLC

PARAMETER	COGCC RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	COGCC PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	UNITS	CONFIRMATION SOIL SAMPLES			
				20220601-YCF 35-33-1 (PH05) @ 3'	20220601-YCF 35-33-1 (PH07) @ 2.25'	20220601-YCF 35-33-1 (PH07) @ 7'	20220601-YCF 35-33-1 (PH08) @ 1.5'
Sample Date				6/1/2022	6/1/2022	6/1/2022	6/1/2022
Sample Depth /Range (feet)				3	2.25	7	1.5
Sample Type				Confirmation	Confirmation	Confirmation	Confirmation
Arsenic	0.68	0.29 (M)	mg/kg	<b>8.68</b>	<b>8.62</b>	<b>5.15</b>	<b>3.43</b>
Barium	15,000	82 (M)	mg/kg	<b>271</b>	<b>405</b>	<b>389</b>	<b>129</b>
Boron	2	2	mg/l	NA	NA	NA	NA
Cadmium	71	0.38 (M)	mg/kg	NA	NA	NA	NA
Chromium (VI)	0.3	0.00067 (R)	mg/kg	NA	NA	NA	NA
Copper	3,100	46 (M)	mg/kg	NA	NA	NA	NA
Lead	400	14 (M)	mg/kg	NA	NA	NA	NA
Nickel	1,500	26 (R)	mg/kg	NA	NA	NA	NA
Selenium	390	0.26 (M)	mg/kg	NA	NA	NA	NA
Silver	390	0.8 (R)	mg/kg	NA	NA	NA	NA
Zinc	23,000	370 (R)	mg/kg	NA	NA	NA	NA
EC	<4	<4	mmhos/cm	NA	NA	NA	NA
pH	6 - 8.3	6 - 8.3	SU	NA	NA	NA	NA
SAR	<6	<6	unitless	<b>12.6</b>	1.46	3.24	<b>6.94</b>
TPH-GRO			mg/kg	5.25	3.82	0.142	794
TPH-DRO			mg/kg	137	ND	115	127
TPH-ORO			mg/kg	14.3	ND	16.0	9.80
TPH	500	500	mg/kg	156.55	3.82	131.142	<b>930.80</b>
Benzene	1.2	0.0026 (M)	mg/kg	ND	ND	ND	ND
Toluene	490	0.69 (M)	mg/kg	ND	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	mg/kg	ND	ND	ND	ND
Total Xylenes	58	9.9 (M)	mg/kg	0.0634	0.141	ND	<b>29.8</b>
1,2,4-trimethylbenzene	30	0.0081 (R)	mg/kg	<b>0.0689</b>	<b>0.0699</b>	ND	<b>13.6</b>
1,3,5-trimethylbenzene	27	0.0087 (R)	mg/kg	<b>1.19</b>	<b>0.846</b>	<b>0.0149</b>	<b>14.7</b>
Acenaphthene	1,800	5.8 (R)	mg/kg	NA	NA	NA	NA
Anthracene	360	0.55 (R)	mg/kg	NA	NA	NA	NA
Benzo(A)anthracene	1.1	0.011 (R)	mg/kg	NA	NA	NA	NA
Benzo(B)fluoranthene	1.1	0.3 (R)	mg/kg	NA	NA	NA	NA
Benzo(K)fluoranthene	11	2.9 (R)	mg/kg	NA	NA	NA	NA
Benzo(A)pyrene	0.11	0.24 (M)	mg/kg	NA	NA	NA	NA
Chrysene	110	9 (R)	mg/kg	NA	NA	NA	NA
Dibenzo(A,H)anthracene	0.11	0.096 (R)	mg/kg	NA	NA	NA	NA
Fluoranthene	240	8.9 (R)	mg/kg	NA	NA	NA	NA
Fluorene	240	0.54 (R)	mg/kg	NA	NA	NA	NA
Indeno(1,2,3,-cd)pyrene	1.1	0.98 (R)	mg/kg	NA	NA	NA	NA
1-methylnaphthalene	18	0.006 (R)	mg/kg	ND	ND	ND	<b>0.597</b>
2-methylnaphthalene	24	0.019 (R)	mg/kg	ND	ND	ND	<b>1.77</b>
Naphthalene	2	0.0038 (R)	mg/kg	ND	ND	ND	<b>0.407</b>
Pyrene	180	1.3 (R)	mg/kg	NA	NA	NA	NA

NOTES:

**BOLD** - indicates result exceeds the COGCC residential soil screening level concentrations

COGCC - Colorado Oil and Gas Conservation Commission

EC- electrical conductivity

mg/l - milligrams per liter

mg/kg - milligrams per kilogram

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TPH-DRO - total petroleum hydrocarbons-diesel range organics

TPH - combination of TPH-GRO, TPH-DRO, and TPH-ORO

NA - analyte not analyzed

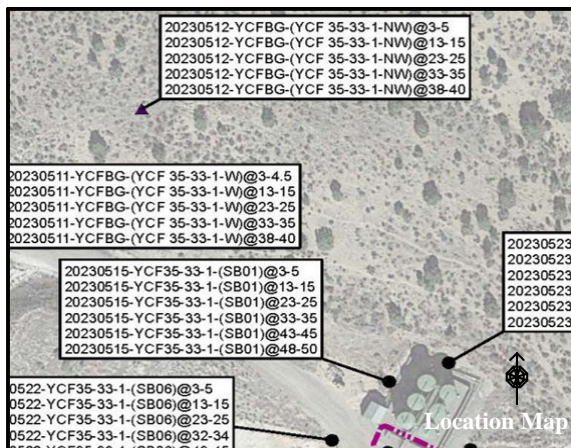
ND - analyte not detected

R - risk based

MCL - maximum contaminant level (M)

M - based MCL

## ENCLOSURE A – SOIL BORING LOGS



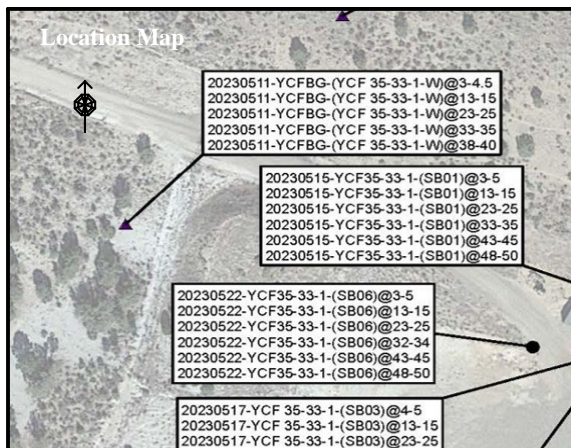
**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

**HOLE DIAMETER:** 3"  
**WELL DIAMETER:** NA  
**CASING TYPE:** NA  
**SCREEN TYPE:** NA

**PROJECT NAME:** YCF 35-33-1  
**PROJECT NO:** 31404550.001  
**BORING/WELL ID:** BG-NW  
**COMPLETION DATE:** 5/12/23  
**TD (ft bgs):** 40'  
**DTW (ft bgs):** NA  
**SCREEN SLOT:** NA  
**CASING LENGTH:** NA  
**SCREEN LENGTH:** NA

**LOGGED BY:** K. Moreland  
**SAMPLE METHOD:** Core - Crush Rock  
**DRILL METHOD:** Air Core  
**DRILLED BY:** Co D&S  
**DETECTOR:** MiniRAE 3000  
**FILTER PACK:** NA  
**ANNULUS SEAL:** Bentonite Chips  
**SURFACE SEAL:** NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.0		dry	BG-NW @3-5'		0				
				100	5	ML		3' - 5' - SILT, light brown, soft, non-plastic, loose trace sands, interbedded weathered sandstone, no staining, no odor.	
6.8		moist		100	10	Sandstone		7' - 10' - SANDSTONE, gray to light brown, weathered, inconsistent oxidation throughout, no staining, no odor.	
10.3		moist		100	15	Sandstone		10' - 15' - SANDSTONE, light brown or red, weathered, iron oxidation throughout, no staining, no odor.	
4.9		moist	BG-NW @13-15'	100	20	Sandstone		15' - 20' - SANDSTONE, light brown or red, weathered, iron oxidation throughout, no staining, no odor.	
3.5		moist		100	25	Sandstone		20' - 25' - SANDSTONE, light brown or red, weathered, iron oxidation throughout, no staining, no odor.	
9.7		moist	BG-NW @23-25'	100	30	Sandstone		25' - 30' - SANDSTONE, light brown or red, weathered with fewer fractures, iron oxidation throughout, no staining, no odor.	
0.2		moist		100	35	Sandstone		30' - 35' - SANDSTONE, light brown or red, hard, weathered with fewer fractures, iron oxidation throughout, no staining, no odor.	
1.4		moist	BG-NW @33-35'	100	40	Sandstone		35' - 40' - SANDSTONE, light brown or red, weathered with fewer fractures, iron oxidation throughout, no staining, no odor.	
			BG-NW @38-40'						



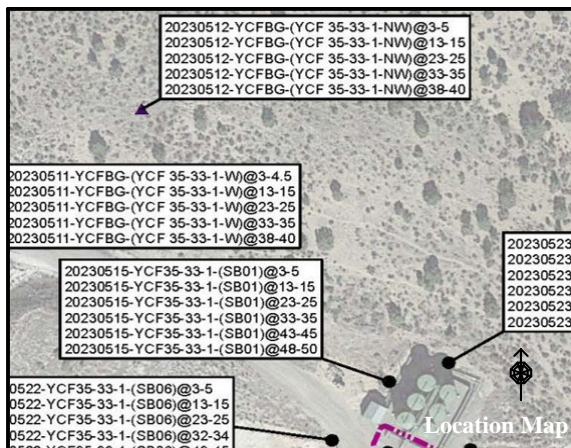
## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

**PROJECT NAME:** YCF 35-33-1  
**PROJECT NO:** 31404550.001 **LOGGED BY:** K. Moreland  
**BORING/WELL ID:** BG-W **SAMPLE METHOD:** Core - Crush Rock  
**COMPLETION DATE:** 5/11/23 **DRILL METHOD:** Air Core  
**TD (ft bgs):** 40' **DRILLED BY:** Co D&S  
**DTW (ft bgs):** NA **DETECTOR:** MiniRAE 3000  
**SCREEN SLOT:** NA **FILTER PACK:** NA  
**CASING LENGTH:** NA **ANNULUS SEAL:** Bentonite Chips  
**SCREEN LENGTH:** NA **SURFACE SEAL:** NA

**HOLE DIAMETER:** 3"  
**WELL DIAMETER:** NA  
**CASING TYPE:** NA  
**SCREEN TYPE:** NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.2		dry	BG-W @3-4.5'	100	0				
					5	Sandstone		3' - 4.5' - SANDSTONE, light gray to brown, fine grained, weathered, no staining, no odor.	
13.2		dry		100	10	Sandstone		7' - 10' - SANDSTONE, light gray to brown, weathering, no staining, no odor.	
8.0				100	15	Sandstone		10' - 15' - SANDSTONE, gray to light brown, weathered, iron oxidation throughout fractures, no staining, no odor.	
12.8		dry	BG-W @13-15'	100	20	Sandstone		15' - 20' - SANDSTONE, gray to light brown, weathered, moist at 18' bgs, dark black to red oxidation throughout fractures, no staining, no odor.	
3.8		moist		100	25	Sandstone		20' - 25' - SANDSTONE, gray to light brown, weathered, moist, dark black to red oxidation throughout fractures, no staining, no odor.	
2.9		moist	BG-W @23-25'	100	30	Sandstone		25' - 30' - SANDSTONE, gray to light brown, weathered, dark black to red oxidation throughout fractures, no staining, no odor.	
8.1		moist		100	35	Sandstone		30' - 35' - SANDSTONE, gray to light brown, weathered, dark black to red oxidation throughout fractures, no staining, no odor.	
6.9		moist	BG-W @33-35'	100	40	Sandstone		35' - 40' - SANDSTONE, gray to light brown, weathered, dark black to red oxidation throughout fractures, interbedded mudstone from 36' to 36.8' bgs, no staining, no odor.	
		moist	BG-W @38-40'						

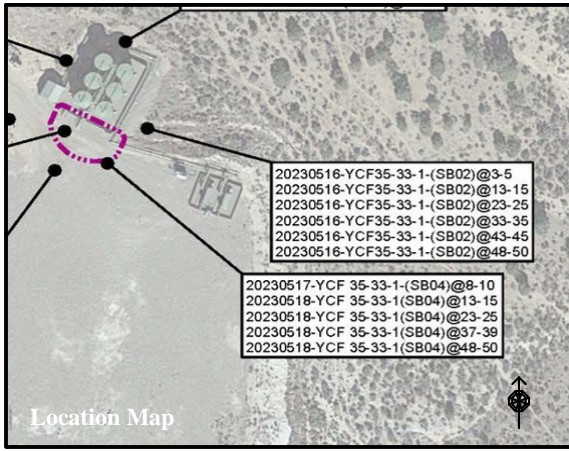




## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

<b>HOLE DIAMETER:</b> 3"	<b>PROJECT NAME:</b> YCF 35-33-1	<b>LOGGED BY:</b> K. Moreland
<b>WELL DIAMETER:</b> NA	<b>PROJECT NO:</b> 31404550.001	<b>SAMPLE METHOD:</b> Core - Crush Rock
<b>CASING TYPE:</b> NA	<b>BORING/WELL ID:</b> SB01	<b>DRILL METHOD:</b> Air Core
<b>SCREEN TYPE:</b> NA	<b>COMPLETION DATE:</b> 5/15/23	<b>DRILLED BY:</b> Co D&S
	<b>TD (ft bgs):</b> 50'	<b>DETECTOR:</b> MiniRAE 3000
	<b>DTW (ft bgs):</b> NA	<b>FILTER PACK:</b> NA
	<b>SCREEN SLOT:</b> NA	<b>ANNULUS SEAL:</b> Bentonite Chips
	<b>CASING LENGTH:</b> NA	<b>SURFACE SEAL:</b> NA
	<b>SCREEN LENGTH:</b> NA	

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
15.2		moist	SB01 @3-5'		0				
2.9		moist			5	Sandstone		3' - 5' - SANDSTONE, brown, fine grained, weathered, iron oxidation throughout, no staining, no odor.	
					10	Sandstone		5' - 10' - SANDSTONE, brown, fine grained, weathered, iron oxidation throughout, no staining, no odor.	
2.1		moist			15	Sandstone		10' - 15' - SANDSTONE, brown, fine grained, weathered, iron oxidation throughout, no staining, no odor.	
12.9		moist	SB01 @13-15'		20	Sandstone		15' - 20' - SANDSTONE, brown, fine grained, weathered, iron oxidation throughout, slight staining within fractures, faint odor.	
127.1		moist			25	Sandstone		20' - 25' - SANDSTONE, brown, fine grained, weathered, iron oxidation throughout, slight staining within fractures, faint odor, solid core from 20.5' to 23' bgs.	
76.8		moist	SB01 @23-25'		30	Sandstone		25' - 30' - SANDSTONE, brown, fine grained, weathered, iron oxidation throughout, staining within fractures, odor, interbedded mudstone from 26.5' to 27.5' bgs.	
119.7		moist			35	Sandstone		30' - 35' - SANDSTONE, brown, fine grained, weathered, iron oxidation throughout, staining and odor in fractures, interbedded mudstone from 33' to 33.9' bgs.	
32.5		moist	SB01 @33-35'		40	Sandstone		35' - 40' - SANDSTONE, brown, fine grained, weathered, iron oxidation throughout, staining and odor in fractures, interbedded mudstone from 36.5' to 40' bgs.	
114.8		moist			45	Sandstone		40' - 45' - SANDSTONE, brown, fine grained, weathered, iron oxidation throughout, staining and odor in fractures, interbedded mudstone from 36.5' to 40' bgs.	
10.8		moist	SB01 @43-45'		50	Sandstone		45' - 50' - SANDSTONE, brown, fine grained, weathered, iron oxidation throughout, staining and odor in fractures from 48' to 49' bgs.	
			SB01 @48-50'						



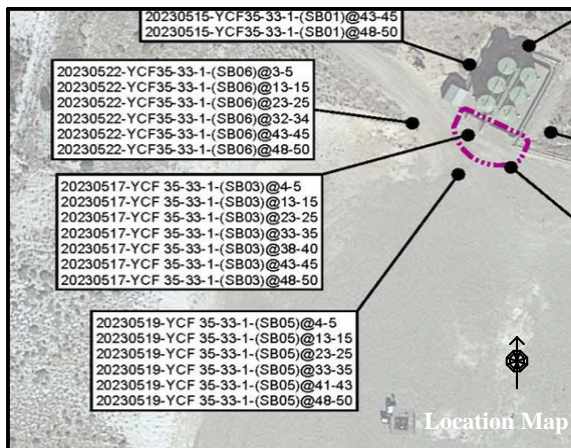
## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

**PROJECT NAME:** YCF 35-33-1  
**PROJECT NO:** 31404550.001  
**BORING/WELL ID:** SB02  
**COMPLETION DATE:** 5/16/23  
**TD (ft bgs):** 50'  
**DTW (ft bgs):** NA  
**SCREEN SLOT:** NA  
**CASING LENGTH:** NA  
**SCREEN LENGTH:** NA

**LOGGED BY:** K. Moreland  
**SAMPLE METHOD:** Core - Crush Rock  
**DRILL METHOD:** Air Core  
**DRILLED BY:** Co D&S  
**DETECTOR:** MiniRAE 3000  
**FILTER PACK:** NA  
**ANNULUS SEAL:** Bentonite Chips  
**SURFACE SEAL:** NA

**HOLE DIAMETER:** 3"  
**WELL DIAMETER:** NA  
**CASING TYPE:** NA  
**SCREEN TYPE:** NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
16.6			SB02 @3-5'	100	0	ML		3' - 5' - SILT, light brown, compact, non-plastic, trace sands, trace weathered sandstone, no staining, no odor.	
1.9				100	5	Sandstone		6' - 10' - SANDSTONE, reddish brown, fine grained, weathered, iron oxidation throughout fractures, no staining, no odor.	
4.7				100	10	Sandstone		10' - 15' - SANDSTONE, reddish brown, fine grained, weathered, iron oxidation throughout fractures, no staining, no odor, mudstone inclusion from 10.5' to 10.7' bgs.	
4.5			SB02 @13-15'	100	15	Sandstone		15' - 20' - SANDSTONE, reddish brown, fine grained, weathered, iron oxidation throughout fractures, no staining, no odor.	
4.3				100	20	Sandstone		20' - 25' - SANDSTONE, reddish brown, fine grained, weathered, iron oxidation throughout fractures, no staining, no odor.	
268.7			SB02 @23-25'	100	25	Sandstone		25' - 30' - SANDSTONE, reddish brown, fine grained, weathered, iron oxidation throughout fractures, staining, odor.	
399.1				100	30	Sandstone		30' - 35' - SANDSTONE, reddish brown, fine grained, weathered, iron oxidation throughout fractures, staining and odor in fractures.	
105.6			SB02 @33-35'	100	35	mudstone		35' - 40' - MUDSTONE, gray, non-plastic, iron oxidation throughout fractures, staining at 35.1' and 35.9' bgs, no odor, sandstone from 35.8' to 36' and 39.8' to 40' bgs.	
23.3				100	40	Mudstone		40' - 45' - MUDSTONE, gray, non-plastic, iron oxidation throughout fractures, staining in sandstone, odor in sandstone, interbedded sandstone from 40.5' to 44' bgs.	
8.7			SB02 @43-45'	100	45	Mudstone		45' - 50' - MUDSTONE, gray, non-plastic, iron oxidation throughout fractures, weathered from 47.7' to 48' bgs and 49' to 49.5' bgs, no staining, odor in weathered areas.	
			SB02 @48-50'	100	50				

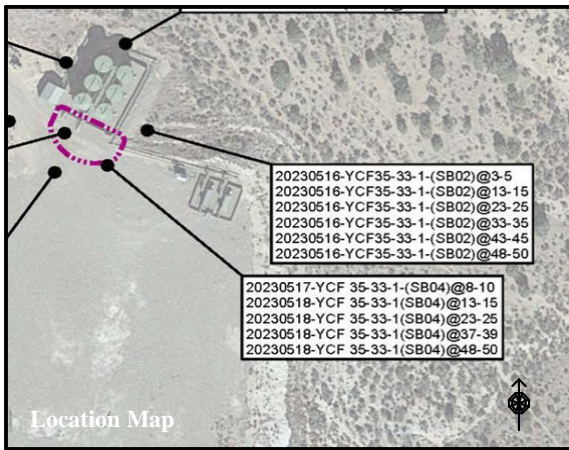


## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

**PROJECT NAME:** YCF 35-33-1  
**PROJECT NO:** 31404550.001 **LOGGED BY:** K. Moreland  
**BORING/WELL ID:** SB03 **SAMPLE METHOD:** Core - Crush Rock  
**COMPLETION DATE:** 5/17/23 **DRILL METHOD:** Air Core  
**TD (ft bgs):** 50' **DRILLED BY:** Co D&S  
**DTW (ft bgs):** NA **DETECTOR:** MiniRAE 3000  
**SCREEN SLOT:** NA **FILTER PACK:** NA  
**CASING LENGTH:** NA **ANNULUS SEAL:** Bentonite Chips  
**SCREEN LENGTH:** NA **SURFACE SEAL:** NA

**HOLE DIAMETER:** 3"  
**WELL DIAMETER:** NA  
**CASING TYPE:** NA  
**SCREEN TYPE:** NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.3			SB03 @4-5'	100	5	Sandstone		3' - 5' - SANDSTONE, light brown, fine grained, weathered, iron oxidation throughout fractures, no staining, no odor.	
29.3				100	10	Sandstone		5' - 10' - SANDSTONE, light brown, fine grained, weathered, iron oxidation throughout fractures, staining and odor in fractures.	
25.9			SB03 @13-15'	100	15	Sandstone		10' - 15' - SANDSTONE, light brown, fine grained, weathered, iron oxidation throughout fractures, staining and odor in fractures.	
8.8				100	20	Sandstone		15' - 20' - SANDSTONE, light brown, fine grained, weathered, iron oxidation throughout fractures, staining and odor in fractures.	
35.4			SB03 @23-25'	100	25	Sandstone		20' - 25' - SANDSTONE, light brown, fine grained, weathered, iron oxidation throughout fractures, staining and odor in fractures.	
237.1				100	30	Sandstone		25' - 30' - SANDSTONE, light brown, fine grained, weathered, iron oxidation throughout fractures, staining and odor in fractures, interbedded mudstone from 29' to 29.4' bgs.	
57.9			SB03 @33-35'	100	35	Sandstone		30' - 35' - SANDSTONE, light brown, fine grained, weathered, iron oxidation throughout fractures, staining and odor in fractures, interbedded mudstone throughout.	
322.8			SB03 @38-40'	100	40	Sandstone		35' - 40' - SANDSTONE, light brown, fine grained, weathered, iron oxidation throughout fractures, staining and odor in fractures, interbedded mudstone throughout.	
113.8			SB03 @43-45'	100	45	Sandstone		40' - 45' - SANDSTONE, light brown, fine grained, weathered, iron oxidation throughout fractures, staining and odor in fractures, interbedded mudstone from 42.2' to 43.5' bgs.	
15.5				100	50	Mudstone		45' - 50' - MUDSTONE, gray, weathered, trace iron oxidation, staining and odor in fractures.	
8.2			SB03 @48-50'						



## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

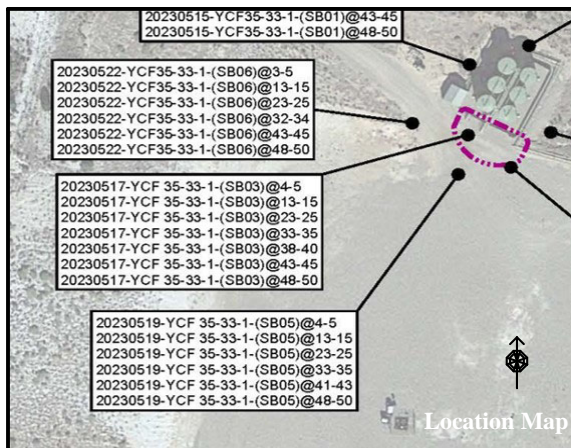
**PROJECT NAME:** YCF 35-33-1  
**PROJECT NO:** 31404550.001  
**BORING/WELL ID:** SB04  
**COMPLETION DATE:** 5/18/23  
**TD (ft bgs):** 50'  
**DTW (ft bgs):** NA  
**SCREEN SLOT:** NA  
**CASING LENGTH:** NA  
**SCREEN LENGTH:** NA

**LOGGED BY:** K. Moreland  
**SAMPLE METHOD:** Core - Crush Rock  
**DRILL METHOD:** Air Core  
**DRILLED BY:** Co D&S  
**DETECTOR:** MiniRAE 3000  
**FILTER PACK:** NA  
**ANNULUS SEAL:** Bentonite Chips  
**SURFACE SEAL:** NA

**HOLE DIAMETER:** 3"  
**WELL DIAMETER:** NA  
**CASING TYPE:** NA  
**SCREEN TYPE:** NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
8.3		moist	SB04 @8-10'	100	0				
130.1		moist	SB04 @13-15'	100	5	Sandstone		6' - 10' - SANDSTONE, light brown, fine grained, weathered and fractured, iron oxidation, no staining, no odor.	
95.1		moist		100	10	Sandstone		10' - 15' - SANDSTONE, light brown, fine grained, weathered at 10.5' bgs, iron oxidation, staining and odor at 15' bgs.	
137.2		moist	SB04 @23-25'	100	15	Sandstone		15' - 20' - SANDSTONE, light brown, fine grained, weathered and fractured, iron oxidation, staining and odor in fractures.	
40.3		moist		100	20	Sandstone		20' - 25' - SANDSTONE, light brown, fine grained, weathered and fractured, iron oxidation, staining and odor in fractures.	
89.1		moist		100	25	Sandstone		25' - 30' - SANDSTONE, light brown, fine grained, weathered and fractured, iron oxidation, staining and odor in fractures, interbedded mudstone throughout.	
268.9		moist	SB04 @37-39'	100	30	Sandstone		30' - 35' - SANDSTONE, light brown, fine grained, weathered and fractured, iron oxidation, staining and odor in fractures.	
19.8		moist		100	35	Sandstone		35' - 40' - SANDSTONE, light brown, fine grained, weathered from 36.5' to 38' bgs, iron oxidation, staining and odor in fractures, interbedded hard mudstone throughout.	
12.5		moist	SB04 @48-50'	100	40	Mudstone		40' - 45' - MUDSTONE, gray, iron oxidation, staining and odor in fractures.	
				100	45	Mudstone		45' - 50' - MUDSTONE, gray, iron oxidation, staining and odor in fractures.	
					50				





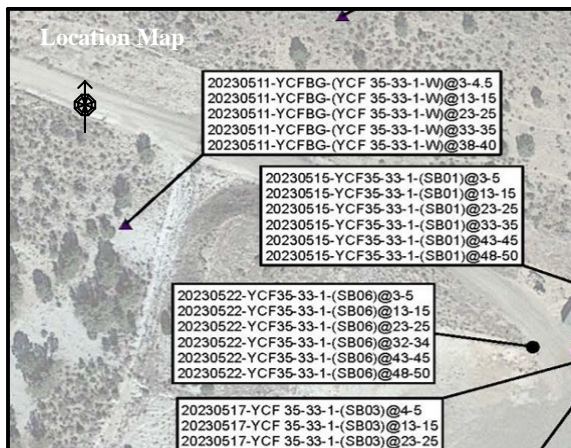
## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

**PROJECT NAME:** YCF 35-33-1  
**PROJECT NO:** 31404550.001  
**BORING/WELL ID:** SB05  
**COMPLETION DATE:** 5/19/23  
**TD (ft bgs):** 50'  
**DTW (ft bgs):** NA  
**SCREEN SLOT:** NA  
**CASING LENGTH:** NA  
**SCREEN LENGTH:** NA

**LOGGED BY:** K. Moreland  
**SAMPLE METHOD:** Core - Crush Rock  
**DRILL METHOD:** Air Core  
**DRILLED BY:** Co D&S  
**DETECTOR:** MiniRAE 3000  
**FILTER PACK:** NA  
**ANNULUS SEAL:** Bentonite Chips  
**SURFACE SEAL:** NA

**HOLE DIAMETER:** 3"  
**WELL DIAMETER:** NA  
**CASING TYPE:** NA  
**SCREEN TYPE:** NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
0.6			SB05 @4-5'		0				
				100	5	Sandstone		4' - 5' - SANDSTONE, light brown, fine grained, loose, weathered, iron oxidation, no staining, no odor.	
0.8				100		Sandstone		5' - 10' - SANDSTONE, light brown, fine grained, loose with increasing firmness at 8' bgs, weathered, iron oxidation, no staining, no odor.	
1.8			SB05 @13-15'		10	Sandstone		10' - 15' - SANDSTONE, light brown, fine grained, weathered, iron oxidation, no staining, no odor.	
1.4				100	15	Sandstone		15' - 20' - SANDSTONE, light brown, fine grained, weathered, iron oxidation, no staining, no odor, thin interbedded mudstone.	
2.1			SB05 @23-25'		20	Sandstone		20' - 25' - SANDSTONE, light brown, fine grained, weathered, iron oxidation throughout, no staining, no odor, mudstone from 20' to 20.5' and 24.5' to 25' bgs.	
1.5				100	25	Sandstone		25' - 30' - SANDSTONE, light brown, fine grained, weathered, iron oxidation throughout, no staining, no odor, mudstone from 25' to 25.4' bgs.	
2.8			SB05 @33-35'		30	Sandstone		30' - 35' - SANDSTONE, light brown, fine grained, weathered, iron oxidation throughout, no staining, odor.	
197.3				100	35	Sandstone		35' - 38.5' - SANDSTONE, light brown, fine grained, weathered, iron oxidation throughout, staining within fractures, staining and odor in fractures from 35.2' to 36.5' bgs.	
285.7			SB05 @41-43'		40	Mudstone		38.5' - 45' - MUDSTONE, light gray, hard, weathered, sandstone from 41.7' to 42.3' bgs, staining and odor throughout.	
21.3			SB05 @48-50'		45	Mudstone		45' - 50' - MUDSTONE, light gray, hard, weathered, some iron oxidation within fractures, no staining, no odor.	
				100	50				



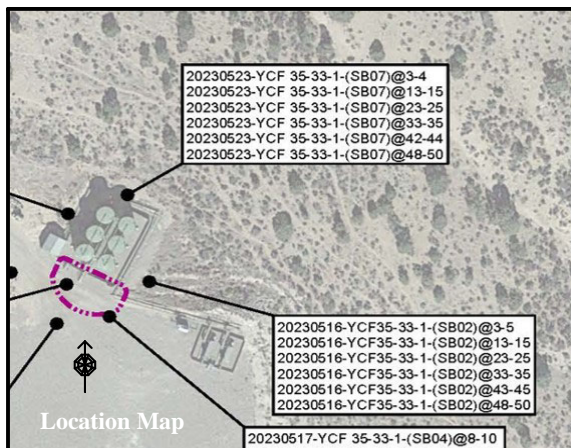
## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

**HOLE DIAMETER:** 3"  
**WELL DIAMETER:** NA  
**CASING TYPE:** NA  
**SCREEN TYPE:** NA

**PROJECT NAME:** YCF 35-33-1  
**PROJECT NO:** 31404550.001  
**BORING/WELL ID:** SB06  
**COMPLETION DATE:** 5/22/23  
**TD (ft bgs):** 50'  
**DTW (ft bgs):** NA  
**SCREEN SLOT:** NA  
**CASING LENGTH:** NA  
**SCREEN LENGTH:** NA

**LOGGED BY:** K. Moreland  
**SAMPLE METHOD:** Core - Crush Rock  
**DRILL METHOD:** Air Core  
**DRILLED BY:** Co D&S  
**DETECTOR:** MiniRAE 3000  
**FILTER PACK:** NA  
**ANNULUS SEAL:** Bentonite Chips  
**SURFACE SEAL:** NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
2.3			SB06 @3-5'	100	0	Sandstone		1.5' - 5' - SANDSTONE, light brown, fine grained, soft, weathered, iron oxidation, no staining, no odor.	
1.7				100	5	Sandstone		5' - 10' - SANDSTONE, light brown, fine grained, soft, weathered, iron oxidation, no staining, no odor.	
1.9			SB06 @13-15'	100	10	Sandstone		10' - 15' - SANDSTONE, light brown, fine grained, weathered, iron oxidation, trace staining at 13.3' bgs, no odor, mudstone layer from 12.8' to 13.3' bgs.	
7.1				100	15	Sandstone		15' - 20' - SANDSTONE, light brown, fine grained, weathered, iron oxidation, staining at 19.3' bgs, odor, mudstone layer from 18.5' to 19.3' bgs.	
36.8			SB06 @23-25'	100	20	Sandstone		20' - 25' - SANDSTONE, light brown, fine grained, weathered, iron oxidation, staining in fractures, odor, interbedded mudstone throughout.	
54.9				100	25	Sandstone		25' - 30' - SANDSTONE, light brown, fine grained, weathered, iron oxidation, staining in fractures, odor, interbedded mudstone throughout.	
126.5			SB06 @32-34'	100	30	Sandstone		30' - 35' - SANDSTONE, light brown, fine grained, weathered, iron oxidation, staining in fractures, odor, mudstone from 31' to 32' bgs.	
19.0				100	35	Sandstone		35' - 40' - SANDSTONE, light brown, fine grained, weathered, iron oxidation, staining in fractures, odor, interbedded mudstone throughout.	
177.2			SB06 @43-45'	100	40	Mudstone		40' - 45' - MUDSTONE, gray, hard, fractured, staining and odor in fractures.	
26.9			SB06 @48-50'	100	45	Mudstone		45' - 50' - MUDSTONE, gray, hard, iron oxidation in fractures, no staining, no odor.	
					50				



## BORING LOG/MONITORING WELL COMPLETION DIAGRAM

**PROJECT NAME:** YCF 35-33-1  
**PROJECT NO:** 31404550.001 **LOGGED BY:** K. Moreland  
**BORING/WELL ID:** SB07 **SAMPLE METHOD:** Core - Crush Rock  
**COMPLETION DATE:** 5/23/23 **DRILL METHOD:** Air Core  
**TD (ft bgs):** 50' **DRILLED BY:** Co D&S  
**DTW (ft bgs):** NA **DETECTOR:** MiniRAE 3000  
**SCREEN SLOT:** NA **FILTER PACK:** NA  
**CASING LENGTH:** NA **ANNULUS SEAL:** Bentonite Chips  
**SCREEN LENGTH:** NA **SURFACE SEAL:** NA

**HOLE DIAMETER:** 3"  
**WELL DIAMETER:** NA  
**CASING TYPE:** NA  
**SCREEN TYPE:** NA

PID (ppm)	Staining	Moisture Content	Sample ID	Recovery (%)	Depth (ft)	USCS	USCS Graphic	Lithology Description	Well Construction
1.5			SB07 @3-4'	100	0	ML		3' - 4' - SILT, light brown, soft, non-plastic, trace loose sands, interbedded weathered sandstone, no staining, no odor.	
1.7				100	5	Sandstone		5' - 10' - SANDSTONE, brown, fine grained, weathered, iron oxidation, no staining, no odor.	
3.6			SB07 @13-15'	100	10	Sandstone		10' - 15' - SANDSTONE, brown, fine grained, weathered, iron oxidation, no staining, no odor.	
3.6				100	15	Sandstone		15' - 20' - SANDSTONE, brown, fine grained, hard, weathered, iron oxidation, mudstone at 17' bgs, no staining, no odor.	
7.8			SB07 @23-25'	100	20	Sandstone		20' - 25' - SANDSTONE, brown, fine grained, weathered, iron oxidation, interbedded mudstone throughout, no staining, no odor.	
3.4				100	25	Sandstone		25' - 30' - SANDSTONE, brown, fine grained, weathered, iron oxidation, interbedded mudstone throughout, no staining, no odor, softer sandstone from 29' to 30' bgs.	
10.1			SB07 @33-35'	100	30	Sandstone		30' - 35' - SANDSTONE, brown, fine grained, weathered, iron oxidation, interbedded mudstone throughout, no staining, no odor.	
6.5				100	35	Sandstone		35' - 40' - SANDSTONE, brown, fine grained, weathered, iron oxidation, interbedded mudstone throughout, staining in fractures, no odor.	
208.3			SB07 @42-44'	100	40	Sandstone		40' - 44' - SANDSTONE, brown, fine grained, weathered, iron oxidation, interbedded mudstone throughout, staining and odor in fractures.	
9.8			SB07 @48-50'	100	45	Mudstone		44' - 50' - MUDSTONE, gray, hard, iron oxidation in fractures, no staining, no odor.	
					50				

## ENCLOSURE B – PHOTO LOG



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
1	May 11, 2023	
20230511-YCFBG-(YCF 35-33-1-W) location overview; View southwest		

Photo No.	Date	
2	May 11, 2023	
YCF 35-33-1 West background soil boring profile at 3-4.5 feet bgs		

# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
3	May 11, 2023	
YCF 35-33-1 West background soil boring profile at 7-10 feet bgs		 <p>A photograph of a soil core sample, labeled '3', showing a series of cylindrical soil segments arranged in a white plastic tray. A red bucket is visible in the background. A handwritten label on the tray reads: 'YCF 35-33-1', 'BG-W', '7-10'', 'D60', 'R 90', and '5/11/23'.</p>

Photo No.	Date	
4	May 11, 2023	
YCF 35-33-1 West background soil boring profile at 10-15 feet bgs		 <p>A photograph of a soil core sample, labeled '4', showing a series of cylindrical soil segments arranged in a white plastic tray. A yellow measuring tape and a yellow digital depth gauge are visible. A handwritten label on the tray reads: 'YCF 35-33-1', 'BG-W', '10-15'', 'D60', 'R 90', and '5/11/23'.</p>



# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

5

Date

May 11, 2023

YCF 35-33-1 West background soil boring profile at 15-20 feet bgs



Photo No.

6

Date

May 11, 2023

YCF 35-33-1 West background soil boring profile at 20-25 feet bgs



# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

Date

7

May 11, 2023

YCF 35-33-1 West background soil boring profile at 25-30 feet bgs



Photo No.

Date

8

May 11, 2023

YCF 35-33-1 West background soil boring profile at 30-35 feet bgs





**PHOTOGRAPHIC LOG**

<b>Caerus Piceance LLC</b>	<b>YCF 35-33-1 Assessment Drilling</b>	<b>31404550.001</b>
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<b>Photo No.</b>	<b>Date</b>	
9	May 11, 2023	
YCF 35-33-1 West background soil boring profile at 35-40 feet bgs		

<b>Photo No.</b>	<b>Date</b>	
10	May 12, 2023	
20230512-YCFBG-(YCF 35-33-1-NW) location overview; View east		

# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

11

Date

May 12, 2023

YCF 35-33-1 Northwest background  
soil boring profile at 3-5 feet bgs



Photo No.

12

Date

May 12, 2023

YCF 35-33-1 Northwest background  
soil boring profile at 7-10 feet bgs






# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
13	May 12, 2023	
YCF 35-33-1 Northwest background soil boring profile at 10-15 feet bgs		

Photo No.	Date	
14	May 12, 2023	
YCF 35-33-1 Northwest background soil boring profile at 15-20 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

Date

15

May 12, 2023

YCF 35-33-1 Northwest background  
soil boring profile at 20-25 feet bgs



Photo No.

Date

16

May 12, 2023

YCF 35-33-1 Northwest background  
soil boring profile at 25-30 feet bgs





**PHOTOGRAPHIC LOG**

<b>Caerus Piceance LLC</b>	<b>YCF 35-33-1 Assessment Drilling</b>	<b>31404550.001</b>
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Photo No.	Date	
17	May 12, 2023	
YCF 35-33-1 Northwest background soil boring profile at 30-35 feet bgs		

Photo No.	Date	
18	May 12, 2023	
YCF 35-33-1 Northwest background soil boring profile at 35-40 feet bgs		

# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
19	May 15, 2023	
20230515-YCF 35-33-1-(SB01) location overview; View northeast		

Photo No.	Date	
20	May 15, 2023	
YCF 35-33-1 Assessment soil boring SB01 profile at 3-5 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
21	May 15, 2023	
YCF 35-33-1 Assessment soil boring SB01 profile at 5-10 feet bgs		

Photo No.	Date	
22	May 15, 2023	
YCF 35-33-1 Assessment soil boring SB01 profile at 10-15 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

23

Date

May 15, 2023

YCF 35-33-1 Assessment soil boring SB01 profile at 15-20 feet bgs



Photo No.

24

Date

May 15, 2023

YCF 35-33-1 Assessment soil boring SB01 profile at 20-25 feet bgs





# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

25

Date

May 15, 2023

YCF 35-33-1 Assessment soil boring SB01 profile at 25-30 feet bgs



Photo No.

26

Date

May 15, 2023

YCF 35-33-1 Assessment soil boring SB01 profile at 30-35 feet bgs





# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
27	May 15, 2023	
YCF 35-33-1 Assessment soil boring SB01 profile at 35-40 feet bgs		

Photo No.	Date	
28	May 15, 2023	
YCF 35-33-1 Assessment soil boring SB01 profile at 40-45 feet bgs		

# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

Date

29

May 15, 2023

YCF 35-33-1 Assessment soil boring SB01 profile at 45-50 feet bgs



Photo No.

Date

30

May 15, 2023

YCF 35-33-1 Assessment soil boring SB01 profile at 45-50 feet bgs close up





# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

Date

31

May 16, 2023

20230516-YCF 35-33-1-(SB02)  
location overview and on-pad hydro  
vacuuming; View northwest



Photo No.

Date

32

May 16, 2023

YCF 35-33-1 Assessment soil  
boring SB02 profile at 3-5 feet bgs





# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
33	May 16, 2023	
YCF 35-33-1 Assessment soil boring SB02 profile at 6-10 feet bgs		

Photo No.	Date	
34	May 16, 2023	
YCF 35-33-1 Assessment soil boring SB02 profile at 10-15 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
35	May 16, 2023	
YCF 35-33-1 Assessment soil boring SB02 profile at 15-20 feet bgs		 A photograph showing a soil core sample (35) from the YCF 35-33-1 Assessment, boring SB02, at a depth of 15-20 feet below ground surface. The core is a long, cylindrical section of soil, approximately 15-20 feet long, resting on a white plastic liner. A yellow measuring tape is placed horizontally across the core to indicate its length. The core is surrounded by various equipment, including a red bucket, a blue bucket, and a white plastic bag. The background shows a gravelly surface.

Photo No.	Date	
36	May 16, 2023	
YCF 35-33-1 Assessment soil boring SB02 profile at 20-25 feet bgs		 A photograph showing a soil core sample (36) from the YCF 35-33-1 Assessment, boring SB02, at a depth of 20-25 feet below ground surface. The core is a long, cylindrical section of soil, approximately 20-25 feet long, resting on a white plastic liner. A yellow measuring tape is placed horizontally across the core to indicate its length. The core is surrounded by various equipment, including a red bucket, a blue bucket, and a white plastic bag. The background shows a gravelly surface.



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
37	May 16, 2023	
YCF 35-33-1 Assessment soil boring SB02 profile at 25-30 feet bgs		

Photo No.	Date	
38	May 16, 2023	
YCF 35-33-1 Assessment soil boring SB02 profile at 30-35 feet bgs		

# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

Date

39

May 16, 2023

YCF 35-33-1 Assessment soil boring SB02 profile at 30-35 feet bgs close up



Photo No.

Date

40

May 16, 2023

YCF 35-33-1 Assessment soil boring SB02 profile at 35-40 feet bgs





# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

Date

41

May 16, 2023

YCF 35-33-1 Assessment soil boring SB02 profile at 40-45 feet bgs



Photo No.

Date

42

May 16, 2023

YCF 35-33-1 Assessment soil boring SB02 profile at 45-50 feet bgs



# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

43

Date

May 17, 2023

20230517-YCF 35-33-1-(SB03)  
location overview; View northeast



Photo No.

44

Date

May 17, 2023

YCF 35-33-1 Assessment soil  
boring SB03 profile at 4-5 feet bgs





PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
45	May 17, 2023	
YCF 35-33-1 Assessment soil boring SB03 profile at 5-10 feet bgs		

Photo No.	Date	
46	May 17, 2023	
YCF 35-33-1 Assessment soil boring SB03 profile at 5-10 feet bgs close up		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
---------------------	---------------------------------	--------------

Photo No.	Date	
47	May 17, 2023	
YCF 35-33-1 Assessment soil boring SB03 profile at 10-15 feet bgs		

Photo No.	Date	
48	May 17, 2023	
YCF 35-33-1 Assessment soil boring SB03 profile at 10-15 feet bgs close up		

# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
---------------------	---------------------------------	--------------

Photo No.	Date	
49	May 17, 2023	
YCF 35-33-1 Assessment soil boring SB03 profile at 15-20 feet bgs		

Photo No.	Date	
50	May 17, 2023	
YCF 35-33-1 Assessment soil boring SB03 profile at 20-25 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

51

Date

May 17, 2023

YCF 35-33-1 Assessment soil boring SB03 profile at 25-30 feet bgs



Photo No.

52

Date

May 17, 2023

YCF 35-33-1 Assessment soil boring SB03 profile at 30-35 feet bgs





# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
---------------------	---------------------------------	--------------

Photo No.	Date	
53	May 17, 2023	
YCF 35-33-1 Assessment soil boring SB03 profile at 30-35 feet bgs close up		

Photo No.	Date	
54	May 17, 2023	
YCF 35-33-1 Assessment soil boring SB03 profile at 35-40 feet bgs		

# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
---------------------	---------------------------------	--------------


Photo No.	Date	
55	May 17, 2023	
YCF 35-33-1 Assessment soil boring SB03 profile at 40-45 feet bgs		

Photo No.	Date	
56	May 17, 2023	
YCF 35-33-1 Assessment soil boring SB03 profile at 40-45 feet bgs close up		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
---------------------	---------------------------------	--------------

Photo No.	Date	
57	May 17, 2023	
YCF 35-33-1 Assessment soil boring SB03 profile at 45-50 feet bgs		


Photo No.	Date	
58	May 18, 2023	
20230518-YCF 35-33-1-(SB04) location overview; View southeast		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
---------------------	---------------------------------	--------------

Photo No.	Date	
59	May 17, 2023	
YCF 35-33-1 Assessment soil boring SB04 profile at 6-10 feet bgs		

Photo No.	Date	
60	May 18, 2023	
YCF 35-33-1 Assessment soil boring SB04 profile at 10-15 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
---------------------	---------------------------------	--------------

Photo No.	Date	
61	May 18, 2023	
YCF 35-33-1 Assessment soil boring SB04 profile at 15-20 feet bgs		

Photo No.	Date	
62	May 18, 2023	
YCF 35-33-1 Assessment soil boring SB04 profile at 20-25 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
---------------------	---------------------------------	--------------

Photo No.	Date	
63	May 18, 2023	
YCF 35-33-1 Assessment soil boring SB04 profile at 20-25 feet bgs close up		

Photo No.	Date	
64	May 18, 2023	
YCF 35-33-1 Assessment soil boring SB04 profile at 25-30 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
---------------------	---------------------------------	--------------

Photo No.	Date	
65	May 18, 2023	
YCF 35-33-1 Assessment soil boring SB04 profile at 30-35 feet bgs		 A photograph of a soil core sample, identified as photo 65, taken on May 18, 2023. The sample is a continuous, light brown soil core, approximately 1.5 meters long, resting on a white, ribbed metal tray. A yellow measuring tape is placed horizontally below the core, showing a length of about 1.5 meters. A hammer is visible on the right side of the tray. A small white label with handwritten text is attached to the top of the core. The background shows a gravelly ground surface.

Photo No.	Date	
66	May 18, 2023	
YCF 35-33-1 Assessment soil boring SB04 profile at 35-40 feet bgs		 A photograph of a soil core sample, identified as photo 66, taken on May 18, 2023. The sample is a continuous, light brown soil core, approximately 1.5 meters long, resting on a white, ribbed metal tray. A yellow measuring tape is placed horizontally below the core, showing a length of about 1.5 meters. A hammer is visible on the right side of the tray. A small white label with handwritten text is attached to the top of the core. The background shows a gravelly ground surface.



# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

67

Date

May 18, 2023

YCF 35-33-1 Assessment soil boring SB04 profile at 40-45 feet bgs



Photo No.

68

Date

May 18, 2023

YCF 35-33-1 Assessment soil boring SB04 profile at 45-50 feet bgs





# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
69	May 19, 2023	
YCF 35-33-1 Assessment soil boring SB05 profile at 4-5 feet bgs		


Photo No.	Date	
70	May 19, 2023	
YCF 35-33-1 Assessment soil boring SB05 profile at 5-10 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
71	May 19, 2023	
YCF 35-33-1 Assessment soil boring SB05 profile at 10-15 feet bgs		

Photo No.	Date	
72	May 19, 2023	
YCF 35-33-1 Assessment soil boring SB05 profile at 15-20 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
73	May 19, 2023	
YCF 35-33-1 Assessment soil boring SB05 profile at 20-25 feet bgs		

Photo No.	Date	
74	May 19, 2023	
YCF 35-33-1 Assessment soil boring SB05 profile at 25-30 feet bgs		

# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
75	May 19, 2023	
YCF 35-33-1 Assessment soil boring SB05 profile at 30-35 feet bgs		


Photo No.	Date	
76	May 19, 2023	
YCF 35-33-1 Assessment soil boring SB05 profile at 35-40 feet bgs		



**PHOTOGRAPHIC LOG**

<b>Caerus Piceance LLC</b>	<b>YCF 35-33-1 Assessment Drilling</b>	<b>31404550.001</b>
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Photo No.	Date	
77	May 19, 2023	
YCF 35-33-1 Assessment soil boring SB05 profile at 35-40 feet bgs close up		

Photo No.	Date	
78	May 19, 2023	
YCF 35-33-1 Assessment soil boring SB05 profile at 40-45 feet bgs		

# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

79

Date

May 19, 2023

YCF 35-33-1 Assessment soil boring SB05 profile at 45-50 feet bgs



Photo No.

80

Date

May 22, 2023

20230522-YCF 35-33-1-(SB06) location overview; View northwest





# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

Date

81

May 22, 2023

YCF 35-33-1 Assessment soil boring SB06 profile at 1.5-5 feet bgs



Photo No.

Date

82

May 22, 2023

YCF 35-33-1 Assessment soil boring SB06 profile at 5-10 feet bgs





# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

83

Date

May 22, 2023

YCF 35-33-1 Assessment soil boring SB06 profile at 10-15 feet bgs



Photo No.

84

Date

May 22, 2023

YCF 35-33-1 Assessment soil boring SB06 profile at 15-20 feet bgs





# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.	Date	
85	May 22, 2023	
YCF 35-33-1 Assessment soil boring SB06 profile at 20-25 feet bgs		

Photo No.	Date	
86	May 22, 2023	
YCF 35-33-1 Assessment soil boring SB06 profile at 25-30 feet bgs		

# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
87	May 22, 2023	
YCF 35-33-1 Assessment soil boring SB06 profile at 25-30 feet bgs close up		

Photo No.	Date	
88	May 22, 2023	
YCF 35-33-1 Assessment soil boring SB06 profile at 30-35 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
89	May 22, 2023	
YCF 35-33-1 Assessment soil boring SB06 profile at 35-40 feet bgs		

Photo No.	Date	
90	May 22, 2023	
YCF 35-33-1 Assessment soil boring SB06 profile at 40-45 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
91	May 22, 2023	
YCF 35-33-1 Assessment soil boring SB06 profile at 45-50 feet bgs		

Photo No.	Date	
92	May 23, 2023	
20230523-YCF 35-33-1-(SB07) location overview; View southeast		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC

YCF 35-33-1 Assessment Drilling

31404550.001

Photo No.

93

Date

May 23, 2023

YCF 35-33-1 Assessment soil boring SB07 profile at 3-4 feet bgs



Photo No.

94

Date

May 23, 2023

YCF 35-33-1 Assessment soil boring SB07 profile at 5-10 feet bgs





# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
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Photo No.	Date	
95	May 23, 2023	
YCF 35-33-1 Assessment soil boring SB07 profile at 10-15 feet bgs		


Photo No.	Date	
96	May 23, 2023	
YCF 35-33-1 Assessment soil boring SB07 profile at 15-20 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
---------------------	---------------------------------	--------------

Photo No.	Date	
97	May 23, 2023	
YCF 35-33-1 Assessment soil boring SB07 profile at 20-25 feet bgs		


Photo No.	Date	
98	May 23, 2023	
YCF 35-33-1 Assessment soil boring SB07 profile at 25-30 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
---------------------	---------------------------------	--------------

Photo No.	Date	
99	May 23, 2023	
YCF 35-33-1 Assessment soil boring SB07 profile at 30-35 feet bgs		


Photo No.	Date	
100	May 23, 2023	
YCF 35-33-1 Assessment soil boring SB07 profile at 35-40 feet bgs		



# PHOTOGRAPHIC LOG

Caerus Piceance LLC	YCF 35-33-1 Assessment Drilling	31404550.001
---------------------	---------------------------------	--------------

Photo No.	Date	
101	May 23, 2023	
YCF 35-33-1 Assessment soil boring SB07 profile at 40-45 feet bgs		

Photo No.	Date	
102	May 23, 2023	
YCF 35-33-1 Assessment soil boring SB07 profile at 45-50 feet bgs		

## ENCLOSURE C – LABORATORY ANALYTICAL REPORTS



**Caerus Oil and Gas**

Sample Delivery Group: L1605150  
Samples Received: 04/13/2023  
Project Number: YCF 35-33-1  
Description: YCF 35-33-1  
Site: 2954  
Report To: Brett M. , Jake J. , Blair R.  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

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

**Pace Analytical National**12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

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20230411-YCFSOURCE-(YCF35-33-1-T) L1605150-03	6
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# SAMPLE SUMMARY

20230411-YCFSOURCE-(YCF35-33-1-T) L1605150-01 WW

Collected by  
K. Moreland

Collected date/time  
04/11/23 10:20

Received date/time  
04/13/23 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 4500H+ B-2011	WG2041799	1	04/15/23 09:32	04/15/23 09:32	DB	Mt. Juliet, TN

20230411-YCFSOURCE-(YCF35-33-1-T) L1605150-03 Solid

Collected by  
K. Moreland

Collected date/time  
04/11/23 10:20

Received date/time  
04/13/23 11:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020	WG2045449	5	04/20/23 08:44	04/20/23 14:42	JPD	Mt. Juliet, TN

<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

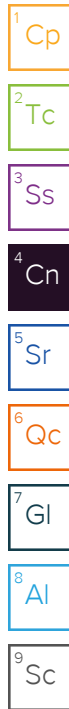
<sup>9</sup>Sc

# 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





Wet Chemistry by Method 4500H+ B-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.41	<a href="#">T8</a>	1	04/15/2023 09:32	<a href="#">WG2041799</a>

Sample Narrative:  
L1605150-01 WG2041799: 7.41 at 21.2C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	U		0.100	1.00	5	04/20/2023 14:42	<a href="#">WG2045449</a>

<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



L1604840-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1604840-04 04/15/23 09:32 • (DUP) R3913571-2 04/15/23 09:32

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	6.91	6.92	1	0.145		1

Sample Narrative:

OS: 6.91 at 20C

DUP: 6.92 at 19.7C

L1604840-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1604840-05 04/15/23 09:32 • (DUP) R3913571-3 04/15/23 09:32

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.82	7.84	1	0.255		1

Sample Narrative:

OS: 7.82 at 19.6C

DUP: 7.84 at 19.7C

Laboratory Control Sample (LCS)

(LCS) R3913571-1 04/15/23 09:32

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

Sample Narrative:

LCS: 10 at 20.3C

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc

Method Blank (MB)

(MB) R3915511-1 04/20/23 14:36

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

Laboratory Control Sample (LCS)

(LCS) R3915511-2 04/20/23 14:39

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	94.0	94.0	80.0-120	

L1605150-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1605150-03 04/20/23 14:42 • (MS) R3915511-5 04/20/23 14:52 • (MSD) R3915511-6 04/20/23 14:56

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	100	U	92.2	89.3	92.2	89.3	5	75.0-125			3.12	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



# 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.
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

T8	Sample(s) received past/too close to holding time expiration.
----	---

<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

# 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.





Condition:  
NCF / OK





May 25, 2023

## Caerus Oil and Gas

Sample Delivery Group: L1617150  
Samples Received: 05/17/2023  
Project Number: YCF 35-33-1  
Description: YCF 35-33-1  
Site: YCF 35-33-1  
Report To: Brett M. , Jake J. , Blair R.  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

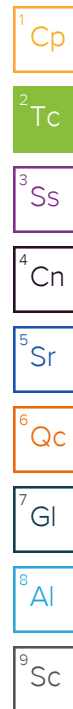
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

**Pace Analytical National**

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

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# SAMPLE SUMMARY

## 20230515-YCF 35-33-1(SB01)@3-5 L1617150-01 Solid

Collected by  
K. Moreland

Collected date/time  
05/15/23 10:00

Received date/time  
05/17/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2062857	1	05/22/23 17:22	05/22/23 17:22	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2062516	1	05/18/23 16:22	05/18/23 20:32	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2062527	5	05/18/23 16:59	05/21/23 21:33	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2066002	1	05/17/23 17:38	05/24/23 20:07	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2065610	1	05/17/23 17:38	05/24/23 12:43	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2063195	1	05/20/23 11:20	05/20/23 18:06	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2063912	1	05/23/23 06:59	05/23/23 15:25	DSH	Mt. Juliet, TN

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

## 20230515-YCF 35-33-1(SB01)@13-15 L1617150-02 Solid

Collected by  
K. Moreland

Collected date/time  
05/15/23 10:40

Received date/time  
05/17/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2062857	1	05/22/23 17:25	05/22/23 17:25	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2062516	1	05/18/23 16:22	05/18/23 20:40	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2062527	5	05/18/23 16:59	05/21/23 21:37	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2066229	1	05/17/23 17:38	05/25/23 07:49	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2065610	1	05/17/23 17:38	05/24/23 13:03	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2063195	1	05/20/23 11:20	05/20/23 18:32	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2063912	1	05/23/23 06:59	05/23/23 15:43	DSH	Mt. Juliet, TN

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

## 20230515-YCF 35-33-1(SB01)@23-25 L1617150-03 Solid

Collected by  
K. Moreland

Collected date/time  
05/15/23 11:30

Received date/time  
05/17/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2062857	1	05/22/23 17:27	05/22/23 17:27	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2062516	1	05/18/23 16:22	05/18/23 20:43	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2062527	5	05/18/23 16:59	05/21/23 21:40	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2066002	1	05/17/23 17:38	05/24/23 22:49	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2065610	1	05/17/23 17:38	05/24/23 13:22	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2063195	1	05/20/23 11:20	05/20/23 18:59	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2063912	1	05/23/23 06:59	05/23/23 16:00	DSH	Mt. Juliet, TN

## 20230515-YCF 35-33-1(SB01)@33-35 L1617150-04 Solid

Collected by  
K. Moreland

Collected date/time  
05/15/23 12:20

Received date/time  
05/17/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2062857	1	05/22/23 17:30	05/22/23 17:30	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2062516	1	05/18/23 16:22	05/18/23 20:46	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2062527	5	05/18/23 16:59	05/21/23 21:50	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2066002	1	05/17/23 17:38	05/24/23 23:12	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2065610	1	05/17/23 17:38	05/24/23 13:42	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2063195	1	05/20/23 11:20	05/20/23 18:46	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2063912	1	05/23/23 06:59	05/23/23 16:18	DSH	Mt. Juliet, TN

## 20230515-YCF 35-33-1(SB01)@43-45 L1617150-05 Solid

Collected by  
K. Moreland

Collected date/time  
05/15/23 13:00

Received date/time  
05/17/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2062857	1	05/22/23 17:33	05/22/23 17:33	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2062516	1	05/18/23 16:22	05/18/23 20:13	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2062527	5	05/18/23 16:59	05/21/23 21:16	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2066002	1	05/17/23 17:38	05/24/23 23:35	AV	Mt. Juliet, TN

# SAMPLE SUMMARY

20230515-YCF 35-33-1-(SB01)@43-45 L1617150-05 Solid

Collected by  
K. Moreland

Collected date/time  
05/15/23 13:00

Received date/time  
05/17/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2065610	1	05/17/23 17:38	05/24/23 14:02	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2063522	1	05/21/23 22:24	05/22/23 07:46	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2063912	1	05/23/23 06:59	05/23/23 16:36	DSH	Mt. Juliet, TN

20230515-YCF 35-33-1-(SB01)@48-50 L1617150-06 Solid

Collected by  
K. Moreland

Collected date/time  
05/15/23 13:30

Received date/time  
05/17/23 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2062857	1	05/22/23 17:35	05/22/23 17:35	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG2062516	1	05/18/23 16:22	05/18/23 20:48	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2062527	5	05/18/23 16:59	05/21/23 21:54	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2066002	1	05/17/23 17:38	05/24/23 23:58	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2065610	1	05/17/23 17:38	05/24/23 14:22	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2063522	1	05/21/23 22:24	05/22/23 07:59	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2063912	1	05/23/23 06:59	05/23/23 16:54	DSH	Mt. Juliet, TN

<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

# 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





## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	12.7		1	05/22/2023 17:22	WG2062857

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	186		0.500	1	05/18/2023 20:32	<a href="#">WG2062516</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.13		1.00	5	05/21/2023 21:33	<a href="#">WG2062527</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/24/2023 20:07	<a href="#">WG2066002</a>
(S) a,a,a-Trifluorotoluene(FID)	95.5		77.0-120		05/24/2023 20:07	<a href="#">WG2066002</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/24/2023 12:43	<a href="#">WG2065610</a>
Toluene	ND		0.00500	1	05/24/2023 12:43	<a href="#">WG2065610</a>
Ethylbenzene	ND		0.00250	1	05/24/2023 12:43	<a href="#">WG2065610</a>
Xylenes, Total	ND		0.00650	1	05/24/2023 12:43	<a href="#">WG2065610</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/24/2023 12:43	<a href="#">WG2065610</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/24/2023 12:43	<a href="#">WG2065610</a>
(S) Toluene-d8	106		75.0-131		05/24/2023 12:43	<a href="#">WG2065610</a>
(S) 4-Bromofluorobenzene	97.3		67.0-138		05/24/2023 12:43	<a href="#">WG2065610</a>
(S) 1,2-Dichloroethane-d4	87.0		70.0-130		05/24/2023 12:43	<a href="#">WG2065610</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/20/2023 18:06	<a href="#">WG2063195</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/20/2023 18:06	<a href="#">WG2063195</a>
(S) o-Terphenyl	60.0		18.0-148		05/20/2023 18:06	<a href="#">WG2063195</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/23/2023 15:25	<a href="#">WG2063912</a>
2-Methylnaphthalene	ND		0.0200	1	05/23/2023 15:25	<a href="#">WG2063912</a>
Naphthalene	ND		0.0200	1	05/23/2023 15:25	<a href="#">WG2063912</a>
(S) p-Terphenyl-d14	65.4		23.0-120		05/23/2023 15:25	<a href="#">WG2063912</a>
(S) Nitrobenzene-d5	76.4		14.0-149		05/23/2023 15:25	<a href="#">WG2063912</a>
(S) 2-Fluorobiphenyl	70.9		34.0-125		05/23/2023 15:25	<a href="#">WG2063912</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	3.35		1	05/22/2023 17:25	WG2062857

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	169		0.500	1	05/18/2023 20:40	<a href="#">WG2062516</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.11		1.00	5	05/21/2023 21:37	<a href="#">WG2062527</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/25/2023 07:49	<a href="#">WG2066229</a>
(S) a,a,a-Trifluorotoluene(FID)	94.4		77.0-120		05/25/2023 07:49	<a href="#">WG2066229</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/24/2023 13:03	<a href="#">WG2065610</a>
Toluene	ND		0.00500	1	05/24/2023 13:03	<a href="#">WG2065610</a>
Ethylbenzene	ND		0.00250	1	05/24/2023 13:03	<a href="#">WG2065610</a>
Xylenes, Total	0.00673		0.00650	1	05/24/2023 13:03	<a href="#">WG2065610</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/24/2023 13:03	<a href="#">WG2065610</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/24/2023 13:03	<a href="#">WG2065610</a>
(S) Toluene-d8	107		75.0-131		05/24/2023 13:03	<a href="#">WG2065610</a>
(S) 4-Bromofluorobenzene	98.6		67.0-138		05/24/2023 13:03	<a href="#">WG2065610</a>
(S) 1,2-Dichloroethane-d4	87.6		70.0-130		05/24/2023 13:03	<a href="#">WG2065610</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/20/2023 18:32	<a href="#">WG2063195</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/20/2023 18:32	<a href="#">WG2063195</a>
(S) o-Terphenyl	54.0		18.0-148		05/20/2023 18:32	<a href="#">WG2063195</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/23/2023 15:43	<a href="#">WG2063912</a>
2-Methylnaphthalene	ND		0.0200	1	05/23/2023 15:43	<a href="#">WG2063912</a>
Naphthalene	ND		0.0200	1	05/23/2023 15:43	<a href="#">WG2063912</a>
(S) p-Terphenyl-d14	77.7		23.0-120		05/23/2023 15:43	<a href="#">WG2063912</a>
(S) Nitrobenzene-d5	82.7		14.0-149		05/23/2023 15:43	<a href="#">WG2063912</a>
(S) 2-Fluorobiphenyl	80.0		34.0-125		05/23/2023 15:43	<a href="#">WG2063912</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	SAR				
Sodium Adsorption Ratio	3.13		1	05/22/2023 17:27	WG2062857

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Barium	166		0.500	1	05/18/2023 20:43	<a href="#">WG2062516</a>

Metals (ICPMS) by Method 6020

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Arsenic	2.51		1.00	5	05/21/2023 21:40	<a href="#">WG2062527</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
TPH (GC/FID) Low Fraction	ND		0.100	1	05/24/2023 22:49	<a href="#">WG2066002</a>
(S) a,a,a-Trifluorotoluene(FID)	93.3		77.0-120		05/24/2023 22:49	<a href="#">WG2066002</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Benzene	ND		0.00100	1	05/24/2023 13:22	<a href="#">WG2065610</a>
Toluene	ND		0.00500	1	05/24/2023 13:22	<a href="#">WG2065610</a>
Ethylbenzene	ND		0.00250	1	05/24/2023 13:22	<a href="#">WG2065610</a>
Xylenes, Total	ND		0.00650	1	05/24/2023 13:22	<a href="#">WG2065610</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/24/2023 13:22	<a href="#">WG2065610</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/24/2023 13:22	<a href="#">WG2065610</a>
(S) Toluene-d8	108		75.0-131		05/24/2023 13:22	<a href="#">WG2065610</a>
(S) 4-Bromofluorobenzene	101		67.0-138		05/24/2023 13:22	<a href="#">WG2065610</a>
(S) 1,2-Dichloroethane-d4	88.6		70.0-130		05/24/2023 13:22	<a href="#">WG2065610</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
C10-C28 Diesel Range	ND		4.00	1	05/20/2023 18:59	<a href="#">WG2063195</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/20/2023 18:59	<a href="#">WG2063195</a>
(S) o-Terphenyl	59.6		18.0-148		05/20/2023 18:59	<a href="#">WG2063195</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
1-Methylnaphthalene	ND		0.0200	1	05/23/2023 16:00	<a href="#">WG2063912</a>
2-Methylnaphthalene	ND		0.0200	1	05/23/2023 16:00	<a href="#">WG2063912</a>
Naphthalene	ND		0.0200	1	05/23/2023 16:00	<a href="#">WG2063912</a>
(S) p-Terphenyl-d14	68.4		23.0-120		05/23/2023 16:00	<a href="#">WG2063912</a>
(S) Nitrobenzene-d5	81.5		14.0-149		05/23/2023 16:00	<a href="#">WG2063912</a>
(S) 2-Fluorobiphenyl	76.9		34.0-125		05/23/2023 16:00	<a href="#">WG2063912</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.53		1	05/22/2023 17:30	WG2062857

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	413		0.500	1	05/18/2023 20:46	<a href="#">WG2062516</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.30		1.00	5	05/21/2023 21:50	<a href="#">WG2062527</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.168	<a href="#">B</a>	0.100	1	05/24/2023 23:12	<a href="#">WG2066002</a>
(S) a,a,a-Trifluorotoluene(FID)	94.0		77.0-120		05/24/2023 23:12	<a href="#">WG2066002</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00155		0.00100	1	05/24/2023 13:42	<a href="#">WG2065610</a>
Toluene	ND		0.00500	1	05/24/2023 13:42	<a href="#">WG2065610</a>
Ethylbenzene	ND		0.00250	1	05/24/2023 13:42	<a href="#">WG2065610</a>
Xylenes, Total	0.0131		0.00650	1	05/24/2023 13:42	<a href="#">WG2065610</a>
1,2,4-Trimethylbenzene	0.00670		0.00500	1	05/24/2023 13:42	<a href="#">WG2065610</a>
1,3,5-Trimethylbenzene	0.00603		0.00500	1	05/24/2023 13:42	<a href="#">WG2065610</a>
(S) Toluene-d8	108		75.0-131		05/24/2023 13:42	<a href="#">WG2065610</a>
(S) 4-Bromofluorobenzene	99.2		67.0-138		05/24/2023 13:42	<a href="#">WG2065610</a>
(S) 1,2-Dichloroethane-d4	91.3		70.0-130		05/24/2023 13:42	<a href="#">WG2065610</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/20/2023 18:46	<a href="#">WG2063195</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/20/2023 18:46	<a href="#">WG2063195</a>
(S) o-Terphenyl	59.3		18.0-148		05/20/2023 18:46	<a href="#">WG2063195</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/23/2023 16:18	<a href="#">WG2063912</a>
2-Methylnaphthalene	ND		0.0200	1	05/23/2023 16:18	<a href="#">WG2063912</a>
Naphthalene	ND		0.0200	1	05/23/2023 16:18	<a href="#">WG2063912</a>
(S) p-Terphenyl-d14	66.9		23.0-120		05/23/2023 16:18	<a href="#">WG2063912</a>
(S) Nitrobenzene-d5	78.2		14.0-149		05/23/2023 16:18	<a href="#">WG2063912</a>
(S) 2-Fluorobiphenyl	72.7		34.0-125		05/23/2023 16:18	<a href="#">WG2063912</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	3.09		1	05/22/2023 17:33	WG2062857

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	212	J3 J6	0.500	1	05/18/2023 20:13	WG2062516

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.79		1.00	5	05/21/2023 21:16	WG2062527

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.123	B	0.100	1	05/24/2023 23:35	WG2066002
(S) a,a,a-Trifluorotoluene(FID)	98.3		77.0-120		05/24/2023 23:35	WG2066002

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/24/2023 14:02	WG2065610
Toluene	ND		0.00500	1	05/24/2023 14:02	WG2065610
Ethylbenzene	ND		0.00250	1	05/24/2023 14:02	WG2065610
Xylenes, Total	ND		0.00650	1	05/24/2023 14:02	WG2065610
1,2,4-Trimethylbenzene	ND		0.00500	1	05/24/2023 14:02	WG2065610
1,3,5-Trimethylbenzene	ND		0.00500	1	05/24/2023 14:02	WG2065610
(S) Toluene-d8	107		75.0-131		05/24/2023 14:02	WG2065610
(S) 4-Bromofluorobenzene	97.6		67.0-138		05/24/2023 14:02	WG2065610
(S) 1,2-Dichloroethane-d4	86.3		70.0-130		05/24/2023 14:02	WG2065610

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/22/2023 07:46	WG2063522
C28-C36 Motor Oil Range	ND		4.00	1	05/22/2023 07:46	WG2063522
(S) o-Terphenyl	43.9		18.0-148		05/22/2023 07:46	WG2063522

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/23/2023 16:36	WG2063912
2-Methylnaphthalene	ND		0.0200	1	05/23/2023 16:36	WG2063912
Naphthalene	ND		0.0200	1	05/23/2023 16:36	WG2063912
(S) p-Terphenyl-d14	68.0		23.0-120		05/23/2023 16:36	WG2063912
(S) Nitrobenzene-d5	76.1		14.0-149		05/23/2023 16:36	WG2063912
(S) 2-Fluorobiphenyl	73.7		34.0-125		05/23/2023 16:36	WG2063912

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	SAR				
Sodium Adsorption Ratio	3.12		1	05/22/2023 17:35	WG2062857

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Barium	136		0.500	1	05/18/2023 20:48	<a href="#">WG2062516</a>

Metals (ICPMS) by Method 6020

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Arsenic	3.48		1.00	5	05/21/2023 21:54	<a href="#">WG2062527</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
TPH (GC/FID) Low Fraction	ND		0.100	1	05/24/2023 23:58	<a href="#">WG2066002</a>
(S) a,a,a-Trifluorotoluene(FID)	93.0		77.0-120		05/24/2023 23:58	<a href="#">WG2066002</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Benzene	0.00295		0.00100	1	05/24/2023 14:22	<a href="#">WG2065610</a>
Toluene	ND		0.00500	1	05/24/2023 14:22	<a href="#">WG2065610</a>
Ethylbenzene	0.00587		0.00250	1	05/24/2023 14:22	<a href="#">WG2065610</a>
Xylenes, Total	0.0112		0.00650	1	05/24/2023 14:22	<a href="#">WG2065610</a>
1,2,4-Trimethylbenzene	0.00603		0.00500	1	05/24/2023 14:22	<a href="#">WG2065610</a>
1,3,5-Trimethylbenzene	0.00877		0.00500	1	05/24/2023 14:22	<a href="#">WG2065610</a>
(S) Toluene-d8	105		75.0-131		05/24/2023 14:22	<a href="#">WG2065610</a>
(S) 4-Bromofluorobenzene	95.1		67.0-138		05/24/2023 14:22	<a href="#">WG2065610</a>
(S) 1,2-Dichloroethane-d4	88.1		70.0-130		05/24/2023 14:22	<a href="#">WG2065610</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
C10-C28 Diesel Range	ND		4.00	1	05/22/2023 07:59	<a href="#">WG2063522</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/22/2023 07:59	<a href="#">WG2063522</a>
(S) o-Terphenyl	38.4		18.0-148		05/22/2023 07:59	<a href="#">WG2063522</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
1-Methylnaphthalene	ND		0.0200	1	05/23/2023 16:54	<a href="#">WG2063912</a>
2-Methylnaphthalene	ND		0.0200	1	05/23/2023 16:54	<a href="#">WG2063912</a>
Naphthalene	ND		0.0200	1	05/23/2023 16:54	<a href="#">WG2063912</a>
(S) p-Terphenyl-d14	65.6		23.0-120		05/23/2023 16:54	<a href="#">WG2063912</a>
(S) Nitrobenzene-d5	72.4		14.0-149		05/23/2023 16:54	<a href="#">WG2063912</a>
(S) 2-Fluorobiphenyl	67.5		34.0-125		05/23/2023 16:54	<a href="#">WG2063912</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3926764-1 05/18/23 20:08

Analyte	MB Result mg/kg	<u>MB Qualifier</u>	MB MDL mg/kg	MB RDL mg/kg
Barium	U		0.0852	0.500

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

Laboratory Control Sample (LCS)

(LCS) R3926764-2 05/18/23 20:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Barium	100	98.5	98.5	80.0-120	

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

L1617150-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1617150-05 05/18/23 20:13 • (MS) R3926764-5 05/18/23 20:21 • (MSD) R3926764-6 05/18/23 20:24

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Barium	100	212	262	208	50.0	0.000	1	75.0-125	<u>J6</u>	<u>J3 J6</u>	22.8	20

Method Blank (MB)

(MB) R3927492-1 05/21/23 21:10

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

Laboratory Control Sample (LCS)

(LCS) R3927492-2 05/21/23 21:13

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	93.7	93.7	80.0-120	

L1617150-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1617150-05 05/21/23 21:16 • (MS) R3927492-5 05/21/23 21:27 • (MSD) R3927492-6 05/21/23 21:30

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	100	4.79	96.4	98.3	91.6	93.5	5	75.0-125			1.94	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3929037-2 05/24/23 15:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0271	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	94.0			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3929037-3 05/24/23 21:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.25	77.3	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			98.8	77.0-120	

<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



Method Blank (MB)

(MB) R3929446-3 05/25/23 07:29

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)	97.8			77.0-120

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

(LCS) R3929446-1 05/25/23 06:07 • (LCSD) R3929446-2 05/25/23 06:28

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 %
TPH (GC/FID) Low Fraction	5.50	6.08	5.30	111	96.4	72.0-127			13.7	20
(S) a,a,a-Trifluorotoluene(FID)				96.6	94.8	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) R3928963-3 05/24/23 08:46

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	112			75.0-131
(S) 4-Bromofluorobenzene	103			67.0-138
(S) 1,2-Dichloroethane-d4	92.0			70.0-130

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

(LCS) R3928963-1 05/24/23 07:28 • (LCSD) R3928963-2 05/24/23 07:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.120	0.122	96.0	97.6	70.0-123			1.65	20
Toluene	0.125	0.112	0.111	89.6	88.8	75.0-121			0.897	20
Ethylbenzene	0.125	0.109	0.110	87.2	88.0	74.0-126			0.913	20
Xylenes, Total	0.375	0.325	0.308	86.7	82.1	72.0-127			5.37	20
1,2,4-Trimethylbenzene	0.125	0.128	0.115	102	92.0	70.0-126			10.7	20
1,3,5-Trimethylbenzene	0.125	0.115	0.112	92.0	89.6	73.0-127			2.64	20
(S) Toluene-d8				104	102	75.0-131				
(S) 4-Bromofluorobenzene				96.8	99.4	67.0-138				
(S) 1,2-Dichloroethane-d4				90.4	98.2	70.0-130				

L1617382-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1617382-02 05/24/23 15:20 • (MS) R3928963-4 05/24/23 15:41 • (MSD) R3928963-5 05/24/23 16:01

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.145	ND	0.110	0.107	88.7	86.3	1	10.0-149			2.76	37
Toluene	0.145	ND	0.103	0.104	83.1	83.9	1	10.0-156			0.966	38
Ethylbenzene	0.145	ND	0.0996	0.102	80.3	82.3	1	10.0-160			2.38	38
Xylenes, Total	0.434	ND	0.298	0.297	80.1	79.8	1	10.0-160			0.336	38
1,2,4-Trimethylbenzene	0.145	ND	0.109	0.110	87.9	88.7	1	10.0-160			0.913	36
1,3,5-Trimethylbenzene	0.145	ND	0.102	0.101	82.3	81.5	1	10.0-160			0.985	38
(S) Toluene-d8					103	106		75.0-131				
(S) 4-Bromofluorobenzene					102	101		67.0-138				
(S) 1,2-Dichloroethane-d4					91.4	86.7		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3927352-1 05/20/23 14:18

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	0.497	⬇	0.274	4.00
(S) o-Terphenyl	59.0			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3927352-2 05/20/23 14:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	38.2	76.4	50.0-150	
(S) o-Terphenyl			81.2	18.0-148	

L1616648-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1616648-01 05/20/23 19:38 • (MS) R3927352-3 05/20/23 19:51 • (MSD) R3927352-4 05/20/23 20:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.0	9.62	38.5	43.1	58.9	67.8	1	50.0-150			11.3	20
(S) o-Terphenyl					75.4	78.1		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3927748-1 05/22/23 07:20

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	45.0			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3927748-2 05/22/23 07:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	32.8	65.6	50.0-150	
(S) o-Terphenyl			70.6	18.0-148	

L1618107-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1618107-05 05/22/23 11:15 • (MS) R3927748-3 05/22/23 11:28 • (MSD) R3927748-4 05/22/23 11:41

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	239	171	233	0.000	0.000	25	50.0-150	V	J3 V	30.7	20
(S) o-Terphenyl					0.000	0.000		18.0-148	J7	J7		

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3928567-2 05/23/23 13:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	89.9			23.0-120
(S) Nitrobenzene-d5	97.5			14.0-149
(S) 2-Fluorobiphenyl	92.1			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3928567-1 05/23/23 13:38

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0739	92.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0763	95.4	50.0-120	
Naphthalene	0.0800	0.0760	95.0	50.0-120	
(S) p-Terphenyl-d14			90.4	23.0-120	
(S) Nitrobenzene-d5			98.0	14.0-149	
(S) 2-Fluorobiphenyl			92.3	34.0-125	

L1617859-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1617859-01 05/23/23 18:59 • (MS) R3928567-3 05/23/23 19:17 • (MSD) R3928567-4 05/23/23 19:35

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 %
1-Methylnaphthalene	0.0788	ND	0.0560	0.0684	71.1	87.2	1	10.0-142			19.9	28
2-Methylnaphthalene	0.0788	ND	0.0580	0.0708	73.6	90.3	1	10.0-137			19.9	28
Naphthalene	0.0788	ND	0.0627	0.0728	79.6	92.9	1	10.0-135			14.9	27
(S) p-Terphenyl-d14					73.4	83.5		23.0-120				
(S) Nitrobenzene-d5					86.0	91.1		14.0-149				
(S) 2-Fluorobiphenyl					77.5	88.1		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

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

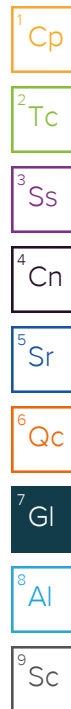
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

## Abbreviations and Definitions

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

## Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
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.





L# 4617150  
B085  
Table #  
Acctnu  
Template:  
Prelogin:  
TSR:  
PB:  
Shipped Via:

Remarks	Sample # (lab only)
	-01
	-02
	-03
	-04
	-05
	-06

**Caerus Oil & Gas LLC**  
143 Diamond Avenue  
Parachute, CO 81635  
970-285-9606

Billing Information:  
Same as above

Report to:  
bmiddleton@caerusoilandgas.com

Email To:  
bmiddleton@caerusoilandgas.com

Project Description:  
YCF 35-33-1

City/State  
Collected: Yellow Creek, CO

Phone:  
Fax:

Client Project #  
YCF 35-33-1  
Lab Project #  
YCF 35-33-1

Collected by (print):  
R. MORELAND

Site/Facility ID #  
YCF 35-33-1  
P.O. #  
YCF 35-33-1

Collected by (signature):  
R. Moreland

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

Date Results Needed  
Standard TAT

Immediately  
Packed on Ice N    Y X

Sample ID	Comp/Grab	Matrix *	Depth'	Date	Time	No. of Cntrs	TPH- GRO, DRO, ORO	BTEX	1&2-methylnaphthalene	SAR	naphthalene	arsenic, barium	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene
20230515-YCF 35-33-1-(SBO1)e3-5	GRAB	SS	3-5	5/15/23	1000	2	X	X	X	X	X	X	X	X
20230515-YCF 35-33-1-(SBO1)e13-15			13-15		1040									
20230515-YCF 35-33-1-(SBO1)e23-25			23-25		1130									
20230515-YCF 35-33-1-(SBO1)e33-35			33-35		1220									
20230515-YCF 35-33-1-(SBO1)e43-45			43-45		1300									
20230515-YCF 35-33-1-(SBO1)e48-50			48-50		1330									

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

Remarks:

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

Samples returned via:  
UPS FedEx Courier

Tracking # 6126 6537 3951

Sample Receipt Checklist  
COC Seal Present/Intact:    NP    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

Relinquished by: (Signature)

Date: 5/16/23 Time: 1200

Received by: (Signature)

Trip Blank Received: Yes/No  
HCL / MeOH  
TBR

Relinquished by: (Signature)

Date: 5/16/23 Time: 1700

Received by: (Signature)

Temp: 15.4°C Bottles Received: 12

Relinquished by: (Signature)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Received for lab by: (Signature)

Date: 5.17.23 Time: 9:30

If preservation required by Login: Date/Time


Hold: Condition:    NCF    OK

May 26, 2023

## Caerus Oil and Gas

Sample Delivery Group: L1617958  
Samples Received: 05/18/2023  
Project Number: YCF 35-33-1  
Description: YCF 35-33-1  
Site: YCF 35-33-1  
Report To: Brett M. , Jake J. , Blair R.  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

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

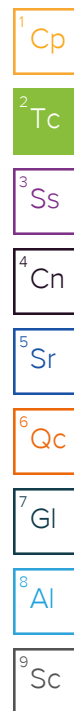
**Pace Analytical National**

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)



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# SAMPLE SUMMARY

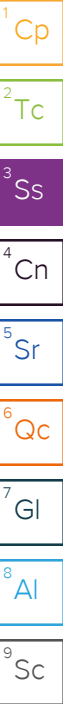
## 20230516.YCF35-33-1-(SB02)@3-5 L1617958-01 Solid

Collected by  
K. Moreland

Collected date/time  
05/16/23 09:00

Received date/time  
05/18/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064145	1	05/25/23 12:40	05/25/23 12:40	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063385	5	05/19/23 17:21	05/21/23 11:23	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063385	50	05/19/23 17:21	05/21/23 13:21	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2064850	1	05/22/23 20:33	05/23/23 13:41	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2065737	1	05/22/23 20:33	05/24/23 13:49	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2065493	1	05/24/23 08:53	05/24/23 21:05	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2065474	1	05/24/23 07:49	05/24/23 14:53	HLA	Mt. Juliet, TN



## 20230516.YCF35-33-1-(SB02)@13-15 L1617958-02 Solid

Collected by  
K. Moreland

Collected date/time  
05/16/23 09:45

Received date/time  
05/18/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064145	1	05/25/23 12:43	05/25/23 12:43	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063385	100	05/19/23 17:21	05/21/23 13:24	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063385	5	05/19/23 17:21	05/21/23 11:27	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2066131	1	05/22/23 20:33	05/25/23 14:38	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2065737	1	05/22/23 20:33	05/24/23 14:09	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2065493	1	05/24/23 08:53	05/24/23 21:45	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2065474	1	05/24/23 07:49	05/24/23 15:11	HLA	Mt. Juliet, TN

## 20230516.YCF35-33-1-(SB02)@23-25 L1617958-03 Solid

Collected by  
K. Moreland

Collected date/time  
05/16/23 10:40

Received date/time  
05/18/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064145	1	05/25/23 12:46	05/25/23 12:46	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063385	20	05/19/23 17:21	05/21/23 13:27	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063385	5	05/19/23 17:21	05/21/23 11:30	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2064850	1	05/22/23 20:33	05/23/23 14:12	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2065737	1	05/22/23 20:33	05/24/23 14:29	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2065493	1	05/24/23 08:53	05/24/23 21:58	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2065500	1	05/24/23 07:51	05/24/23 17:18	DSH	Mt. Juliet, TN

## 20230516.YCF35-33-1-(SB02)@33-35 L1617958-04 Solid

Collected by  
K. Moreland

Collected date/time  
05/16/23 11:30

Received date/time  
05/18/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064145	1	05/25/23 12:48	05/25/23 12:48	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063385	20	05/19/23 17:21	05/21/23 13:31	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063385	5	05/19/23 17:21	05/21/23 11:33	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2065444	1	05/22/23 20:33	05/24/23 16:49	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2065737	1	05/22/23 20:33	05/24/23 14:49	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2065493	1	05/24/23 08:53	05/24/23 21:18	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2065500	1	05/24/23 07:51	05/24/23 17:35	DSH	Mt. Juliet, TN

## 20230516.YCF35-33-1-(SB02)@43-45 L1617958-05 Solid

Collected by  
K. Moreland

Collected date/time  
05/16/23 12:15

Received date/time  
05/18/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064145	1	05/25/23 12:51	05/25/23 12:51	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063385	10	05/19/23 17:21	05/21/23 13:34	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063385	5	05/19/23 17:21	05/21/23 11:36	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2064850	1	05/22/23 20:33	05/23/23 15:21	CDD	Mt. Juliet, TN

# SAMPLE SUMMARY

20230516.YCF35-33-1-(SB02)@43-45 L1617958-05 Solid

Collected by  
K. Moreland

Collected date/time  
05/16/23 12:15

Received date/time  
05/18/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2065737	1	05/22/23 20:33	05/24/23 15:08	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2065493	1	05/24/23 08:53	05/24/23 22:24	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2065500	1	05/24/23 07:51	05/24/23 18:27	DSH	Mt. Juliet, TN

20230516.YCF35-33-1-(SB02)@48-50 L1617958-06 Solid

Collected by  
K. Moreland

Collected date/time  
05/16/23 12:50

Received date/time  
05/18/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064145	1	05/25/23 12:54	05/25/23 12:54	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063385	20	05/19/23 17:21	05/21/23 13:37	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063385	5	05/19/23 17:21	05/21/23 11:40	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2064850	1	05/22/23 20:33	05/23/23 15:44	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2065737	1	05/22/23 20:33	05/24/23 15:28	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2065493	1	05/24/23 08:53	05/24/23 22:37	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2065500	1	05/24/23 07:51	05/24/23 18:45	DSH	Mt. Juliet, TN

<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



# 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	8.15		1	05/25/2023 12:40	WG2064145

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.61		1.00	5	05/21/2023 11:23	<a href="#">WG2063385</a>
Barium	549		25.0	50	05/21/2023 13:21	<a href="#">WG2063385</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/23/2023 13:41	<a href="#">WG2064850</a>
(S) a,a,a-Trifluorotoluene(FID)	95.4		77.0-120		05/23/2023 13:41	<a href="#">WG2064850</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/24/2023 13:49	<a href="#">WG2065737</a>
Toluene	ND		0.00500	1	05/24/2023 13:49	<a href="#">WG2065737</a>
Ethylbenzene	ND		0.00250	1	05/24/2023 13:49	<a href="#">WG2065737</a>
Xylenes, Total	ND		0.00650	1	05/24/2023 13:49	<a href="#">WG2065737</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/24/2023 13:49	<a href="#">WG2065737</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/24/2023 13:49	<a href="#">WG2065737</a>
(S) Toluene-d8	106		75.0-131		05/24/2023 13:49	<a href="#">WG2065737</a>
(S) 4-Bromofluorobenzene	86.9		67.0-138		05/24/2023 13:49	<a href="#">WG2065737</a>
(S) 1,2-Dichloroethane-d4	85.6		70.0-130		05/24/2023 13:49	<a href="#">WG2065737</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/24/2023 21:05	<a href="#">WG2065493</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/24/2023 21:05	<a href="#">WG2065493</a>
(S) o-Terphenyl	28.6		18.0-148		05/24/2023 21:05	<a href="#">WG2065493</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/24/2023 14:53	<a href="#">WG2065474</a>
2-Methylnaphthalene	ND		0.0200	1	05/24/2023 14:53	<a href="#">WG2065474</a>
Naphthalene	ND		0.0200	1	05/24/2023 14:53	<a href="#">WG2065474</a>
(S) p-Terphenyl-d14	74.8		23.0-120		05/24/2023 14:53	<a href="#">WG2065474</a>
(S) Nitrobenzene-d5	67.1		14.0-149		05/24/2023 14:53	<a href="#">WG2065474</a>
(S) 2-Fluorobiphenyl	67.0		34.0-125		05/24/2023 14:53	<a href="#">WG2065474</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	5.75		1	05/25/2023 12:43	WG2064145

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.47		1.00	5	05/21/2023 11:27	<a href="#">WG2063385</a>
Barium	1440		50.0	100	05/21/2023 13:24	<a href="#">WG2063385</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/25/2023 14:38	<a href="#">WG2066131</a>
(S) a,a,a-Trifluorotoluene(FID)	94.3		77.0-120		05/25/2023 14:38	<a href="#">WG2066131</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/24/2023 14:09	<a href="#">WG2065737</a>
Toluene	ND		0.00500	1	05/24/2023 14:09	<a href="#">WG2065737</a>
Ethylbenzene	ND		0.00250	1	05/24/2023 14:09	<a href="#">WG2065737</a>
Xylenes, Total	ND		0.00650	1	05/24/2023 14:09	<a href="#">WG2065737</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/24/2023 14:09	<a href="#">WG2065737</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/24/2023 14:09	<a href="#">WG2065737</a>
(S) Toluene-d8	104		75.0-131		05/24/2023 14:09	<a href="#">WG2065737</a>
(S) 4-Bromofluorobenzene	85.5		67.0-138		05/24/2023 14:09	<a href="#">WG2065737</a>
(S) 1,2-Dichloroethane-d4	89.2		70.0-130		05/24/2023 14:09	<a href="#">WG2065737</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/24/2023 21:45	<a href="#">WG2065493</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/24/2023 21:45	<a href="#">WG2065493</a>
(S) o-Terphenyl	30.8		18.0-148		05/24/2023 21:45	<a href="#">WG2065493</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/24/2023 15:11	<a href="#">WG2065474</a>
2-Methylnaphthalene	ND		0.0200	1	05/24/2023 15:11	<a href="#">WG2065474</a>
Naphthalene	ND		0.0200	1	05/24/2023 15:11	<a href="#">WG2065474</a>
(S) p-Terphenyl-d14	37.7		23.0-120		05/24/2023 15:11	<a href="#">WG2065474</a>
(S) Nitrobenzene-d5	38.4		14.0-149		05/24/2023 15:11	<a href="#">WG2065474</a>
(S) 2-Fluorobiphenyl	37.4		34.0-125		05/24/2023 15:11	<a href="#">WG2065474</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	3.43		1	05/25/2023 12:46	WG2064145

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.54		1.00	5	05/21/2023 11:30	<a href="#">WG2063385</a>
Barium	384		10.0	20	05/21/2023 13:27	<a href="#">WG2063385</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/23/2023 14:12	<a href="#">WG2064850</a>
(S) a,a,a-Trifluorotoluene(FID)	92.2		77.0-120		05/23/2023 14:12	<a href="#">WG2064850</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/24/2023 14:29	<a href="#">WG2065737</a>
Toluene	ND		0.00500	1	05/24/2023 14:29	<a href="#">WG2065737</a>
Ethylbenzene	ND		0.00250	1	05/24/2023 14:29	<a href="#">WG2065737</a>
Xylenes, Total	ND		0.00650	1	05/24/2023 14:29	<a href="#">WG2065737</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/24/2023 14:29	<a href="#">WG2065737</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/24/2023 14:29	<a href="#">WG2065737</a>
(S) Toluene-d8	108		75.0-131		05/24/2023 14:29	<a href="#">WG2065737</a>
(S) 4-Bromofluorobenzene	86.0		67.0-138		05/24/2023 14:29	<a href="#">WG2065737</a>
(S) 1,2-Dichloroethane-d4	89.3		70.0-130		05/24/2023 14:29	<a href="#">WG2065737</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/24/2023 21:58	<a href="#">WG2065493</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/24/2023 21:58	<a href="#">WG2065493</a>
(S) o-Terphenyl	36.3		18.0-148		05/24/2023 21:58	<a href="#">WG2065493</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/24/2023 17:18	<a href="#">WG2065500</a>
2-Methylnaphthalene	ND		0.0200	1	05/24/2023 17:18	<a href="#">WG2065500</a>
Naphthalene	ND		0.0200	1	05/24/2023 17:18	<a href="#">WG2065500</a>
(S) p-Terphenyl-d14	56.4		23.0-120		05/24/2023 17:18	<a href="#">WG2065500</a>
(S) Nitrobenzene-d5	42.4		14.0-149		05/24/2023 17:18	<a href="#">WG2065500</a>
(S) 2-Fluorobiphenyl	55.9		34.0-125		05/24/2023 17:18	<a href="#">WG2065500</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.00		1	05/25/2023 12:48	WG2064145

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.99		1.00	5	05/21/2023 11:33	<a href="#">WG2063385</a>
Barium	301		10.0	20	05/21/2023 13:31	<a href="#">WG2063385</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.121	<a href="#">B</a>	0.100	1	05/24/2023 16:49	<a href="#">WG2065444</a>
(S) a,a,a-Trifluorotoluene(FID)	93.8		77.0-120		05/24/2023 16:49	<a href="#">WG2065444</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/24/2023 14:49	<a href="#">WG2065737</a>
Toluene	ND		0.00500	1	05/24/2023 14:49	<a href="#">WG2065737</a>
Ethylbenzene	ND		0.00250	1	05/24/2023 14:49	<a href="#">WG2065737</a>
Xylenes, Total	ND		0.00650	1	05/24/2023 14:49	<a href="#">WG2065737</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/24/2023 14:49	<a href="#">WG2065737</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/24/2023 14:49	<a href="#">WG2065737</a>
(S) Toluene-d8	107		75.0-131		05/24/2023 14:49	<a href="#">WG2065737</a>
(S) 4-Bromofluorobenzene	86.0		67.0-138		05/24/2023 14:49	<a href="#">WG2065737</a>
(S) 1,2-Dichloroethane-d4	85.9		70.0-130		05/24/2023 14:49	<a href="#">WG2065737</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/24/2023 21:18	<a href="#">WG2065493</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/24/2023 21:18	<a href="#">WG2065493</a>
(S) o-Terphenyl	47.2		18.0-148		05/24/2023 21:18	<a href="#">WG2065493</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/24/2023 17:35	<a href="#">WG2065500</a>
2-Methylnaphthalene	ND		0.0200	1	05/24/2023 17:35	<a href="#">WG2065500</a>
Naphthalene	ND		0.0200	1	05/24/2023 17:35	<a href="#">WG2065500</a>
(S) p-Terphenyl-d14	71.6		23.0-120		05/24/2023 17:35	<a href="#">WG2065500</a>
(S) Nitrobenzene-d5	50.8		14.0-149		05/24/2023 17:35	<a href="#">WG2065500</a>
(S) 2-Fluorobiphenyl	66.4		34.0-125		05/24/2023 17:35	<a href="#">WG2065500</a>

<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	3.60		1	05/25/2023 12:51	WG2064145

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.06		1.00	5	05/21/2023 11:36	<a href="#">WG2063385</a>
Barium	144		5.00	10	05/21/2023 13:34	<a href="#">WG2063385</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/23/2023 15:21	<a href="#">WG2064850</a>
(S) a,a,a-Trifluorotoluene(FID)	91.9		77.0-120		05/23/2023 15:21	<a href="#">WG2064850</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00273		0.00100	1	05/24/2023 15:08	<a href="#">WG2065737</a>
Toluene	ND		0.00500	1	05/24/2023 15:08	<a href="#">WG2065737</a>
Ethylbenzene	ND		0.00250	1	05/24/2023 15:08	<a href="#">WG2065737</a>
Xylenes, Total	ND		0.00650	1	05/24/2023 15:08	<a href="#">WG2065737</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/24/2023 15:08	<a href="#">WG2065737</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/24/2023 15:08	<a href="#">WG2065737</a>
(S) Toluene-d8	106		75.0-131		05/24/2023 15:08	<a href="#">WG2065737</a>
(S) 4-Bromofluorobenzene	85.8		67.0-138		05/24/2023 15:08	<a href="#">WG2065737</a>
(S) 1,2-Dichloroethane-d4	86.6		70.0-130		05/24/2023 15:08	<a href="#">WG2065737</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.19		4.00	1	05/24/2023 22:24	<a href="#">WG2065493</a>
C28-C36 Motor Oil Range	11.3		4.00	1	05/24/2023 22:24	<a href="#">WG2065493</a>
(S) o-Terphenyl	50.3		18.0-148		05/24/2023 22:24	<a href="#">WG2065493</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/24/2023 18:27	<a href="#">WG2065500</a>
2-Methylnaphthalene	ND		0.0200	1	05/24/2023 18:27	<a href="#">WG2065500</a>
Naphthalene	ND		0.0200	1	05/24/2023 18:27	<a href="#">WG2065500</a>
(S) p-Terphenyl-d14	66.7		23.0-120		05/24/2023 18:27	<a href="#">WG2065500</a>
(S) Nitrobenzene-d5	53.5		14.0-149		05/24/2023 18:27	<a href="#">WG2065500</a>
(S) 2-Fluorobiphenyl	67.7		34.0-125		05/24/2023 18:27	<a href="#">WG2065500</a>

1  
Cp2  
Tc3  
Ss4  
Cn5  
Sr6  
Qc7  
Gl8  
Al9  
Sc



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.49		1	05/25/2023 12:54	WG2064145

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.41		1.00	5	05/21/2023 11:40	<a href="#">WG2063385</a>
Barium	244		10.0	20	05/21/2023 13:37	<a href="#">WG2063385</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/23/2023 15:44	<a href="#">WG2064850</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	92.0		77.0-120		05/23/2023 15:44	<a href="#">WG2064850</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/24/2023 15:28	<a href="#">WG2065737</a>
Toluene	ND		0.00500	1	05/24/2023 15:28	<a href="#">WG2065737</a>
Ethylbenzene	ND		0.00250	1	05/24/2023 15:28	<a href="#">WG2065737</a>
Xylenes, Total	ND		0.00650	1	05/24/2023 15:28	<a href="#">WG2065737</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/24/2023 15:28	<a href="#">WG2065737</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/24/2023 15:28	<a href="#">WG2065737</a>
(S) <i>Toluene-d8</i>	104		75.0-131		05/24/2023 15:28	<a href="#">WG2065737</a>
(S) <i>4</i> -Bromofluorobenzene	83.1		67.0-138		05/24/2023 15:28	<a href="#">WG2065737</a>
(S) <i>1,2</i> -Dichloroethane- <i>d4</i>	87.9		70.0-130		05/24/2023 15:28	<a href="#">WG2065737</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	8.79		4.00	1	05/24/2023 22:37	<a href="#">WG2065493</a>
C28-C36 Motor Oil Range	18.1		4.00	1	05/24/2023 22:37	<a href="#">WG2065493</a>
(S) <i>o</i> -Terphenyl	50.9		18.0-148		05/24/2023 22:37	<a href="#">WG2065493</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/24/2023 18:45	<a href="#">WG2065500</a>
2-Methylnaphthalene	ND		0.0200	1	05/24/2023 18:45	<a href="#">WG2065500</a>
Naphthalene	ND		0.0200	1	05/24/2023 18:45	<a href="#">WG2065500</a>
(S) <i>p</i> -Terphenyl- <i>d14</i>	61.5		23.0-120		05/24/2023 18:45	<a href="#">WG2065500</a>
(S) Nitrobenzene- <i>d5</i>	51.0		14.0-149		05/24/2023 18:45	<a href="#">WG2065500</a>
(S) <i>2</i> -Fluorobiphenyl	65.5		34.0-125		05/24/2023 18:45	<a href="#">WG2065500</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3927384-1 05/21/23 10:40

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50

Laboratory Control Sample (LCS)

(LCS) R3927384-2 05/21/23 10:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	102	102	80.0-120	
Barium	100	100	100	80.0-120	

L1617920-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1617920-02 05/21/23 10:47 • (MS) R3927384-6 05/21/23 10:57 • (MSD) R3927384-7 05/21/23 11:00

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	12.5	122	119	110	107	5	75.0-125			2.80	20
Barium	100	53.3	179	182	126	128	5	75.0-125	E J5	E J5	1.58	20

<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) R3928290-3 05/23/23 11:22

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)	92.9			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3928290-2 05/23/23 10:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.12	93.1	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			101	77.0-120	

<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



Method Blank (MB)

(MB) R3929035-2 05/24/23 15:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0271	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	94.0			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3929035-3 05/24/23 21:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.25	77.3	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			98.8	77.0-120	

<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

Method Blank (MB)

(MB) R3929445-3 05/25/23 07:29

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)	97.8			77.0-120

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

(LCS) R3929445-1 05/25/23 06:07 • (LCSD) R3929445-2 05/25/23 06:28

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 %
TPH (GC/FID) Low Fraction	5.50	6.08	5.30	111	96.4	72.0-127			13.7	20
(S) a,a,a-Trifluorotoluene(FID)				96.6	94.8	77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3929429-2 05/24/23 10:32

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	106			75.0-131
(S) 4-Bromofluorobenzene	82.1			67.0-138
(S) 1,2-Dichloroethane-d4	90.2			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3929429-1 05/24/23 09:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.111	88.8	70.0-123	
Toluene	0.125	0.108	86.4	75.0-121	
Ethylbenzene	0.125	0.107	85.6	74.0-126	
Xylenes, Total	0.375	0.301	80.3	72.0-127	
1,2,4-Trimethylbenzene	0.125	0.0982	78.6	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.108	86.4	73.0-127	
(S) Toluene-d8			103	75.0-131	
(S) 4-Bromofluorobenzene			90.6	67.0-138	
(S) 1,2-Dichloroethane-d4			99.5	70.0-130	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3929126-1 05/24/23 15:52

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	50.0			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3929126-2 05/24/23 16:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	25.4	50.8	50.0-150	
(S) o-Terphenyl			56.8	18.0-148	

L1617881-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1617881-01 05/24/23 17:02 • (MS) R3929126-3 05/24/23 17:15 • (MSD) R3929126-4 05/24/23 17:28

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	43.5	1370	657	1250	0.000	0.000	100	50.0-150	V	J3 V	62.2	20
(S) o-Terphenyl					79.6	129		18.0-148	J7	J7		

Sample Narrative:

OS: Dilution due to matrix.

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc

Method Blank (MB)

(MB) R3928925-2 05/24/23 12:12

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	73.7			23.0-120
(S) Nitrobenzene-d5	60.9			14.0-149
(S) 2-Fluorobiphenyl	67.1			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3928925-1 05/24/23 11:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0553	69.1	51.0-121	
2-Methylnaphthalene	0.0800	0.0577	72.1	50.0-120	
Naphthalene	0.0800	0.0555	69.4	50.0-120	
(S) p-Terphenyl-d14			65.7	23.0-120	
(S) Nitrobenzene-d5			67.4	14.0-149	
(S) 2-Fluorobiphenyl			65.8	34.0-125	

L1619013-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1619013-01 05/24/23 12:30 • (MS) R3928925-3 05/24/23 12:48 • (MSD) R3928925-4 05/24/23 13:06

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 %
1-Methylnaphthalene	0.0784	0.935	0.637	0.782	0.000	0.000	1	10.0-142	V	V	20.4	28
2-Methylnaphthalene	0.0784	1.64	1.10	1.14	0.000	0.000	1	10.0-137	V	V	3.57	28
Naphthalene	0.0784	1.66	1.11	1.19	0.000	0.000	1	10.0-135	V	V	6.96	27
(S) p-Terphenyl-d14					41.2	44.8		23.0-120				
(S) Nitrobenzene-d5					36.5	42.9		14.0-149				
(S) 2-Fluorobiphenyl					39.7	46.0		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3929198-2 05/24/23 12:40

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	84.4			23.0-120
(S) Nitrobenzene-d5	59.7			14.0-149
(S) 2-Fluorobiphenyl	78.5			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3929198-1 05/24/23 12:23

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0697	87.1	51.0-121	
2-Methylnaphthalene	0.0800	0.0709	88.6	50.0-120	
Naphthalene	0.0800	0.0661	82.6	50.0-120	
(S) p-Terphenyl-d14			88.7	23.0-120	
(S) Nitrobenzene-d5			71.5	14.0-149	
(S) 2-Fluorobiphenyl			86.6	34.0-125	

L1617958-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1617958-04 05/24/23 17:35 • (MS) R3929198-3 05/24/23 17:52 • (MSD) R3929198-4 05/24/23 18:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1-Methylnaphthalene	0.0780	ND	0.0549	0.0527	70.4	67.9	1	10.0-142			4.09	28
2-Methylnaphthalene	0.0780	ND	0.0561	0.0538	71.9	69.3	1	10.0-137			4.19	28
Naphthalene	0.0780	ND	0.0513	0.0492	65.8	63.4	1	10.0-135			4.18	27
(S) p-Terphenyl-d14					80.9	68.0		23.0-120				
(S) Nitrobenzene-d5					58.3	52.7		14.0-149				
(S) 2-Fluorobiphenyl					72.1	66.0		34.0-125				

1  
Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc



# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

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

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

## Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
V	The sample concentration is too high to evaluate accurate spike recoveries.

<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

# ACCREDITATIONS & LOCATIONS

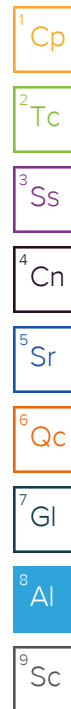
## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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 & Gas LLC  
143 Diamond Avenue  
Parachute, CO 81635  
970-285-9606

Billing Information:

Same as above

Pres  
Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Report to:  
bmiddleton@caerusoilandgas.com

Email To:  
bmiddleton@caerusoilandgas.com

Project  
Description: YCF 35-33-1

City/State  
Collected: Yellow Creek, CO

Phone:  
Fax: Client Project #  
YCF 35-33-1

Lab Project #  
YCF 35-33-1

Collected by (print):  
K. MORELAND

Site/Facility ID #  
YCF 35-33-1

P.O. #  
YCF 35-33-1

Collected by (signature):

Rush? (Lab MUST Be Notified)

Quote #

Immediately

Same Day Five Day  
Next Day 5 Day (Rad Only)  
Two Day 10 Day (Rad Only)  
Three Day

Date Results Needed

Standard TAT

No.  
of  
Cnts

Sample ID

Comp/Grab

Matrix \*

Depth

Date

Time

TPH- GRO, DRO, ORO

BTEX

1&2-methylnaphthalene

SAR

naphthalene

arsenic, barium

1,2,4-trimethylbenzene

1,3,5-trimethylbenzene

L #

L617958

T

H055

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Remarks

Sample # (lab only)

20230510-YCF 35-33-1-(SB02)E3-5

GRAB

SS

3-5

5/10/23

900

2

X

X

X

X

X

X

X

X

-02

20230510-YCF 35-33-1-(SB02)E13-15

13-15

945

-03

20230510-YCF 35-33-1-(SB02)E23-25

23-25

1040

-04

20230510-YCF 35-33-1-(SB02)E33-35

33-35

1130

-05

20230510-YCF 35-33-1-(SB02)E43-45

43-45

1215

-06

20230510-YCF 35-33-1-(SB02)E48-50

48-50

1250

-06

\* Matrix:

SS - Soil AIR - Air F - Filter  
GW - Groundwater B - Bioassay  
WW - Waste Water  
DW - Drinking Water  
OT - Other

Remarks:

Samples returned via:

UPS FedEx Courier

pH Temp

Flow 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

Relinquished by: (Signature)

K. Moreland

Date:

5/10/23

Time:

1145

Received by: (Signature)

[Signature]

Trip Blank Received: Yes ☒ No

HCL / MeOH  
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: 25.4°C  
2.0 to 2.0 12

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

[Signature]

Date: 5/18/23

Time: 0915

Hold:

Condition:  
NCF / OK



**Caerus Oil and Gas**

Sample Delivery Group: L1618445  
Samples Received: 05/20/2023  
Project Number: YCF 35-33-1  
Description: YCF 35-33-1  
Site: YCF 35-33-1  
Report To: Brett M. , Jake J. , Blair R.  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

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

**Pace Analytical National**12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

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20230517-YCF 35-33-1-(SB03)@13-15 L1618445-02	7
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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

## 20230517-YCF 35-33-1-(SB03)@4-5 L1618445-01 Solid

Collected by K. Moreland  
Collected date/time 05/17/23 08:15  
Received date/time 05/20/23 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064145	1	05/25/23 13:07	05/25/23 13:07	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063875	5	05/21/23 15:53	05/25/23 02:09	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2064850	1	05/23/23 01:36	05/23/23 16:31	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2066801	1	05/23/23 01:36	05/26/23 04:52	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067216	1	05/26/23 16:45	05/27/23 01:21	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066278	1	05/25/23 07:30	05/25/23 19:14	JRM	Mt. Juliet, TN

## 20230517-YCF 35-33-1-(SB03)@13-15 L1618445-02 Solid

Collected by K. Moreland  
Collected date/time 05/17/23 08:55  
Received date/time 05/20/23 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064145	1	05/25/23 13:10	05/25/23 13:10	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063875	5	05/21/23 15:53	05/25/23 02:13	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2065444	1	05/23/23 01:36	05/24/23 17:23	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2066801	1	05/23/23 01:36	05/26/23 05:11	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067216	1	05/26/23 16:45	05/27/23 01:34	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066278	1	05/25/23 07:30	05/25/23 19:31	JRM	Mt. Juliet, TN

## 20230517-YCF 35-33-1-(SB03)@23-25 L1618445-03 Solid

Collected by K. Moreland  
Collected date/time 05/17/23 09:45  
Received date/time 05/20/23 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064145	1	05/25/23 13:12	05/25/23 13:12	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063875	5	05/21/23 15:53	05/25/23 01:19	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2064850	1	05/23/23 01:36	05/23/23 17:17	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2066801	1	05/23/23 01:36	05/26/23 05:30	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067216	1	05/26/23 16:45	05/27/23 01:52	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066278	1	05/25/23 07:30	05/25/23 19:49	JRM	Mt. Juliet, TN

## 20230517-YCF 35-33-1-(SB03)@33-35 L1618445-04 Solid

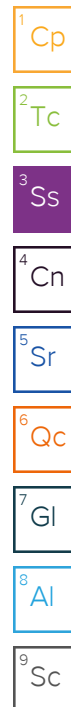
Collected by K. Moreland  
Collected date/time 05/17/23 10:35  
Received date/time 05/20/23 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064145	1	05/25/23 13:15	05/25/23 13:15	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063875	5	05/21/23 15:53	05/25/23 01:22	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2064850	1	05/23/23 01:36	05/23/23 17:40	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2066801	1	05/23/23 01:36	05/26/23 05:49	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067216	1	05/26/23 16:45	05/27/23 07:44	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066278	1	05/25/23 07:30	05/25/23 20:06	JRM	Mt. Juliet, TN

## 20230517-YCF 35-33-1-(SB03)@38-40 L1618445-05 Solid

Collected by K. Moreland  
Collected date/time 05/17/23 10:55  
Received date/time 05/20/23 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064145	1	05/25/23 13:18	05/25/23 13:18	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063875	5	05/21/23 15:53	05/25/23 01:26	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2064850	1	05/23/23 01:36	05/23/23 18:03	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2066801	1	05/23/23 01:36	05/26/23 06:08	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067216	1	05/26/23 16:45	05/27/23 07:57	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066278	1	05/25/23 07:30	05/25/23 20:23	JRM	Mt. Juliet, TN





# SAMPLE SUMMARY

20230517-YCF 35-33-1-(SB03)@43-45 L1618445-06 Solid

Collected by  
K. Moreland

Collected date/time  
05/17/23 11:10

Received date/time  
05/20/23 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064145	1	05/25/23 13:21	05/25/23 13:21	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063875	5	05/21/23 15:53	05/25/23 01:29	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2064850	1	05/23/23 01:36	05/23/23 18:27	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2066801	1	05/23/23 01:36	05/26/23 06:27	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067216	1	05/26/23 16:45	05/27/23 08:36	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066278	1	05/25/23 07:30	05/25/23 20:41	JRM	Mt. Juliet, TN

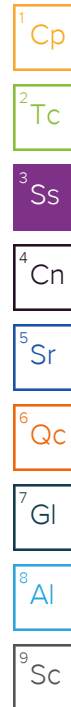
20230517-YCF 35-33-1-(SB03)@48-50 L1618445-07 Solid

Collected by  
K. Moreland

Collected date/time  
05/17/23 11:35

Received date/time  
05/20/23 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064145	1	05/25/23 13:24	05/25/23 13:24	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063875	5	05/21/23 15:53	05/25/23 01:32	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2064850	1	05/23/23 01:36	05/23/23 18:50	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2066801	1	05/23/23 01:36	05/26/23 06:46	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067216	1	05/26/23 16:45	05/27/23 10:07	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066278	1	05/25/23 07:30	05/25/23 20:58	JRM	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



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	14.1		1	05/25/2023 13:07	WG2064145

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.74		1.00	5	05/25/2023 02:09	<a href="#">WG2063875</a>
Barium	628		2.50	5	05/25/2023 02:09	<a href="#">WG2063875</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/23/2023 16:31	<a href="#">WG2064850</a>
(S) a,a,a-Trifluorotoluene(FID)	93.0		77.0-120		05/23/2023 16:31	<a href="#">WG2064850</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/26/2023 04:52	<a href="#">WG2066801</a>
Toluene	ND		0.00500	1	05/26/2023 04:52	<a href="#">WG2066801</a>
Ethylbenzene	ND		0.00250	1	05/26/2023 04:52	<a href="#">WG2066801</a>
Xylenes, Total	ND		0.00650	1	05/26/2023 04:52	<a href="#">WG2066801</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/26/2023 04:52	<a href="#">WG2066801</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/26/2023 04:52	<a href="#">WG2066801</a>
(S) Toluene-d8	108		75.0-131		05/26/2023 04:52	<a href="#">WG2066801</a>
(S) 4-Bromofluorobenzene	97.3		67.0-138		05/26/2023 04:52	<a href="#">WG2066801</a>
(S) 1,2-Dichloroethane-d4	111		70.0-130		05/26/2023 04:52	<a href="#">WG2066801</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/27/2023 01:21	<a href="#">WG2067216</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/27/2023 01:21	<a href="#">WG2067216</a>
(S) o-Terphenyl	46.5		18.0-148		05/27/2023 01:21	<a href="#">WG2067216</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/25/2023 19:14	<a href="#">WG2066278</a>
2-Methylnaphthalene	ND		0.0200	1	05/25/2023 19:14	<a href="#">WG2066278</a>
Naphthalene	ND		0.0200	1	05/25/2023 19:14	<a href="#">WG2066278</a>
(S) p-Terphenyl-d14	44.8		23.0-120		05/25/2023 19:14	<a href="#">WG2066278</a>
(S) Nitrobenzene-d5	52.0		14.0-149		05/25/2023 19:14	<a href="#">WG2066278</a>
(S) 2-Fluorobiphenyl	41.5		34.0-125		05/25/2023 19:14	<a href="#">WG2066278</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	8.32		1	05/25/2023 13:10	WG2064145

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.90		1.00	5	05/25/2023 02:13	<a href="#">WG2063875</a>
Barium	149		2.50	5	05/25/2023 02:13	<a href="#">WG2063875</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.119	<a href="#">B</a>	0.100	1	05/24/2023 17:23	<a href="#">WG2065444</a>
(S) a,a,a-Trifluorotoluene(FID)	93.0		77.0-120		05/24/2023 17:23	<a href="#">WG2065444</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/26/2023 05:11	<a href="#">WG2066801</a>
Toluene	ND		0.00500	1	05/26/2023 05:11	<a href="#">WG2066801</a>
Ethylbenzene	ND		0.00250	1	05/26/2023 05:11	<a href="#">WG2066801</a>
Xylenes, Total	ND		0.00650	1	05/26/2023 05:11	<a href="#">WG2066801</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/26/2023 05:11	<a href="#">WG2066801</a>
1,3,5-Trimethylbenzene	0.0128		0.00500	1	05/26/2023 05:11	<a href="#">WG2066801</a>
(S) Toluene-d8	105		75.0-131		05/26/2023 05:11	<a href="#">WG2066801</a>
(S) 4-Bromofluorobenzene	94.6		67.0-138		05/26/2023 05:11	<a href="#">WG2066801</a>
(S) 1,2-Dichloroethane-d4	109		70.0-130		05/26/2023 05:11	<a href="#">WG2066801</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/27/2023 01:34	<a href="#">WG2067216</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/27/2023 01:34	<a href="#">WG2067216</a>
(S) o-Terphenyl	45.5		18.0-148		05/27/2023 01:34	<a href="#">WG2067216</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/25/2023 19:31	<a href="#">WG2066278</a>
2-Methylnaphthalene	ND		0.0200	1	05/25/2023 19:31	<a href="#">WG2066278</a>
Naphthalene	ND		0.0200	1	05/25/2023 19:31	<a href="#">WG2066278</a>
(S) p-Terphenyl-d14	72.5		23.0-120		05/25/2023 19:31	<a href="#">WG2066278</a>
(S) Nitrobenzene-d5	77.2		14.0-149		05/25/2023 19:31	<a href="#">WG2066278</a>
(S) 2-Fluorobiphenyl	64.5		34.0-125		05/25/2023 19:31	<a href="#">WG2066278</a>

<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	4.29		1	05/25/2023 13:12	WG2064145

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.35		1.00	5	05/25/2023 01:19	<a href="#">WG2063875</a>
Barium	341		2.50	5	05/25/2023 01:19	<a href="#">WG2063875</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/23/2023 17:17	<a href="#">WG2064850</a>
(S) a,a,a-Trifluorotoluene(FID)	92.7		77.0-120		05/23/2023 17:17	<a href="#">WG2064850</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/26/2023 05:30	<a href="#">WG2066801</a>
Toluene	ND		0.00500	1	05/26/2023 05:30	<a href="#">WG2066801</a>
Ethylbenzene	ND		0.00250	1	05/26/2023 05:30	<a href="#">WG2066801</a>
Xylenes, Total	ND		0.00650	1	05/26/2023 05:30	<a href="#">WG2066801</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/26/2023 05:30	<a href="#">WG2066801</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/26/2023 05:30	<a href="#">WG2066801</a>
(S) Toluene-d8	108		75.0-131		05/26/2023 05:30	<a href="#">WG2066801</a>
(S) 4-Bromofluorobenzene	98.2		67.0-138		05/26/2023 05:30	<a href="#">WG2066801</a>
(S) 1,2-Dichloroethane-d4	109		70.0-130		05/26/2023 05:30	<a href="#">WG2066801</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND	<a href="#">J6</a>	4.00	1	05/27/2023 01:52	<a href="#">WG2067216</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/27/2023 01:52	<a href="#">WG2067216</a>
(S) o-Terphenyl	41.9		18.0-148		05/27/2023 01:52	<a href="#">WG2067216</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/25/2023 19:49	<a href="#">WG2066278</a>
2-Methylnaphthalene	ND		0.0200	1	05/25/2023 19:49	<a href="#">WG2066278</a>
Naphthalene	ND		0.0200	1	05/25/2023 19:49	<a href="#">WG2066278</a>
(S) p-Terphenyl-d14	70.4		23.0-120		05/25/2023 19:49	<a href="#">WG2066278</a>
(S) Nitrobenzene-d5	78.0		14.0-149		05/25/2023 19:49	<a href="#">WG2066278</a>
(S) 2-Fluorobiphenyl	63.8		34.0-125		05/25/2023 19:49	<a href="#">WG2066278</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.05		1	05/25/2023 13:15	WG2064145

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.20		1.00	5	05/25/2023 01:22	<a href="#">WG2063875</a>
Barium	316		2.50	5	05/25/2023 01:22	<a href="#">WG2063875</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.174		0.100	1	05/23/2023 17:40	<a href="#">WG2064850</a>
(S) a,a,a-Trifluorotoluene(FID)	92.8		77.0-120		05/23/2023 17:40	<a href="#">WG2064850</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/26/2023 05:49	<a href="#">WG2066801</a>
Toluene	ND		0.00500	1	05/26/2023 05:49	<a href="#">WG2066801</a>
Ethylbenzene	ND		0.00250	1	05/26/2023 05:49	<a href="#">WG2066801</a>
Xylenes, Total	0.0192		0.00650	1	05/26/2023 05:49	<a href="#">WG2066801</a>
1,2,4-Trimethylbenzene	0.0129		0.00500	1	05/26/2023 05:49	<a href="#">WG2066801</a>
1,3,5-Trimethylbenzene	0.0128		0.00500	1	05/26/2023 05:49	<a href="#">WG2066801</a>
(S) Toluene-d8	106		75.0-131		05/26/2023 05:49	<a href="#">WG2066801</a>
(S) 4-Bromofluorobenzene	96.9		67.0-138		05/26/2023 05:49	<a href="#">WG2066801</a>
(S) 1,2-Dichloroethane-d4	109		70.0-130		05/26/2023 05:49	<a href="#">WG2066801</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.92		4.00	1	05/27/2023 07:44	<a href="#">WG2067216</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/27/2023 07:44	<a href="#">WG2067216</a>
(S) o-Terphenyl	49.4		18.0-148		05/27/2023 07:44	<a href="#">WG2067216</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/25/2023 20:06	<a href="#">WG2066278</a>
2-Methylnaphthalene	0.0269		0.0200	1	05/25/2023 20:06	<a href="#">WG2066278</a>
Naphthalene	0.0293		0.0200	1	05/25/2023 20:06	<a href="#">WG2066278</a>
(S) p-Terphenyl-d14	64.7		23.0-120		05/25/2023 20:06	<a href="#">WG2066278</a>
(S) Nitrobenzene-d5	62.7		14.0-149		05/25/2023 20:06	<a href="#">WG2066278</a>
(S) 2-Fluorobiphenyl	55.2		34.0-125		05/25/2023 20:06	<a href="#">WG2066278</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	3.04		1	05/25/2023 13:18	WG2064145

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.63		1.00	5	05/25/2023 01:26	<a href="#">WG2063875</a>
Barium	357		2.50	5	05/25/2023 01:26	<a href="#">WG2063875</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.561		0.100	1	05/23/2023 18:03	<a href="#">WG2064850</a>
(S) a,a,a-Trifluorotoluene(FID)	93.1		77.0-120		05/23/2023 18:03	<a href="#">WG2064850</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/26/2023 06:08	<a href="#">WG2066801</a>
Toluene	ND		0.00500	1	05/26/2023 06:08	<a href="#">WG2066801</a>
Ethylbenzene	ND		0.00250	1	05/26/2023 06:08	<a href="#">WG2066801</a>
Xylenes, Total	0.0191		0.00650	1	05/26/2023 06:08	<a href="#">WG2066801</a>
1,2,4-Trimethylbenzene	0.0369		0.00500	1	05/26/2023 06:08	<a href="#">WG2066801</a>
1,3,5-Trimethylbenzene	0.0296		0.00500	1	05/26/2023 06:08	<a href="#">WG2066801</a>
(S) Toluene-d8	105		75.0-131		05/26/2023 06:08	<a href="#">WG2066801</a>
(S) 4-Bromofluorobenzene	101		67.0-138		05/26/2023 06:08	<a href="#">WG2066801</a>
(S) 1,2-Dichloroethane-d4	111		70.0-130		05/26/2023 06:08	<a href="#">WG2066801</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	13.3		4.00	1	05/27/2023 07:57	<a href="#">WG2067216</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/27/2023 07:57	<a href="#">WG2067216</a>
(S) o-Terphenyl	46.0		18.0-148		05/27/2023 07:57	<a href="#">WG2067216</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	0.0239		0.0200	1	05/25/2023 20:23	<a href="#">WG2066278</a>
2-Methylnaphthalene	0.0882		0.0200	1	05/25/2023 20:23	<a href="#">WG2066278</a>
Naphthalene	0.0919		0.0200	1	05/25/2023 20:23	<a href="#">WG2066278</a>
(S) p-Terphenyl-d14	71.1		23.0-120		05/25/2023 20:23	<a href="#">WG2066278</a>
(S) Nitrobenzene-d5	93.1		14.0-149		05/25/2023 20:23	<a href="#">WG2066278</a>
(S) 2-Fluorobiphenyl	65.1		34.0-125		05/25/2023 20:23	<a href="#">WG2066278</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	1.65		1	05/25/2023 13:21	WG2064145

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.16		1.00	5	05/25/2023 01:29	<a href="#">WG2063875</a>
Barium	186		2.50	5	05/25/2023 01:29	<a href="#">WG2063875</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.224		0.100	1	05/23/2023 18:27	<a href="#">WG2064850</a>
(S) a,a,a-Trifluorotoluene(FID)	92.8		77.0-120		05/23/2023 18:27	<a href="#">WG2064850</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00160		0.00100	1	05/26/2023 06:27	<a href="#">WG2066801</a>
Toluene	0.0101		0.00500	1	05/26/2023 06:27	<a href="#">WG2066801</a>
Ethylbenzene	ND		0.00250	1	05/26/2023 06:27	<a href="#">WG2066801</a>
Xylenes, Total	0.0294		0.00650	1	05/26/2023 06:27	<a href="#">WG2066801</a>
1,2,4-Trimethylbenzene	0.0128		0.00500	1	05/26/2023 06:27	<a href="#">WG2066801</a>
1,3,5-Trimethylbenzene	0.0113		0.00500	1	05/26/2023 06:27	<a href="#">WG2066801</a>
(S) Toluene-d8	107		75.0-131		05/26/2023 06:27	<a href="#">WG2066801</a>
(S) 4-Bromofluorobenzene	94.7		67.0-138		05/26/2023 06:27	<a href="#">WG2066801</a>
(S) 1,2-Dichloroethane-d4	112		70.0-130		05/26/2023 06:27	<a href="#">WG2066801</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	7.97		4.00	1	05/27/2023 08:36	<a href="#">WG2067216</a>
C28-C36 Motor Oil Range	4.97		4.00	1	05/27/2023 08:36	<a href="#">WG2067216</a>
(S) o-Terphenyl	50.0		18.0-148		05/27/2023 08:36	<a href="#">WG2067216</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/25/2023 20:41	<a href="#">WG2066278</a>
2-Methylnaphthalene	0.0507		0.0200	1	05/25/2023 20:41	<a href="#">WG2066278</a>
Naphthalene	0.0968		0.0200	1	05/25/2023 20:41	<a href="#">WG2066278</a>
(S) p-Terphenyl-d14	62.2		23.0-120		05/25/2023 20:41	<a href="#">WG2066278</a>
(S) Nitrobenzene-d5	66.9		14.0-149		05/25/2023 20:41	<a href="#">WG2066278</a>
(S) 2-Fluorobiphenyl	56.1		34.0-125		05/25/2023 20:41	<a href="#">WG2066278</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	2.45		1	05/25/2023 13:24	WG2064145

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.79		1.00	5	05/25/2023 01:32	<a href="#">WG2063875</a>
Barium	190		2.50	5	05/25/2023 01:32	<a href="#">WG2063875</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/23/2023 18:50	<a href="#">WG2064850</a>
(S) a,a,a-Trifluorotoluene(FID)	96.9		77.0-120		05/23/2023 18:50	<a href="#">WG2064850</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00158		0.00100	1	05/26/2023 06:46	<a href="#">WG2066801</a>
Toluene	ND		0.00500	1	05/26/2023 06:46	<a href="#">WG2066801</a>
Ethylbenzene	0.00325		0.00250	1	05/26/2023 06:46	<a href="#">WG2066801</a>
Xylenes, Total	0.00735		0.00650	1	05/26/2023 06:46	<a href="#">WG2066801</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/26/2023 06:46	<a href="#">WG2066801</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/26/2023 06:46	<a href="#">WG2066801</a>
(S) Toluene-d8	104		75.0-131		05/26/2023 06:46	<a href="#">WG2066801</a>
(S) 4-Bromofluorobenzene	99.9		67.0-138		05/26/2023 06:46	<a href="#">WG2066801</a>
(S) 1,2-Dichloroethane-d4	108		70.0-130		05/26/2023 06:46	<a href="#">WG2066801</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.22		4.00	1	05/27/2023 10:07	<a href="#">WG2067216</a>
C28-C36 Motor Oil Range	10.6		4.00	1	05/27/2023 10:07	<a href="#">WG2067216</a>
(S) o-Terphenyl	45.8		18.0-148		05/27/2023 10:07	<a href="#">WG2067216</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/25/2023 20:58	<a href="#">WG2066278</a>
2-Methylnaphthalene	ND		0.0200	1	05/25/2023 20:58	<a href="#">WG2066278</a>
Naphthalene	ND		0.0200	1	05/25/2023 20:58	<a href="#">WG2066278</a>
(S) p-Terphenyl-d14	69.8		23.0-120		05/25/2023 20:58	<a href="#">WG2066278</a>
(S) Nitrobenzene-d5	83.0		14.0-149		05/25/2023 20:58	<a href="#">WG2066278</a>
(S) 2-Fluorobiphenyl	69.3		34.0-125		05/25/2023 20:58	<a href="#">WG2066278</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3929253-1 05/25/23 01:42

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50

Laboratory Control Sample (LCS)

(LCS) R3929253-2 05/25/23 01:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	96.4	96.4	80.0-120	
Barium	100	97.3	97.3	80.0-120	

L1618442-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1618442-01 05/25/23 01:49 • (MS) R3929253-5 05/25/23 01:59 • (MSD) R3929253-6 05/25/23 02:03

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	4.73	94.2	96.4	89.4	91.6	5	75.0-125			2.31	20
Barium	100	303	358	377	54.5	73.5	5	75.0-125	J6	J6	5.18	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3928290-3 05/23/23 11:22

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)	92.9			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3928290-2 05/23/23 10:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.12	93.1	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			101	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3929035-2 05/24/23 15:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0271	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	94.0			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3929035-3 05/24/23 21:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.25	77.3	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			98.8	77.0-120	

<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



Method Blank (MB)

(MB) R3930007-2 05/26/23 03:54

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	107			75.0-131
(S) 4-Bromofluorobenzene	99.4			67.0-138
(S) 1,2-Dichloroethane-d4	108			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3930007-1 05/26/23 02:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.111	88.8	70.0-123	
Toluene	0.125	0.110	88.0	75.0-121	
Ethylbenzene	0.125	0.109	87.2	74.0-126	
Xylenes, Total	0.375	0.312	83.2	72.0-127	
1,2,4-Trimethylbenzene	0.125	0.101	80.8	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.108	86.4	73.0-127	
(S) Toluene-d8			105	75.0-131	
(S) 4-Bromofluorobenzene			97.1	67.0-138	
(S) 1,2-Dichloroethane-d4			110	70.0-130	

L1618595-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1618595-02 05/26/23 07:04 • (MS) R3930007-3 05/26/23 10:34 • (MSD) R3930007-4 05/26/23 10:53

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.175	ND	0.0912	0.103	66.6	75.2	1.09	10.0-149			12.2	37
Toluene	0.175	ND	0.0826	0.0997	60.3	72.8	1.09	10.0-156			18.8	38
Ethylbenzene	0.175	ND	0.0773	0.0985	56.4	71.9	1.09	10.0-160			24.1	38
Xylenes, Total	0.521	ND	0.228	0.293	55.7	71.6	1.09	10.0-160			25.0	38
1,2,4-Trimethylbenzene	0.175	ND	0.0759	0.0945	55.4	69.0	1.09	10.0-160			21.8	36
1,3,5-Trimethylbenzene	0.175	ND	0.0741	0.0917	54.1	66.9	1.09	10.0-160			21.2	38
(S) Toluene-d8					105	105		75.0-131				
(S) 4-Bromofluorobenzene					97.9	99.5		67.0-138				
(S) 1,2-Dichloroethane-d4					111	109		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3930054-1 05/26/23 23:43

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	57.5			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3930054-2 05/26/23 23:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	31.3	62.6	50.0-150	
(S) o-Terphenyl			69.5	18.0-148	

L1618445-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1618445-03 05/27/23 01:52 • (MS) R3930054-3 05/27/23 02:05 • (MSD) R3930054-4 05/27/23 07:25

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	ND	25.6	26.8	45.8	48.2	1	50.0-150	J6	J6	4.58	20
(S) o-Terphenyl					49.2	51.4		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3929379-2 05/25/23 12:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	97.4			23.0-120
(S) Nitrobenzene-d5	93.8			14.0-149
(S) 2-Fluorobiphenyl	89.4			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3929379-1 05/25/23 12:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0669	83.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0693	86.6	50.0-120	
Naphthalene	0.0800	0.0695	86.9	50.0-120	
(S) p-Terphenyl-d14			101	23.0-120	
(S) Nitrobenzene-d5			102	14.0-149	
(S) 2-Fluorobiphenyl			96.5	34.0-125	

L1618656-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1618656-01 05/25/23 18:07 • (MS) R3930161-1 05/25/23 18:25 • (MSD) R3930161-2 05/25/23 18:43

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 %
1-Methylnaphthalene	0.0796	ND	0.0492	0.0410	49.0	39.3	1	10.0-142			18.2	28
2-Methylnaphthalene	0.0796	ND	0.0530	0.0457	53.3	44.8	1	10.0-137			14.8	28
Naphthalene	0.0796	ND	0.0534	0.0463	67.1	59.1	1	10.0-135			14.2	27
(S) p-Terphenyl-d14					66.7	59.4		23.0-120				
(S) Nitrobenzene-d5					108	103		14.0-149				
(S) 2-Fluorobiphenyl					59.2	47.2		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

# 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.

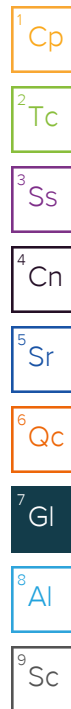
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## Abbreviations and Definitions

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

## Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.





# ACCREDITATIONS & LOCATIONS

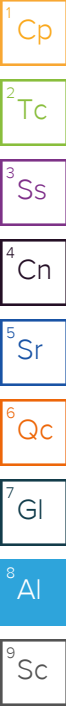
## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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.



[illegible]

May 30, 2023

<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

Sample Delivery Group: L1618442  
Samples Received: 05/20/2023  
Project Number: YCF 35-33-1  
Description: YCF 35-33-1  
Site: YCF 35-33-1  
Report To: Brett M. , Jake J. , Blair R.  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

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

**Pace Analytical National**

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

20230517-YCF 35-33-1-(SB04)@8-10 L1618442-01 Solid

Collected by  
K. Moreland

Collected date/time  
05/17/23 12:40

Received date/time  
05/20/23 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064145	1	05/25/23 12:59	05/25/23 12:59	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2063875	5	05/21/23 15:53	05/25/23 01:49	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2064850	1	05/23/23 01:36	05/23/23 16:08	CDD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2066801	1	05/23/23 01:36	05/26/23 04:33	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2066706	1	05/27/23 09:04	05/27/23 17:52	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2065875	1	05/25/23 07:37	05/25/23 15:46	JRM	Mt. Juliet, TN

<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

# 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



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	17.1		1	05/25/2023 12:59	WG2064145

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.73		1.00	5	05/25/2023 01:49	<a href="#">WG2063875</a>
Barium	303		2.50	5	05/25/2023 01:49	<a href="#">WG2063875</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/23/2023 16:08	<a href="#">WG2064850</a>
(S) a,a,a-Trifluorotoluene(FID)	96.7		77.0-120		05/23/2023 16:08	<a href="#">WG2064850</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/26/2023 04:33	<a href="#">WG2066801</a>
Toluene	ND		0.00500	1	05/26/2023 04:33	<a href="#">WG2066801</a>
Ethylbenzene	ND		0.00250	1	05/26/2023 04:33	<a href="#">WG2066801</a>
Xylenes, Total	ND		0.00650	1	05/26/2023 04:33	<a href="#">WG2066801</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/26/2023 04:33	<a href="#">WG2066801</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/26/2023 04:33	<a href="#">WG2066801</a>
(S) Toluene-d8	108		75.0-131		05/26/2023 04:33	<a href="#">WG2066801</a>
(S) 4-Bromofluorobenzene	96.8		67.0-138		05/26/2023 04:33	<a href="#">WG2066801</a>
(S) 1,2-Dichloroethane-d4	111		70.0-130		05/26/2023 04:33	<a href="#">WG2066801</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/27/2023 17:52	<a href="#">WG2066706</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/27/2023 17:52	<a href="#">WG2066706</a>
(S) o-Terphenyl	25.1		18.0-148		05/27/2023 17:52	<a href="#">WG2066706</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/25/2023 15:46	<a href="#">WG2065875</a>
2-Methylnaphthalene	ND		0.0200	1	05/25/2023 15:46	<a href="#">WG2065875</a>
Naphthalene	ND		0.0200	1	05/25/2023 15:46	<a href="#">WG2065875</a>
(S) p-Terphenyl-d14	67.6		23.0-120		05/25/2023 15:46	<a href="#">WG2065875</a>
(S) Nitrobenzene-d5	80.6		14.0-149		05/25/2023 15:46	<a href="#">WG2065875</a>
(S) 2-Fluorobiphenyl	69.0		34.0-125		05/25/2023 15:46	<a href="#">WG2065875</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3929253-1 05/25/23 01:42

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50

Laboratory Control Sample (LCS)

(LCS) R3929253-2 05/25/23 01:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	96.4	96.4	80.0-120	
Barium	100	97.3	97.3	80.0-120	

L1618442-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1618442-01 05/25/23 01:49 • (MS) R3929253-5 05/25/23 01:59 • (MSD) R3929253-6 05/25/23 02:03

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	4.73	94.2	96.4	89.4	91.6	5	75.0-125			2.31	20
Barium	100	303	358	377	54.5	73.5	5	75.0-125	J6	J6	5.18	20

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc



Method Blank (MB)

(MB) R3928290-3 05/23/23 11:22

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)	92.9			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3928290-2 05/23/23 10:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.12	93.1	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			101	77.0-120	

<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

Method Blank (MB)

(MB) R3930007-2 05/26/23 03:54

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	107			75.0-131
(S) 4-Bromofluorobenzene	99.4			67.0-138
(S) 1,2-Dichloroethane-d4	108			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3930007-1 05/26/23 02:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.111	88.8	70.0-123	
Toluene	0.125	0.110	88.0	75.0-121	
Ethylbenzene	0.125	0.109	87.2	74.0-126	
Xylenes, Total	0.375	0.312	83.2	72.0-127	
1,2,4-Trimethylbenzene	0.125	0.101	80.8	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.108	86.4	73.0-127	
(S) Toluene-d8			105	75.0-131	
(S) 4-Bromofluorobenzene			97.1	67.0-138	
(S) 1,2-Dichloroethane-d4			110	70.0-130	

L1618595-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1618595-02 05/26/23 07:04 • (MS) R3930007-3 05/26/23 10:34 • (MSD) R3930007-4 05/26/23 10:53

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.175	ND	0.0912	0.103	66.6	75.2	1.09	10.0-149			12.2	37
Toluene	0.175	ND	0.0826	0.0997	60.3	72.8	1.09	10.0-156			18.8	38
Ethylbenzene	0.175	ND	0.0773	0.0985	56.4	71.9	1.09	10.0-160			24.1	38
Xylenes, Total	0.521	ND	0.228	0.293	55.7	71.6	1.09	10.0-160			25.0	38
1,2,4-Trimethylbenzene	0.175	ND	0.0759	0.0945	55.4	69.0	1.09	10.0-160			21.8	36
1,3,5-Trimethylbenzene	0.175	ND	0.0741	0.0917	54.1	66.9	1.09	10.0-160			21.2	38
(S) Toluene-d8					105	105		75.0-131				
(S) 4-Bromofluorobenzene					97.9	99.5		67.0-138				
(S) 1,2-Dichloroethane-d4					111	109		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3930141-1 05/27/23 16:21

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	48.9			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3930141-4 05/27/23 22:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	29.3	58.6	50.0-150	
(S) o-Terphenyl			67.6	18.0-148	

L1618863-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1618863-10 05/27/23 20:35 • (MS) R3930141-2 05/27/23 20:54 • (MSD) R3930141-3 05/27/23 21:07

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	47.0	ND	20.8	22.5	44.3	47.3	1	50.0-150	J6	J6	7.85	20
(S) o-Terphenyl					42.0	50.0		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3929378-2 05/25/23 12:00

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	101			23.0-120
(S) Nitrobenzene-d5	109			14.0-149
(S) 2-Fluorobiphenyl	99.0			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3929378-1 05/25/23 11:38

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0751	93.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0778	97.3	50.0-120	
Naphthalene	0.0800	0.0784	98.0	50.0-120	
(S) p-Terphenyl-d14			96.4	23.0-120	
(S) Nitrobenzene-d5			106	14.0-149	
(S) 2-Fluorobiphenyl			97.2	34.0-125	

L1617215-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1617215-02 05/25/23 14:19 • (MS) R3929378-3 05/25/23 14:37 • (MSD) R3929378-4 05/25/23 14:54

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1-Methylnaphthalene	0.0780	ND	0.0677	0.0693	86.8	87.1	1	10.0-142			2.34	28
2-Methylnaphthalene	0.0780	ND	0.0698	0.0723	89.5	90.8	1	10.0-137			3.52	28
Naphthalene	0.0780	ND	0.0698	0.0723	89.5	90.8	1	10.0-135			3.52	27
(S) p-Terphenyl-d14					89.9	87.5		23.0-120				
(S) Nitrobenzene-d5					101	97.2		14.0-149				
(S) 2-Fluorobiphenyl					90.2	86.1		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

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

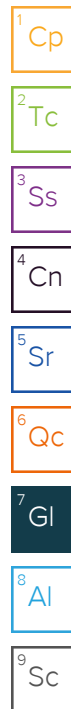
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

## Abbreviations and Definitions

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

## Qualifier Description

J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
----	---



# 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**

Sample Delivery Group: L1618657  
Samples Received: 05/20/2023  
Project Number: YCF 35-33-1  
Description: YCF 35-33-1  
Site: YCF 35-33-1  
Report To: Brett M. , Jake J. , Blair R.  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

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

**Pace Analytical National**12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)



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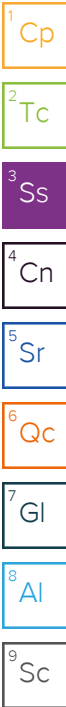
<sup>1</sup> Cp
<sup>2</sup> Tc
<sup>3</sup> Ss
<sup>4</sup> Cn
<sup>5</sup> Sr
<sup>6</sup> Qc
<sup>7</sup> Gl
<sup>8</sup> Al
<sup>9</sup> Sc

# SAMPLE SUMMARY

20230518-YCF 35-33-1(SB04)@13-15 L1618657-01 Solid

Collected by K. Moreland Collected date/time 05/18/23 09:00 Received date/time 05/20/23 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064501	1	05/26/23 18:21	05/26/23 18:21	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2065195	5	05/23/23 15:19	05/23/23 18:42	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2067524	1	05/25/23 09:22	05/28/23 02:28	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2067544	1	05/25/23 09:22	05/27/23 08:27	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2069470	1	05/25/23 09:22	06/01/23 12:04	BAM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067216	1	05/26/23 16:45	05/27/23 09:15	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066322	1	05/25/23 07:33	05/25/23 14:33	DSH	Mt. Juliet, TN



20230518-YCF 35-33-1(SB04)@23-25 L1618657-02 Solid

Collected by K. Moreland Collected date/time 05/18/23 09:55 Received date/time 05/20/23 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064501	1	05/26/23 18:24	05/26/23 18:24	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2065195	5	05/23/23 15:19	05/23/23 18:45	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2067524	1	05/25/23 09:22	05/28/23 02:48	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2067544	1	05/25/23 09:22	05/27/23 08:47	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067216	1	05/26/23 16:45	05/27/23 08:10	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066322	1	05/25/23 07:33	05/25/23 14:51	DSH	Mt. Juliet, TN

20230518-YCF 35-33-1(SB04)@37-39 L1618657-03 Solid

Collected by K. Moreland Collected date/time 05/18/23 11:15 Received date/time 05/20/23 09:20

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064501	1	05/26/23 18:26	05/26/23 18:26	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2065195	5	05/23/23 15:19	05/23/23 18:49	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2067524	1	05/25/23 09:22	05/28/23 03:09	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2067544	1	05/25/23 09:22	05/27/23 09:07	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067216	1	05/26/23 16:45	05/27/23 08:23	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066322	1	05/25/23 07:33	05/25/23 15:08	DSH	Mt. Juliet, TN

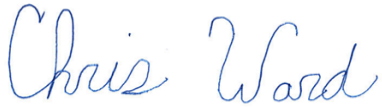
20230518-YCF 35-33-1(SB04)@48-50 L1618657-04 Solid

Collected by K. Moreland Collected date/time 05/18/23 12:10 Received date/time 05/20/23 09:20

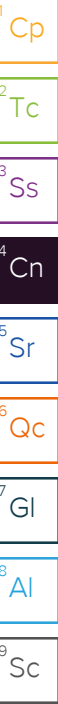
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2064501	1	05/26/23 18:29	05/26/23 18:29	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2065195	5	05/23/23 15:19	05/23/23 18:52	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2068211	1	05/25/23 09:22	05/30/23 23:51	NCC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2067544	1	05/25/23 09:22	05/27/23 09:26	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067216	1	05/26/23 16:45	05/27/23 09:28	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066322	1	05/25/23 07:33	05/25/23 15:26	DSH	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



Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	SAR				
Sodium Adsorption Ratio	4.50		1	05/26/2023 18:21	WG2064501

Metals (ICPMS) by Method 6020

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Arsenic	2.71		1.00	5	05/23/2023 18:42	<a href="#">WG2065195</a>
Barium	197		2.50	5	05/23/2023 18:42	<a href="#">WG2065195</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
TPH (GC/FID) Low Fraction	0.156		0.100	1	05/28/2023 02:28	<a href="#">WG2067524</a>
(S) a,a,a-Trifluorotoluene(FID)	94.4		77.0-120		05/28/2023 02:28	<a href="#">WG2067524</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Benzene	ND		0.00100	1	05/27/2023 08:27	<a href="#">WG2067544</a>
Toluene	ND		0.00500	1	05/27/2023 08:27	<a href="#">WG2067544</a>
Ethylbenzene	ND		0.00250	1	05/27/2023 08:27	<a href="#">WG2067544</a>
Xylenes, Total	ND		0.00650	1	05/27/2023 08:27	<a href="#">WG2067544</a>
1,2,4-Trimethylbenzene	0.0114		0.00500	1	06/01/2023 12:04	<a href="#">WG2069470</a>
1,3,5-Trimethylbenzene	0.00537		0.00500	1	05/27/2023 08:27	<a href="#">WG2067544</a>
(S) Toluene-d8	106		75.0-131		05/27/2023 08:27	<a href="#">WG2067544</a>
(S) Toluene-d8	97.2		75.0-131		06/01/2023 12:04	<a href="#">WG2069470</a>
(S) 4-Bromofluorobenzene	95.8		67.0-138		05/27/2023 08:27	<a href="#">WG2067544</a>
(S) 4-Bromofluorobenzene	102		67.0-138		06/01/2023 12:04	<a href="#">WG2069470</a>
(S) 1,2-Dichloroethane-d4	90.8		70.0-130		05/27/2023 08:27	<a href="#">WG2067544</a>
(S) 1,2-Dichloroethane-d4	88.7		70.0-130		06/01/2023 12:04	<a href="#">WG2069470</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
C10-C28 Diesel Range	5.05		4.00	1	05/27/2023 09:15	<a href="#">WG2067216</a>
C28-C36 Motor Oil Range	6.12		4.00	1	05/27/2023 09:15	<a href="#">WG2067216</a>
(S) o-Terphenyl	52.4		18.0-148		05/27/2023 09:15	<a href="#">WG2067216</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
1-Methylnaphthalene	ND		0.0200	1	05/25/2023 14:33	<a href="#">WG2066322</a>
2-Methylnaphthalene	ND		0.0200	1	05/25/2023 14:33	<a href="#">WG2066322</a>
Naphthalene	ND		0.0200	1	05/25/2023 14:33	<a href="#">WG2066322</a>
(S) p-Terphenyl-d14	70.2		23.0-120		05/25/2023 14:33	<a href="#">WG2066322</a>
(S) Nitrobenzene-d5	62.9		14.0-149		05/25/2023 14:33	<a href="#">WG2066322</a>
(S) 2-Fluorobiphenyl	68.8		34.0-125		05/25/2023 14:33	<a href="#">WG2066322</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.67		1	05/26/2023 18:24	WG2064501

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	11.1		1.00	5	05/23/2023 18:45	<a href="#">WG2065195</a>
Barium	171		2.50	5	05/23/2023 18:45	<a href="#">WG2065195</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.108		0.100	1	05/28/2023 02:48	<a href="#">WG2067524</a>
(S) a,a,a-Trifluorotoluene(FID)	92.9		77.0-120		05/28/2023 02:48	<a href="#">WG2067524</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/27/2023 08:47	<a href="#">WG2067544</a>
Toluene	ND		0.00500	1	05/27/2023 08:47	<a href="#">WG2067544</a>
Ethylbenzene	ND		0.00250	1	05/27/2023 08:47	<a href="#">WG2067544</a>
Xylenes, Total	ND		0.00650	1	05/27/2023 08:47	<a href="#">WG2067544</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/27/2023 08:47	<a href="#">WG2067544</a>
1,3,5-Trimethylbenzene	0.00532		0.00500	1	05/27/2023 08:47	<a href="#">WG2067544</a>
(S) Toluene-d8	109		75.0-131		05/27/2023 08:47	<a href="#">WG2067544</a>
(S) 4-Bromofluorobenzene	97.8		67.0-138		05/27/2023 08:47	<a href="#">WG2067544</a>
(S) 1,2-Dichloroethane-d4	87.2		70.0-130		05/27/2023 08:47	<a href="#">WG2067544</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	10.8		4.00	1	05/27/2023 08:10	<a href="#">WG2067216</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/27/2023 08:10	<a href="#">WG2067216</a>
(S) o-Terphenyl	49.7		18.0-148		05/27/2023 08:10	<a href="#">WG2067216</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/25/2023 14:51	<a href="#">WG2066322</a>
2-Methylnaphthalene	ND		0.0200	1	05/25/2023 14:51	<a href="#">WG2066322</a>
Naphthalene	ND		0.0200	1	05/25/2023 14:51	<a href="#">WG2066322</a>
(S) p-Terphenyl-d14	74.0		23.0-120		05/25/2023 14:51	<a href="#">WG2066322</a>
(S) Nitrobenzene-d5	74.4		14.0-149		05/25/2023 14:51	<a href="#">WG2066322</a>
(S) 2-Fluorobiphenyl	70.7		34.0-125		05/25/2023 14:51	<a href="#">WG2066322</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	4.01		1	05/26/2023 18:26	WG2064501

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.73		1.00	5	05/23/2023 18:49	<a href="#">WG2065195</a>
Barium	263		2.50	5	05/23/2023 18:49	<a href="#">WG2065195</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	7.64		0.100	1	05/28/2023 03:09	<a href="#">WG2067524</a>
(S) a,a,a-Trifluorotoluene(FID)	88.3		77.0-120		05/28/2023 03:09	<a href="#">WG2067524</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/27/2023 09:07	<a href="#">WG2067544</a>
Toluene	ND		0.00500	1	05/27/2023 09:07	<a href="#">WG2067544</a>
Ethylbenzene	ND		0.00250	1	05/27/2023 09:07	<a href="#">WG2067544</a>
Xylenes, Total	0.201		0.00650	1	05/27/2023 09:07	<a href="#">WG2067544</a>
1,2,4-Trimethylbenzene	0.116		0.00500	1	05/27/2023 09:07	<a href="#">WG2067544</a>
1,3,5-Trimethylbenzene	0.182		0.00500	1	05/27/2023 09:07	<a href="#">WG2067544</a>
(S) Toluene-d8	106		75.0-131		05/27/2023 09:07	<a href="#">WG2067544</a>
(S) 4-Bromofluorobenzene	97.4		67.0-138		05/27/2023 09:07	<a href="#">WG2067544</a>
(S) 1,2-Dichloroethane-d4	81.3		70.0-130		05/27/2023 09:07	<a href="#">WG2067544</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	17.8		4.00	1	05/27/2023 08:23	<a href="#">WG2067216</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/27/2023 08:23	<a href="#">WG2067216</a>
(S) o-Terphenyl	60.3		18.0-148		05/27/2023 08:23	<a href="#">WG2067216</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/25/2023 15:08	<a href="#">WG2066322</a>
2-Methylnaphthalene	0.0589		0.0200	1	05/25/2023 15:08	<a href="#">WG2066322</a>
Naphthalene	ND		0.0200	1	05/25/2023 15:08	<a href="#">WG2066322</a>
(S) p-Terphenyl-d14	85.7		23.0-120		05/25/2023 15:08	<a href="#">WG2066322</a>
(S) Nitrobenzene-d5	93.1		14.0-149		05/25/2023 15:08	<a href="#">WG2066322</a>
(S) 2-Fluorobiphenyl	63.8		34.0-125		05/25/2023 15:08	<a href="#">WG2066322</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.49		1	05/26/2023 18:29	WG2064501

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.16		1.00	5	05/23/2023 18:52	<a href="#">WG2065195</a>
Barium	168		2.50	5	05/23/2023 18:52	<a href="#">WG2065195</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/30/2023 23:51	<a href="#">WG2068211</a>
(S) a,a,a-Trifluorotoluene(FID)	93.5		77.0-120		05/30/2023 23:51	<a href="#">WG2068211</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00559		0.00100	1	05/27/2023 09:26	<a href="#">WG2067544</a>
Toluene	0.0259		0.00500	1	05/27/2023 09:26	<a href="#">WG2067544</a>
Ethylbenzene	0.00629		0.00250	1	05/27/2023 09:26	<a href="#">WG2067544</a>
Xylenes, Total	0.0400		0.00650	1	05/27/2023 09:26	<a href="#">WG2067544</a>
1,2,4-Trimethylbenzene	0.00582		0.00500	1	05/27/2023 09:26	<a href="#">WG2067544</a>
1,3,5-Trimethylbenzene	0.0107		0.00500	1	05/27/2023 09:26	<a href="#">WG2067544</a>
(S) Toluene-d8	107		75.0-131		05/27/2023 09:26	<a href="#">WG2067544</a>
(S) 4-Bromofluorobenzene	97.7		67.0-138		05/27/2023 09:26	<a href="#">WG2067544</a>
(S) 1,2-Dichloroethane-d4	87.8		70.0-130		05/27/2023 09:26	<a href="#">WG2067544</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.99		4.00	1	05/27/2023 09:28	<a href="#">WG2067216</a>
C28-C36 Motor Oil Range	8.31		4.00	1	05/27/2023 09:28	<a href="#">WG2067216</a>
(S) o-Terphenyl	53.3		18.0-148		05/27/2023 09:28	<a href="#">WG2067216</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/25/2023 15:26	<a href="#">WG2066322</a>
2-Methylnaphthalene	ND		0.0200	1	05/25/2023 15:26	<a href="#">WG2066322</a>
Naphthalene	ND		0.0200	1	05/25/2023 15:26	<a href="#">WG2066322</a>
(S) p-Terphenyl-d14	85.7		23.0-120		05/25/2023 15:26	<a href="#">WG2066322</a>
(S) Nitrobenzene-d5	74.3		14.0-149		05/25/2023 15:26	<a href="#">WG2066322</a>
(S) 2-Fluorobiphenyl	81.4		34.0-125		05/25/2023 15:26	<a href="#">WG2066322</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3928444-1 05/23/23 17:41

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50

Laboratory Control Sample (LCS)

(LCS) R3928444-2 05/23/23 17:45

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	97.1	97.1	80.0-120	
Barium	100	99.4	99.4	80.0-120	

L1619005-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1619005-01 05/23/23 17:49 • (MS) R3928444-5 05/23/23 17:59 • (MSD) R3928444-6 05/23/23 18:02

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	100	6.69	98.7	98.6	92.0	91.9	5	75.0-125			0.108	20
Barium	100	129	213	214	84.2	85.2	5	75.0-125			0.462	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3930314-2 05/28/23 00:25

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)	95.9			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3930314-1 05/27/23 23:24

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.56	82.9	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			104	77.0-120	

<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

Method Blank (MB)

(MB) R3930808-2 05/30/23 16:00

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)	95.8			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3930808-1 05/30/23 15:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.57	83.1	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3931286-3 05/27/23 07:10

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	104			75.0-131
(S) 4-Bromofluorobenzene	90.3			67.0-138
(S) 1,2-Dichloroethane-d4	98.6			70.0-130

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

(LCS) R3931286-1 05/27/23 05:30 • (LCSD) R3931286-2 05/27/23 05:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.129	0.130	103	104	70.0-123			0.772	20
Toluene	0.125	0.118	0.116	94.4	92.8	75.0-121			1.71	20
Ethylbenzene	0.125	0.114	0.107	91.2	85.6	74.0-126			6.33	20
Xylenes, Total	0.375	0.320	0.328	85.3	87.5	72.0-127			2.47	20
1,2,4-Trimethylbenzene	0.125	0.121	0.131	96.8	105	70.0-126			7.94	20
1,3,5-Trimethylbenzene	0.125	0.116	0.117	92.8	93.6	73.0-127			0.858	20
(S) Toluene-d8				102	101	75.0-131				
(S) 4-Bromofluorobenzene				96.7	95.6	67.0-138				
(S) 1,2-Dichloroethane-d4				106	106	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3931617-2 06/01/23 09:26

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1,2,4-Trimethylbenzene	U		0.00158	0.00500
(S) Toluene-d8	96.4			75.0-131
(S) 4-Bromofluorobenzene	98.9			67.0-138
(S) 1,2-Dichloroethane-d4	89.8			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3931617-1 06/01/23 07:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1,2,4-Trimethylbenzene	0.125	0.113	90.4	70.0-126	
(S) Toluene-d8			94.4	75.0-131	
(S) 4-Bromofluorobenzene			97.8	67.0-138	
(S) 1,2-Dichloroethane-d4			96.5	70.0-130	

1  
Cp

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Tc

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Ss

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Qc

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Gl

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Method Blank (MB)

(MB) R3930054-1 05/26/23 23:43

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	57.5			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3930054-2 05/26/23 23:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	31.3	62.6	50.0-150	
(S) o-Terphenyl			69.5	18.0-148	

L1618445-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1618445-03 05/27/23 01:52 • (MS) R3930054-3 05/27/23 02:05 • (MSD) R3930054-4 05/27/23 07:25

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	ND	25.6	26.8	45.8	48.2	1	50.0-150	J6	J6	4.58	20
(S) o-Terphenyl					49.2	51.4		18.0-148				

1  
Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

Method Blank (MB)

(MB) R3930386-2 05/25/23 14:15

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	90.6			23.0-120
(S) Nitrobenzene-d5	73.9			14.0-149
(S) 2-Fluorobiphenyl	83.5			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3930386-1 05/25/23 13:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0835	104	51.0-121	
2-Methylnaphthalene	0.0800	0.0869	109	50.0-120	
Naphthalene	0.0800	0.0865	108	50.0-120	
(S) p-Terphenyl-d14			126	23.0-120	J1
(S) Nitrobenzene-d5			115	14.0-149	
(S) 2-Fluorobiphenyl			121	34.0-125	

L1618863-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1618863-10 05/25/23 18:42 • (MS) R3930386-3 05/25/23 19:00 • (MSD) R3930386-4 05/25/23 19:18

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 %
1-Methylnaphthalene	0.0760	ND	0.0402	0.0370	52.6	48.9	1	10.0-142			8.29	28
2-Methylnaphthalene	0.0760	ND	0.0416	0.0384	54.5	50.8	1	10.0-137			8.00	28
Naphthalene	0.0760	ND	0.0423	0.0395	55.4	52.2	1	10.0-135			6.85	27
(S) p-Terphenyl-d14					60.7	55.1		23.0-120				
(S) Nitrobenzene-d5					57.5	55.7		14.0-149				
(S) 2-Fluorobiphenyl					61.7	56.9		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

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

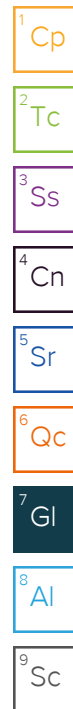
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

### Abbreviations and Definitions

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

### Qualifier Description

J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.



# 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.





[illegible]

**Caerus Oil and Gas**

Sample Delivery Group: L1619291  
Samples Received: 05/23/2023  
Project Number: YCF 35-33-1  
Description: YCF 35-33-1  
Site: YCF 35-33-1  
Report To: Jake J. , Brett M. , Blair R.  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

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**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

20230519-YCF 35-33-1-(SB05)@4-5 L1619291-01 Solid

Collected by  
K. Moreland

Collected date/time  
05/19/23 08:35

Received date/time  
05/23/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2065578	1	05/30/23 17:08	05/30/23 17:08	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2066213	.184	05/25/23 05:56	05/26/23 18:41	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2067887	1	05/25/23 13:30	05/28/23 14:53	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2067638	1	05/25/23 13:30	05/28/23 01:00	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067245	1	05/27/23 20:40	05/28/23 13:04	KAP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067245	1	05/27/23 20:40	05/30/23 12:38	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066615	1	05/25/23 19:07	05/26/23 05:30	DLH	Mt. Juliet, TN

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

20230519-YCF 35-33-1-(SB05)@13-15 L1619291-02 Solid

Collected by  
K. Moreland

Collected date/time  
05/19/23 09:10

Received date/time  
05/23/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2065578	1	05/30/23 17:11	05/30/23 17:11	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2066213	5	05/25/23 05:56	05/26/23 18:45	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2067887	1	05/25/23 13:30	05/28/23 15:13	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2067638	1	05/25/23 13:30	05/28/23 01:20	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067245	1	05/27/23 20:40	05/28/23 13:18	KAP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067245	1	05/27/23 20:40	05/30/23 12:52	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066615	1	05/25/23 19:07	05/26/23 05:50	DLH	Mt. Juliet, TN

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

20230519-YCF 35-33-1-(SB05)@23-25 L1619291-03 Solid

Collected by  
K. Moreland

Collected date/time  
05/19/23 10:00

Received date/time  
05/23/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2065578	1	05/30/23 17:14	05/30/23 17:14	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2066213	5	05/25/23 05:56	05/26/23 18:48	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2067887	1	05/25/23 13:30	05/28/23 15:34	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2067638	1	05/25/23 13:30	05/28/23 01:39	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067245	1	05/27/23 20:40	05/28/23 13:32	KAP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067245	1	05/27/23 20:40	05/30/23 13:05	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066615	1	05/25/23 19:07	05/26/23 06:09	DLH	Mt. Juliet, TN

20230519-YCF 35-33-1-(SB05)@33-35 L1619291-04 Solid

Collected by  
K. Moreland

Collected date/time  
05/19/23 10:55

Received date/time  
05/23/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2065578	1	05/30/23 17:22	05/30/23 17:22	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2066213	5	05/25/23 05:56	05/26/23 18:51	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2067887	1	05/25/23 13:30	05/28/23 15:54	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2067898	1	05/25/23 13:30	05/28/23 15:40	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067245	1	05/27/23 20:40	05/28/23 14:14	KAP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067245	1	05/27/23 20:40	05/30/23 13:18	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066615	1	05/25/23 19:07	05/26/23 06:29	DLH	Mt. Juliet, TN

20230519-YCF 35-33-1-(SB05)@41-43 L1619291-05 Solid

Collected by  
K. Moreland

Collected date/time  
05/19/23 11:45

Received date/time  
05/23/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2065578	1	05/30/23 17:25	05/30/23 17:25	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2066213	5	05/25/23 05:56	05/26/23 18:54	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2067887	1	05/25/23 13:30	05/28/23 16:15	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2067898	1	05/25/23 13:30	05/28/23 15:59	JHH	Mt. Juliet, TN



# SAMPLE SUMMARY

20230519-YCF 35-33-1-(SB05)@41-43 L1619291-05 Solid

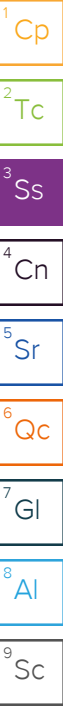
Collected by K. Moreland  
Collected date/time 05/19/23 11:45  
Received date/time 05/23/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067245	1	05/27/23 20:40	05/28/23 14:28	KAP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067245	1	05/27/23 20:40	05/30/23 13:37	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066615	1	05/25/23 19:07	05/26/23 06:49	DLH	Mt. Juliet, TN

20230519-YCF 35-33-1-(SB05)@48-50 L1619291-06 Solid

Collected by K. Moreland  
Collected date/time 05/19/23 12:20  
Received date/time 05/23/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2065578	1	05/30/23 17:28	05/30/23 17:28	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2066213	5	05/25/23 05:56	05/26/23 14:41	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2067887	1	05/25/23 13:30	05/28/23 16:35	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2067898	1	05/25/23 13:30	05/28/23 16:18	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067245	1	05/27/23 20:40	05/28/23 15:10	KAP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2067245	1	05/27/23 20:40	05/30/23 14:16	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2066615	1	05/25/23 19:07	05/26/23 07:08	DLH	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

## Report Revision History

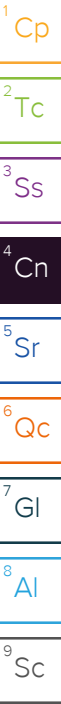
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Level II Report - Version 1: 06/01/23 16:51

## Project Narrative

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Report reissued 6/12 for updated sample IDs



Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	SAR				
Sodium Adsorption Ratio	17.8		1	05/30/2023 17:08	WG2065578

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	0.150		0.00368	0.0368	.184	05/26/2023 18:41	<a href="#">WG2066213</a>
Barium	14.4		0.00559	0.0920	.184	05/26/2023 18:41	<a href="#">WG2066213</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	0.123		0.0217	0.100	1	05/28/2023 14:53	<a href="#">WG2067887</a>
(S) a,a,a-Trifluorotoluene(FID)	95.4			77.0-120		05/28/2023 14:53	<a href="#">WG2067887</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	05/28/2023 01:00	<a href="#">WG2067638</a>
Toluene	0.00208	J	0.00130	0.00500	1	05/28/2023 01:00	<a href="#">WG2067638</a>
Ethylbenzene	U		0.000737	0.00250	1	05/28/2023 01:00	<a href="#">WG2067638</a>
Xylenes, Total	0.00353	J	0.000880	0.00650	1	05/28/2023 01:00	<a href="#">WG2067638</a>
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	05/28/2023 01:00	<a href="#">WG2067638</a>
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	05/28/2023 01:00	<a href="#">WG2067638</a>
(S) Toluene-d8	97.5			75.0-131		05/28/2023 01:00	<a href="#">WG2067638</a>
(S) 4-Bromofluorobenzene	90.4			67.0-138		05/28/2023 01:00	<a href="#">WG2067638</a>
(S) 1,2-Dichloroethane-d4	105			70.0-130		05/28/2023 01:00	<a href="#">WG2067638</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	5.24		1.61	4.00	1	05/28/2023 13:04	<a href="#">WG2067245</a>
C28-C36 Motor Oil Range	3.73	J	0.274	4.00	1	05/30/2023 12:38	<a href="#">WG2067245</a>
(S) o-Terphenyl	60.0			18.0-148		05/28/2023 13:04	<a href="#">WG2067245</a>
(S) o-Terphenyl	62.9			18.0-148		05/30/2023 12:38	<a href="#">WG2067245</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
1-Methylnaphthalene	U		0.00449	0.0200	1	05/26/2023 05:30	<a href="#">WG2066615</a>
2-Methylnaphthalene	U		0.00427	0.0200	1	05/26/2023 05:30	<a href="#">WG2066615</a>
Naphthalene	U		0.00408	0.0200	1	05/26/2023 05:30	<a href="#">WG2066615</a>
(S) p-Terphenyl-d14	91.8			23.0-120		05/26/2023 05:30	<a href="#">WG2066615</a>
(S) Nitrobenzene-d5	66.0			14.0-149		05/26/2023 05:30	<a href="#">WG2066615</a>
(S) 2-Fluorobiphenyl	57.7			34.0-125		05/26/2023 05:30	<a href="#">WG2066615</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	SAR				
Sodium Adsorption Ratio	7.12		1	05/30/2023 17:11	WG2065578

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.34		0.100	1.00	5	05/26/2023 18:45	<a href="#">WG2066213</a>
Barium	166		0.152	2.50	5	05/26/2023 18:45	<a href="#">WG2066213</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	U		0.0217	0.100	1	05/28/2023 15:13	<a href="#">WG2067887</a>
(S) a,a,a-Trifluorotoluene(FID)	95.1			77.0-120		05/28/2023 15:13	<a href="#">WG2067887</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	05/28/2023 01:20	<a href="#">WG2067638</a>
Toluene	0.00220	J	0.00130	0.00500	1	05/28/2023 01:20	<a href="#">WG2067638</a>
Ethylbenzene	U		0.000737	0.00250	1	05/28/2023 01:20	<a href="#">WG2067638</a>
Xylenes, Total	0.00300	J	0.000880	0.00650	1	05/28/2023 01:20	<a href="#">WG2067638</a>
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	05/28/2023 01:20	<a href="#">WG2067638</a>
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	05/28/2023 01:20	<a href="#">WG2067638</a>
(S) Toluene-d8	96.5			75.0-131		05/28/2023 01:20	<a href="#">WG2067638</a>
(S) 4-Bromofluorobenzene	85.6			67.0-138		05/28/2023 01:20	<a href="#">WG2067638</a>
(S) 1,2-Dichloroethane-d4	104			70.0-130		05/28/2023 01:20	<a href="#">WG2067638</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	3.12	J	1.61	4.00	1	05/28/2023 13:18	<a href="#">WG2067245</a>
C28-C36 Motor Oil Range	1.79	J	0.274	4.00	1	05/30/2023 12:52	<a href="#">WG2067245</a>
(S) o-Terphenyl	64.7			18.0-148		05/30/2023 12:52	<a href="#">WG2067245</a>
(S) o-Terphenyl	60.1			18.0-148		05/28/2023 13:18	<a href="#">WG2067245</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
1-Methylnaphthalene	U		0.00449	0.0200	1	05/26/2023 05:50	<a href="#">WG2066615</a>
2-Methylnaphthalene	U		0.00427	0.0200	1	05/26/2023 05:50	<a href="#">WG2066615</a>
Naphthalene	U		0.00408	0.0200	1	05/26/2023 05:50	<a href="#">WG2066615</a>
(S) p-Terphenyl-d14	95.2			23.0-120		05/26/2023 05:50	<a href="#">WG2066615</a>
(S) Nitrobenzene-d5	56.1			14.0-149		05/26/2023 05:50	<a href="#">WG2066615</a>
(S) 2-Fluorobiphenyl	58.7			34.0-125		05/26/2023 05:50	<a href="#">WG2066615</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	SAR				
Sodium Adsorption Ratio	4.25		1	05/30/2023 17:14	WG2065578

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.13		0.100	1.00	5	05/26/2023 18:48	<a href="#">WG2066213</a>
Barium	331		0.152	2.50	5	05/26/2023 18:48	<a href="#">WG2066213</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	0.0222	J	0.0217	0.100	1	05/28/2023 15:34	<a href="#">WG2067887</a>
(S) a,a,a-Trifluorotoluene(FID)	99.6			77.0-120		05/28/2023 15:34	<a href="#">WG2067887</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	05/28/2023 01:39	<a href="#">WG2067638</a>
Toluene	0.00175	J	0.00130	0.00500	1	05/28/2023 01:39	<a href="#">WG2067638</a>
Ethylbenzene	0.00168	J	0.000737	0.00250	1	05/28/2023 01:39	<a href="#">WG2067638</a>
Xylenes, Total	0.00345	J	0.000880	0.00650	1	05/28/2023 01:39	<a href="#">WG2067638</a>
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	05/28/2023 01:39	<a href="#">WG2067638</a>
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	05/28/2023 01:39	<a href="#">WG2067638</a>
(S) Toluene-d8	99.2			75.0-131		05/28/2023 01:39	<a href="#">WG2067638</a>
(S) 4-Bromofluorobenzene	88.8			67.0-138		05/28/2023 01:39	<a href="#">WG2067638</a>
(S) 1,2-Dichloroethane-d4	106			70.0-130		05/28/2023 01:39	<a href="#">WG2067638</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	1.75	J	1.61	4.00	1	05/28/2023 13:32	<a href="#">WG2067245</a>
C28-C36 Motor Oil Range	1.39	J	0.274	4.00	1	05/30/2023 13:05	<a href="#">WG2067245</a>
(S) o-Terphenyl	130			18.0-148		05/30/2023 13:05	<a href="#">WG2067245</a>
(S) o-Terphenyl	113			18.0-148		05/28/2023 13:32	<a href="#">WG2067245</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
1-Methylnaphthalene	U		0.00449	0.0200	1	05/26/2023 06:09	<a href="#">WG2066615</a>
2-Methylnaphthalene	U		0.00427	0.0200	1	05/26/2023 06:09	<a href="#">WG2066615</a>
Naphthalene	U		0.00408	0.0200	1	05/26/2023 06:09	<a href="#">WG2066615</a>
(S) p-Terphenyl-d14	96.8			23.0-120		05/26/2023 06:09	<a href="#">WG2066615</a>
(S) Nitrobenzene-d5	60.2			14.0-149		05/26/2023 06:09	<a href="#">WG2066615</a>
(S) 2-Fluorobiphenyl	64.7			34.0-125		05/26/2023 06:09	<a href="#">WG2066615</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	SAR				
Sodium Adsorption Ratio	3.53		1	05/30/2023 17:22	WG2065578

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.71		0.100	1.00	5	05/26/2023 18:51	<a href="#">WG2066213</a>
Barium	213		0.152	2.50	5	05/26/2023 18:51	<a href="#">WG2066213</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	0.0620	J	0.0217	0.100	1	05/28/2023 15:54	<a href="#">WG2067887</a>
(S) a,a,a-Trifluorotoluene(FID)	95.0			77.0-120		05/28/2023 15:54	<a href="#">WG2067887</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	05/28/2023 15:40	<a href="#">WG2067898</a>
Toluene	0.00218	J	0.00130	0.00500	1	05/28/2023 15:40	<a href="#">WG2067898</a>
Ethylbenzene	0.00168	J	0.000737	0.00250	1	05/28/2023 15:40	<a href="#">WG2067898</a>
Xylenes, Total	0.00373	J	0.000880	0.00650	1	05/28/2023 15:40	<a href="#">WG2067898</a>
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	05/28/2023 15:40	<a href="#">WG2067898</a>
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	05/28/2023 15:40	<a href="#">WG2067898</a>
(S) Toluene-d8	106			75.0-131		05/28/2023 15:40	<a href="#">WG2067898</a>
(S) 4-Bromofluorobenzene	101			67.0-138		05/28/2023 15:40	<a href="#">WG2067898</a>
(S) 1,2-Dichloroethane-d4	111			70.0-130		05/28/2023 15:40	<a href="#">WG2067898</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	2.84	J	1.61	4.00	1	05/28/2023 14:14	<a href="#">WG2067245</a>
C28-C36 Motor Oil Range	2.49	J	0.274	4.00	1	05/30/2023 13:18	<a href="#">WG2067245</a>
(S) o-Terphenyl	61.4			18.0-148		05/28/2023 14:14	<a href="#">WG2067245</a>
(S) o-Terphenyl	60.2			18.0-148		05/30/2023 13:18	<a href="#">WG2067245</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
1-Methylnaphthalene	U		0.00449	0.0200	1	05/26/2023 06:29	<a href="#">WG2066615</a>
2-Methylnaphthalene	U		0.00427	0.0200	1	05/26/2023 06:29	<a href="#">WG2066615</a>
Naphthalene	U		0.00408	0.0200	1	05/26/2023 06:29	<a href="#">WG2066615</a>
(S) p-Terphenyl-d14	89.4			23.0-120		05/26/2023 06:29	<a href="#">WG2066615</a>
(S) Nitrobenzene-d5	52.6			14.0-149		05/26/2023 06:29	<a href="#">WG2066615</a>
(S) 2-Fluorobiphenyl	55.2			34.0-125		05/26/2023 06:29	<a href="#">WG2066615</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	SAR				
Sodium Adsorption Ratio	3.35		1	05/30/2023 17:25	WG2065578

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.85		0.100	1.00	5	05/26/2023 18:54	<a href="#">WG2066213</a>
Barium	160		0.152	2.50	5	05/26/2023 18:54	<a href="#">WG2066213</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	0.589		0.0217	0.100	1	05/28/2023 16:15	<a href="#">WG2067887</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	94.5			77.0-120		05/28/2023 16:15	<a href="#">WG2067887</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	0.00388		0.000467	0.00100	1	05/28/2023 15:59	<a href="#">WG2067898</a>
Toluene	0.0121		0.00130	0.00500	1	05/28/2023 15:59	<a href="#">WG2067898</a>
Ethylbenzene	0.0121		0.000737	0.00250	1	05/28/2023 15:59	<a href="#">WG2067898</a>
Xylenes, Total	0.0782		0.000880	0.00650	1	05/28/2023 15:59	<a href="#">WG2067898</a>
1,2,4-Trimethylbenzene	0.0423		0.00158	0.00500	1	05/28/2023 15:59	<a href="#">WG2067898</a>
1,3,5-Trimethylbenzene	0.0413		0.00200	0.00500	1	05/28/2023 15:59	<a href="#">WG2067898</a>
(S) Toluene-d8	104			75.0-131		05/28/2023 15:59	<a href="#">WG2067898</a>
(S) 4-Bromofluorobenzene	101			67.0-138		05/28/2023 15:59	<a href="#">WG2067898</a>
(S) 1,2-Dichloroethane-d4	102			70.0-130		05/28/2023 15:59	<a href="#">WG2067898</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	6.81		1.61	4.00	1	05/28/2023 14:28	<a href="#">WG2067245</a>
C28-C36 Motor Oil Range	8.63		0.274	4.00	1	05/30/2023 13:37	<a href="#">WG2067245</a>
(S) o-Terphenyl	62.2			18.0-148		05/30/2023 13:37	<a href="#">WG2067245</a>
(S) o-Terphenyl	50.8			18.0-148		05/28/2023 14:28	<a href="#">WG2067245</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
1-Methylnaphthalene	0.00627	J	0.00449	0.0200	1	05/26/2023 06:49	<a href="#">WG2066615</a>
2-Methylnaphthalene	0.0169	J	0.00427	0.0200	1	05/26/2023 06:49	<a href="#">WG2066615</a>
Naphthalene	0.0122	J	0.00408	0.0200	1	05/26/2023 06:49	<a href="#">WG2066615</a>
(S) p-Terphenyl-d14	95.7			23.0-120		05/26/2023 06:49	<a href="#">WG2066615</a>
(S) Nitrobenzene-d5	71.8			14.0-149		05/26/2023 06:49	<a href="#">WG2066615</a>
(S) 2-Fluorobiphenyl	70.1			34.0-125		05/26/2023 06:49	<a href="#">WG2066615</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	SAR				
Sodium Adsorption Ratio	3.44		1	05/30/2023 17:28	WG2065578

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.74	<a href="#">O1</a>	0.100	1.00	5	05/26/2023 14:41	<a href="#">WG2066213</a>
Barium	182	<a href="#">J3 J5 O1</a>	0.152	2.50	5	05/26/2023 14:41	<a href="#">WG2066213</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	0.0301	<a href="#">J</a>	0.0217	0.100	1	05/28/2023 16:35	<a href="#">WG2067887</a>
(S) a,a,a-Trifluorotoluene(FID)	97.7			77.0-120		05/28/2023 16:35	<a href="#">WG2067887</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	05/28/2023 16:18	<a href="#">WG2067898</a>
Toluene	0.00220	<a href="#">J</a>	0.00130	0.00500	1	05/28/2023 16:18	<a href="#">WG2067898</a>
Ethylbenzene	0.00220	<a href="#">J</a>	0.000737	0.00250	1	05/28/2023 16:18	<a href="#">WG2067898</a>
Xylenes, Total	0.00443	<a href="#">J</a>	0.000880	0.00650	1	05/28/2023 16:18	<a href="#">WG2067898</a>
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	05/28/2023 16:18	<a href="#">WG2067898</a>
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	05/28/2023 16:18	<a href="#">WG2067898</a>
(S) Toluene-d8	103			75.0-131		05/28/2023 16:18	<a href="#">WG2067898</a>
(S) 4-Bromofluorobenzene	98.9			67.0-138		05/28/2023 16:18	<a href="#">WG2067898</a>
(S) 1,2-Dichloroethane-d4	108			70.0-130		05/28/2023 16:18	<a href="#">WG2067898</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	6.17		1.61	4.00	1	05/28/2023 15:10	<a href="#">WG2067245</a>
C28-C36 Motor Oil Range	12.8		0.274	4.00	1	05/30/2023 14:16	<a href="#">WG2067245</a>
(S) o-Terphenyl	58.3			18.0-148		05/28/2023 15:10	<a href="#">WG2067245</a>
(S) o-Terphenyl	71.6			18.0-148		05/30/2023 14:16	<a href="#">WG2067245</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
1-Methylnaphthalene	U		0.00449	0.0200	1	05/26/2023 07:08	<a href="#">WG2066615</a>
2-Methylnaphthalene	U		0.00427	0.0200	1	05/26/2023 07:08	<a href="#">WG2066615</a>
Naphthalene	U		0.00408	0.0200	1	05/26/2023 07:08	<a href="#">WG2066615</a>
(S) p-Terphenyl-d14	99.6			23.0-120		05/26/2023 07:08	<a href="#">WG2066615</a>
(S) Nitrobenzene-d5	68.2			14.0-149		05/26/2023 07:08	<a href="#">WG2066615</a>
(S) 2-Fluorobiphenyl	71.6			34.0-125		05/26/2023 07:08	<a href="#">WG2066615</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3929865-1 05/26/23 14:35

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50

Laboratory Control Sample (LCS)

(LCS) R3929865-2 05/26/23 14:38

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	106	106	80.0-120	
Barium	100	103	103	80.0-120	

L1619291-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1619291-06 05/26/23 14:41 • (MS) R3929865-5 05/26/23 14:51 • (MSD) R3929865-6 05/26/23 14:54

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	100	2.74	96.3	94.0	93.5	91.3	5	75.0-125			2.34	20
Barium	100	182	347	259	166	77.7	5	75.0-125	J5	J3	29.0	20

<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) R3931584-1 05/28/23 10:50

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)	101			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3931584-2 05/28/23 12:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.10	92.7	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			102	77.0-120	

<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

Method Blank (MB)

(MB) R3930469-3 05/27/23 18:46

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	97.0			75.0-131
(S) 4-Bromofluorobenzene	83.6			67.0-138
(S) 1,2-Dichloroethane-d4	110			70.0-130

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

(LCS) R3930469-1 05/27/23 17:28 • (LCSD) R3930469-2 05/27/23 17:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.125	0.133	100	106	70.0-123			6.20	20
Toluene	0.125	0.124	0.135	99.2	108	75.0-121			8.49	20
Ethylbenzene	0.125	0.120	0.130	96.0	104	74.0-126			8.00	20
Xylenes, Total	0.375	0.358	0.393	95.5	105	72.0-127			9.32	20
1,2,4-Trimethylbenzene	0.125	0.131	0.150	105	120	70.0-126			13.5	20
1,3,5-Trimethylbenzene	0.125	0.127	0.150	102	120	73.0-127			16.6	20
(S) Toluene-d8				94.8	96.8	75.0-131				
(S) 4-Bromofluorobenzene				86.8	86.6	67.0-138				
(S) 1,2-Dichloroethane-d4				111	111	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3931004-3 05/28/23 11:43

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	105			75.0-131
(S) 4-Bromofluorobenzene	99.6			67.0-138
(S) 1,2-Dichloroethane-d4	108			70.0-130

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

(LCS) R3931004-1 05/28/23 10:28 • (LCSD) R3931004-2 05/28/23 10:46

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.131	0.124	105	99.2	70.0-123			5.49	20
Toluene	0.125	0.120	0.123	96.0	98.4	75.0-121			2.47	20
Ethylbenzene	0.125	0.122	0.121	97.6	96.8	74.0-126			0.823	20
Xylenes, Total	0.375	0.355	0.351	94.7	93.6	72.0-127			1.13	20
1,2,4-Trimethylbenzene	0.125	0.113	0.124	90.4	99.2	70.0-126			9.28	20
1,3,5-Trimethylbenzene	0.125	0.117	0.123	93.6	98.4	73.0-127			5.00	20
(S) Toluene-d8				99.7	99.4	75.0-131				
(S) 4-Bromofluorobenzene				96.8	101	67.0-138				
(S) 1,2-Dichloroethane-d4				113	114	70.0-130				

L1619291-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1619291-04 05/28/23 15:40 • (MS) R3931004-4 05/28/23 19:28 • (MSD) R3931004-5 05/28/23 19:47

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 %
Benzene	0.125	U	0.0941	0.111	75.3	88.8	1	10.0-149			16.5	37
Toluene	0.125	0.00218	0.0975	0.111	78.0	88.8	1	10.0-156			12.9	38
Ethylbenzene	0.125	0.00168	0.0950	0.106	76.0	84.8	1	10.0-160			10.9	38
Xylenes, Total	0.375	0.00373	0.276	0.298	73.6	79.5	1	10.0-160			7.67	38
1,2,4-Trimethylbenzene	0.125	U	0.0899	0.0991	71.9	79.3	1	10.0-160			9.74	36
1,3,5-Trimethylbenzene	0.125	U	0.0932	0.0984	74.6	78.7	1	10.0-160			5.43	38
(S) Toluene-d8					104	105		75.0-131				
(S) 4-Bromofluorobenzene					102	99.7		67.0-138				
(S) 1,2-Dichloroethane-d4					105	109		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3930452-1 05/28/23 10:59

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	77.5			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3930452-2 05/28/23 11:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	43.8	87.6	50.0-150	
(S) o-Terphenyl			87.2	18.0-148	

L1619261-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1619261-03 05/28/23 11:55 • (MS) R3930452-3 05/28/23 12:09 • (MSD) R3930452-4 05/28/23 12:23

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	47.3	U	33.9	33.5	71.7	70.7	1	50.0-150			1.19	20
(S) o-Terphenyl					71.1	66.8		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3929703-2 05/26/23 00:54

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	104			23.0-120
(S) Nitrobenzene-d5	69.5			14.0-149
(S) 2-Fluorobiphenyl	71.5			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3929703-1 05/26/23 00:34

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0849	106	51.0-121	
2-Methylnaphthalene	0.0800	0.0817	102	50.0-120	
Naphthalene	0.0800	0.0813	102	50.0-120	
(S) p-Terphenyl-d14			96.5	23.0-120	
(S) Nitrobenzene-d5			68.3	14.0-149	
(S) 2-Fluorobiphenyl			65.0	34.0-125	

L1617243-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1617243-03 05/26/23 01:14 • (MS) R3929703-3 05/26/23 01:33 • (MSD) R3929703-4 05/26/23 01:53

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 %
1-Methylnaphthalene	0.0788	U	0.0628	0.0646	79.7	82.4	1	10.0-142			2.83	28
2-Methylnaphthalene	0.0788	U	0.0575	0.0590	73.0	75.3	1	10.0-137			2.58	28
Naphthalene	0.0788	U	0.0584	0.0613	74.1	78.2	1	10.0-135			4.85	27
(S) p-Terphenyl-d14					84.7	82.4		23.0-120				
(S) Nitrobenzene-d5					50.1	48.6		14.0-149				
(S) 2-Fluorobiphenyl					49.6	48.2		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

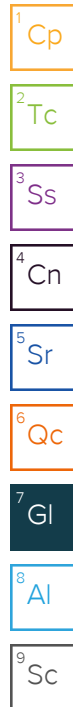
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

### Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.



# 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.





[illegible]

June 02, 2023

<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

Sample Delivery Group: L1619780  
Samples Received: 05/24/2023  
Project Number: YCF 35-33-1  
Description: YCF 35-33-1  
Site: YCF 35-33-1  
Report To: Brett M. , Jake J. , Blair R.  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

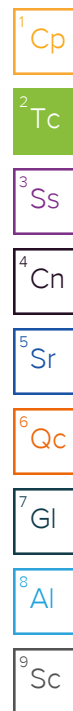
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

**Pace Analytical National**

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

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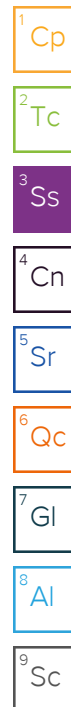


# SAMPLE SUMMARY

## 20230522-YCF 35-33-1-(SB06)@3-5 L1619780-01 Solid

Collected by K. Moreland  
Collected date/time 05/22/23 09:10  
Received date/time 05/24/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2066319	1	05/31/23 16:52	05/31/23 16:52	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2067077	5	05/27/23 00:05	05/30/23 15:42	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2068083	1	05/25/23 18:31	05/29/23 15:09	NCC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2068172	1	05/25/23 18:31	05/29/23 18:34	KSD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2068262	1	05/30/23 09:05	05/31/23 16:33	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2068051	1	05/30/23 00:16	05/30/23 10:54	DLH	Mt. Juliet, TN



## 20230522-YCF 35-33-1-(SB06)@13-15 L1619780-02 Solid

Collected by K. Moreland  
Collected date/time 05/22/23 10:00  
Received date/time 05/24/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2066319	1	05/31/23 16:55	05/31/23 16:55	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2067077	5	05/27/23 00:05	05/30/23 15:46	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2068083	1	05/25/23 18:31	05/29/23 15:30	NCC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2068172	1	05/25/23 18:31	05/29/23 18:53	KSD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2068262	1	05/30/23 09:05	05/31/23 16:47	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2068051	1	05/30/23 00:16	05/30/23 11:14	DLH	Mt. Juliet, TN

## 20230522-YCF 35-33-1-(SB06)@23-25 L1619780-03 Solid

Collected by K. Moreland  
Collected date/time 05/22/23 10:55  
Received date/time 05/24/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2066319	1	05/31/23 16:58	05/31/23 16:58	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2067077	5	05/27/23 00:05	05/30/23 15:49	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2068083	1	05/25/23 18:31	05/29/23 15:50	NCC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2068172	1	05/25/23 18:31	05/29/23 19:12	KSD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2068262	1	05/30/23 09:05	05/31/23 17:01	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2068051	1	05/30/23 00:16	05/30/23 11:34	DLH	Mt. Juliet, TN

## 20230522-YCF 35-33-1-(SB06)@32-34 L1619780-04 Solid

Collected by K. Moreland  
Collected date/time 05/22/23 11:45  
Received date/time 05/24/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2066319	1	05/31/23 17:06	05/31/23 17:06	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2067077	5	05/27/23 00:05	05/30/23 15:52	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2068083	1	05/25/23 18:31	05/29/23 16:10	NCC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2068172	1	05/25/23 18:31	05/29/23 19:31	KSD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2068262	1	05/30/23 09:05	05/31/23 17:15	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2069400	1	05/31/23 19:24	06/01/23 05:11	DSH	Mt. Juliet, TN

## 20230522-YCF 35-33-1-(SB06)@43-45 L1619780-05 Solid

Collected by K. Moreland  
Collected date/time 05/22/23 12:35  
Received date/time 05/24/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2066319	1	05/31/23 17:09	05/31/23 17:09	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2067077	5	05/27/23 00:05	05/30/23 15:55	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2068083	1	05/25/23 18:31	05/29/23 16:31	NCC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2068172	1	05/25/23 18:31	05/29/23 19:50	KSD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2068262	1	05/30/23 09:05	05/31/23 17:29	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2069400	1	05/31/23 19:24	06/01/23 05:28	DSH	Mt. Juliet, TN



# SAMPLE SUMMARY

20230522-YCF 35-33-1-(SB06)@48-50 L1619780-06 Solid

Collected by  
K. Moreland

Collected date/time  
05/22/23 12:50

Received date/time  
05/24/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2066319	1	05/31/23 17:11	05/31/23 17:11	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2067077	5	05/27/23 00:05	05/30/23 15:59	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2068083	1	05/25/23 18:31	05/29/23 16:51	NCC	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2068172	1	05/25/23 18:31	05/29/23 20:08	KSD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2068262	1	05/30/23 09:05	05/31/23 18:54	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2068051	1	05/30/23 00:16	05/30/23 13:12	DLH	Mt. Juliet, TN

<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

# 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	10.3		1	05/31/2023 16:52	WG2066319

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.65		1.00	5	05/30/2023 15:42	<a href="#">WG2067077</a>
Barium	206		2.50	5	05/30/2023 15:42	<a href="#">WG2067077</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.402		0.100	1	05/29/2023 15:09	<a href="#">WG2068083</a>
(S) a,a,a-Trifluorotoluene(FID)	97.2		77.0-120		05/29/2023 15:09	<a href="#">WG2068083</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/29/2023 18:34	<a href="#">WG2068172</a>
Toluene	ND		0.00500	1	05/29/2023 18:34	<a href="#">WG2068172</a>
Ethylbenzene	ND		0.00250	1	05/29/2023 18:34	<a href="#">WG2068172</a>
Xylenes, Total	ND		0.00650	1	05/29/2023 18:34	<a href="#">WG2068172</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/29/2023 18:34	<a href="#">WG2068172</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/29/2023 18:34	<a href="#">WG2068172</a>
(S) Toluene-d8	107		75.0-131		05/29/2023 18:34	<a href="#">WG2068172</a>
(S) 4-Bromofluorobenzene	92.9		67.0-138		05/29/2023 18:34	<a href="#">WG2068172</a>
(S) 1,2-Dichloroethane-d4	110		70.0-130		05/29/2023 18:34	<a href="#">WG2068172</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/31/2023 16:33	<a href="#">WG2068262</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/31/2023 16:33	<a href="#">WG2068262</a>
(S) o-Terphenyl	49.7		18.0-148		05/31/2023 16:33	<a href="#">WG2068262</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/30/2023 10:54	<a href="#">WG2068051</a>
2-Methylnaphthalene	ND		0.0200	1	05/30/2023 10:54	<a href="#">WG2068051</a>
Naphthalene	ND		0.0200	1	05/30/2023 10:54	<a href="#">WG2068051</a>
(S) p-Terphenyl-d14	96.2		23.0-120		05/30/2023 10:54	<a href="#">WG2068051</a>
(S) Nitrobenzene-d5	69.5		14.0-149		05/30/2023 10:54	<a href="#">WG2068051</a>
(S) 2-Fluorobiphenyl	62.3		34.0-125		05/30/2023 10:54	<a href="#">WG2068051</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	3.82		1	05/31/2023 16:55	WG2066319

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.42		1.00	5	05/30/2023 15:46	<a href="#">WG2067077</a>
Barium	218		2.50	5	05/30/2023 15:46	<a href="#">WG2067077</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/29/2023 15:30	<a href="#">WG2068083</a>
(S) a,a,a-Trifluorotoluene(FID)	100		77.0-120		05/29/2023 15:30	<a href="#">WG2068083</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/29/2023 18:53	<a href="#">WG2068172</a>
Toluene	ND		0.00500	1	05/29/2023 18:53	<a href="#">WG2068172</a>
Ethylbenzene	ND		0.00250	1	05/29/2023 18:53	<a href="#">WG2068172</a>
Xylenes, Total	ND		0.00650	1	05/29/2023 18:53	<a href="#">WG2068172</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/29/2023 18:53	<a href="#">WG2068172</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/29/2023 18:53	<a href="#">WG2068172</a>
(S) Toluene-d8	109		75.0-131		05/29/2023 18:53	<a href="#">WG2068172</a>
(S) 4-Bromofluorobenzene	91.0		67.0-138		05/29/2023 18:53	<a href="#">WG2068172</a>
(S) 1,2-Dichloroethane-d4	103		70.0-130		05/29/2023 18:53	<a href="#">WG2068172</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/31/2023 16:47	<a href="#">WG2068262</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/31/2023 16:47	<a href="#">WG2068262</a>
(S) o-Terphenyl	47.0		18.0-148		05/31/2023 16:47	<a href="#">WG2068262</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/30/2023 11:14	<a href="#">WG2068051</a>
2-Methylnaphthalene	ND		0.0200	1	05/30/2023 11:14	<a href="#">WG2068051</a>
Naphthalene	ND		0.0200	1	05/30/2023 11:14	<a href="#">WG2068051</a>
(S) p-Terphenyl-d14	86.1		23.0-120		05/30/2023 11:14	<a href="#">WG2068051</a>
(S) Nitrobenzene-d5	85.8		14.0-149		05/30/2023 11:14	<a href="#">WG2068051</a>
(S) 2-Fluorobiphenyl	71.0		34.0-125		05/30/2023 11:14	<a href="#">WG2068051</a>



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.71		1	05/31/2023 16:58	WG2066319

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.03		1.00	5	05/30/2023 15:49	<a href="#">WG2067077</a>
Barium	395		2.50	5	05/30/2023 15:49	<a href="#">WG2067077</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	05/29/2023 15:50	<a href="#">WG2068083</a>
(S) a,a,a-Trifluorotoluene(FID)	96.8		77.0-120		05/29/2023 15:50	<a href="#">WG2068083</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/29/2023 19:12	<a href="#">WG2068172</a>
Toluene	ND		0.00500	1	05/29/2023 19:12	<a href="#">WG2068172</a>
Ethylbenzene	ND		0.00250	1	05/29/2023 19:12	<a href="#">WG2068172</a>
Xylenes, Total	ND		0.00650	1	05/29/2023 19:12	<a href="#">WG2068172</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/29/2023 19:12	<a href="#">WG2068172</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/29/2023 19:12	<a href="#">WG2068172</a>
(S) Toluene-d8	106		75.0-131		05/29/2023 19:12	<a href="#">WG2068172</a>
(S) 4-Bromofluorobenzene	91.3		67.0-138		05/29/2023 19:12	<a href="#">WG2068172</a>
(S) 1,2-Dichloroethane-d4	109		70.0-130		05/29/2023 19:12	<a href="#">WG2068172</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	05/31/2023 17:01	<a href="#">WG2068262</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/31/2023 17:01	<a href="#">WG2068262</a>
(S) o-Terphenyl	39.9		18.0-148		05/31/2023 17:01	<a href="#">WG2068262</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/30/2023 11:34	<a href="#">WG2068051</a>
2-Methylnaphthalene	ND		0.0200	1	05/30/2023 11:34	<a href="#">WG2068051</a>
Naphthalene	ND		0.0200	1	05/30/2023 11:34	<a href="#">WG2068051</a>
(S) p-Terphenyl-d14	93.1		23.0-120		05/30/2023 11:34	<a href="#">WG2068051</a>
(S) Nitrobenzene-d5	76.2		14.0-149		05/30/2023 11:34	<a href="#">WG2068051</a>
(S) 2-Fluorobiphenyl	70.6		34.0-125		05/30/2023 11:34	<a href="#">WG2068051</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	3.90		1	05/31/2023 17:06	WG2066319

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.55		1.00	5	05/30/2023 15:52	<a href="#">WG2067077</a>
Barium	355		2.50	5	05/30/2023 15:52	<a href="#">WG2067077</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.678		0.100	1	05/29/2023 16:10	<a href="#">WG2068083</a>
(S) a,a,a-Trifluorotoluene(FID)	97.8		77.0-120		05/29/2023 16:10	<a href="#">WG2068083</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00195		0.00100	1	05/29/2023 19:31	<a href="#">WG2068172</a>
Toluene	ND		0.00500	1	05/29/2023 19:31	<a href="#">WG2068172</a>
Ethylbenzene	0.00278		0.00250	1	05/29/2023 19:31	<a href="#">WG2068172</a>
Xylenes, Total	0.0242		0.00650	1	05/29/2023 19:31	<a href="#">WG2068172</a>
1,2,4-Trimethylbenzene	0.0122		0.00500	1	05/29/2023 19:31	<a href="#">WG2068172</a>
1,3,5-Trimethylbenzene	0.0128		0.00500	1	05/29/2023 19:31	<a href="#">WG2068172</a>
(S) Toluene-d8	108		75.0-131		05/29/2023 19:31	<a href="#">WG2068172</a>
(S) 4-Bromofluorobenzene	94.3		67.0-138		05/29/2023 19:31	<a href="#">WG2068172</a>
(S) 1,2-Dichloroethane-d4	96.2		70.0-130		05/29/2023 19:31	<a href="#">WG2068172</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	6.50		4.00	1	05/31/2023 17:15	<a href="#">WG2068262</a>
C28-C36 Motor Oil Range	ND		4.00	1	05/31/2023 17:15	<a href="#">WG2068262</a>
(S) o-Terphenyl	54.9		18.0-148		05/31/2023 17:15	<a href="#">WG2068262</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	06/01/2023 05:11	<a href="#">WG2069400</a>
2-Methylnaphthalene	ND		0.0200	1	06/01/2023 05:11	<a href="#">WG2069400</a>
Naphthalene	ND		0.0200	1	06/01/2023 05:11	<a href="#">WG2069400</a>
(S) p-Terphenyl-d14	95.3		23.0-120		06/01/2023 05:11	<a href="#">WG2069400</a>
(S) Nitrobenzene-d5	84.7		14.0-149		06/01/2023 05:11	<a href="#">WG2069400</a>
(S) 2-Fluorobiphenyl	71.4		34.0-125		06/01/2023 05:11	<a href="#">WG2069400</a>



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.53		1	05/31/2023 17:09	WG2066319

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	10.3		1.00	5	05/30/2023 15:55	<a href="#">WG2067077</a>
Barium	158		2.50	5	05/30/2023 15:55	<a href="#">WG2067077</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	5.50		0.100	1	05/29/2023 16:31	<a href="#">WG2068083</a>
(S) a,a,a-Trifluorotoluene(FID)	87.5		77.0-120		05/29/2023 16:31	<a href="#">WG2068083</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00378		0.00100	1	05/29/2023 19:50	<a href="#">WG2068172</a>
Toluene	0.0121		0.00500	1	05/29/2023 19:50	<a href="#">WG2068172</a>
Ethylbenzene	0.0139		0.00250	1	05/29/2023 19:50	<a href="#">WG2068172</a>
Xylenes, Total	0.140		0.00650	1	05/29/2023 19:50	<a href="#">WG2068172</a>
1,2,4-Trimethylbenzene	0.129		0.00500	1	05/29/2023 19:50	<a href="#">WG2068172</a>
1,3,5-Trimethylbenzene	0.117		0.00500	1	05/29/2023 19:50	<a href="#">WG2068172</a>
(S) Toluene-d8	103		75.0-131		05/29/2023 19:50	<a href="#">WG2068172</a>
(S) 4-Bromofluorobenzene	96.8		67.0-138		05/29/2023 19:50	<a href="#">WG2068172</a>
(S) 1,2-Dichloroethane-d4	104		70.0-130		05/29/2023 19:50	<a href="#">WG2068172</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	23.1		4.00	1	05/31/2023 17:29	<a href="#">WG2068262</a>
C28-C36 Motor Oil Range	5.06		4.00	1	05/31/2023 17:29	<a href="#">WG2068262</a>
(S) o-Terphenyl	46.3		18.0-148		05/31/2023 17:29	<a href="#">WG2068262</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	06/01/2023 05:28	<a href="#">WG2069400</a>
2-Methylnaphthalene	0.0652		0.0200	1	06/01/2023 05:28	<a href="#">WG2069400</a>
Naphthalene	0.0208		0.0200	1	06/01/2023 05:28	<a href="#">WG2069400</a>
(S) p-Terphenyl-d14	90.0		23.0-120		06/01/2023 05:28	<a href="#">WG2069400</a>
(S) Nitrobenzene-d5	95.8		14.0-149		06/01/2023 05:28	<a href="#">WG2069400</a>
(S) 2-Fluorobiphenyl	70.0		34.0-125		06/01/2023 05:28	<a href="#">WG2069400</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	4.05		1	05/31/2023 17:11	WG2066319

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.00		1.00	5	05/30/2023 15:59	<a href="#">WG2067077</a>
Barium	505		2.50	5	05/30/2023 15:59	<a href="#">WG2067077</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.289		0.100	1	05/29/2023 16:51	<a href="#">WG2068083</a>
(S) a,a,a-Trifluorotoluene(FID)	99.5		77.0-120		05/29/2023 16:51	<a href="#">WG2068083</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	05/29/2023 20:08	<a href="#">WG2068172</a>
Toluene	ND		0.00500	1	05/29/2023 20:08	<a href="#">WG2068172</a>
Ethylbenzene	ND		0.00250	1	05/29/2023 20:08	<a href="#">WG2068172</a>
Xylenes, Total	ND		0.00650	1	05/29/2023 20:08	<a href="#">WG2068172</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	05/29/2023 20:08	<a href="#">WG2068172</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	05/29/2023 20:08	<a href="#">WG2068172</a>
(S) Toluene-d8	105		75.0-131		05/29/2023 20:08	<a href="#">WG2068172</a>
(S) 4-Bromofluorobenzene	93.9		67.0-138		05/29/2023 20:08	<a href="#">WG2068172</a>
(S) 1,2-Dichloroethane-d4	112		70.0-130		05/29/2023 20:08	<a href="#">WG2068172</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	8.58		4.00	1	05/31/2023 18:54	<a href="#">WG2068262</a>
C28-C36 Motor Oil Range	11.3		4.00	1	05/31/2023 18:54	<a href="#">WG2068262</a>
(S) o-Terphenyl	51.5		18.0-148		05/31/2023 18:54	<a href="#">WG2068262</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/30/2023 13:12	<a href="#">WG2068051</a>
2-Methylnaphthalene	ND		0.0200	1	05/30/2023 13:12	<a href="#">WG2068051</a>
Naphthalene	ND		0.0200	1	05/30/2023 13:12	<a href="#">WG2068051</a>
(S) p-Terphenyl-d14	86.2		23.0-120		05/30/2023 13:12	<a href="#">WG2068051</a>
(S) Nitrobenzene-d5	67.6		14.0-149		05/30/2023 13:12	<a href="#">WG2068051</a>
(S) 2-Fluorobiphenyl	61.9		34.0-125		05/30/2023 13:12	<a href="#">WG2068051</a>



Method Blank (MB)

(MB) R3930700-1 05/30/23 14:50

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	0.351	⬇	0.152	2.50

Laboratory Control Sample (LCS)

(LCS) R3930700-2 05/30/23 14:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	106	106	80.0-120	
Barium	100	102	102	80.0-120	

L1619772-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1619772-04 05/30/23 14:57 • (MS) R3930700-5 05/30/23 15:07 • (MSD) R3930700-6 05/30/23 15:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	6.36	118	103	112	96.8	5	75.0-125			13.4	20
Barium	100	529	519	582	0.000	52.8	5	75.0-125	⬇	⬇	11.4	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3930811-2 05/29/23 11:43

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)	97.0			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3930811-1 05/29/23 11:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.66	121	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			116	77.0-120	

<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

Method Blank (MB)

(MB) R3930305-1 05/29/23 10:34

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	104			75.0-131
(S) 4-Bromofluorobenzene	103			67.0-138
(S) 1,2-Dichloroethane-d4	105			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3930305-2 05/29/23 12:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.122	97.6	70.0-123	
Toluene	0.125	0.116	92.8	75.0-121	
Ethylbenzene	0.125	0.115	92.0	74.0-126	
Xylenes, Total	0.375	0.326	86.9	72.0-127	
1,2,4-Trimethylbenzene	0.125	0.117	93.6	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.120	96.0	73.0-127	
(S) Toluene-d8			105	75.0-131	
(S) 4-Bromofluorobenzene			88.9	67.0-138	
(S) 1,2-Dichloroethane-d4			114	70.0-130	

L1619780-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1619780-06 05/29/23 20:08 • (MS) R3930305-3 05/29/23 22:02 • (MSD) R3930305-4 05/29/23 22:21

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.124	ND	0.114	0.120	91.9	96.8	1	10.0-149			5.13	37
Toluene	0.124	ND	0.118	0.115	95.2	92.7	1	10.0-156			2.58	38
Ethylbenzene	0.124	ND	0.115	0.113	92.7	91.1	1	10.0-160			1.75	38
Xylenes, Total	0.372	ND	0.315	0.313	84.3	83.8	1	10.0-160			0.637	38
1,2,4-Trimethylbenzene	0.124	ND	0.109	0.112	87.9	90.3	1	10.0-160			2.71	36
1,3,5-Trimethylbenzene	0.124	ND	0.118	0.118	95.2	95.2	1	10.0-160			0.000	38
(S) Toluene-d8					104	105		75.0-131				
(S) 4-Bromofluorobenzene					92.3	90.5		67.0-138				
(S) 1,2-Dichloroethane-d4					109	113		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3931228-2 05/31/23 15:23

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	60.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3931228-1 05/31/23 15:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	31.2	62.4	50.0-150	
(S) o-Terphenyl			61.6	18.0-148	

L1619780-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1619780-06 05/31/23 18:54 • (MS) R3931228-3 05/31/23 19:08 • (MSD) R3931228-4 05/31/23 19:21

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.8	8.58	42.2	39.5	67.5	62.1	1	50.0-150			6.61	20
(S) o-Terphenyl					45.9	45.6		18.0-148				

1  
Cp

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Tc

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Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc



Method Blank (MB)

(MB) R3930912-2 05/30/23 09:16

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	89.8			23.0-120
(S) Nitrobenzene-d5	74.8			14.0-149
(S) 2-Fluorobiphenyl	68.0			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3930912-1 05/30/23 08:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0707	88.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0674	84.3	50.0-120	
Naphthalene	0.0800	0.0693	86.6	50.0-120	
(S) p-Terphenyl-d14			88.0	23.0-120	
(S) Nitrobenzene-d5			76.9	14.0-149	
(S) 2-Fluorobiphenyl			67.7	34.0-125	

L1619780-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1619780-03 05/30/23 11:34 • (MS) R3930912-3 05/30/23 11:53 • (MSD) R3930912-4 05/30/23 12:13

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 %
1-Methylnaphthalene	0.0796	ND	0.0788	0.0824	92.6	97.6	1	10.0-142			4.47	28
2-Methylnaphthalene	0.0796	ND	0.0778	0.0793	84.9	87.2	1	10.0-137			1.91	28
Naphthalene	0.0796	ND	0.0748	0.0785	87.9	93.0	1	10.0-135			4.83	27
(S) p-Terphenyl-d14					97.3	94.4		23.0-120				
(S) Nitrobenzene-d5					70.5	76.9		14.0-149				
(S) 2-Fluorobiphenyl					67.3	71.9		34.0-125				

1  
Cp

2  
Tc

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Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc

Method Blank (MB)

(MB) R3931595-2 06/01/23 01:47

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	90.9			23.0-120
(S) Nitrobenzene-d5	39.1			14.0-149
(S) 2-Fluorobiphenyl	54.7			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3931595-1 06/01/23 01:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0498	62.3	51.0-121	
2-Methylnaphthalene	0.0800	0.0526	65.8	50.0-120	
Naphthalene	0.0800	0.0513	64.1	50.0-120	
(S) p-Terphenyl-d14			104	23.0-120	
(S) Nitrobenzene-d5			78.2	14.0-149	
(S) 2-Fluorobiphenyl			87.4	34.0-125	

<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

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

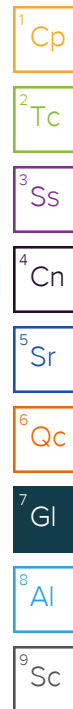
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

### Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
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.





[illegible]

June 06, 2023

<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

Sample Delivery Group: L1620240  
Samples Received: 05/25/2023  
Project Number: YCF 35-33-1  
Description: YCF 35-33-1  
Site: YCF 35-33-1  
Report To: Brett M. , Jake J. , Blair R.  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

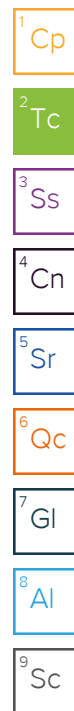
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

**Pace Analytical National**

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

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# SAMPLE SUMMARY

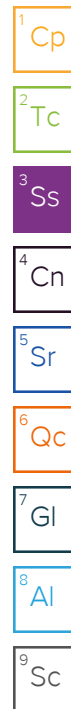
## 20230523-YCF 35-33-1-(SB07)@3-4 L1620240-01 Solid

Collected by  
K. Moreland

Collected date/time  
05/23/23 09:00

Received date/time  
05/25/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2067039	1	06/02/23 09:46	06/02/23 09:46	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2067729	5	05/28/23 06:51	05/30/23 17:40	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2069305	1	05/28/23 08:32	06/01/23 00:12	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2070193	1	05/28/23 08:32	06/01/23 23:09	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2068341	1	05/31/23 19:16	06/01/23 09:57	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2068051	1	05/30/23 00:16	05/30/23 16:09	DLH	Mt. Juliet, TN



## 20230523-YCF 35-33-1-(SB07)@13-15 L1620240-02 Solid

Collected by  
K. Moreland

Collected date/time  
05/23/23 09:50

Received date/time  
05/25/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2067039	1	06/02/23 09:49	06/02/23 09:49	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2067729	5	05/28/23 06:51	05/30/23 17:43	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2071123	1	06/03/23 14:58	06/05/23 14:43	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2070193	1	05/28/23 08:32	06/01/23 23:28	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2068341	1	05/31/23 19:16	06/01/23 10:09	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2068051	1	05/30/23 00:16	05/30/23 16:29	DLH	Mt. Juliet, TN

## 20230523-YCF 35-33-1-(SB07)@23-25 L1620240-03 Solid

Collected by  
K. Moreland

Collected date/time  
05/23/23 10:50

Received date/time  
05/25/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2067039	1	06/02/23 09:52	06/02/23 09:52	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2067729	5	05/28/23 06:51	05/30/23 17:47	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2069305	1	05/28/23 08:32	06/01/23 00:58	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2070193	1	05/28/23 08:32	06/01/23 23:47	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2068341	1	05/31/23 19:16	06/01/23 10:22	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2068887	1	05/31/23 08:54	05/31/23 19:24	DSH	Mt. Juliet, TN

## 20230523-YCF 35-33-1-(SB07)@33-35 L1620240-04 Solid

Collected by  
K. Moreland

Collected date/time  
05/23/23 11:30

Received date/time  
05/25/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2067039	1	06/02/23 09:55	06/02/23 09:55	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2067729	5	05/28/23 06:51	05/30/23 17:50	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2071123	1	06/03/23 15:05	06/05/23 15:06	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2070193	1	05/28/23 08:32	06/02/23 00:06	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2068341	1	05/31/23 19:16	06/01/23 10:34	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2068887	1	05/31/23 08:54	05/31/23 19:41	DSH	Mt. Juliet, TN

## 20230523-YCF 35-33-1-(SB07)@42-44 L1620240-05 Solid

Collected by  
K. Moreland

Collected date/time  
05/23/23 12:00

Received date/time  
05/25/23 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2067039	1	06/02/23 09:58	06/02/23 09:58	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2067729	5	05/28/23 06:51	05/30/23 17:53	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2069305	1	05/28/23 08:32	06/01/23 01:46	BAM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2070193	1	05/28/23 08:32	06/02/23 00:25	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2068341	1	05/31/23 19:16	06/01/23 10:47	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2068887	1	05/31/23 08:54	05/31/23 19:59	DSH	Mt. Juliet, TN



# SAMPLE SUMMARY

20230523-YCF 35-33-1-(SB07)@48-50 L1620240-06 Solid				Collected by K. Moreland	Collected date/time 05/23/23 12:20	Received date/time 05/25/23 08:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Calculated Results	WG2067039	1	06/02/23 10:01	06/02/23 10:01	SPL	Mt. Juliet, TN	<sup>1</sup> Cp
Metals (ICPMS) by Method 6020	WG2067729	5	05/28/23 06:51	05/30/23 17:56	LD	Mt. Juliet, TN	<sup>2</sup> Tc
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2069305	1	05/28/23 08:32	06/01/23 02:09	BAM	Mt. Juliet, TN	<sup>3</sup> Ss
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2070193	1	05/28/23 08:32	06/02/23 00:44	DWR	Mt. Juliet, TN	<sup>4</sup> Cn
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2068341	1	05/31/23 19:16	06/01/23 11:25	JAS	Mt. Juliet, TN	<sup>5</sup> Sr
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2068887	1	05/31/23 08:54	05/31/23 20:17	DSH	Mt. Juliet, TN	<sup>6</sup> Qc

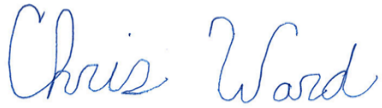
<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>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	4.97		1	06/02/2023 09:46	WG2067039

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.96		1.00	5	05/30/2023 17:40	<a href="#">WG2067729</a>
Barium	373		2.50	5	05/30/2023 17:40	<a href="#">WG2067729</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND	<a href="#">J3</a>	0.100	1	06/01/2023 00:12	<a href="#">WG2069305</a>
(S) a,a,a-Trifluorotoluene(FID)	97.9		77.0-120		06/01/2023 00:12	<a href="#">WG2069305</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/01/2023 23:09	<a href="#">WG2070193</a>
Toluene	ND		0.00500	1	06/01/2023 23:09	<a href="#">WG2070193</a>
Ethylbenzene	ND		0.00250	1	06/01/2023 23:09	<a href="#">WG2070193</a>
Xylenes, Total	ND		0.00650	1	06/01/2023 23:09	<a href="#">WG2070193</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	06/01/2023 23:09	<a href="#">WG2070193</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	06/01/2023 23:09	<a href="#">WG2070193</a>
(S) Toluene-d8	106		75.0-131		06/01/2023 23:09	<a href="#">WG2070193</a>
(S) 4-Bromofluorobenzene	92.5		67.0-138		06/01/2023 23:09	<a href="#">WG2070193</a>
(S) 1,2-Dichloroethane-d4	108		70.0-130		06/01/2023 23:09	<a href="#">WG2070193</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/01/2023 09:57	<a href="#">WG2068341</a>
C28-C36 Motor Oil Range	ND		4.00	1	06/01/2023 09:57	<a href="#">WG2068341</a>
(S) o-Terphenyl	48.6		18.0-148		06/01/2023 09:57	<a href="#">WG2068341</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/30/2023 16:09	<a href="#">WG2068051</a>
2-Methylnaphthalene	ND		0.0200	1	05/30/2023 16:09	<a href="#">WG2068051</a>
Naphthalene	ND		0.0200	1	05/30/2023 16:09	<a href="#">WG2068051</a>
(S) p-Terphenyl-d14	94.0		23.0-120		05/30/2023 16:09	<a href="#">WG2068051</a>
(S) Nitrobenzene-d5	66.1		14.0-149		05/30/2023 16:09	<a href="#">WG2068051</a>
(S) 2-Fluorobiphenyl	65.3		34.0-125		05/30/2023 16:09	<a href="#">WG2068051</a>

Sample Narrative:

L1620240-01 WG2068051: Last IS failed, reruning for impacted targets

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.62		1	06/02/2023 09:49	WG2067039

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	ND		1.00	5	05/30/2023 17:43	<a href="#">WG2067729</a>
Barium	ND		2.50	5	05/30/2023 17:43	<a href="#">WG2067729</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/05/2023 14:43	<a href="#">WG2071123</a>
(S) a,a,a-Trifluorotoluene(FID)	101		77.0-120		06/05/2023 14:43	<a href="#">WG2071123</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/01/2023 23:28	<a href="#">WG2070193</a>
Toluene	ND		0.00500	1	06/01/2023 23:28	<a href="#">WG2070193</a>
Ethylbenzene	ND		0.00250	1	06/01/2023 23:28	<a href="#">WG2070193</a>
Xylenes, Total	ND		0.00650	1	06/01/2023 23:28	<a href="#">WG2070193</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	06/01/2023 23:28	<a href="#">WG2070193</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	06/01/2023 23:28	<a href="#">WG2070193</a>
(S) Toluene-d8	104		75.0-131		06/01/2023 23:28	<a href="#">WG2070193</a>
(S) 4-Bromofluorobenzene	92.3		67.0-138		06/01/2023 23:28	<a href="#">WG2070193</a>
(S) 1,2-Dichloroethane-d4	107		70.0-130		06/01/2023 23:28	<a href="#">WG2070193</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/01/2023 10:09	<a href="#">WG2068341</a>
C28-C36 Motor Oil Range	ND		4.00	1	06/01/2023 10:09	<a href="#">WG2068341</a>
(S) o-Terphenyl	48.9		18.0-148		06/01/2023 10:09	<a href="#">WG2068341</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/30/2023 16:29	<a href="#">WG2068051</a>
2-Methylnaphthalene	ND		0.0200	1	05/30/2023 16:29	<a href="#">WG2068051</a>
Naphthalene	ND		0.0200	1	05/30/2023 16:29	<a href="#">WG2068051</a>
(S) p-Terphenyl-d14	107		23.0-120		05/30/2023 16:29	<a href="#">WG2068051</a>
(S) Nitrobenzene-d5	65.0		14.0-149		05/30/2023 16:29	<a href="#">WG2068051</a>
(S) 2-Fluorobiphenyl	69.4		34.0-125		05/30/2023 16:29	<a href="#">WG2068051</a>

## Sample Narrative:

L1620240-02 WG2068051: Last IS failed, reruning for impacted targets



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.62		1	06/02/2023 09:52	WG2067039

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.23		1.00	5	05/30/2023 17:47	<a href="#">WG2067729</a>
Barium	131		2.50	5	05/30/2023 17:47	<a href="#">WG2067729</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.107	<a href="#">B J3</a>	0.100	1	06/01/2023 00:58	<a href="#">WG2069305</a>
(S) a,a,a-Trifluorotoluene(FID)	100		77.0-120		06/01/2023 00:58	<a href="#">WG2069305</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/01/2023 23:47	<a href="#">WG2070193</a>
Toluene	ND		0.00500	1	06/01/2023 23:47	<a href="#">WG2070193</a>
Ethylbenzene	ND		0.00250	1	06/01/2023 23:47	<a href="#">WG2070193</a>
Xylenes, Total	ND		0.00650	1	06/01/2023 23:47	<a href="#">WG2070193</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	06/01/2023 23:47	<a href="#">WG2070193</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	06/01/2023 23:47	<a href="#">WG2070193</a>
(S) Toluene-d8	106		75.0-131		06/01/2023 23:47	<a href="#">WG2070193</a>
(S) 4-Bromofluorobenzene	93.8		67.0-138		06/01/2023 23:47	<a href="#">WG2070193</a>
(S) 1,2-Dichloroethane-d4	107		70.0-130		06/01/2023 23:47	<a href="#">WG2070193</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/01/2023 10:22	<a href="#">WG2068341</a>
C28-C36 Motor Oil Range	ND		4.00	1	06/01/2023 10:22	<a href="#">WG2068341</a>
(S) o-Terphenyl	63.8		18.0-148		06/01/2023 10:22	<a href="#">WG2068341</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/31/2023 19:24	<a href="#">WG2068887</a>
2-Methylnaphthalene	ND		0.0200	1	05/31/2023 19:24	<a href="#">WG2068887</a>
Naphthalene	ND		0.0200	1	05/31/2023 19:24	<a href="#">WG2068887</a>
(S) p-Terphenyl-d14	95.2		23.0-120		05/31/2023 19:24	<a href="#">WG2068887</a>
(S) Nitrobenzene-d5	71.7		14.0-149		05/31/2023 19:24	<a href="#">WG2068887</a>
(S) 2-Fluorobiphenyl	84.2		34.0-125		05/31/2023 19:24	<a href="#">WG2068887</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	1.69		1	06/02/2023 09:55	WG2067039

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.62		1.00	5	05/30/2023 17:50	<a href="#">WG2067729</a>
Barium	332		2.50	5	05/30/2023 17:50	<a href="#">WG2067729</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/05/2023 15:06	<a href="#">WG2071123</a>
(S) a,a,a-Trifluorotoluene(FID)	100		77.0-120		06/05/2023 15:06	<a href="#">WG2071123</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/02/2023 00:06	<a href="#">WG2070193</a>
Toluene	ND		0.00500	1	06/02/2023 00:06	<a href="#">WG2070193</a>
Ethylbenzene	ND		0.00250	1	06/02/2023 00:06	<a href="#">WG2070193</a>
Xylenes, Total	ND		0.00650	1	06/02/2023 00:06	<a href="#">WG2070193</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	06/02/2023 00:06	<a href="#">WG2070193</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	06/02/2023 00:06	<a href="#">WG2070193</a>
(S) Toluene-d8	109		75.0-131		06/02/2023 00:06	<a href="#">WG2070193</a>
(S) 4-Bromofluorobenzene	92.6		67.0-138		06/02/2023 00:06	<a href="#">WG2070193</a>
(S) 1,2-Dichloroethane-d4	103		70.0-130		06/02/2023 00:06	<a href="#">WG2070193</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.12		4.00	1	06/01/2023 10:34	<a href="#">WG2068341</a>
C28-C36 Motor Oil Range	ND		4.00	1	06/01/2023 10:34	<a href="#">WG2068341</a>
(S) o-Terphenyl	77.3		18.0-148		06/01/2023 10:34	<a href="#">WG2068341</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/31/2023 19:41	<a href="#">WG2068887</a>
2-Methylnaphthalene	ND		0.0200	1	05/31/2023 19:41	<a href="#">WG2068887</a>
Naphthalene	ND		0.0200	1	05/31/2023 19:41	<a href="#">WG2068887</a>
(S) p-Terphenyl-d14	85.3		23.0-120		05/31/2023 19:41	<a href="#">WG2068887</a>
(S) Nitrobenzene-d5	64.5		14.0-149		05/31/2023 19:41	<a href="#">WG2068887</a>
(S) 2-Fluorobiphenyl	77.4		34.0-125		05/31/2023 19:41	<a href="#">WG2068887</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	1.24		1	06/02/2023 09:58	WG2067039

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.05		1.00	5	05/30/2023 17:53	<a href="#">WG2067729</a>
Barium	98.0		2.50	5	05/30/2023 17:53	<a href="#">WG2067729</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	2.36	<a href="#">J3</a>	0.100	1	06/01/2023 01:46	<a href="#">WG2069305</a>
(S) a,a,a-Trifluorotoluene(FID)	99.3		77.0-120		06/01/2023 01:46	<a href="#">WG2069305</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0157		0.00100	1	06/02/2023 00:25	<a href="#">WG2070193</a>
Toluene	0.0638		0.00500	1	06/02/2023 00:25	<a href="#">WG2070193</a>
Ethylbenzene	0.00560		0.00250	1	06/02/2023 00:25	<a href="#">WG2070193</a>
Xylenes, Total	0.100		0.00650	1	06/02/2023 00:25	<a href="#">WG2070193</a>
1,2,4-Trimethylbenzene	0.0345		0.00500	1	06/02/2023 00:25	<a href="#">WG2070193</a>
1,3,5-Trimethylbenzene	0.0359		0.00500	1	06/02/2023 00:25	<a href="#">WG2070193</a>
(S) Toluene-d8	106		75.0-131		06/02/2023 00:25	<a href="#">WG2070193</a>
(S) 4-Bromofluorobenzene	98.1		67.0-138		06/02/2023 00:25	<a href="#">WG2070193</a>
(S) 1,2-Dichloroethane-d4	109		70.0-130		06/02/2023 00:25	<a href="#">WG2070193</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	9.26		4.00	1	06/01/2023 10:47	<a href="#">WG2068341</a>
C28-C36 Motor Oil Range	ND		4.00	1	06/01/2023 10:47	<a href="#">WG2068341</a>
(S) o-Terphenyl	69.9		18.0-148		06/01/2023 10:47	<a href="#">WG2068341</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/31/2023 19:59	<a href="#">WG2068887</a>
2-Methylnaphthalene	0.0288		0.0200	1	05/31/2023 19:59	<a href="#">WG2068887</a>
Naphthalene	ND		0.0200	1	05/31/2023 19:59	<a href="#">WG2068887</a>
(S) p-Terphenyl-d14	95.7		23.0-120		05/31/2023 19:59	<a href="#">WG2068887</a>
(S) Nitrobenzene-d5	80.9		14.0-149		05/31/2023 19:59	<a href="#">WG2068887</a>
(S) 2-Fluorobiphenyl	86.2		34.0-125		05/31/2023 19:59	<a href="#">WG2068887</a>

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.76		1	06/02/2023 10:01	WG2067039

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.81		1.00	5	05/30/2023 17:56	<a href="#">WG2067729</a>
Barium	405		2.50	5	05/30/2023 17:56	<a href="#">WG2067729</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND	<a href="#">J3</a>	0.100	1	06/01/2023 02:09	<a href="#">WG2069305</a>
(S) a,a,a-Trifluorotoluene(FID)	95.6		77.0-120		06/01/2023 02:09	<a href="#">WG2069305</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/02/2023 00:44	<a href="#">WG2070193</a>
Toluene	ND		0.00500	1	06/02/2023 00:44	<a href="#">WG2070193</a>
Ethylbenzene	ND		0.00250	1	06/02/2023 00:44	<a href="#">WG2070193</a>
Xylenes, Total	ND		0.00650	1	06/02/2023 00:44	<a href="#">WG2070193</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	06/02/2023 00:44	<a href="#">WG2070193</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	06/02/2023 00:44	<a href="#">WG2070193</a>
(S) Toluene-d8	107		75.0-131		06/02/2023 00:44	<a href="#">WG2070193</a>
(S) 4-Bromofluorobenzene	92.1		67.0-138		06/02/2023 00:44	<a href="#">WG2070193</a>
(S) 1,2-Dichloroethane-d4	107		70.0-130		06/02/2023 00:44	<a href="#">WG2070193</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	10.6		4.00	1	06/01/2023 11:25	<a href="#">WG2068341</a>
C28-C36 Motor Oil Range	17.8		4.00	1	06/01/2023 11:25	<a href="#">WG2068341</a>
(S) o-Terphenyl	61.0		18.0-148		06/01/2023 11:25	<a href="#">WG2068341</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	05/31/2023 20:17	<a href="#">WG2068887</a>
2-Methylnaphthalene	ND		0.0200	1	05/31/2023 20:17	<a href="#">WG2068887</a>
Naphthalene	ND		0.0200	1	05/31/2023 20:17	<a href="#">WG2068887</a>
(S) p-Terphenyl-d14	76.5		23.0-120		05/31/2023 20:17	<a href="#">WG2068887</a>
(S) Nitrobenzene-d5	60.8		14.0-149		05/31/2023 20:17	<a href="#">WG2068887</a>
(S) 2-Fluorobiphenyl	71.1		34.0-125		05/31/2023 20:17	<a href="#">WG2068887</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3930766-1 05/30/23 16:59

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50

Laboratory Control Sample (LCS)

(LCS) R3930766-2 05/30/23 17:02

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	105	105	80.0-120	
Barium	100	104	104	80.0-120	

L1620152-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620152-04 05/30/23 17:06 • (MS) R3930766-5 05/30/23 17:16 • (MSD) R3930766-6 05/30/23 17:19

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	99.7	1.80	87.0	88.4	85.2	86.6	5	75.0-125			1.59	20
Barium	99.7	474	872	628	398	154	5	75.0-125	E V	J3 V	32.5	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3931739-3 05/31/23 17:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0243	J	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	96.8			77.0-120

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

(LCS) R3931739-1 05/31/23 16:20 • (LCSD) R3931739-2 05/31/23 16:44

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.97	4.59	109	83.5	72.0-127		J3	26.1	20
(S) a,a,a-Trifluorotoluene(FID)				108	104	77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3933137-2 06/05/23 13:16

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)	98.8			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3933137-1 06/05/23 12:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.71	85.6	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			105	77.0-120	

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc

Method Blank (MB)

(MB) R3931988-2 06/01/23 16:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	105			75.0-131
(S) 4-Bromofluorobenzene	97.8			67.0-138
(S) 1,2-Dichloroethane-d4	103			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3931988-1 06/01/23 15:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.117	93.6	70.0-123	
Toluene	0.125	0.113	90.4	75.0-121	
Ethylbenzene	0.125	0.113	90.4	74.0-126	
Xylenes, Total	0.375	0.327	87.2	72.0-127	
1,2,4-Trimethylbenzene	0.125	0.107	85.6	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.104	83.2	73.0-127	
(S) Toluene-d8			101	75.0-131	
(S) 4-Bromofluorobenzene			101	67.0-138	
(S) 1,2-Dichloroethane-d4			109	70.0-130	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Method Blank (MB)

(MB) R3931686-1 06/01/23 08:17

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	0.786	⬇	0.274	4.00
(S) o-Terphenyl	54.4			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3931686-2 06/01/23 08:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	34.7	69.4	50.0-150	
(S) o-Terphenyl			78.5	18.0-148	

L1620064-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1620064-05 06/01/23 08:42 • (MS) R3931686-3 06/01/23 08:54 • (MSD) R3931686-4 06/01/23 09:06

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.5	ND	28.8	32.5	53.2	60.6	1	50.0-150			12.1	20
(S) o-Terphenyl					52.3	60.6		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) R3930912-2 05/30/23 09:16

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	89.8			23.0-120
(S) Nitrobenzene-d5	74.8			14.0-149
(S) 2-Fluorobiphenyl	68.0			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3930912-1 05/30/23 08:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0707	88.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0674	84.3	50.0-120	
Naphthalene	0.0800	0.0693	86.6	50.0-120	
(S) p-Terphenyl-d14			88.0	23.0-120	
(S) Nitrobenzene-d5			76.9	14.0-149	
(S) 2-Fluorobiphenyl			67.7	34.0-125	

L1619780-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1619780-03 05/30/23 11:34 • (MS) R3930912-3 05/30/23 11:53 • (MSD) R3930912-4 05/30/23 12:13

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 %
1-Methylnaphthalene	0.0796	ND	0.0788	0.0824	92.6	97.6	1	10.0-142			4.47	28
2-Methylnaphthalene	0.0796	ND	0.0778	0.0793	84.9	87.2	1	10.0-137			1.91	28
Naphthalene	0.0796	ND	0.0748	0.0785	87.9	93.0	1	10.0-135			4.83	27
(S) p-Terphenyl-d14					97.3	94.4		23.0-120				
(S) Nitrobenzene-d5					70.5	76.9		14.0-149				
(S) 2-Fluorobiphenyl					67.3	71.9		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3931212-2 05/31/23 13:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	75.9			23.0-120
(S) Nitrobenzene-d5	66.2			14.0-149
(S) 2-Fluorobiphenyl	71.8			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3931212-1 05/31/23 13:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0631	78.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0648	81.0	50.0-120	
Naphthalene	0.0800	0.0647	80.9	50.0-120	
(S) p-Terphenyl-d14			103	23.0-120	
(S) Nitrobenzene-d5			90.2	14.0-149	
(S) 2-Fluorobiphenyl			97.6	34.0-125	

L1617845-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1617845-03 05/31/23 14:02 • (MS) R3931212-3 05/31/23 14:20 • (MSD) R3931212-4 05/31/23 14:38

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 %
1-Methylnaphthalene	0.0778	ND	0.0699	0.0663	90.1	84.1	1	10.0-142			5.29	28
2-Methylnaphthalene	0.0778	ND	0.0733	0.0680	94.5	86.3	1	10.0-137			7.50	28
Naphthalene	0.0778	ND	0.0715	0.0670	92.1	85.0	1	10.0-135			6.50	27
(S) p-Terphenyl-d14					109	96.8		23.0-120				
(S) Nitrobenzene-d5					95.2	86.6		14.0-149				
(S) 2-Fluorobiphenyl					105	91.6		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

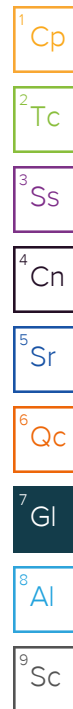
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

### Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
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.





May 23, 2023

<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

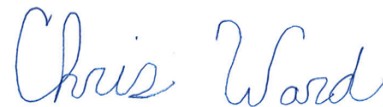
<sup>8</sup> Al

<sup>9</sup> Sc

## Caerus Oil and Gas

Sample Delivery Group: L1616267  
Samples Received: 05/13/2023  
Project Number: YCF-35-33-1  
Description: YCF-35-33-1  
Site: YCF-35-33-1  
Report To: Brett M. , Jake J. , Blair R.  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

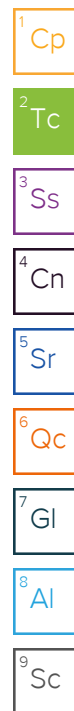
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

**Pace Analytical National**

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

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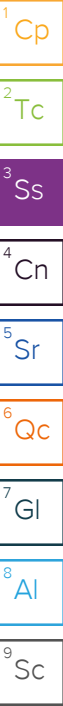


# SAMPLE SUMMARY

## 20230511-YCFBG-(YCF35-33-1-W)@3-4.5 L1616267-01 Solid

Collected by K. Moreland  
Collected date/time 05/11/23 11:20  
Received date/time 05/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2060197	1	05/20/23 16:15	05/20/23 16:15	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2062079	1	05/18/23 09:37	05/18/23 15:45	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2062126	1	05/18/23 14:09	05/18/23 16:13	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2062682	1	05/19/23 09:20	05/19/23 11:19	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2063294	1	05/22/23 08:54	05/22/23 16:11	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2059965	5	05/16/23 06:26	05/21/23 17:41	LD	Mt. Juliet, TN



## 20230511-YCFBG-(YCF35-33-1-W)@13-15 L1616267-02 Solid

Collected by K. Moreland  
Collected date/time 05/11/23 12:15  
Received date/time 05/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2060197	1	05/20/23 16:18	05/20/23 16:18	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2062079	1	05/18/23 09:37	05/18/23 15:50	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2062126	1	05/18/23 14:09	05/18/23 16:13	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2062682	1	05/19/23 09:20	05/19/23 11:19	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2063294	1	05/22/23 08:54	05/22/23 16:19	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2059965	5	05/16/23 06:26	05/21/23 17:44	LD	Mt. Juliet, TN

## 20230511-YCFBG-(YCF35-33-1-W)@23-25 L1616267-03 Solid

Collected by K. Moreland  
Collected date/time 05/11/23 13:00  
Received date/time 05/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2060197	1	05/20/23 16:21	05/20/23 16:21	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2062079	1	05/18/23 09:37	05/18/23 15:56	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2062126	1	05/18/23 14:09	05/18/23 16:13	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2062682	1	05/19/23 09:20	05/19/23 11:19	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2063294	1	05/22/23 08:54	05/22/23 16:22	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2059965	5	05/16/23 06:26	05/21/23 17:47	LD	Mt. Juliet, TN

## 20230511-YCFBG-(YCF35-33-1-W)@33-35 L1616267-04 Solid

Collected by K. Moreland  
Collected date/time 05/11/23 13:35  
Received date/time 05/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2060197	1	05/20/23 16:24	05/20/23 16:24	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2062079	1	05/18/23 09:37	05/18/23 16:01	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2062126	1	05/18/23 14:09	05/18/23 16:13	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2062682	1	05/19/23 09:20	05/19/23 11:19	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2063294	1	05/22/23 08:54	05/22/23 16:25	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2059965	5	05/16/23 06:26	05/21/23 17:51	LD	Mt. Juliet, TN

## 20230511-YCFBG-(YCF35-33-1-W)@38-40 L1616267-05 Solid

Collected by K. Moreland  
Collected date/time 05/11/23 14:00  
Received date/time 05/13/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2060197	1	05/20/23 16:32	05/20/23 16:32	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2062079	1	05/18/23 09:37	05/18/23 16:06	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2062126	1	05/18/23 14:09	05/18/23 16:13	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2062682	1	05/19/23 09:20	05/19/23 11:19	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2063294	1	05/22/23 08:54	05/22/23 16:27	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2059965	5	05/16/23 06:26	05/21/23 17:54	LD	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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.34		1	05/20/2023 16:15	WG2060197

1  
Cp

2  
Tc

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/18/2023 15:45	<a href="#">WG2062079</a>

3  
Ss

4  
Cn

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.09	<a href="#">T8</a>	1	05/18/2023 16:13	<a href="#">WG2062126</a>

5  
Sr

6  
Qc

Sample Narrative:

L1616267-01 WG2062126: 9.09 at 20.7C

7  
Gl

8  
Al

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	141		10.0	1	05/19/2023 11:19	<a href="#">WG2062682</a>

9  
Sc

Sample Narrative:

L1616267-01 WG2062682: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	05/22/2023 16:11	<a href="#">WG2063294</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.68		1.00	5	05/21/2023 17:41	<a href="#">WG2059965</a>
Barium	509		2.50	5	05/21/2023 17:41	<a href="#">WG2059965</a>
Cadmium	ND		1.00	5	05/21/2023 17:41	<a href="#">WG2059965</a>
Copper	11.1		5.00	5	05/21/2023 17:41	<a href="#">WG2059965</a>
Lead	6.94		2.00	5	05/21/2023 17:41	<a href="#">WG2059965</a>
Nickel	10.9		2.50	5	05/21/2023 17:41	<a href="#">WG2059965</a>
Selenium	ND		2.50	5	05/21/2023 17:41	<a href="#">WG2059965</a>
Silver	ND		0.500	5	05/21/2023 17:41	<a href="#">WG2059965</a>
Zinc	30.0		25.0	5	05/21/2023 17:41	<a href="#">WG2059965</a>

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.28		1	05/20/2023 16:18	WG2060197

1  
Cp

2  
Tc

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/18/2023 15:50	<a href="#">WG2062079</a>

3  
Ss

4  
Cn

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.17	<a href="#">T8</a>	1	05/18/2023 16:13	<a href="#">WG2062126</a>

5  
Sr

6  
Qc

Sample Narrative:

L1616267-02 WG2062126: 9.17 at 20.6C

7  
Gl

8  
Al

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	198		10.0	1	05/19/2023 11:19	<a href="#">WG2062682</a>

9  
Sc

Sample Narrative:

L1616267-02 WG2062682: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	05/22/2023 16:19	<a href="#">WG2063294</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	7.15		1.00	5	05/21/2023 17:44	<a href="#">WG2059965</a>
Barium	417		2.50	5	05/21/2023 17:44	<a href="#">WG2059965</a>
Cadmium	ND		1.00	5	05/21/2023 17:44	<a href="#">WG2059965</a>
Copper	7.01		5.00	5	05/21/2023 17:44	<a href="#">WG2059965</a>
Lead	5.96		2.00	5	05/21/2023 17:44	<a href="#">WG2059965</a>
Nickel	7.11		2.50	5	05/21/2023 17:44	<a href="#">WG2059965</a>
Selenium	ND		2.50	5	05/21/2023 17:44	<a href="#">WG2059965</a>
Silver	ND		0.500	5	05/21/2023 17:44	<a href="#">WG2059965</a>
Zinc	28.8		25.0	5	05/21/2023 17:44	<a href="#">WG2059965</a>

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.63		1	05/20/2023 16:21	WG2060197

1  
Cp

2  
Tc

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/18/2023 15:56	<a href="#">WG2062079</a>

3  
Ss

4  
Cn

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.77	<a href="#">T8</a>	1	05/18/2023 16:13	<a href="#">WG2062126</a>

5  
Sr

6  
Qc

Sample Narrative:

L1616267-03 WG2062126: 8.77 at 20.6C

7  
Gl

8  
Al

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	183		10.0	1	05/19/2023 11:19	<a href="#">WG2062682</a>

9  
Sc

Sample Narrative:

L1616267-03 WG2062682: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	05/22/2023 16:22	<a href="#">WG2063294</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.32		1.00	5	05/21/2023 17:47	<a href="#">WG2059965</a>
Barium	264		2.50	5	05/21/2023 17:47	<a href="#">WG2059965</a>
Cadmium	ND		1.00	5	05/21/2023 17:47	<a href="#">WG2059965</a>
Copper	17.7		5.00	5	05/21/2023 17:47	<a href="#">WG2059965</a>
Lead	15.2		2.00	5	05/21/2023 17:47	<a href="#">WG2059965</a>
Nickel	18.2		2.50	5	05/21/2023 17:47	<a href="#">WG2059965</a>
Selenium	ND		2.50	5	05/21/2023 17:47	<a href="#">WG2059965</a>
Silver	ND		0.500	5	05/21/2023 17:47	<a href="#">WG2059965</a>
Zinc	51.0		25.0	5	05/21/2023 17:47	<a href="#">WG2059965</a>

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.92		1	05/20/2023 16:24	WG2060197

1  
Cp

2  
Tc

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/18/2023 16:01	<a href="#">WG2062079</a>

3  
Ss

4  
Cn

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.65	<a href="#">T8</a>	1	05/18/2023 16:13	<a href="#">WG2062126</a>

5  
Sr

6  
Qc

Sample Narrative:

L1616267-04 WG2062126: 8.65 at 20.6C

7  
Gl

8  
Al

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	202		10.0	1	05/19/2023 11:19	<a href="#">WG2062682</a>

9  
Sc

Sample Narrative:

L1616267-04 WG2062682: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	05/22/2023 16:25	<a href="#">WG2063294</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.89		1.00	5	05/21/2023 17:51	<a href="#">WG2059965</a>
Barium	322		2.50	5	05/21/2023 17:51	<a href="#">WG2059965</a>
Cadmium	ND		1.00	5	05/21/2023 17:51	<a href="#">WG2059965</a>
Copper	18.5		5.00	5	05/21/2023 17:51	<a href="#">WG2059965</a>
Lead	14.8		2.00	5	05/21/2023 17:51	<a href="#">WG2059965</a>
Nickel	19.5		2.50	5	05/21/2023 17:51	<a href="#">WG2059965</a>
Selenium	ND		2.50	5	05/21/2023 17:51	<a href="#">WG2059965</a>
Silver	ND		0.500	5	05/21/2023 17:51	<a href="#">WG2059965</a>
Zinc	49.7		25.0	5	05/21/2023 17:51	<a href="#">WG2059965</a>



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.02		1	05/20/2023 16:32	WG2060197

1  
Cp

2  
Tc

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/18/2023 16:06	<a href="#">WG2062079</a>

3  
Ss

4  
Cn

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.58	<a href="#">T8</a>	1	05/18/2023 16:13	<a href="#">WG2062126</a>

5  
Sr

6  
Qc

Sample Narrative:

L1616267-05 WG2062126: 8.58 at 20.2C

7  
Gl

8  
Al

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	275		10.0	1	05/19/2023 11:19	<a href="#">WG2062682</a>

9  
Sc

Sample Narrative:

L1616267-05 WG2062682: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	05/22/2023 16:27	<a href="#">WG2063294</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.45		1.00	5	05/21/2023 17:54	<a href="#">WG2059965</a>
Barium	218		2.50	5	05/21/2023 17:54	<a href="#">WG2059965</a>
Cadmium	ND		1.00	5	05/21/2023 17:54	<a href="#">WG2059965</a>
Copper	16.7		5.00	5	05/21/2023 17:54	<a href="#">WG2059965</a>
Lead	13.7		2.00	5	05/21/2023 17:54	<a href="#">WG2059965</a>
Nickel	16.6		2.50	5	05/21/2023 17:54	<a href="#">WG2059965</a>
Selenium	ND		2.50	5	05/21/2023 17:54	<a href="#">WG2059965</a>
Silver	ND		0.500	5	05/21/2023 17:54	<a href="#">WG2059965</a>
Zinc	49.1		25.0	5	05/21/2023 17:54	<a href="#">WG2059965</a>

Method Blank (MB)

(MB) R3926652-1 05/18/23 15:33

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

L1616836-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1616836-01 05/18/23 16:11 • (DUP) R3926652-3 05/18/23 16:16

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

L1617103-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1617103-08 05/18/23 17:50 • (DUP) R3926652-8 05/18/23 17:55

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

Laboratory Control Sample (LCS)

(LCS) R3926652-2 05/18/23 15:40

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	8.92	89.2	80.0-120	

L1616836-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1616836-03 05/18/23 16:37 • (MS) R3926652-4 05/18/23 16:42 • (MSD) R3926652-5 05/18/23 16:48

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	ND	16.7	17.4	83.7	87.0	1	75.0-125			3.91	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1616575-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1616575-04 05/18/23 16:13 • (DUP) R3926617-3 05/18/23 16:13

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	9.10	9.09	1	0.110		1

Sample Narrative:

OS: 9.1 at 20C  
DUP: 9.09 at 20.1C

Laboratory Control Sample (LCS)

(LCS) R3926617-1 05/18/23 16:13

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

Sample Narrative:

LCS: 10 at 20.1C

<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) R3926887-1 05/19/23 11:19

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

Sample Narrative:  
BLANK: at 25C

L1615973-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1615973-08 05/19/23 11:19 • (DUP) R3926887-3 05/19/23 11:19

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	240	244	1	1.32		20

Sample Narrative:  
OS: at 25C  
DUP: at 25C

L1616575-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1616575-05 05/19/23 11:19 • (DUP) R3926887-4 05/19/23 11:19

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	488	489	1	0.205		20

Sample Narrative:  
OS: at 25C  
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3926887-2 05/19/23 11:19

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	327	335	102	85.0-115	

Sample Narrative:  
LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3927917-1 05/22/23 15:47

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

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

(LCS) R3927917-2 05/22/23 15:49 • (LCSD) R3927917-3 05/22/23 15:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.03	1.07	103	107	80.0-120			3.83	20

<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) R3927452-1 05/21/23 16:11

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50
Cadmium	U		0.0855	1.00
Copper	U		0.133	5.00
Lead	U		0.0990	2.00
Nickel	U		0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

Laboratory Control Sample (LCS)

(LCS) R3927452-2 05/21/23 16:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	91.7	91.7	80.0-120	
Barium	100	91.1	91.1	80.0-120	
Cadmium	100	93.3	93.3	80.0-120	
Copper	100	87.3	87.3	80.0-120	
Lead	100	88.7	88.7	80.0-120	
Nickel	100	93.6	93.6	80.0-120	
Selenium	100	97.2	97.2	80.0-120	
Silver	20.0	18.5	92.4	80.0-120	
Zinc	100	91.7	91.7	80.0-120	

L1616104-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1616104-03 05/21/23 16:18 • (MS) R3927452-5 05/21/23 16:28 • (MSD) R3927452-6 05/21/23 16:31

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	7.52	102	108	94.5	100	5	75.0-125			5.33	20
Barium	100	72.9	142	178	69.3	105	5	75.0-125	J6	J3	22.4	20
Cadmium	100	ND	105	113	104	112	5	75.0-125			7.27	20
Copper	100	12.4	103	111	90.3	98.8	5	75.0-125			7.94	20
Lead	100	9.82	101	112	90.7	102	5	75.0-125			10.4	20
Nickel	100	20.0	111	120	91.0	100	5	75.0-125			7.98	20
Selenium	100	ND	112	116	111	115	5	75.0-125			3.51	20
Silver	20.0	ND	20.2	21.6	101	108	5	75.0-125			6.55	20
Zinc	100	43.4	128	138	84.4	94.6	5	75.0-125			7.64	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

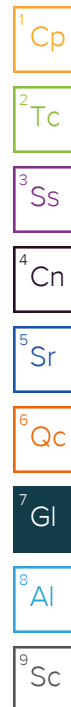
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

## Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
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
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.



# ACCREDITATIONS & LOCATIONS

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

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico <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 & Gas LLC  
143 Diamond Avenue  
Parachute, CO 81635  
970-285-9606

Billing Information:

Same as above

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:  
bmiddleton@caerusoilandgas.com

Email To:  
bmiddleton@caerusoilandgas.com

Project  
Description: YLF 35-33-1

City/State  
Collected: Piceance Creek, CO

Phone:  
Fax:

Client Project #

YLF 35-33-1

Lab Project #

YLF 35-33-1

Collected by (print):

K. MORELAND

Site/Facility ID #

YLF 35-33-1

P.O. #

Collected by (signature):

K. Moreland

Rush? (Lab MUST Be Notified)

Same Day Five Day  
Next Day 5 Day (Rad Only)  
Two Day 10 Day (Rad Only)  
Three Day

Quote #

Date Results Needed

Standard TAT

Immediately  
Packed on Ice N Y X

No.  
of  
Cnts

Sample ID	Comp/Grab	Matrix *	Depth'	Date	Time	No. of Cnts
20230511-YLFBG-(YLF 35-33-1-W) 03-45		SS	3-4.5	5/11/23	1120	2
20230511-YLFBG-(YLF 35-33-1-W) 013-15			13-15		1215	1
20230511-YLFBG-(YLF 35-33-1-W) 023-25			23-25		1300	
20230511-YLFBG-(YLF 35-33-1-W) 033-35			33-35		1335	
20230511-YLFBG-(YLF 35-33-1-W) 038-40			38-40		1400	

TPH- GRO, DRO, ORO

BTEX

TABLE 915-1- PAH's

SAR, EC, pH, Boron

TABLE 915-1- Metals

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Remarks

Sample # (lab only)

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

Remarks:

Samples returned via:

UPS FedEx Courier

Tracking #

5882 7564 7331

Received by: (Signature)

Trip Blank Received: Yes/No  
HCL/ MeOH  
TBR

Received by: (Signature)

Temp: °C Bottles Received:  
3.4+0=3.4 10

Received for lab by: (Signature)

Date: Time:

If preservation required by Login: Date/Time

Hold:

Condition:  
NCF / OK

Sample Receipt Checklist  
COC Seal Present/Intact: NP 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

**Caerus Oil and Gas**

Sample Delivery Group: L1616575  
Samples Received: 05/16/2023  
Project Number: YCF 35-33-1  
Description: YCF 35-33-1  
Site: YCF 35-33-1  
Report To: Brett M. , Jake J. , Blair R.  
143 Diamond Avenue  
Parachute, CO 81635

<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

Entire Report Reviewed By:



T. Alan Harvill  
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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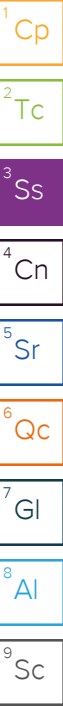


# SAMPLE SUMMARY

20230512-YCFBG-(YCF35-33-1-NW)@3-5 L1616575-01 Solid

Collected by K. Moreland  
Collected date/time 05/12/23 09:15  
Received date/time 05/16/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2061904	1	05/24/23 13:36	05/24/23 13:36	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2061041	1	05/17/23 03:21	05/17/23 12:06	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2062126	1	05/18/23 14:09	05/18/23 16:13	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2062682	1	05/19/23 09:20	05/19/23 11:19	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2061906	1	05/23/23 14:06	05/23/23 23:15	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2061326	5	05/17/23 09:25	05/17/23 21:15	SJM	Mt. Juliet, TN



20230512-YCFBG-(YCF35-33-1-NW)@13-15 L1616575-02 Solid

Collected by K. Moreland  
Collected date/time 05/12/23 09:50  
Received date/time 05/16/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2061904	1	05/24/23 13:39	05/24/23 13:39	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2061041	1	05/17/23 03:21	05/17/23 12:11	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2062126	1	05/18/23 14:09	05/18/23 16:13	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2062682	1	05/19/23 09:20	05/19/23 11:19	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2061906	1	05/23/23 14:06	05/23/23 23:17	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2061326	5	05/17/23 09:25	05/17/23 21:18	SJM	Mt. Juliet, TN

20230512-YCFBG-(YCF35-33-1-NW)@23-25 L1616575-03 Solid

Collected by K. Moreland  
Collected date/time 05/12/23 10:30  
Received date/time 05/16/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2061904	1	05/24/23 13:42	05/24/23 13:42	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2061041	1	05/17/23 03:21	05/17/23 12:16	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2062126	1	05/18/23 14:09	05/18/23 16:13	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2062682	1	05/19/23 09:20	05/19/23 11:19	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2061906	1	05/23/23 14:06	05/23/23 23:20	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2061326	5	05/17/23 09:25	05/17/23 21:22	SJM	Mt. Juliet, TN

20230512-YCFBG-(YCF35-33-1-NW)@33-35 L1616575-04 Solid

Collected by K. Moreland  
Collected date/time 05/12/23 11:20  
Received date/time 05/16/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2061904	1	05/24/23 13:44	05/24/23 13:44	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2061041	1	05/17/23 03:21	05/17/23 12:32	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2062126	1	05/18/23 14:09	05/18/23 16:13	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2062682	1	05/19/23 09:20	05/19/23 11:19	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2061906	1	05/23/23 14:06	05/23/23 23:23	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2061326	5	05/17/23 09:25	05/17/23 21:25	SJM	Mt. Juliet, TN

20230512-YCFBG-(YCF35-33-1-NW)@38-40 L1616575-05 Solid

Collected by K. Moreland  
Collected date/time 05/12/23 11:35  
Received date/time 05/16/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2061904	1	05/24/23 13:47	05/24/23 13:47	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2061041	1	05/17/23 03:21	05/17/23 12:37	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2062126	1	05/18/23 14:09	05/18/23 16:13	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2062682	1	05/19/23 09:20	05/19/23 11:19	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2061906	1	05/23/23 14:06	05/23/23 23:25	SPL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2061326	5	05/17/23 09:25	05/17/23 19:55	SJM	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.



T. Alan Harvill  
Project Manager

## Report Revision History

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Level II Report - Version 1: 05/25/23 15:46

## Project Narrative

---

Revised to correct sample IDs.



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	13.8		1	05/24/2023 13:36	WG2061904

1  
Cp

2  
Tc

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	1.36		1.00	1	05/17/2023 12:06	<a href="#">WG2061041</a>

3  
Ss

4  
Cn

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.13	<a href="#">T8</a>	1	05/18/2023 16:13	<a href="#">WG2062126</a>

5  
Sr

6  
Qc

Sample Narrative:

L1616575-01 WG2062126: 8.13 at 20.3C

7  
Gl

8  
Al

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	3530		10.0	1	05/19/2023 11:19	<a href="#">WG2062682</a>

9  
Sc

Sample Narrative:

L1616575-01 WG2062682: at 25C

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.611		0.200	1	05/23/2023 23:15	<a href="#">WG2061906</a>

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.13		1.00	5	05/17/2023 21:15	<a href="#">WG2061326</a>
Barium	290		2.50	5	05/17/2023 21:15	<a href="#">WG2061326</a>
Cadmium	ND		1.00	5	05/17/2023 21:15	<a href="#">WG2061326</a>
Copper	30.0		5.00	5	05/17/2023 21:15	<a href="#">WG2061326</a>
Lead	17.2		2.00	5	05/17/2023 21:15	<a href="#">WG2061326</a>
Nickel	25.0		2.50	5	05/17/2023 21:15	<a href="#">WG2061326</a>
Selenium	ND		2.50	5	05/17/2023 21:15	<a href="#">WG2061326</a>
Silver	ND		0.500	5	05/17/2023 21:15	<a href="#">WG2061326</a>
Zinc	56.6		25.0	5	05/17/2023 21:15	<a href="#">WG2061326</a>

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.62		1	05/24/2023 13:39	WG2061904

<sup>1</sup>Cp

<sup>2</sup>Tc

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/17/2023 12:11	<a href="#">WG2061041</a>

<sup>3</sup>Ss

<sup>4</sup>Cn

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.02	<a href="#">T8</a>	1	05/18/2023 16:13	<a href="#">WG2062126</a>

<sup>5</sup>Sr

<sup>6</sup>Qc

Sample Narrative:

L1616575-02 WG2062126: 9.02 at 20.1C

<sup>7</sup>Gl

<sup>8</sup>Al

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	311		10.0	1	05/19/2023 11:19	<a href="#">WG2062682</a>

<sup>9</sup>Sc

Sample Narrative:

L1616575-02 WG2062682: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.509		0.200	1	05/23/2023 23:17	<a href="#">WG2061906</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	2.78		1.00	5	05/17/2023 21:18	<a href="#">WG2061326</a>
Barium	212		2.50	5	05/17/2023 21:18	<a href="#">WG2061326</a>
Cadmium	ND		1.00	5	05/17/2023 21:18	<a href="#">WG2061326</a>
Copper	12.6		5.00	5	05/17/2023 21:18	<a href="#">WG2061326</a>
Lead	12.2		2.00	5	05/17/2023 21:18	<a href="#">WG2061326</a>
Nickel	12.4		2.50	5	05/17/2023 21:18	<a href="#">WG2061326</a>
Selenium	ND		2.50	5	05/17/2023 21:18	<a href="#">WG2061326</a>
Silver	ND		0.500	5	05/17/2023 21:18	<a href="#">WG2061326</a>
Zinc	41.6		25.0	5	05/17/2023 21:18	<a href="#">WG2061326</a>



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.99		1	05/24/2023 13:42	WG2061904

1  
Cp

2  
Tc

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/17/2023 12:16	<a href="#">WG2061041</a>

3  
Ss

4  
Cn

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.01	<a href="#">T8</a>	1	05/18/2023 16:13	<a href="#">WG2062126</a>

5  
Sr

6  
Qc

Sample Narrative:

L1616575-03 WG2062126: 9.01 at 19.8C

7  
Gl

8  
Al

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	376		10.0	1	05/19/2023 11:19	<a href="#">WG2062682</a>

9  
Sc

Sample Narrative:

L1616575-03 WG2062682: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.510		0.200	1	05/23/2023 23:20	<a href="#">WG2061906</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.17		1.00	5	05/17/2023 21:22	<a href="#">WG2061326</a>
Barium	418		2.50	5	05/17/2023 21:22	<a href="#">WG2061326</a>
Cadmium	ND		1.00	5	05/17/2023 21:22	<a href="#">WG2061326</a>
Copper	13.6		5.00	5	05/17/2023 21:22	<a href="#">WG2061326</a>
Lead	13.4		2.00	5	05/17/2023 21:22	<a href="#">WG2061326</a>
Nickel	16.0		2.50	5	05/17/2023 21:22	<a href="#">WG2061326</a>
Selenium	ND		2.50	5	05/17/2023 21:22	<a href="#">WG2061326</a>
Silver	ND		0.500	5	05/17/2023 21:22	<a href="#">WG2061326</a>
Zinc	46.0		25.0	5	05/17/2023 21:22	<a href="#">WG2061326</a>

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.46		1	05/24/2023 13:44	WG2061904

1  
Cp

2  
Tc

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/17/2023 12:32	<a href="#">WG2061041</a>

3  
Ss

4  
Cn

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.10	<a href="#">T8</a>	1	05/18/2023 16:13	<a href="#">WG2062126</a>

5  
Sr

6  
Qc

Sample Narrative:

L1616575-04 WG2062126: 9.1 at 20C

7  
Gl

8  
Al

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	229		10.0	1	05/19/2023 11:19	<a href="#">WG2062682</a>

9  
Sc

Sample Narrative:

L1616575-04 WG2062682: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.445		0.200	1	05/23/2023 23:23	<a href="#">WG2061906</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.42		1.00	5	05/17/2023 21:25	<a href="#">WG2061326</a>
Barium	138		2.50	5	05/17/2023 21:25	<a href="#">WG2061326</a>
Cadmium	ND		1.00	5	05/17/2023 21:25	<a href="#">WG2061326</a>
Copper	14.6		5.00	5	05/17/2023 21:25	<a href="#">WG2061326</a>
Lead	11.9		2.00	5	05/17/2023 21:25	<a href="#">WG2061326</a>
Nickel	13.5		2.50	5	05/17/2023 21:25	<a href="#">WG2061326</a>
Selenium	ND		2.50	5	05/17/2023 21:25	<a href="#">WG2061326</a>
Silver	ND		0.500	5	05/17/2023 21:25	<a href="#">WG2061326</a>
Zinc	42.0		25.0	5	05/17/2023 21:25	<a href="#">WG2061326</a>

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.59		1	05/24/2023 13:47	WG2061904

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	05/17/2023 12:37	<a href="#">WG2061041</a>

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.83	<a href="#">T8</a>	1	05/18/2023 16:13	<a href="#">WG2062126</a>

Sample Narrative:

L1616575-05 WG2062126: 8.83 at 20C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	488		10.0	1	05/19/2023 11:19	<a href="#">WG2062682</a>

Sample Narrative:

L1616575-05 WG2062682: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.566		0.200	1	05/23/2023 23:25	<a href="#">WG2061906</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.05		1.00	5	05/17/2023 19:55	<a href="#">WG2061326</a>
Barium	162		2.50	5	05/17/2023 19:55	<a href="#">WG2061326</a>
Cadmium	ND		1.00	5	05/17/2023 19:55	<a href="#">WG2061326</a>
Copper	15.8		5.00	5	05/17/2023 19:55	<a href="#">WG2061326</a>
Lead	12.6		2.00	5	05/17/2023 19:55	<a href="#">WG2061326</a>
Nickel	14.2		2.50	5	05/17/2023 19:55	<a href="#">WG2061326</a>
Selenium	ND		2.50	5	05/17/2023 19:55	<a href="#">WG2061326</a>
Silver	ND		0.500	5	05/17/2023 19:55	<a href="#">WG2061326</a>
Zinc	44.2		25.0	5	05/17/2023 19:55	<a href="#">WG2061326</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3925906-1 05/17/23 10:25

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

L1615483-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1615483-08 05/17/23 11:45 • (DUP) R3925906-7 05/17/23 11:50

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

L1616119-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1616119-11 05/17/23 11:56 • (DUP) R3925906-8 05/17/23 12:01

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	16.2		20

Laboratory Control Sample (LCS)

(LCS) R3925906-2 05/17/23 10:33

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.78	97.8	80.0-120	

L1615483-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1615483-01 05/17/23 10:38 • (MS) R3925906-3 05/17/23 10:43 • (MSD) R3925906-4 05/17/23 10:48

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	ND	17.1	12.9	85.6	64.6	1	75.0-125		J3 J6	28.0	20

L1615483-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1615483-01 05/17/23 10:38 • (MS) R3925906-5 05/17/23 10:53

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	638	ND	336	52.7	50	75.0-125	J6

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1616575-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1616575-04 05/18/23 16:13 • (DUP) R3926617-3 05/18/23 16:13

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	9.10	9.09	1	0.110		1

Sample Narrative:

OS: 9.1 at 20C  
DUP: 9.09 at 20.1C

Laboratory Control Sample (LCS)

(LCS) R3926617-1 05/18/23 16:13

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

Sample Narrative:

LCS: 10 at 20.1C

<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) R3926887-1 05/19/23 11:19

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

Sample Narrative:  
BLANK: at 25C

L1615973-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1615973-08 05/19/23 11:19 • (DUP) R3926887-3 05/19/23 11:19

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	240	244	1	1.32		20

Sample Narrative:  
OS: at 25C  
DUP: at 25C

L1616575-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1616575-05 05/19/23 11:19 • (DUP) R3926887-4 05/19/23 11:19

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	488	489	1	0.205		20

Sample Narrative:  
OS: at 25C  
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3926887-2 05/19/23 11:19

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	327	335	102	85.0-115	

Sample Narrative:  
LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3928527-1 05/23/23 23:06

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

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

(LCS) R3928527-2 05/23/23 23:09 • (LCSD) R3928527-3 05/23/23 23:11

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.05	1.07	105	107	80.0-120			2.18	20

<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) R3926217-1 05/17/23 19:48

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50
Cadmium	U		0.0855	1.00
Copper	U		0.133	5.00
Lead	U		0.0990	2.00
Nickel	U		0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

Laboratory Control Sample (LCS)

(LCS) R3926217-2 05/17/23 19:52

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	102	102	80.0-120	
Barium	100	100	100	80.0-120	
Cadmium	100	106	106	80.0-120	
Copper	100	100	100	80.0-120	
Lead	100	98.0	98.0	80.0-120	
Nickel	100	103	103	80.0-120	
Selenium	100	108	108	80.0-120	
Silver	20.0	20.1	101	80.0-120	
Zinc	100	100	100	80.0-120	

L1616575-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1616575-05 05/17/23 19:55 • (MS) R3926217-5 05/17/23 20:05 • (MSD) R3926217-6 05/17/23 20:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	3.05	87.7	89.7	84.7	86.6	5	75.0-125			2.18	20
Barium	100	162	263	247	101	84.7	5	75.0-125			6.36	20
Cadmium	100	ND	93.7	95.7	93.6	95.6	5	75.0-125			2.15	20
Copper	100	15.8	98.4	101	82.6	85.0	5	75.0-125			2.43	20
Lead	100	12.6	100	105	87.8	92.8	5	75.0-125			4.83	20
Nickel	100	14.2	101	106	86.7	91.4	5	75.0-125			4.59	20
Selenium	100	ND	95.7	95.5	95.3	95.1	5	75.0-125			0.262	20
Silver	20.0	ND	17.8	18.1	88.9	90.7	5	75.0-125			1.98	20
Zinc	100	44.2	131	133	87.3	88.7	5	75.0-125			1.05	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

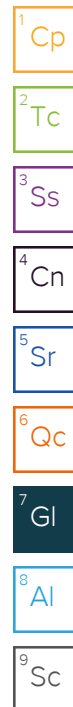
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

## Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
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
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.



# ACCREDITATIONS & LOCATIONS

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

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico <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.





**Billing Information:**

Same as above

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

Phone:	Client Project #	Lab Project #
Fax:	YLF 35-33-1	YLF 35-33-1

Collected by (signature):	<b>Rush?</b> (Lab MUST Be Notified) Same Day      Five Day	Quote #
---------------------------	---	---------

Next Day ☐ 5 Day (Rad Only) ☐  
Two Day ☐ 10 Day (Rad Only) ☐  
Three Day ☐

Date Results Needed

Standard TAT

Sample ID	Comp/Grab	Matrix *	Depth /	Date	Time
-----------	-----------	----------	---------	------	------


20230512-YCFBG-(YCF35-33+1-NW)E3-5	SS	3-5	5/12/23	915
20230512-YCFBG-(YCF35-33+1-NW)E13-15		13-15		950
20230512-YCFBG-(YCF35-33+1-NW)E23-25		23-25		1030
20230512-YCFBG-(YCF35-33+1-NW)E33-35		33-35		1120
20230512-YCFBG-(YCF35-33+1-NW)E38-40		38-40		1135

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

Remarks:

Samples returned via:  
UPS      FedEx      Courier

Relinquished by: (Signature)	Date:	Time:
<i>S. Monahan</i>	5/15/23	1400

Relinquished by: (Signature)	Date:	Time:
	5/5/23	1700

Relinquished by : (Signature)	Date:	Time:
-------------------------------	-------	-------

Tracking # 6126 6537 3707

Received by: (Signature)	Trip Blank Received: Yes / <u>No</u> HCL / MeOH TBR
--------------------------	---

Received by: (Signature)	Temp: 19.4°C 1.2h = 1.2	Bottles Received: 10
--------------------------	----------------------------	-------------------------

Received for lab by: (Signature)	Date:	Time:
<i>[Signature]</i>	5-16-23	9:00

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



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



L# 44657

Table # B22.

Acctn

Template

Prelogin:

TSR:

PB:

Shipped Via:

Remarks	Sample # (lab only)
---------	---------------------

		-01
		-02
		-03
		-04
		-05

### Sample Receipt Checklist

COC Seal Present/Intact: NP 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

If preservation required by Login: Date/Time

Hold:	Condition: NCF / OK
-------	------------------------

## Caerus Oil and Gas

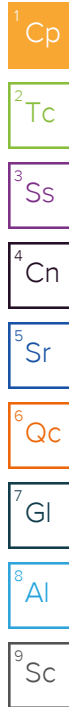
Sample Delivery Group: L1485076  
Samples Received: 04/21/2022  
Project Number: YCF 35-33-1  
Description: YCF 35-33-1  
Site: YCF 35-33-1  
Report To: Brett Middleton  
143 Diamond Avenue  
Parachute, CO 81635

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

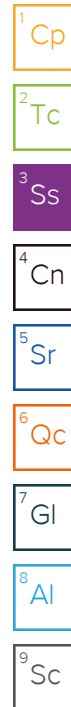
## 20220419-YCF 35-33-1 (POCA) L1485076-01 Solid

Collected by  
K. Moreland

Collected date/time  
04/19/22 10:45

Received date/time  
04/21/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1853665	1	04/27/22 22:30	04/27/22 22:30	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1853623	1	04/26/22 00:38	04/27/22 14:25	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1853301	1	04/26/22 08:00	04/26/22 10:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1853745	1	04/25/22 07:47	04/25/22 11:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1852954	1	04/24/22 08:37	04/27/22 18:44	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1855508	1	04/27/22 21:46	04/28/22 12:54	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1852959	5	04/24/22 08:27	04/25/22 00:15	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1854453	2000	04/23/22 16:30	04/27/22 10:34	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1853405	20	04/23/22 16:30	04/24/22 01:43	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1853697	400	04/23/22 16:30	04/25/22 17:10	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1855177	1	04/27/22 18:26	04/28/22 04:13	JAS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1855177	20	04/27/22 18:26	04/28/22 10:25	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1854729	1	04/27/22 03:33	04/27/22 11:37	AMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1854729	10	04/27/22 03:33	04/28/22 13:02	AMG	Mt. Juliet, TN



## 20220419-YCF 35-33-1 (POCA)@2' L1485076-02 Solid

Collected by  
K. Moreland

Collected date/time  
04/19/22 11:30

Received date/time  
04/21/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1853665	1	04/27/22 22:33	04/27/22 22:33	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1853623	1	04/26/22 00:38	04/27/22 14:51	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1854386	1	04/26/22 13:00	04/26/22 15:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1851216	1	04/25/22 07:51	04/25/22 10:12	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1852954	1	04/24/22 08:37	04/27/22 18:47	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1855508	1	04/27/22 21:46	04/28/22 12:57	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1852959	5	04/24/22 08:27	04/25/22 00:19	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1853645	100	04/23/22 16:30	04/24/22 23:56	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1853405	8	04/23/22 16:30	04/24/22 02:02	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1853697	200	04/23/22 16:30	04/25/22 16:51	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1855177	1	04/27/22 18:26	04/28/22 04:26	JAS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1855177	5	04/27/22 18:26	04/28/22 10:12	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1854729	1	04/27/22 03:33	04/27/22 11:57	AMG	Mt. Juliet, TN

## 20220419-YCF 35-33-1 (POCB) L1485076-03 Solid

Collected by  
K. Moreland

Collected date/time  
04/19/22 10:48

Received date/time  
04/21/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1853665	1	04/27/22 22:35	04/27/22 22:35	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1853623	1	04/26/22 00:38	04/27/22 14:57	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1853301	1	04/26/22 08:00	04/26/22 10:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1853745	1	04/25/22 07:47	04/25/22 11:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1852954	1	04/24/22 08:37	04/27/22 18:31	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1855508	1	04/27/22 21:46	04/28/22 13:00	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1852959	5	04/24/22 08:27	04/24/22 23:59	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1853596	1	04/23/22 16:30	04/25/22 06:36	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1853405	1	04/23/22 16:30	04/23/22 21:55	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1855177	1	04/27/22 18:26	04/28/22 04:40	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1854729	1	04/27/22 03:33	04/27/22 12:17	AMG	Mt. Juliet, TN

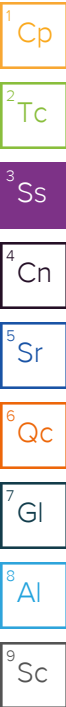


# SAMPLE SUMMARY

## 20220419-YCF 35-33-1 (POCB)@2' L1485076-04 Solid

Collected by K. Moreland  
Collected date/time 04/19/22 11:35  
Received date/time 04/21/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1853665	1	04/27/22 22:38	04/27/22 22:38	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1853623	1	04/26/22 00:38	04/27/22 15:07	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1853301	1	04/26/22 08:00	04/26/22 10:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1853745	1	04/25/22 07:47	04/25/22 11:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1852954	1	04/24/22 08:37	04/27/22 18:50	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1855508	1	04/27/22 21:46	04/28/22 13:02	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1852959	5	04/24/22 08:27	04/25/22 00:22	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1853596	1	04/23/22 16:30	04/25/22 07:07	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1853405	1	04/23/22 16:30	04/23/22 22:14	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1855177	1	04/27/22 18:26	04/28/22 04:53	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1854729	1	04/27/22 03:33	04/27/22 12:37	AMG	Mt. Juliet, TN



## 20220419-YCF 35-33-1 (POCC) L1485076-05 Solid

Collected by K. Moreland  
Collected date/time 04/19/22 11:00  
Received date/time 04/21/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1853665	1	04/27/22 22:41	04/27/22 22:41	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1853623	1	04/26/22 00:38	04/27/22 15:12	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1853301	1	04/26/22 08:00	04/26/22 10:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1853745	1	04/25/22 07:47	04/25/22 11:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1852954	1	04/24/22 08:37	04/27/22 18:59	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1855508	1	04/27/22 21:46	04/28/22 13:05	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1852959	5	04/24/22 08:27	04/25/22 00:32	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1854102	1	04/23/22 16:30	04/26/22 03:19	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1853405	1	04/23/22 16:30	04/23/22 22:33	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1855177	1	04/27/22 18:26	04/28/22 05:07	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1854729	1	04/27/22 03:33	04/27/22 12:56	AMG	Mt. Juliet, TN

## 20220419-YCF 35-33-1 (POCC)@2' L1485076-06 Solid

Collected by K. Moreland  
Collected date/time 04/19/22 11:40  
Received date/time 04/21/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1853665	1	04/27/22 22:44	04/27/22 22:44	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1853623	1	04/26/22 00:38	04/27/22 15:28	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1853301	1	04/26/22 08:00	04/26/22 10:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1853745	1	04/25/22 07:47	04/25/22 11:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1852954	1	04/24/22 08:37	04/27/22 19:01	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1855508	1	04/27/22 21:46	04/28/22 13:08	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1852959	5	04/24/22 08:27	04/25/22 00:35	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1853596	1	04/23/22 16:30	04/25/22 07:53	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1853405	1	04/23/22 16:30	04/23/22 22:52	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1855177	1	04/27/22 18:26	04/28/22 05:20	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1854729	1	04/27/22 03:33	04/27/22 13:16	AMG	Mt. Juliet, TN

## 20220419-YCF 35-33-1 (POCD) L1485076-07 Solid

Collected by K. Moreland  
Collected date/time 04/19/22 11:05  
Received date/time 04/21/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1853665	1	04/27/22 22:47	04/27/22 22:47	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1853623	1	04/26/22 00:38	04/27/22 15:33	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1853301	1	04/26/22 08:00	04/26/22 10:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1853745	1	04/25/22 07:47	04/25/22 11:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1852954	1	04/24/22 08:37	04/27/22 19:04	ZSA	Mt. Juliet, TN



# SAMPLE SUMMARY

20220419-YCF 35-33-1 (POCD) L1485076-07 Solid

Collected by  
K. Moreland

Collected date/time  
04/19/22 11:05

Received date/time  
04/21/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1855508	1	04/27/22 21:46	04/28/22 13:11	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1852959	5	04/24/22 08:27	04/25/22 00:38	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1854453	2000	04/23/22 16:30	04/27/22 10:58	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1853405	20	04/23/22 16:30	04/24/22 02:21	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1853697	400	04/23/22 16:30	04/25/22 17:29	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1855177	1	04/27/22 18:26	04/28/22 05:34	JAS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1855177	20	04/27/22 18:26	04/28/22 10:25	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1854729	1	04/27/22 03:33	04/27/22 13:36	AMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1854729	10	04/27/22 03:33	04/28/22 13:20	AMG	Mt. Juliet, TN

20220419-YCF 35-33-1 (POCD)@2' L1485076-08 Solid

Collected by  
K. Moreland

Collected date/time  
04/19/22 11:50

Received date/time  
04/21/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1853665	1	04/27/22 22:50	04/27/22 22:50	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1853623	1	04/26/22 00:38	04/27/22 15:38	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1853301	1	04/26/22 08:00	04/26/22 10:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1853745	1	04/25/22 07:47	04/25/22 11:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1852954	1	04/24/22 08:37	04/27/22 19:07	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1855508	1	04/27/22 21:46	04/28/22 13:14	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1852959	5	04/24/22 08:27	04/25/22 00:42	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1853645	100	04/23/22 16:30	04/25/22 00:16	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1853405	8	04/23/22 16:30	04/24/22 02:40	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1853697	8	04/23/22 16:30	04/25/22 16:32	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1855177	1	04/27/22 18:26	04/28/22 05:47	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1854729	1	04/27/22 03:33	04/27/22 13:56	AMG	Mt. Juliet, TN

<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

# 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

## Report Revision History

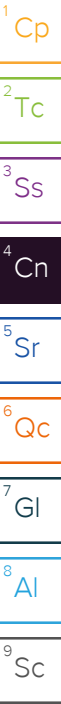
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Level II Report - Version 1: 04/29/22 10:27

## Project Narrative

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Rerun to split report and correct sample IDs



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.17		1	04/27/2022 22:30	WG1853665

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	04/27/2022 14:25	<a href="#">WG1853623</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.64	<a href="#">T8</a>	1	04/26/2022 10:00	<a href="#">WG1853301</a>

## Sample Narrative:

L1485076-01 WG1853301: 7.64 at 20.2C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	743		10.0	1	04/25/2022 11:00	<a href="#">WG1853745</a>

## Sample Narrative:

L1485076-01 WG1853745: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	406		0.500	1	04/27/2022 18:44	<a href="#">WG1852954</a>
Cadmium	ND		0.500	1	04/27/2022 18:44	<a href="#">WG1852954</a>
Copper	10.7		2.00	1	04/27/2022 18:44	<a href="#">WG1852954</a>
Lead	6.91		0.500	1	04/27/2022 18:44	<a href="#">WG1852954</a>
Nickel	9.43		2.00	1	04/27/2022 18:44	<a href="#">WG1852954</a>
Selenium	ND		2.00	1	04/27/2022 18:44	<a href="#">WG1852954</a>
Silver	ND		1.00	1	04/27/2022 18:44	<a href="#">WG1852954</a>
Zinc	27.0		5.00	1	04/27/2022 18:44	<a href="#">WG1852954</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	1.06		0.200	1	04/28/2022 12:54	<a href="#">WG1855508</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.45		1.00	5	04/25/2022 00:15	<a href="#">WG1852959</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	3410		200	2000	04/27/2022 10:34	<a href="#">WG1854453</a>
(S) a,a,a-Trifluorotoluene(FID)	94.8		77.0-120		04/27/2022 10:34	<a href="#">WG1854453</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.931		0.0200	20	04/24/2022 01:43	<a href="#">WG1853405</a>
Toluene	90.4		2.00	400	04/25/2022 17:10	<a href="#">WG1853697</a>
Ethylbenzene	12.6		0.0500	20	04/24/2022 01:43	<a href="#">WG1853405</a>
Xylenes, Total	403		2.60	400	04/25/2022 17:10	<a href="#">WG1853697</a>
1,2,4-Trimethylbenzene	73.0		2.00	400	04/25/2022 17:10	<a href="#">WG1853697</a>
1,3,5-Trimethylbenzene	49.2	<a href="#">V</a>	0.100	20	04/24/2022 01:43	<a href="#">WG1853405</a>
(S) Toluene-d8	116		75.0-131		04/24/2022 01:43	<a href="#">WG1853405</a>
(S) Toluene-d8	110		75.0-131		04/25/2022 17:10	<a href="#">WG1853697</a>
(S) 4-Bromofluorobenzene	122		67.0-138		04/24/2022 01:43	<a href="#">WG1853405</a>
(S) 4-Bromofluorobenzene	96.8		67.0-138		04/25/2022 17:10	<a href="#">WG1853697</a>
(S) 1,2-Dichloroethane-d4	106		70.0-130		04/24/2022 01:43	<a href="#">WG1853405</a>
(S) 1,2-Dichloroethane-d4	107		70.0-130		04/25/2022 17:10	<a href="#">WG1853697</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	1880		80.0	20	04/28/2022 10:25	<a href="#">WG1855177</a>
C28-C36 Motor Oil Range	45.8		4.00	1	04/28/2022 04:13	<a href="#">WG1855177</a>
(S) o-Terphenyl	0.000	<a href="#">J7</a>	18.0-148		04/28/2022 10:25	<a href="#">WG1855177</a>
(S) o-Terphenyl	88.3		18.0-148		04/28/2022 04:13	<a href="#">WG1855177</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	0.222		0.00600	1	04/27/2022 11:37	<a href="#">WG1854729</a>
Anthracene	ND		0.00600	1	04/27/2022 11:37	<a href="#">WG1854729</a>
Benzo(a)anthracene	ND		0.00600	1	04/27/2022 11:37	<a href="#">WG1854729</a>
Benzo(b)fluoranthene	ND		0.00600	1	04/27/2022 11:37	<a href="#">WG1854729</a>
Benzo(k)fluoranthene	ND		0.00600	1	04/27/2022 11:37	<a href="#">WG1854729</a>
Benzo(a)pyrene	ND		0.00600	1	04/27/2022 11:37	<a href="#">WG1854729</a>
Chrysene	ND		0.00600	1	04/27/2022 11:37	<a href="#">WG1854729</a>
Dibenz(a,h)anthracene	ND		0.00600	1	04/27/2022 11:37	<a href="#">WG1854729</a>
Fluoranthene	ND		0.00600	1	04/27/2022 11:37	<a href="#">WG1854729</a>
Fluorene	0.459		0.00600	1	04/27/2022 11:37	<a href="#">WG1854729</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	04/27/2022 11:37	<a href="#">WG1854729</a>
1-Methylnaphthalene	2.67		0.0200	1	04/27/2022 11:37	<a href="#">WG1854729</a>
2-Methylnaphthalene	11.3		0.200	10	04/28/2022 13:02	<a href="#">WG1854729</a>
Naphthalene	4.67		0.200	10	04/28/2022 13:02	<a href="#">WG1854729</a>
Pyrene	ND		0.00600	1	04/27/2022 11:37	<a href="#">WG1854729</a>
(S) p-Terphenyl-d14	104		23.0-120		04/28/2022 13:02	<a href="#">WG1854729</a>
(S) p-Terphenyl-d14	99.0		23.0-120		04/27/2022 11:37	<a href="#">WG1854729</a>
(S) Nitrobenzene-d5	2350	<a href="#">J1</a>	14.0-149		04/27/2022 11:37	<a href="#">WG1854729</a>
(S) Nitrobenzene-d5	0.000	<a href="#">J2</a>	14.0-149		04/28/2022 13:02	<a href="#">WG1854729</a>
(S) 2-Fluorobiphenyl	71.6		34.0-125		04/28/2022 13:02	<a href="#">WG1854729</a>
(S) 2-Fluorobiphenyl	114		34.0-125		04/27/2022 11:37	<a href="#">WG1854729</a>

## Sample Narrative:

L1485076-01 WG1854729: Surrogate failure due to matrix interference

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.70		1	04/27/2022 22:33	WG1853665

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	04/27/2022 14:51	<a href="#">WG1853623</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.05	<a href="#">T8</a>	1	04/26/2022 15:00	<a href="#">WG1854386</a>

## Sample Narrative:

L1485076-02 WG1854386: 8.05 at 19.8C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	673		10.0	1	04/25/2022 10:12	<a href="#">WG1851216</a>

## Sample Narrative:

L1485076-02 WG1851216: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	408		0.500	1	04/27/2022 18:47	<a href="#">WG1852954</a>
Cadmium	ND		0.500	1	04/27/2022 18:47	<a href="#">WG1852954</a>
Copper	10.5		2.00	1	04/27/2022 18:47	<a href="#">WG1852954</a>
Lead	8.08		0.500	1	04/27/2022 18:47	<a href="#">WG1852954</a>
Nickel	10.9		2.00	1	04/27/2022 18:47	<a href="#">WG1852954</a>
Selenium	ND		2.00	1	04/27/2022 18:47	<a href="#">WG1852954</a>
Silver	ND		1.00	1	04/27/2022 18:47	<a href="#">WG1852954</a>
Zinc	30.5		5.00	1	04/27/2022 18:47	<a href="#">WG1852954</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.853		0.200	1	04/28/2022 12:57	<a href="#">WG1855508</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.88		1.00	5	04/25/2022 00:19	<a href="#">WG1852959</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	984		10.0	100	04/24/2022 23:56	<a href="#">WG1853645</a>
(S) a,a,a-Trifluorotoluene(FID)	95.8		77.0-120		04/24/2022 23:56	<a href="#">WG1853645</a>





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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.129		0.00800	8	04/24/2022 02:02	<a href="#">WG1853405</a>
Toluene	8.28		0.0400	8	04/24/2022 02:02	<a href="#">WG1853405</a>
Ethylbenzene	2.73		0.0200	8	04/24/2022 02:02	<a href="#">WG1853405</a>
Xylenes, Total	72.1		1.30	200	04/25/2022 16:51	<a href="#">WG1853697</a>
1,2,4-Trimethylbenzene	14.3		0.0400	8	04/24/2022 02:02	<a href="#">WG1853405</a>
1,3,5-Trimethylbenzene	14.0		0.0400	8	04/24/2022 02:02	<a href="#">WG1853405</a>
(S) Toluene-d8	115		75.0-131		04/24/2022 02:02	<a href="#">WG1853405</a>
(S) Toluene-d8	110		75.0-131		04/25/2022 16:51	<a href="#">WG1853697</a>
(S) 4-Bromofluorobenzene	124		67.0-138		04/24/2022 02:02	<a href="#">WG1853405</a>
(S) 4-Bromofluorobenzene	97.1		67.0-138		04/25/2022 16:51	<a href="#">WG1853697</a>
(S) 1,2-Dichloroethane-d4	104		70.0-130		04/24/2022 02:02	<a href="#">WG1853405</a>
(S) 1,2-Dichloroethane-d4	107		70.0-130		04/25/2022 16:51	<a href="#">WG1853697</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	368		20.0	5	04/28/2022 10:12	<a href="#">WG1855177</a>
C28-C36 Motor Oil Range	12.8		4.00	1	04/28/2022 04:26	<a href="#">WG1855177</a>
(S) o-Terphenyl	40.8		18.0-148		04/28/2022 10:12	<a href="#">WG1855177</a>
(S) o-Terphenyl	57.6		18.0-148		04/28/2022 04:26	<a href="#">WG1855177</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	0.0397		0.00600	1	04/27/2022 11:57	<a href="#">WG1854729</a>
Anthracene	ND		0.00600	1	04/27/2022 11:57	<a href="#">WG1854729</a>
Benzo(a)anthracene	ND		0.00600	1	04/27/2022 11:57	<a href="#">WG1854729</a>
Benzo(b)fluoranthene	ND		0.00600	1	04/27/2022 11:57	<a href="#">WG1854729</a>
Benzo(k)fluoranthene	ND		0.00600	1	04/27/2022 11:57	<a href="#">WG1854729</a>
Benzo(a)pyrene	ND		0.00600	1	04/27/2022 11:57	<a href="#">WG1854729</a>
Chrysene	ND		0.00600	1	04/27/2022 11:57	<a href="#">WG1854729</a>
Dibenz(a,h)anthracene	ND		0.00600	1	04/27/2022 11:57	<a href="#">WG1854729</a>
Fluoranthene	ND		0.00600	1	04/27/2022 11:57	<a href="#">WG1854729</a>
Fluorene	0.0840		0.00600	1	04/27/2022 11:57	<a href="#">WG1854729</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	04/27/2022 11:57	<a href="#">WG1854729</a>
1-Methylnaphthalene	0.553		0.0200	1	04/27/2022 11:57	<a href="#">WG1854729</a>
2-Methylnaphthalene	1.88		0.0200	1	04/27/2022 11:57	<a href="#">WG1854729</a>
Naphthalene	0.767		0.0200	1	04/27/2022 11:57	<a href="#">WG1854729</a>
Pyrene	ND		0.00600	1	04/27/2022 11:57	<a href="#">WG1854729</a>
(S) p-Terphenyl-d14	100		23.0-120		04/27/2022 11:57	<a href="#">WG1854729</a>
(S) Nitrobenzene-d5	423	<a href="#">J1</a>	14.0-149		04/27/2022 11:57	<a href="#">WG1854729</a>
(S) 2-Fluorobiphenyl	94.4		34.0-125		04/27/2022 11:57	<a href="#">WG1854729</a>

## Sample Narrative:

L1485076-02 WG1854729: Surrogate failure due to matrix interference

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.58		1	04/27/2022 22:35	WG1853665

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	04/27/2022 14:57	<a href="#">WG1853623</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.56	<a href="#">T8</a>	1	04/26/2022 10:00	<a href="#">WG1853301</a>

## Sample Narrative:

L1485076-03 WG1853301: 7.56 at 20.2C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	360		10.0	1	04/25/2022 11:00	<a href="#">WG1853745</a>

## Sample Narrative:

L1485076-03 WG1853745: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	170		0.500	1	04/27/2022 18:31	<a href="#">WG1852954</a>
Cadmium	ND		0.500	1	04/27/2022 18:31	<a href="#">WG1852954</a>
Copper	12.5		2.00	1	04/27/2022 18:31	<a href="#">WG1852954</a>
Lead	5.58		0.500	1	04/27/2022 18:31	<a href="#">WG1852954</a>
Nickel	17.9		2.00	1	04/27/2022 18:31	<a href="#">WG1852954</a>
Selenium	ND		2.00	1	04/27/2022 18:31	<a href="#">WG1852954</a>
Silver	ND		1.00	1	04/27/2022 18:31	<a href="#">WG1852954</a>
Zinc	26.5		5.00	1	04/27/2022 18:31	<a href="#">WG1852954</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.244		0.200	1	04/28/2022 13:00	<a href="#">WG1855508</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.32		1.00	5	04/24/2022 23:59	<a href="#">WG1852959</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.605		0.100	1	04/25/2022 06:36	<a href="#">WG1853596</a>
(S) a,a,a-Trifluorotoluene(FID)	87.8		77.0-120		04/25/2022 06:36	<a href="#">WG1853596</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	04/23/2022 21:55	<a href="#">WG1853405</a>
Toluene	ND		0.00500	1	04/23/2022 21:55	<a href="#">WG1853405</a>
Ethylbenzene	ND		0.00250	1	04/23/2022 21:55	<a href="#">WG1853405</a>
Xylenes, Total	0.0129		0.00650	1	04/23/2022 21:55	<a href="#">WG1853405</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	04/23/2022 21:55	<a href="#">WG1853405</a>
1,3,5-Trimethylbenzene	0.0261		0.00500	1	04/23/2022 21:55	<a href="#">WG1853405</a>
(S) Toluene-d8	107		75.0-131		04/23/2022 21:55	<a href="#">WG1853405</a>
(S) 4-Bromofluorobenzene	103		67.0-138		04/23/2022 21:55	<a href="#">WG1853405</a>
(S) 1,2-Dichloroethane-d4	110		70.0-130		04/23/2022 21:55	<a href="#">WG1853405</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	7.30		4.00	1	04/28/2022 04:40	<a href="#">WG1855177</a>
C28-C36 Motor Oil Range	7.04	<a href="#">B</a>	4.00	1	04/28/2022 04:40	<a href="#">WG1855177</a>
(S) o-Terphenyl	68.6		18.0-148		04/28/2022 04:40	<a href="#">WG1855177</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	04/27/2022 12:17	<a href="#">WG1854729</a>
Anthracene	ND		0.00600	1	04/27/2022 12:17	<a href="#">WG1854729</a>
Benzo(a)anthracene	ND		0.00600	1	04/27/2022 12:17	<a href="#">WG1854729</a>
Benzo(b)fluoranthene	ND		0.00600	1	04/27/2022 12:17	<a href="#">WG1854729</a>
Benzo(k)fluoranthene	ND		0.00600	1	04/27/2022 12:17	<a href="#">WG1854729</a>
Benzo(a)pyrene	ND		0.00600	1	04/27/2022 12:17	<a href="#">WG1854729</a>
Chrysene	ND		0.00600	1	04/27/2022 12:17	<a href="#">WG1854729</a>
Dibenz(a,h)anthracene	ND		0.00600	1	04/27/2022 12:17	<a href="#">WG1854729</a>
Fluoranthene	ND		0.00600	1	04/27/2022 12:17	<a href="#">WG1854729</a>
Fluorene	ND		0.00600	1	04/27/2022 12:17	<a href="#">WG1854729</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	04/27/2022 12:17	<a href="#">WG1854729</a>
1-Methylnaphthalene	ND		0.0200	1	04/27/2022 12:17	<a href="#">WG1854729</a>
2-Methylnaphthalene	0.0242		0.0200	1	04/27/2022 12:17	<a href="#">WG1854729</a>
Naphthalene	ND		0.0200	1	04/27/2022 12:17	<a href="#">WG1854729</a>
Pyrene	ND		0.00600	1	04/27/2022 12:17	<a href="#">WG1854729</a>
(S) p-Terphenyl-d14	97.3		23.0-120		04/27/2022 12:17	<a href="#">WG1854729</a>
(S) Nitrobenzene-d5	99.1		14.0-149		04/27/2022 12:17	<a href="#">WG1854729</a>
(S) 2-Fluorobiphenyl	79.3		34.0-125		04/27/2022 12:17	<a href="#">WG1854729</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	0.639		1	04/27/2022 22:38	WG1853665

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	04/27/2022 15:07	<a href="#">WG1853623</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.53	<a href="#">T8</a>	1	04/26/2022 10:00	<a href="#">WG1853301</a>

## Sample Narrative:

L1485076-04 WG1853301: 7.53 at 20.2C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	418		10.0	1	04/25/2022 11:00	<a href="#">WG1853745</a>

## Sample Narrative:

L1485076-04 WG1853745: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	341		0.500	1	04/27/2022 18:50	<a href="#">WG1852954</a>
Cadmium	ND		0.500	1	04/27/2022 18:50	<a href="#">WG1852954</a>
Copper	12.9		2.00	1	04/27/2022 18:50	<a href="#">WG1852954</a>
Lead	7.76		0.500	1	04/27/2022 18:50	<a href="#">WG1852954</a>
Nickel	11.8		2.00	1	04/27/2022 18:50	<a href="#">WG1852954</a>
Selenium	ND		2.00	1	04/27/2022 18:50	<a href="#">WG1852954</a>
Silver	ND		1.00	1	04/27/2022 18:50	<a href="#">WG1852954</a>
Zinc	26.8		5.00	1	04/27/2022 18:50	<a href="#">WG1852954</a>

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

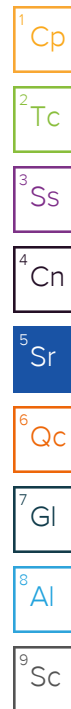
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.437		0.200	1	04/28/2022 13:02	<a href="#">WG1855508</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.13		1.00	5	04/25/2022 00:22	<a href="#">WG1852959</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	6.40		0.100	1	04/25/2022 07:07	<a href="#">WG1853596</a>
(S) a,a,a-Trifluorotoluene(FID)	86.9		77.0-120		04/25/2022 07:07	<a href="#">WG1853596</a>



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	04/23/2022 22:14	<a href="#">WG1853405</a>
Toluene	0.0151		0.00500	1	04/23/2022 22:14	<a href="#">WG1853405</a>
Ethylbenzene	0.00473		0.00250	1	04/23/2022 22:14	<a href="#">WG1853405</a>
Xylenes, Total	0.133		0.00650	1	04/23/2022 22:14	<a href="#">WG1853405</a>
1,2,4-Trimethylbenzene	0.0294		0.00500	1	04/23/2022 22:14	<a href="#">WG1853405</a>
1,3,5-Trimethylbenzene	0.0519		0.00500	1	04/23/2022 22:14	<a href="#">WG1853405</a>
(S) Toluene-d8	105		75.0-131		04/23/2022 22:14	<a href="#">WG1853405</a>
(S) 4-Bromofluorobenzene	102		67.0-138		04/23/2022 22:14	<a href="#">WG1853405</a>
(S) 1,2-Dichloroethane-d4	108		70.0-130		04/23/2022 22:14	<a href="#">WG1853405</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	9.15		4.00	1	04/28/2022 04:53	<a href="#">WG1855177</a>
C28-C36 Motor Oil Range	8.67		4.00	1	04/28/2022 04:53	<a href="#">WG1855177</a>
(S) o-Terphenyl	60.4		18.0-148		04/28/2022 04:53	<a href="#">WG1855177</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	04/27/2022 12:37	<a href="#">WG1854729</a>
Anthracene	ND		0.00600	1	04/27/2022 12:37	<a href="#">WG1854729</a>
Benzo(a)anthracene	ND		0.00600	1	04/27/2022 12:37	<a href="#">WG1854729</a>
Benzo(b)fluoranthene	ND		0.00600	1	04/27/2022 12:37	<a href="#">WG1854729</a>
Benzo(k)fluoranthene	ND		0.00600	1	04/27/2022 12:37	<a href="#">WG1854729</a>
Benzo(a)pyrene	ND		0.00600	1	04/27/2022 12:37	<a href="#">WG1854729</a>
Chrysene	ND		0.00600	1	04/27/2022 12:37	<a href="#">WG1854729</a>
Dibenz(a,h)anthracene	ND		0.00600	1	04/27/2022 12:37	<a href="#">WG1854729</a>
Fluoranthene	ND		0.00600	1	04/27/2022 12:37	<a href="#">WG1854729</a>
Fluorene	ND		0.00600	1	04/27/2022 12:37	<a href="#">WG1854729</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	04/27/2022 12:37	<a href="#">WG1854729</a>
1-Methylnaphthalene	ND		0.0200	1	04/27/2022 12:37	<a href="#">WG1854729</a>
2-Methylnaphthalene	ND		0.0200	1	04/27/2022 12:37	<a href="#">WG1854729</a>
Naphthalene	ND		0.0200	1	04/27/2022 12:37	<a href="#">WG1854729</a>
Pyrene	ND		0.00600	1	04/27/2022 12:37	<a href="#">WG1854729</a>
(S) p-Terphenyl-d14	88.1		23.0-120		04/27/2022 12:37	<a href="#">WG1854729</a>
(S) Nitrobenzene-d5	79.7		14.0-149		04/27/2022 12:37	<a href="#">WG1854729</a>
(S) 2-Fluorobiphenyl	72.3		34.0-125		04/27/2022 12:37	<a href="#">WG1854729</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	0.743		1	04/27/2022 22:41	WG1853665

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	04/27/2022 15:12	<a href="#">WG1853623</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.76	<a href="#">T8</a>	1	04/26/2022 10:00	<a href="#">WG1853301</a>

## Sample Narrative:

L1485076-05 WG1853301: 7.76 at 19.9C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	322		10.0	1	04/25/2022 11:00	<a href="#">WG1853745</a>

## Sample Narrative:

L1485076-05 WG1853745: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	81.2		0.500	1	04/27/2022 18:59	<a href="#">WG1852954</a>
Cadmium	ND		0.500	1	04/27/2022 18:59	<a href="#">WG1852954</a>
Copper	6.44		2.00	1	04/27/2022 18:59	<a href="#">WG1852954</a>
Lead	2.89		0.500	1	04/27/2022 18:59	<a href="#">WG1852954</a>
Nickel	18.9		2.00	1	04/27/2022 18:59	<a href="#">WG1852954</a>
Selenium	ND		2.00	1	04/27/2022 18:59	<a href="#">WG1852954</a>
Silver	ND		1.00	1	04/27/2022 18:59	<a href="#">WG1852954</a>
Zinc	17.3		5.00	1	04/27/2022 18:59	<a href="#">WG1852954</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	04/28/2022 13:05	<a href="#">WG1855508</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	2.36		1.00	5	04/25/2022 00:32	<a href="#">WG1852959</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.169		0.100	1	04/26/2022 03:19	<a href="#">WG1854102</a>
(S) a,a,a-Trifluorotoluene(FID)	109		77.0-120		04/26/2022 03:19	<a href="#">WG1854102</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	04/23/2022 22:33	<a href="#">WG1853405</a>
Toluene	ND		0.00500	1	04/23/2022 22:33	<a href="#">WG1853405</a>
Ethylbenzene	ND		0.00250	1	04/23/2022 22:33	<a href="#">WG1853405</a>
Xylenes, Total	0.0321		0.00650	1	04/23/2022 22:33	<a href="#">WG1853405</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	04/23/2022 22:33	<a href="#">WG1853405</a>
1,3,5-Trimethylbenzene	0.0519		0.00500	1	04/23/2022 22:33	<a href="#">WG1853405</a>
(S) Toluene-d8	110		75.0-131		04/23/2022 22:33	<a href="#">WG1853405</a>
(S) 4-Bromofluorobenzene	105		67.0-138		04/23/2022 22:33	<a href="#">WG1853405</a>
(S) 1,2-Dichloroethane-d4	107		70.0-130		04/23/2022 22:33	<a href="#">WG1853405</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	04/28/2022 05:07	<a href="#">WG1855177</a>
C28-C36 Motor Oil Range	5.79	B	4.00	1	04/28/2022 05:07	<a href="#">WG1855177</a>
(S) o-Terphenyl	69.4		18.0-148		04/28/2022 05:07	<a href="#">WG1855177</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	04/27/2022 12:56	<a href="#">WG1854729</a>
Anthracene	ND		0.00600	1	04/27/2022 12:56	<a href="#">WG1854729</a>
Benzo(a)anthracene	ND		0.00600	1	04/27/2022 12:56	<a href="#">WG1854729</a>
Benzo(b)fluoranthene	ND		0.00600	1	04/27/2022 12:56	<a href="#">WG1854729</a>
Benzo(k)fluoranthene	ND		0.00600	1	04/27/2022 12:56	<a href="#">WG1854729</a>
Benzo(a)pyrene	ND		0.00600	1	04/27/2022 12:56	<a href="#">WG1854729</a>
Chrysene	ND		0.00600	1	04/27/2022 12:56	<a href="#">WG1854729</a>
Dibenz(a,h)anthracene	ND		0.00600	1	04/27/2022 12:56	<a href="#">WG1854729</a>
Fluoranthene	ND		0.00600	1	04/27/2022 12:56	<a href="#">WG1854729</a>
Fluorene	ND		0.00600	1	04/27/2022 12:56	<a href="#">WG1854729</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	04/27/2022 12:56	<a href="#">WG1854729</a>
1-Methylnaphthalene	ND		0.0200	1	04/27/2022 12:56	<a href="#">WG1854729</a>
2-Methylnaphthalene	ND		0.0200	1	04/27/2022 12:56	<a href="#">WG1854729</a>
Naphthalene	ND		0.0200	1	04/27/2022 12:56	<a href="#">WG1854729</a>
Pyrene	ND		0.00600	1	04/27/2022 12:56	<a href="#">WG1854729</a>
(S) p-Terphenyl-d14	100		23.0-120		04/27/2022 12:56	<a href="#">WG1854729</a>
(S) Nitrobenzene-d5	86.3		14.0-149		04/27/2022 12:56	<a href="#">WG1854729</a>
(S) 2-Fluorobiphenyl	80.9		34.0-125		04/27/2022 12:56	<a href="#">WG1854729</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	0.926		1	04/27/2022 22:44	WG1853665

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	04/27/2022 15:28	<a href="#">WG1853623</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.71	<a href="#">T8</a>	1	04/26/2022 10:00	<a href="#">WG1853301</a>

## Sample Narrative:

L1485076-06 WG1853301: 7.71 at 19.9C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	369		10.0	1	04/25/2022 11:00	<a href="#">WG1853745</a>

## Sample Narrative:

L1485076-06 WG1853745: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	242		0.500	1	04/27/2022 19:01	<a href="#">WG1852954</a>
Cadmium	ND		0.500	1	04/27/2022 19:01	<a href="#">WG1852954</a>
Copper	15.5		2.00	1	04/27/2022 19:01	<a href="#">WG1852954</a>
Lead	10.7		0.500	1	04/27/2022 19:01	<a href="#">WG1852954</a>
Nickel	14.1		2.00	1	04/27/2022 19:01	<a href="#">WG1852954</a>
Selenium	ND		2.00	1	04/27/2022 19:01	<a href="#">WG1852954</a>
Silver	ND		1.00	1	04/27/2022 19:01	<a href="#">WG1852954</a>
Zinc	34.8		5.00	1	04/27/2022 19:01	<a href="#">WG1852954</a>

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

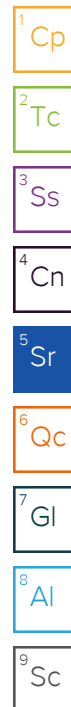
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.496		0.200	1	04/28/2022 13:08	<a href="#">WG1855508</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.45		1.00	5	04/25/2022 00:35	<a href="#">WG1852959</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.303		0.100	1	04/25/2022 07:53	<a href="#">WG1853596</a>
(S) a,a,a-Trifluorotoluene(FID)	92.3		77.0-120		04/25/2022 07:53	<a href="#">WG1853596</a>



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	04/23/2022 22:52	<a href="#">WG1853405</a>
Toluene	ND		0.00500	1	04/23/2022 22:52	<a href="#">WG1853405</a>
Ethylbenzene	ND		0.00250	1	04/23/2022 22:52	<a href="#">WG1853405</a>
Xylenes, Total	ND		0.00650	1	04/23/2022 22:52	<a href="#">WG1853405</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	04/23/2022 22:52	<a href="#">WG1853405</a>
1,3,5-Trimethylbenzene	0.0219		0.00500	1	04/23/2022 22:52	<a href="#">WG1853405</a>
(S) Toluene-d8	108		75.0-131		04/23/2022 22:52	<a href="#">WG1853405</a>
(S) 4-Bromofluorobenzene	101		67.0-138		04/23/2022 22:52	<a href="#">WG1853405</a>
(S) 1,2-Dichloroethane-d4	107		70.0-130		04/23/2022 22:52	<a href="#">WG1853405</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.13		4.00	1	04/28/2022 05:20	<a href="#">WG1855177</a>
C28-C36 Motor Oil Range	5.33	B	4.00	1	04/28/2022 05:20	<a href="#">WG1855177</a>
(S) o-Terphenyl	54.8		18.0-148		04/28/2022 05:20	<a href="#">WG1855177</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	04/27/2022 13:16	<a href="#">WG1854729</a>
Anthracene	ND		0.00600	1	04/27/2022 13:16	<a href="#">WG1854729</a>
Benzo(a)anthracene	ND		0.00600	1	04/27/2022 13:16	<a href="#">WG1854729</a>
Benzo(b)fluoranthene	ND		0.00600	1	04/27/2022 13:16	<a href="#">WG1854729</a>
Benzo(k)fluoranthene	ND		0.00600	1	04/27/2022 13:16	<a href="#">WG1854729</a>
Benzo(a)pyrene	ND		0.00600	1	04/27/2022 13:16	<a href="#">WG1854729</a>
Chrysene	ND		0.00600	1	04/27/2022 13:16	<a href="#">WG1854729</a>
Dibenz(a,h)anthracene	ND		0.00600	1	04/27/2022 13:16	<a href="#">WG1854729</a>
Fluoranthene	ND		0.00600	1	04/27/2022 13:16	<a href="#">WG1854729</a>
Fluorene	ND		0.00600	1	04/27/2022 13:16	<a href="#">WG1854729</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	04/27/2022 13:16	<a href="#">WG1854729</a>
1-Methylnaphthalene	ND		0.0200	1	04/27/2022 13:16	<a href="#">WG1854729</a>
2-Methylnaphthalene	ND		0.0200	1	04/27/2022 13:16	<a href="#">WG1854729</a>
Naphthalene	0.0217		0.0200	1	04/27/2022 13:16	<a href="#">WG1854729</a>
Pyrene	ND		0.00600	1	04/27/2022 13:16	<a href="#">WG1854729</a>
(S) p-Terphenyl-d14	92.0		23.0-120		04/27/2022 13:16	<a href="#">WG1854729</a>
(S) Nitrobenzene-d5	79.5		14.0-149		04/27/2022 13:16	<a href="#">WG1854729</a>
(S) 2-Fluorobiphenyl	75.5		34.0-125		04/27/2022 13:16	<a href="#">WG1854729</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	3.49		1	04/27/2022 22:47	WG1853665

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	04/27/2022 15:33	<a href="#">WG1853623</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.32	<a href="#">T8</a>	1	04/26/2022 10:00	<a href="#">WG1853301</a>

## Sample Narrative:

L1485076-07 WG1853301: 7.32 at 19.7C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	1840		10.0	1	04/25/2022 11:00	<a href="#">WG1853745</a>

## Sample Narrative:

L1485076-07 WG1853745: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	389		0.500	1	04/27/2022 19:04	<a href="#">WG1852954</a>
Cadmium	ND		0.500	1	04/27/2022 19:04	<a href="#">WG1852954</a>
Copper	16.5		2.00	1	04/27/2022 19:04	<a href="#">WG1852954</a>
Lead	9.72		0.500	1	04/27/2022 19:04	<a href="#">WG1852954</a>
Nickel	16.6		2.00	1	04/27/2022 19:04	<a href="#">WG1852954</a>
Selenium	ND		2.00	1	04/27/2022 19:04	<a href="#">WG1852954</a>
Silver	ND		1.00	1	04/27/2022 19:04	<a href="#">WG1852954</a>
Zinc	35.4		5.00	1	04/27/2022 19:04	<a href="#">WG1852954</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.314		0.200	1	04/28/2022 13:11	<a href="#">WG1855508</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	6.13		1.00	5	04/25/2022 00:38	<a href="#">WG1852959</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	3040		200	2000	04/27/2022 10:58	<a href="#">WG1854453</a>
(S) a,a,a-Trifluorotoluene(FID)	95.4		77.0-120		04/27/2022 10:58	<a href="#">WG1854453</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.931		0.0200	20	04/24/2022 02:21	<a href="#">WG1853405</a>
Toluene	62.2		2.00	400	04/25/2022 17:29	<a href="#">WG1853697</a>
Ethylbenzene	12.9		0.0500	20	04/24/2022 02:21	<a href="#">WG1853405</a>
Xylenes, Total	270		2.60	400	04/25/2022 17:29	<a href="#">WG1853697</a>
1,2,4-Trimethylbenzene	57.9		2.00	400	04/25/2022 17:29	<a href="#">WG1853697</a>
1,3,5-Trimethylbenzene	57.6		2.00	400	04/25/2022 17:29	<a href="#">WG1853697</a>
(S) Toluene-d8	109		75.0-131		04/24/2022 02:21	<a href="#">WG1853405</a>
(S) Toluene-d8	108		75.0-131		04/25/2022 17:29	<a href="#">WG1853697</a>
(S) 4-Bromofluorobenzene	118		67.0-138		04/24/2022 02:21	<a href="#">WG1853405</a>
(S) 4-Bromofluorobenzene	97.3		67.0-138		04/25/2022 17:29	<a href="#">WG1853697</a>
(S) 1,2-Dichloroethane-d4	105		70.0-130		04/24/2022 02:21	<a href="#">WG1853405</a>
(S) 1,2-Dichloroethane-d4	106		70.0-130		04/25/2022 17:29	<a href="#">WG1853697</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	2070		80.0	20	04/28/2022 10:25	<a href="#">WG1855177</a>
C28-C36 Motor Oil Range	23.1		4.00	1	04/28/2022 05:34	<a href="#">WG1855177</a>
(S) o-Terphenyl	107		18.0-148		04/28/2022 05:34	<a href="#">WG1855177</a>
(S) o-Terphenyl	0.000	<a href="#">J7</a>	18.0-148		04/28/2022 10:25	<a href="#">WG1855177</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	0.167		0.00600	1	04/27/2022 13:36	<a href="#">WG1854729</a>
Anthracene	ND		0.00600	1	04/27/2022 13:36	<a href="#">WG1854729</a>
Benzo(a)anthracene	ND		0.00600	1	04/27/2022 13:36	<a href="#">WG1854729</a>
Benzo(b)fluoranthene	ND		0.00600	1	04/27/2022 13:36	<a href="#">WG1854729</a>
Benzo(k)fluoranthene	ND		0.00600	1	04/27/2022 13:36	<a href="#">WG1854729</a>
Benzo(a)pyrene	ND		0.00600	1	04/27/2022 13:36	<a href="#">WG1854729</a>
Chrysene	ND		0.00600	1	04/27/2022 13:36	<a href="#">WG1854729</a>
Dibenz(a,h)anthracene	ND		0.00600	1	04/27/2022 13:36	<a href="#">WG1854729</a>
Fluoranthene	ND		0.00600	1	04/27/2022 13:36	<a href="#">WG1854729</a>
Fluorene	0.357		0.00600	1	04/27/2022 13:36	<a href="#">WG1854729</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	04/27/2022 13:36	<a href="#">WG1854729</a>
1-Methylnaphthalene	2.04		0.0200	1	04/27/2022 13:36	<a href="#">WG1854729</a>
2-Methylnaphthalene	8.67		0.200	10	04/28/2022 13:20	<a href="#">WG1854729</a>
Naphthalene	3.09		0.0200	1	04/27/2022 13:36	<a href="#">WG1854729</a>
Pyrene	ND		0.00600	1	04/27/2022 13:36	<a href="#">WG1854729</a>
(S) p-Terphenyl-d14	99.9		23.0-120		04/28/2022 13:20	<a href="#">WG1854729</a>
(S) p-Terphenyl-d14	97.3		23.0-120		04/27/2022 13:36	<a href="#">WG1854729</a>
(S) Nitrobenzene-d5	1810	<a href="#">J1</a>	14.0-149		04/27/2022 13:36	<a href="#">WG1854729</a>
(S) Nitrobenzene-d5	0.000	<a href="#">J2</a>	14.0-149		04/28/2022 13:20	<a href="#">WG1854729</a>
(S) 2-Fluorobiphenyl	67.6		34.0-125		04/28/2022 13:20	<a href="#">WG1854729</a>
(S) 2-Fluorobiphenyl	102		34.0-125		04/27/2022 13:36	<a href="#">WG1854729</a>

## Sample Narrative:

L1485076-07 WG1854729: Surrogate failure due to matrix interference

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	7.76		1	04/27/2022 22:50	WG1853665

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	04/27/2022 15:38	<a href="#">WG1853623</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.80	<a href="#">T8</a>	1	04/26/2022 10:00	<a href="#">WG1853301</a>

## Sample Narrative:

L1485076-08 WG1853301: 7.8 at 20.3C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	1270		10.0	1	04/25/2022 11:00	<a href="#">WG1853745</a>

## Sample Narrative:

L1485076-08 WG1853745: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	312		0.500	1	04/27/2022 19:07	<a href="#">WG1852954</a>
Cadmium	ND		0.500	1	04/27/2022 19:07	<a href="#">WG1852954</a>
Copper	16.3		2.00	1	04/27/2022 19:07	<a href="#">WG1852954</a>
Lead	9.88		0.500	1	04/27/2022 19:07	<a href="#">WG1852954</a>
Nickel	14.1		2.00	1	04/27/2022 19:07	<a href="#">WG1852954</a>
Selenium	ND		2.00	1	04/27/2022 19:07	<a href="#">WG1852954</a>
Silver	ND		1.00	1	04/27/2022 19:07	<a href="#">WG1852954</a>
Zinc	34.8		5.00	1	04/27/2022 19:07	<a href="#">WG1852954</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.482		0.200	1	04/28/2022 13:14	<a href="#">WG1855508</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.80		1.00	5	04/25/2022 00:42	<a href="#">WG1852959</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	243		10.0	100	04/25/2022 00:16	<a href="#">WG1853645</a>
(S) a,a,a-Trifluorotoluene(FID)	100		77.0-120		04/25/2022 00:16	<a href="#">WG1853645</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00800	8	04/24/2022 02:40	<a href="#">WG1853405</a>
Toluene	0.0921		0.0400	8	04/25/2022 16:32	<a href="#">WG1853697</a>
Ethylbenzene	0.0449		0.0200	8	04/24/2022 02:40	<a href="#">WG1853405</a>
Xylenes, Total	4.28		0.0520	8	04/25/2022 16:32	<a href="#">WG1853697</a>
1,2,4-Trimethylbenzene	2.31		0.0400	8	04/25/2022 16:32	<a href="#">WG1853697</a>
1,3,5-Trimethylbenzene	4.38		0.0400	8	04/25/2022 16:32	<a href="#">WG1853697</a>
(S) Toluene-d8	109		75.0-131		04/24/2022 02:40	<a href="#">WG1853405</a>
(S) Toluene-d8	113		75.0-131		04/25/2022 16:32	<a href="#">WG1853697</a>
(S) 4-Bromofluorobenzene	103		67.0-138		04/24/2022 02:40	<a href="#">WG1853405</a>
(S) 4-Bromofluorobenzene	107		67.0-138		04/25/2022 16:32	<a href="#">WG1853697</a>
(S) 1,2-Dichloroethane-d4	104		70.0-130		04/24/2022 02:40	<a href="#">WG1853405</a>
(S) 1,2-Dichloroethane-d4	105		70.0-130		04/25/2022 16:32	<a href="#">WG1853697</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	146		4.00	1	04/28/2022 05:47	<a href="#">WG1855177</a>
C28-C36 Motor Oil Range	7.30	<a href="#">B</a>	4.00	1	04/28/2022 05:47	<a href="#">WG1855177</a>
(S) o-Terphenyl	62.9		18.0-148		04/28/2022 05:47	<a href="#">WG1855177</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	0.0118		0.00600	1	04/27/2022 13:56	<a href="#">WG1854729</a>
Anthracene	ND		0.00600	1	04/27/2022 13:56	<a href="#">WG1854729</a>
Benzo(a)anthracene	ND		0.00600	1	04/27/2022 13:56	<a href="#">WG1854729</a>
Benzo(b)fluoranthene	ND		0.00600	1	04/27/2022 13:56	<a href="#">WG1854729</a>
Benzo(k)fluoranthene	ND		0.00600	1	04/27/2022 13:56	<a href="#">WG1854729</a>
Benzo(a)pyrene	ND		0.00600	1	04/27/2022 13:56	<a href="#">WG1854729</a>
Chrysene	ND		0.00600	1	04/27/2022 13:56	<a href="#">WG1854729</a>
Dibenz(a,h)anthracene	ND		0.00600	1	04/27/2022 13:56	<a href="#">WG1854729</a>
Fluoranthene	ND		0.00600	1	04/27/2022 13:56	<a href="#">WG1854729</a>
Fluorene	0.0263		0.00600	1	04/27/2022 13:56	<a href="#">WG1854729</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	04/27/2022 13:56	<a href="#">WG1854729</a>
1-Methylnaphthalene	0.210		0.0200	1	04/27/2022 13:56	<a href="#">WG1854729</a>
2-Methylnaphthalene	0.587		0.0200	1	04/27/2022 13:56	<a href="#">WG1854729</a>
Naphthalene	0.179		0.0200	1	04/27/2022 13:56	<a href="#">WG1854729</a>
Pyrene	ND		0.00600	1	04/27/2022 13:56	<a href="#">WG1854729</a>
(S) p-Terphenyl-d14	101		23.0-120		04/27/2022 13:56	<a href="#">WG1854729</a>
(S) Nitrobenzene-d5	230	<a href="#">J1</a>	14.0-149		04/27/2022 13:56	<a href="#">WG1854729</a>
(S) 2-Fluorobiphenyl	75.9		34.0-125		04/27/2022 13:56	<a href="#">WG1854729</a>

## Sample Narrative:

L1485076-08 WG1854729: Surrogate failure due to matrix interference

Method Blank (MB)

(MB) R3785705-1 04/27/22 13:21

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
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

L1485076-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1485076-03 04/27/22 14:57 • (DUP) R3785705-7 04/27/22 15:02

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	2.56		20

L1485076-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1485076-12 04/27/22 15:43 • (DUP) R3785705-8 04/27/22 15:48

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

Laboratory Control Sample (LCS)

(LCS) R3785705-2 04/27/22 13:28

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	9.96	99.6	80.0-120	

L1485076-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1485076-01 04/27/22 14:25 • (MS) R3785705-3 04/27/22 14:31 • (MSD) R3785705-4 04/27/22 14:36

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	ND	16.1	18.0	79.0	88.1	1	75.0-125			10.6	20

L1485076-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1485076-01 04/27/22 14:25 • (MS) R3785705-5 04/27/22 14:41

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	639	ND	622	97.3	50	75.0-125	

L1485076-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1485076-06 04/26/22 10:00 • (DUP) R3785027-2 04/26/22 10:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	7.71	7.70	1	0.130		1

Sample Narrative:

OS: 7.71 at 19.9C

DUP: 7.7 at 20C

L1485076-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1485076-11 04/26/22 10:00 • (DUP) R3785027-3 04/26/22 10:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	7.62	7.62	1	0.000		1

Sample Narrative:

OS: 7.62 at 20.3C

DUP: 7.62 at 20.3C

Laboratory Control Sample (LCS)

(LCS) R3785027-1 04/26/22 10:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.95	99.5	99.0-101	

Sample Narrative:

LCS: 9.95 at 20.1C





L1485077-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1485077-02 04/26/22 15:00 • (DUP) R3785194-2 04/26/22 15:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	pH	su		%		%
pH	7.99	8.01	1	0.250		1

Sample Narrative:

OS: 7.99 at 19.5C

DUP: 8.01 at 19.3C

L1485313-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1485313-04 04/26/22 15:00 • (DUP) R3785194-3 04/26/22 15:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	9.37	9.35	1	0.214		1

Sample Narrative:

OS: 9.37 at 20.2C

DUP: 9.35 at 20.2C

Laboratory Control Sample (LCS)

(LCS) R3785194-1 04/26/22 15:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.93	99.3	99.0-101	

Sample Narrative:

LCS: 9.93 at 18.6C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3784665-1 04/25/22 10:12

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

Sample Narrative:

BLANK: at 25C

L1483860-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1483860-01 04/25/22 10:12 • (DUP) R3784665-3 04/25/22 10:12

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	686	670	1	2.36		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1485076-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1485076-02 04/25/22 10:12 • (DUP) R3784665-4 04/25/22 10:12

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	673	668	1	0.746		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3784665-2 04/25/22 10:12

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	282	105	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3784683-1 04/25/22 11:00

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

Sample Narrative:  
BLANK: at 25C

L1485055-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1485055-02 04/25/22 11:00 • (DUP) R3784683-3 04/25/22 11:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	4940	4930	1	0.203		20

Sample Narrative:  
OS: at 25C  
DUP: at 25C

L1485058-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1485058-02 04/25/22 11:00 • (DUP) R3784683-4 04/25/22 11:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	2810	2900	1	3.33		20

Sample Narrative:  
OS: at 25C  
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3784683-2 04/25/22 11:00

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	275	102	85.0-115	

Sample Narrative:  
LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3785756-1 04/27/22 18:25

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		0.0852	0.500
Cadmium	U		0.0471	0.500
Copper	U		0.400	2.00
Lead	U		0.208	0.500
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00
Silver	U		0.127	1.00
Zinc	U		0.832	5.00

Laboratory Control Sample (LCS)

(LCS) R3785756-2 04/27/22 18:28

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	101	101	80.0-120	
Cadmium	100	95.6	95.6	80.0-120	
Copper	100	98.0	98.0	80.0-120	
Lead	100	96.4	96.4	80.0-120	
Nickel	100	97.5	97.5	80.0-120	
Selenium	100	96.3	96.3	80.0-120	
Silver	20.0	18.3	91.3	80.0-120	
Zinc	100	92.8	92.8	80.0-120	

L1485076-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1485076-03 04/27/22 18:31 • (MS) R3785756-5 04/27/22 18:39 • (MSD) R3785756-6 04/27/22 18:41

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	170	272	245	102	75.1	1	75.0-125			10.5	20
Cadmium	100	ND	100	102	99.9	102	1	75.0-125			1.91	20
Copper	100	12.5	113	112	101	99.5	1	75.0-125			0.863	20
Lead	100	5.58	107	108	101	103	1	75.0-125			1.57	20
Nickel	100	17.9	122	120	104	102	1	75.0-125			1.55	20
Selenium	100	ND	97.6	94.5	97.6	94.5	1	75.0-125			3.26	20
Silver	20.0	ND	19.4	19.7	96.9	98.5	1	75.0-125			1.66	20
Zinc	100	26.5	116	115	89.8	89.0	1	75.0-125			0.718	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3786108-1 04/28/22 12:16

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

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

(LCS) R3786108-2 04/28/22 12:18 • (LCSD) R3786108-3 04/28/22 12:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	0.975	0.957	97.5	95.7	80.0-120			1.83	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc



Method Blank (MB)

(MB) R3784630-1 04/24/22 23:52

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

Laboratory Control Sample (LCS)

(LCS) R3784630-2 04/24/22 23:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	92.4	92.4	80.0-120	

L1485076-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1485076-03 04/24/22 23:59 • (MS) R3784630-5 04/25/22 00:09 • (MSD) R3784630-6 04/25/22 00:12

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	4.32	96.3	97.7	91.9	93.3	5	75.0-125			1.46	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3784867-2 04/25/22 06:16

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)	94.8			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3784867-1 04/25/22 05:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	6.67	121	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			103	77.0-120	

L1485076-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1485076-03 04/25/22 06:36 • (MS) R3784867-3 04/25/22 14:36 • (MSD) R3784867-4 04/25/22 14:56

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.56	0.605	5.78	6.26	93.1	104	1.01	10.0-151			7.97	28
(S) a,a,a-Trifluorotoluene(FID)					101	103		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3785096-2 04/24/22 19:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	1.86	⬇	0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	99.8			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3785096-1 04/24/22 17:49

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)			112	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3784970-3 04/25/22 19:25

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)	111			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3784970-2 04/25/22 18:42

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.94	89.8	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			100	77.0-120	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3785416-2 04/26/22 15:10

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	97.4			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3785416-1 04/26/22 13:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.32	78.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			99.8	77.0-120	

<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



Method Blank (MB)

(MB) R3784556-3 04/23/22 19:52

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	112			75.0-131
(S) 4-Bromofluorobenzene	96.8			67.0-138
(S) 1,2-Dichloroethane-d4	108			70.0-130

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

(LCS) R3784556-1 04/23/22 18:36 • (LCSD) R3784556-2 04/23/22 18:55

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 %
Benzene	0.125	0.115	0.114	92.0	91.2	70.0-123			0.873	20
Toluene	0.125	0.128	0.127	102	102	75.0-121			0.784	20
Ethylbenzene	0.125	0.127	0.129	102	103	74.0-126			1.56	20
Xylenes, Total	0.375	0.367	0.371	97.9	98.9	72.0-127			1.08	20
1,2,4-Trimethylbenzene	0.125	0.109	0.111	87.2	88.8	70.0-126			1.82	20
1,3,5-Trimethylbenzene	0.125	0.117	0.114	93.6	91.2	73.0-127			2.60	20
(S) Toluene-d8				111	108	75.0-131				
(S) 4-Bromofluorobenzene				96.6	95.8	67.0-138				
(S) 1,2-Dichloroethane-d4				107	107	70.0-130				

L1485076-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1485076-01 04/24/22 01:43 • (MS) R3784556-4 04/24/22 02:59 • (MSD) R3784556-5 04/24/22 03:18

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	2.48	0.931	2.93	2.93	80.6	80.6	20	10.0-149			0.000	37
Toluene	2.48	55.3	53.1	52.7	0.000	0.000	20	10.0-156	E V	E V	0.756	38
Ethylbenzene	2.48	12.6	13.9	14.5	52.4	76.6	20	10.0-160			4.23	38
Xylenes, Total	7.43	288	278	289	0.000	13.5	20	10.0-160	V		3.88	38
1,2,4-Trimethylbenzene	2.48	50.6	47.5	47.6	0.000	0.000	20	10.0-160	V	V	0.210	36
1,3,5-Trimethylbenzene	2.48	49.2	46.0	46.2	0.000	0.000	20	10.0-160	V	V	0.434	38
(S) Toluene-d8					112	111		75.0-131				
(S) 4-Bromofluorobenzene					123	132		67.0-138				
(S) 1,2-Dichloroethane-d4					105	105		70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3784937-3 04/25/22 11:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Toluene	U		0.00130	0.00500
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	112			75.0-131
(S) 4-Bromofluorobenzene	94.1			67.0-138
(S) 1,2-Dichloroethane-d4	103			70.0-130

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

(LCS) R3784937-1 04/25/22 10:22 • (LCSD) R3784937-2 04/25/22 10:42

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	0.136	0.137	109	110	75.0-121			0.733	20
Xylenes, Total	0.375	0.412	0.404	110	108	72.0-127			1.96	20
1,2,4-Trimethylbenzene	0.125	0.113	0.125	90.4	100	70.0-126			10.1	20
1,3,5-Trimethylbenzene	0.125	0.114	0.129	91.2	103	73.0-127			12.3	20
(S) Toluene-d8				106	107	75.0-131				
(S) 4-Bromofluorobenzene				99.1	95.8	67.0-138				
(S) 1,2-Dichloroethane-d4				104	107	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3785861-1 04/28/22 03:01

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	0.837	⬇	0.274	4.00
(S) o-Terphenyl	67.4			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3785861-2 04/28/22 03:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	33.4	66.8	50.0-150	
(S) o-Terphenyl			87.1	18.0-148	

L1485077-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1485077-01 04/28/22 07:08 • (MS) R3785861-3 04/28/22 07:21 • (MSD) R3785861-4 04/28/22 07:35

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.4	230	220	238	0.000	16.2	10	50.0-150	⬇	⬇	7.86	20
(S) o-Terphenyl					102	119		18.0-148				

Sample Narrative:

OS: Surrogate failure due to matrix interference

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc

Method Blank (MB)

(MB) R3785928-1 04/27/22 09:38

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00209	0.00600
Anthracene	U		0.00230	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	102			23.0-120
(S) Nitrobenzene-d5	88.7			14.0-149
(S) 2-Fluorobiphenyl	85.1			34.0-125

<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) R3785928-2 04/27/22 09:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0668	83.5	50.0-120	
Anthracene	0.0800	0.0654	81.8	50.0-126	
Benzo(a)anthracene	0.0800	0.0674	84.3	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0720	90.0	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0707	88.4	49.0-125	
Benzo(a)pyrene	0.0800	0.0624	78.0	42.0-120	
Chrysene	0.0800	0.0710	88.8	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0702	87.8	47.0-125	
Fluoranthene	0.0800	0.0697	87.1	49.0-129	
Fluorene	0.0800	0.0692	86.5	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0680	85.0	46.0-125	
1-Methylnaphthalene	0.0800	0.0680	85.0	51.0-121	
2-Methylnaphthalene	0.0800	0.0643	80.4	50.0-120	
Naphthalene	0.0800	0.0693	86.6	50.0-120	
Pyrene	0.0800	0.0680	85.0	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3785928-2 04/27/22 09:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
(S) p-Terphenyl-d14			103	23.0-120	
(S) Nitrobenzene-d5			93.8	14.0-149	
(S) 2-Fluorobiphenyl			89.7	34.0-125	

L1484853-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1484853-01 04/27/22 10:17 • (MS) R3785928-3 04/27/22 10:37 • (MSD) R3785928-4 04/27/22 10:57

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Acenaphthene	0.0800	ND	0.0534	0.0547	66.8	68.4	1	14.0-127			2.41	27
Anthracene	0.0800	ND	0.0520	0.0558	65.0	69.8	1	10.0-145			7.05	30
Benzo(a)anthracene	0.0800	ND	0.0533	0.0594	66.6	74.3	1	10.0-139			10.8	30
Benzo(b)fluoranthene	0.0800	ND	0.0554	0.0587	69.3	73.4	1	10.0-140			5.78	36
Benzo(k)fluoranthene	0.0800	ND	0.0551	0.0588	68.9	73.5	1	10.0-137			6.50	31
Benzo(a)pyrene	0.0800	ND	0.0528	0.0576	66.0	72.0	1	10.0-141			8.70	31
Chrysene	0.0800	ND	0.0570	0.0610	71.3	76.3	1	10.0-145			6.78	30
Dibenz(a,h)anthracene	0.0800	ND	0.0547	0.0583	68.4	72.9	1	10.0-132			6.37	31
Fluoranthene	0.0800	ND	0.0553	0.0600	69.1	75.0	1	10.0-153			8.15	33
Fluorene	0.0800	ND	0.0546	0.0579	68.3	72.4	1	11.0-130			5.87	29
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0535	0.0581	66.9	72.6	1	10.0-137			8.24	32
1-Methylnaphthalene	0.0800	ND	0.0654	0.0718	68.9	76.9	1	10.0-142			9.33	28
2-Methylnaphthalene	0.0800	ND	0.0664	0.0766	62.3	75.0	1	10.0-137			14.3	28
Naphthalene	0.0800	ND	0.0708	0.0778	67.1	75.9	1	10.0-135			9.42	27
Pyrene	0.0800	ND	0.0522	0.0565	65.3	70.6	1	10.0-148			7.91	35
(S) p-Terphenyl-d14					88.7	88.8		23.0-120				
(S) Nitrobenzene-d5					86.2	82.6		14.0-149				
(S) 2-Fluorobiphenyl					79.7	76.4		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

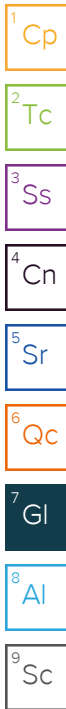
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

## Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.



# ACCREDITATIONS & LOCATIONS

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

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico <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 & Gas LLC  
143 Diamond Avenue  
Parachute, CO 81635  
970-285-9606

Billing Information:

Same as above

Pres  
Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 2



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



Report to:  
bmiddleton@caerusoilandgas.com

Email To:  
bmiddleton@caerusoilandgas.com

Project  
Description: YCF 35-33-1

City/State  
Collected: Rio Blanco, CO

Phone: (970) 668-4524  
Fax:

Client Project #  
YCF 35-33-1

Lab Project #  
YCF 35-33-1

Collected by (print):  
K. MORELAND

Site/Facility ID #  
YCF 35-33-1

P.O. #  
YCF 35-33-1

Collected by (signature):

**Rush?** (Lab MUST Be Notified)

Quote #

Immediately  
Packed on Ice N ☐ Y ☒

☐ Same Day ☐ Five Day  
☐ Next Day ☐ 5 Day (Rad Only)  
☐ Two Day ☐ 10 Day (Rad Only)  
☐ Three Day

Date Results Needed

Standard TAT

No.  
of  
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH- GRO, DRO,ORO	BTEX	TABLE 915-1- PAH's	SAR, EC, pH, Boron	TABLE 915-1- Metals								
20220419-YCF 35-33-1 (PDC A)	GRAB	SS	1'	4/19/22	1045	3	X	X	X	X	X								
20220419-YCF 35-33-1 (PDC A) @ 2'			2'		1130														
20220419-YCF 35-33-1 (PDC B)			1'		1048														
20220419-YCF 35-33-1 (PDC B) @ 2'			2'		1135														
20220419-YCF 35-33-1 (PDC C)			1'		1100														
20220419-YCF 35-33-1 (PDC C) @ 2'			2'		1140														
20220419-YCF 35-33-1 (PDC D)			1'		1105														
20220419-YCF 35-33-1 (PDC D) @ 2'			2'		1150														
20220419-YCF 35-33-1 (PDC E)			1'		1110														
20220419-YCF 35-33-1 (PDC E) @ 2'			2'		1200														

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

Remarks:

Samples returned via:

UPS FedEx Courier

Tracking #

pH Temp

Flow 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

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received: Yes ☒ No  
HCL / MeOH  
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: °C Bottles Received: 38

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: 4/21/22 Time: 0930

Hold:

Condition:

NCF 10

**Caerus Oil & Gas LLC**  
**143 Diamond Avenue**  
**Parachute, CO 81635**  
**970-285-9606**

Billing Information:

Same as above

Report to:  
**bmiddleton@caerusoilandgas.com**

Project	YCF 35-33-1
Description:	

Phone: (970)-418-4514  
Fax:

Client Project #  
**YCF 35-33-1**

Lab Project #  
**YCF 35-33-1**

Collected by (print):  
Y. MORELAND

Site/Facility ID #  
**YCF 35-33-1**

P.O. #  
YCF 35-33-1

Collected by (signature):  
K. Monahan  
Immediately  
Packed on Ice N Y X

***Rush?*** (Lab MUST Be Notified)

<input type="checkbox"/> Same Day	<input type="checkbox"/> Five Day
<input type="checkbox"/> Next Day	<input type="checkbox"/> 5 Day (Rad Only)
<input type="checkbox"/> Two Day	<input type="checkbox"/> 10 Day (Rad Only)
<input type="checkbox"/> Three Day	

Quote # \_\_\_\_\_

Date Results Needed \_\_\_\_\_

**Standard TAT**

Sample ID
-----------

Comp/Grab	Matrix *	Depth
-----------	----------	-------

Date	Time
------	------

[illegible]

Chain of Custody Page 2 of 2

 **Pace Analytical®**  
National Center for Testing & Innovation

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



L# 485076

Table #

Acctnum:  
Template:

Prelogin:

TSR:

PB:

Shipped Via:	
Remarks	Sample # (lab only)

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

Remarks: <div style="float: right;">           pH _____ Temp _____            Flow _____ Other _____         </div>	
Samples returned via: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier	Tracking # _____

Sample Receipt Checklist

COC Seal Present/Intact:	✓ <sup>NP</sup>	<u>Y</u>	<u>N</u>
COC Signed/Accurate:		<u>Y</u>	<u>N</u>
Bottles arrive intact:		<u>Y</u>	<u>N</u>
Correct bottles used:		<u>Y</u>	<u>N</u>
Sufficient volume sent:		<u>Y</u>	<u>N</u>
<u>If Applicable</u>			

Relinquished by : (Signature)

Date: 4/20/12

Time: 1330

Received by (Signature)

Trip Blank Received:	Yes / No
	HCL / MeOH
	TBR

Relinquished by : (Signature)

Date: 4/20/22

Time: 15.00

Received by: (Signature)

Temp:	°C	Bottles Received:
11		33

Relinquished by : (Signature)

Date:

Time: \_\_\_\_\_

Received for lab by: (Signature)

Date: 9/21/22 Time: 0930

Hold:	Condition: NCF / <u>OK</u>
-------	-------------------------------



**Caerus Oil and Gas**

Sample Delivery Group: L1501204  
Samples Received: 06/03/2022  
Project Number: YCF 35-33-1  
Description: YCF 35-33-1  
Site: YCF 35-33-1  
Report To: Blair Rollins  
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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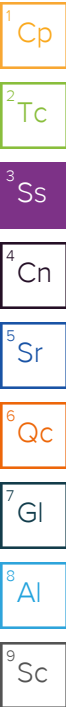
<sup>1</sup> Cp
<sup>2</sup> Tc
<sup>3</sup> Ss
<sup>4</sup> Cn
<sup>5</sup> Sr
<sup>6</sup> Qc
<sup>7</sup> Gl
<sup>8</sup> Al
<sup>9</sup> Sc

# SAMPLE SUMMARY

## 20220601-YCF 35-33-1 (PH01) @ 2'-4' L1501204-01 Solid

Collected by K. Moreland  
Collected date/time 06/01/22 09:12  
Received date/time 06/03/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1876003	1	06/14/22 01:00	06/14/22 01:00	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1876247	1	06/15/22 07:39	06/15/22 18:15	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1883245	5	06/21/22 21:52	06/22/22 21:07	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1874732	250	06/04/22 20:44	06/06/22 17:54	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1876600	20	06/04/22 20:44	06/09/22 06:39	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1877555	400	06/04/22 20:44	06/11/22 15:30	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1879143	1	06/14/22 17:22	06/15/22 00:21	JAS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1879143	20	06/14/22 17:22	06/15/22 10:07	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1878891	1	06/14/22 08:00	06/14/22 16:34	SAW	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1878891	10	06/14/22 08:00	06/15/22 12:17	AMG	Mt. Juliet, TN



## 20220601-YCF 35-33-1 (PH02) @ 4.5' L1501204-03 Solid

Collected by K. Moreland  
Collected date/time 06/01/22 09:55  
Received date/time 06/03/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1876003	1	06/14/22 01:03	06/14/22 01:03	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1876247	1	06/15/22 07:39	06/15/22 18:18	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1883245	5	06/21/22 21:52	06/22/22 21:10	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1874734	1	06/04/22 20:44	06/06/22 14:53	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1876600	1	06/04/22 20:44	06/09/22 02:28	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1879143	1	06/14/22 17:22	06/14/22 23:43	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1878891	1	06/14/22 08:00	06/14/22 16:52	AMG	Mt. Juliet, TN

## 20220601-YCF 35-33-1 (PH03) @ 2'-4' L1501204-04 Solid

Collected by K. Moreland  
Collected date/time 06/01/22 10:05  
Received date/time 06/03/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1876003	1	06/14/22 01:06	06/14/22 01:06	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1876247	1	06/15/22 07:39	06/15/22 18:26	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1883245	5	06/21/22 21:52	06/22/22 21:22	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1874732	250	06/04/22 20:44	06/06/22 18:15	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1876600	20	06/04/22 20:44	06/09/22 06:58	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1877555	200	06/04/22 20:44	06/11/22 15:49	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1879143	1	06/14/22 17:22	06/15/22 00:09	JAS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1879143	25	06/14/22 17:22	06/15/22 10:07	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1878891	1	06/14/22 08:00	06/14/22 17:10	AMG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1878891	10	06/14/22 08:00	06/15/22 12:37	AMG	Mt. Juliet, TN

## 20220601-YCF 35-33-1 (PH04) @ 2' L1501204-05 Solid

Collected by K. Moreland  
Collected date/time 06/01/22 10:30  
Received date/time 06/03/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1876392	1	06/13/22 10:55	06/13/22 10:55	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1876247	1	06/15/22 07:39	06/15/22 18:29	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1883245	5	06/21/22 21:52	06/22/22 21:25	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1874734	1	06/04/22 20:44	06/06/22 15:14	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1876600	1	06/04/22 20:44	06/09/22 02:47	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1879143	1	06/14/22 17:22	06/14/22 23:56	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1878891	1	06/14/22 08:00	06/14/22 17:27	AMG	Mt. Juliet, TN

# SAMPLE SUMMARY

## 20220601-YCF 35-33-1 (PH05) @ 3' L1501204-07 Solid

Collected by  
K. Moreland

Collected date/time  
06/01/22 10:55

Received date/time  
06/03/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1876392	1	06/13/22 10:58	06/13/22 10:58	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1876247	1	06/15/22 07:39	06/15/22 18:32	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1883245	5	06/21/22 21:52	06/22/22 21:28	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1874734	1	06/04/22 20:44	06/06/22 15:34	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1876600	1	06/04/22 20:44	06/09/22 03:07	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1879143	1	06/14/22 17:22	06/15/22 09:54	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1878891	1	06/14/22 08:00	06/14/22 17:45	AMG	Mt. Juliet, TN

## 20220601-YCF 35-33-1 (PH07) @ 2.25' L1501204-09 Solid

Collected by  
K. Moreland

Collected date/time  
06/01/22 11:30

Received date/time  
06/03/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1876392	1	06/13/22 11:06	06/13/22 11:06	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1876247	1	06/15/22 07:39	06/15/22 18:35	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1883245	5	06/21/22 21:52	06/22/22 21:31	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1875991	1	06/04/22 20:44	06/08/22 13:54	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1876600	1	06/04/22 20:44	06/09/22 03:26	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1879143	1	06/14/22 17:22	06/14/22 22:53	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1878891	1	06/14/22 08:00	06/14/22 18:03	AMG	Mt. Juliet, TN

## 20220601-YCF 35-33-1 (PH07) @ 7' L1501204-10 Solid

Collected by  
K. Moreland

Collected date/time  
06/01/22 12:25

Received date/time  
06/03/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1876392	1	06/13/22 11:09	06/13/22 11:09	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1876247	1	06/15/22 07:39	06/15/22 18:38	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1883245	5	06/21/22 21:52	06/22/22 21:35	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1875739	1	06/04/22 20:44	06/07/22 19:19	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1876600	1	06/04/22 20:44	06/09/22 03:45	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1879143	1	06/14/22 17:22	06/14/22 22:15	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1878891	1	06/14/22 08:00	06/14/22 18:21	AMG	Mt. Juliet, TN

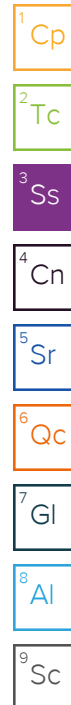
## 20220601-YCF 35-33-1 (PH08) @ 1.5' L1501204-11 Solid

Collected by  
K. Moreland

Collected date/time  
06/01/22 13:00

Received date/time  
06/03/22 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1876392	1	06/13/22 11:11	06/13/22 11:11	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1876247	1	06/15/22 07:39	06/15/22 18:41	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1883245	5	06/21/22 21:52	06/22/22 21:38	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1874732	250	06/04/22 20:44	06/06/22 18:37	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1876600	20	06/04/22 20:44	06/09/22 07:18	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1879143	1	06/14/22 17:22	06/14/22 23:18	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1878891	1	06/14/22 08:00	06/14/22 18:39	AMG	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



## Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	SAR				
Sodium Adsorption Ratio	4.61		1	06/14/2022 01:00	WG1876003

## Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Barium	374		0.500	1	06/15/2022 18:15	<a href="#">WG1876247</a>

## Metals (ICPMS) by Method 6020

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Arsenic	3.55		1.00	5	06/22/2022 21:07	<a href="#">WG1883245</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
TPH (GC/FID) Low Fraction	2060		25.0	250	06/06/2022 17:54	<a href="#">WG1874732</a>
(S) a,a,a-Trifluorotoluene(FID)	79.5		77.0-120		06/06/2022 17:54	<a href="#">WG1874732</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Benzene	0.935		0.0200	20	06/09/2022 06:39	<a href="#">WG1876600</a>
Toluene	36.1		0.100	20	06/09/2022 06:39	<a href="#">WG1876600</a>
Ethylbenzene	9.08		0.0500	20	06/09/2022 06:39	<a href="#">WG1876600</a>
Xylenes, Total	209		2.60	400	06/11/2022 15:30	<a href="#">WG1877555</a>
1,2,4-Trimethylbenzene	47.4		0.100	20	06/09/2022 06:39	<a href="#">WG1876600</a>
1,3,5-Trimethylbenzene	46.1		0.100	20	06/09/2022 06:39	<a href="#">WG1876600</a>
(S) Toluene-d8	91.4		75.0-131		06/09/2022 06:39	<a href="#">WG1876600</a>
(S) Toluene-d8	103		75.0-131		06/11/2022 15:30	<a href="#">WG1877555</a>
(S) 4-Bromofluorobenzene	92.4		67.0-138		06/09/2022 06:39	<a href="#">WG1876600</a>
(S) 4-Bromofluorobenzene	96.8		67.0-138		06/11/2022 15:30	<a href="#">WG1877555</a>
(S) 1,2-Dichloroethane-d4	107		70.0-130		06/09/2022 06:39	<a href="#">WG1876600</a>
(S) 1,2-Dichloroethane-d4	117		70.0-130		06/11/2022 15:30	<a href="#">WG1877555</a>

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

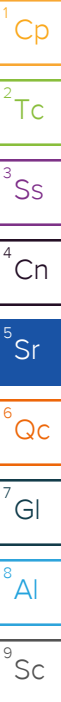
	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
C10-C28 Diesel Range	2060		80.0	20	06/15/2022 10:07	<a href="#">WG1879143</a>
C28-C36 Motor Oil Range	104		4.00	1	06/15/2022 00:21	<a href="#">WG1879143</a>
(S) o-Terphenyl	0.000	<a href="#">J2</a>	18.0-148		06/15/2022 00:21	<a href="#">WG1879143</a>
(S) o-Terphenyl	0.000	<a href="#">J7</a>	18.0-148		06/15/2022 10:07	<a href="#">WG1879143</a>

## Sample Narrative:

L1501204-01 WG1879143: Surrogate failure due to matrix interference

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
1-Methylnaphthalene	3.18		0.0200	1	06/14/2022 16:34	<a href="#">WG1878891</a>
2-Methylnaphthalene	12.8		0.200	10	06/15/2022 12:17	<a href="#">WG1878891</a>
Naphthalene	5.14		0.200	10	06/15/2022 12:17	<a href="#">WG1878891</a>
(S) p-Terphenyl-d14	106		23.0-120		06/15/2022 12:17	<a href="#">WG1878891</a>
(S) p-Terphenyl-d14	104		23.0-120		06/14/2022 16:34	<a href="#">WG1878891</a>





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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) Nitrobenzene-d5	1620	J1	14.0-149		06/15/2022 12:17	WG1878891
(S) Nitrobenzene-d5	1660	J1	14.0-149		06/14/2022 16:34	WG1878891
(S) 2-Fluorobiphenyl	80.0		34.0-125		06/15/2022 12:17	WG1878891
(S) 2-Fluorobiphenyl	113		34.0-125		06/14/2022 16:34	WG1878891

Sample Narrative:

L1501204-01 WG1878891: Surrogate failure due to matrix interference

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

## Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	SAR				
Sodium Adsorption Ratio	11.2		1	06/14/2022 01:03	WG1876003

## Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Barium	324		0.500	1	06/15/2022 18:18	<a href="#">WG1876247</a>

## Metals (ICPMS) by Method 6020

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Arsenic	5.76		1.00	5	06/22/2022 21:10	<a href="#">WG1883245</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
TPH (GC/FID) Low Fraction	ND		0.100	1	06/06/2022 14:53	<a href="#">WG1874734</a>
(S) a,a,a-Trifluorotoluene(FID)	93.0		77.0-120		06/06/2022 14:53	<a href="#">WG1874734</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Benzene	ND		0.00100	1	06/09/2022 02:28	<a href="#">WG1876600</a>
Toluene	ND		0.00500	1	06/09/2022 02:28	<a href="#">WG1876600</a>
Ethylbenzene	ND		0.00250	1	06/09/2022 02:28	<a href="#">WG1876600</a>
Xylenes, Total	ND		0.00650	1	06/09/2022 02:28	<a href="#">WG1876600</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	06/09/2022 02:28	<a href="#">WG1876600</a>
1,3,5-Trimethylbenzene	0.0178		0.00500	1	06/09/2022 02:28	<a href="#">WG1876600</a>
(S) Toluene-d8	103		75.0-131		06/09/2022 02:28	<a href="#">WG1876600</a>
(S) 4-Bromofluorobenzene	107		67.0-138		06/09/2022 02:28	<a href="#">WG1876600</a>
(S) 1,2-Dichloroethane-d4	96.3		70.0-130		06/09/2022 02:28	<a href="#">WG1876600</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
C10-C28 Diesel Range	ND		4.00	1	06/14/2022 23:43	<a href="#">WG1879143</a>
C28-C36 Motor Oil Range	ND		4.00	1	06/14/2022 23:43	<a href="#">WG1879143</a>
(S) o-Terphenyl	70.1		18.0-148		06/14/2022 23:43	<a href="#">WG1879143</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
1-Methylnaphthalene	ND		0.0200	1	06/14/2022 16:52	<a href="#">WG1878891</a>
2-Methylnaphthalene	ND		0.0200	1	06/14/2022 16:52	<a href="#">WG1878891</a>
Naphthalene	ND		0.0200	1	06/14/2022 16:52	<a href="#">WG1878891</a>
(S) p-Terphenyl-d14	106		23.0-120		06/14/2022 16:52	<a href="#">WG1878891</a>
(S) Nitrobenzene-d5	83.4		14.0-149		06/14/2022 16:52	<a href="#">WG1878891</a>
(S) 2-Fluorobiphenyl	87.1		34.0-125		06/14/2022 16:52	<a href="#">WG1878891</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	SAR				
Sodium Adsorption Ratio	3.35		1	06/14/2022 01:06	WG1876003

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Barium	443		0.500	1	06/15/2022 18:26	<a href="#">WG1876247</a>

Metals (ICPMS) by Method 6020

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Arsenic	5.15		1.00	5	06/22/2022 21:22	<a href="#">WG1883245</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
TPH (GC/FID) Low Fraction	2270		25.0	250	06/06/2022 18:15	<a href="#">WG1874732</a>
(S) a,a,a-Trifluorotoluene(FID)	77.9		77.0-120		06/06/2022 18:15	<a href="#">WG1874732</a>

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
Benzene	1.52		0.0200	20	06/09/2022 06:58	<a href="#">WG1876600</a>
Toluene	40.2		0.100	20	06/09/2022 06:58	<a href="#">WG1876600</a>
Ethylbenzene	7.10		0.0500	20	06/09/2022 06:58	<a href="#">WG1876600</a>
Xylenes, Total	310		1.30	200	06/11/2022 15:49	<a href="#">WG1877555</a>
1,2,4-Trimethylbenzene	89.7		1.00	200	06/11/2022 15:49	<a href="#">WG1877555</a>
1,3,5-Trimethylbenzene	90.8		1.00	200	06/11/2022 15:49	<a href="#">WG1877555</a>
(S) Toluene-d8	89.4		75.0-131		06/09/2022 06:58	<a href="#">WG1876600</a>
(S) Toluene-d8	101		75.0-131		06/11/2022 15:49	<a href="#">WG1877555</a>
(S) 4-Bromofluorobenzene	94.8		67.0-138		06/09/2022 06:58	<a href="#">WG1876600</a>
(S) 4-Bromofluorobenzene	96.5		67.0-138		06/11/2022 15:49	<a href="#">WG1877555</a>
(S) 1,2-Dichloroethane-d4	104		70.0-130		06/09/2022 06:58	<a href="#">WG1876600</a>
(S) 1,2-Dichloroethane-d4	117		70.0-130		06/11/2022 15:49	<a href="#">WG1877555</a>

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

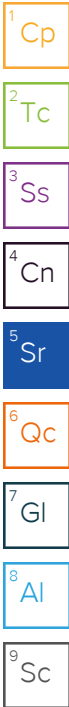
	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
C10-C28 Diesel Range	2890		100	25	06/15/2022 10:07	<a href="#">WG1879143</a>
C28-C36 Motor Oil Range	35.8		4.00	1	06/15/2022 00:09	<a href="#">WG1879143</a>
(S) o-Terphenyl	0.000	<a href="#">J7</a>	18.0-148		06/15/2022 10:07	<a href="#">WG1879143</a>
(S) o-Terphenyl	0.000	<a href="#">J2</a>	18.0-148		06/15/2022 00:09	<a href="#">WG1879143</a>

Sample Narrative:

L1501204-04 WG1879143: Surrogate failure due to matrix interference

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

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg			
1-Methylnaphthalene	3.73		0.0200	1	06/14/2022 17:10	<a href="#">WG1878891</a>
2-Methylnaphthalene	14.7		0.200	10	06/15/2022 12:37	<a href="#">WG1878891</a>
Naphthalene	6.18		0.200	10	06/15/2022 12:37	<a href="#">WG1878891</a>
(S) p-Terphenyl-d14	98.7		23.0-120		06/14/2022 17:10	<a href="#">WG1878891</a>
(S) p-Terphenyl-d14	94.9		23.0-120		06/15/2022 12:37	<a href="#">WG1878891</a>



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) Nitrobenzene-d5	1420	J1	14.0-149		06/15/2022 12:37	WG1878891
(S) Nitrobenzene-d5	1570	J1	14.0-149		06/14/2022 17:10	WG1878891
(S) 2-Fluorobiphenyl	108		34.0-125		06/14/2022 17:10	WG1878891
(S) 2-Fluorobiphenyl	75.1		34.0-125		06/15/2022 12:37	WG1878891

Sample Narrative:

L1501204-04 WG1878891: Surrogate failure due to matrix interference

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	17.0		1	06/13/2022 10:55	WG1876392

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	258		0.500	1	06/15/2022 18:29	<a href="#">WG1876247</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.11		1.00	5	06/22/2022 21:25	<a href="#">WG1883245</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.287		0.100	1	06/06/2022 15:14	<a href="#">WG1874734</a>
(S) a,a,a-Trifluorotoluene(FID)	91.8		77.0-120		06/06/2022 15:14	<a href="#">WG1874734</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/09/2022 02:47	<a href="#">WG1876600</a>
Toluene	ND		0.00500	1	06/09/2022 02:47	<a href="#">WG1876600</a>
Ethylbenzene	ND		0.00250	1	06/09/2022 02:47	<a href="#">WG1876600</a>
Xylenes, Total	0.0192		0.00650	1	06/09/2022 02:47	<a href="#">WG1876600</a>
1,2,4-Trimethylbenzene	0.00587		0.00500	1	06/09/2022 02:47	<a href="#">WG1876600</a>
1,3,5-Trimethylbenzene	0.00671		0.00500	1	06/09/2022 02:47	<a href="#">WG1876600</a>
(S) Toluene-d8	103		75.0-131		06/09/2022 02:47	<a href="#">WG1876600</a>
(S) 4-Bromofluorobenzene	102		67.0-138		06/09/2022 02:47	<a href="#">WG1876600</a>
(S) 1,2-Dichloroethane-d4	94.4		70.0-130		06/09/2022 02:47	<a href="#">WG1876600</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.29	<a href="#">B</a>	4.00	1	06/14/2022 23:56	<a href="#">WG1879143</a>
C28-C36 Motor Oil Range	ND		4.00	1	06/14/2022 23:56	<a href="#">WG1879143</a>
(S) o-Terphenyl	56.4		18.0-148		06/14/2022 23:56	<a href="#">WG1879143</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	06/14/2022 17:27	<a href="#">WG1878891</a>
2-Methylnaphthalene	ND		0.0200	1	06/14/2022 17:27	<a href="#">WG1878891</a>
Naphthalene	ND		0.0200	1	06/14/2022 17:27	<a href="#">WG1878891</a>
(S) p-Terphenyl-d14	84.6		23.0-120		06/14/2022 17:27	<a href="#">WG1878891</a>
(S) Nitrobenzene-d5	74.0		14.0-149		06/14/2022 17:27	<a href="#">WG1878891</a>
(S) 2-Fluorobiphenyl	69.8		34.0-125		06/14/2022 17:27	<a href="#">WG1878891</a>

<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	12.6		1	06/13/2022 10:58	WG1876392

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	271		0.500	1	06/15/2022 18:32	<a href="#">WG1876247</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.68		1.00	5	06/22/2022 21:28	<a href="#">WG1883245</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	5.25		0.100	1	06/06/2022 15:34	<a href="#">WG1874734</a>
(S) a,a,a-Trifluorotoluene(FID)	90.1		77.0-120		06/06/2022 15:34	<a href="#">WG1874734</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/09/2022 03:07	<a href="#">WG1876600</a>
Toluene	ND		0.00500	1	06/09/2022 03:07	<a href="#">WG1876600</a>
Ethylbenzene	ND		0.00250	1	06/09/2022 03:07	<a href="#">WG1876600</a>
Xylenes, Total	0.0634		0.00650	1	06/09/2022 03:07	<a href="#">WG1876600</a>
1,2,4-Trimethylbenzene	0.0689		0.00500	1	06/09/2022 03:07	<a href="#">WG1876600</a>
1,3,5-Trimethylbenzene	1.19		0.00500	1	06/09/2022 03:07	<a href="#">WG1876600</a>
(S) Toluene-d8	98.0		75.0-131		06/09/2022 03:07	<a href="#">WG1876600</a>
(S) 4-Bromofluorobenzene	103		67.0-138		06/09/2022 03:07	<a href="#">WG1876600</a>
(S) 1,2-Dichloroethane-d4	102		70.0-130		06/09/2022 03:07	<a href="#">WG1876600</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	137		4.00	1	06/15/2022 09:54	<a href="#">WG1879143</a>
C28-C36 Motor Oil Range	14.3	<a href="#">B</a>	4.00	1	06/15/2022 09:54	<a href="#">WG1879143</a>
(S) o-Terphenyl	74.5		18.0-148		06/15/2022 09:54	<a href="#">WG1879143</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	06/14/2022 17:45	<a href="#">WG1878891</a>
2-Methylnaphthalene	ND		0.0200	1	06/14/2022 17:45	<a href="#">WG1878891</a>
Naphthalene	ND		0.0200	1	06/14/2022 17:45	<a href="#">WG1878891</a>
(S) p-Terphenyl-d14	98.0		23.0-120		06/14/2022 17:45	<a href="#">WG1878891</a>
(S) Nitrobenzene-d5	190	<a href="#">J1</a>	14.0-149		06/14/2022 17:45	<a href="#">WG1878891</a>
(S) 2-Fluorobiphenyl	78.6		34.0-125		06/14/2022 17:45	<a href="#">WG1878891</a>

## Sample Narrative:

L1501204-07 WG1878891: Surrogate failure due to matrix interference

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.46		1	06/13/2022 11:06	WG1876392

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	405		0.500	1	06/15/2022 18:35	<a href="#">WG1876247</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.62		1.00	5	06/22/2022 21:31	<a href="#">WG1883245</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	3.82		0.100	1	06/08/2022 13:54	<a href="#">WG1875991</a>
(S) a,a,a-Trifluorotoluene(FID)	92.3		77.0-120		06/08/2022 13:54	<a href="#">WG1875991</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/09/2022 03:26	<a href="#">WG1876600</a>
Toluene	ND		0.00500	1	06/09/2022 03:26	<a href="#">WG1876600</a>
Ethylbenzene	ND		0.00250	1	06/09/2022 03:26	<a href="#">WG1876600</a>
Xylenes, Total	0.141		0.00650	1	06/09/2022 03:26	<a href="#">WG1876600</a>
1,2,4-Trimethylbenzene	0.0699		0.00500	1	06/09/2022 03:26	<a href="#">WG1876600</a>
1,3,5-Trimethylbenzene	0.846		0.00500	1	06/09/2022 03:26	<a href="#">WG1876600</a>
(S) Toluene-d8	99.7		75.0-131		06/09/2022 03:26	<a href="#">WG1876600</a>
(S) 4-Bromofluorobenzene	98.0		67.0-138		06/09/2022 03:26	<a href="#">WG1876600</a>
(S) 1,2-Dichloroethane-d4	99.1		70.0-130		06/09/2022 03:26	<a href="#">WG1876600</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/14/2022 22:53	<a href="#">WG1879143</a>
C28-C36 Motor Oil Range	ND		4.00	1	06/14/2022 22:53	<a href="#">WG1879143</a>
(S) o-Terphenyl	55.6		18.0-148		06/14/2022 22:53	<a href="#">WG1879143</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	06/14/2022 18:03	<a href="#">WG1878891</a>
2-Methylnaphthalene	ND		0.0200	1	06/14/2022 18:03	<a href="#">WG1878891</a>
Naphthalene	ND		0.0200	1	06/14/2022 18:03	<a href="#">WG1878891</a>
(S) p-Terphenyl-d14	106		23.0-120		06/14/2022 18:03	<a href="#">WG1878891</a>
(S) Nitrobenzene-d5	128		14.0-149		06/14/2022 18:03	<a href="#">WG1878891</a>
(S) 2-Fluorobiphenyl	84.9		34.0-125		06/14/2022 18:03	<a href="#">WG1878891</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	3.24		1	06/13/2022 11:09	WG1876392

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	389		0.500	1	06/15/2022 18:38	<a href="#">WG1876247</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.15		1.00	5	06/22/2022 21:35	<a href="#">WG1883245</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.142		0.100	1	06/07/2022 19:19	<a href="#">WG1875739</a>
(S) a,a,a-Trifluorotoluene(FID)	109		77.0-120		06/07/2022 19:19	<a href="#">WG1875739</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/09/2022 03:45	<a href="#">WG1876600</a>
Toluene	ND		0.00500	1	06/09/2022 03:45	<a href="#">WG1876600</a>
Ethylbenzene	ND		0.00250	1	06/09/2022 03:45	<a href="#">WG1876600</a>
Xylenes, Total	ND		0.00650	1	06/09/2022 03:45	<a href="#">WG1876600</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	06/09/2022 03:45	<a href="#">WG1876600</a>
1,3,5-Trimethylbenzene	0.0149		0.00500	1	06/09/2022 03:45	<a href="#">WG1876600</a>
(S) Toluene-d8	102		75.0-131		06/09/2022 03:45	<a href="#">WG1876600</a>
(S) 4-Bromofluorobenzene	107		67.0-138		06/09/2022 03:45	<a href="#">WG1876600</a>
(S) 1,2-Dichloroethane-d4	91.1		70.0-130		06/09/2022 03:45	<a href="#">WG1876600</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	115		4.00	1	06/14/2022 22:15	<a href="#">WG1879143</a>
C28-C36 Motor Oil Range	16.0	<a href="#">B</a>	4.00	1	06/14/2022 22:15	<a href="#">WG1879143</a>
(S) o-Terphenyl	64.4		18.0-148		06/14/2022 22:15	<a href="#">WG1879143</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	ND		0.0200	1	06/14/2022 18:21	<a href="#">WG1878891</a>
2-Methylnaphthalene	ND		0.0200	1	06/14/2022 18:21	<a href="#">WG1878891</a>
Naphthalene	ND		0.0200	1	06/14/2022 18:21	<a href="#">WG1878891</a>
(S) p-Terphenyl-d14	80.8		23.0-120		06/14/2022 18:21	<a href="#">WG1878891</a>
(S) Nitrobenzene-d5	65.2		14.0-149		06/14/2022 18:21	<a href="#">WG1878891</a>
(S) 2-Fluorobiphenyl	70.4		34.0-125		06/14/2022 18:21	<a href="#">WG1878891</a>

<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	6.94		1	06/13/2022 11:11	WG1876392

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	129		0.500	1	06/15/2022 18:41	<a href="#">WG1876247</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.43		1.00	5	06/22/2022 21:38	<a href="#">WG1883245</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	794		25.0	250	06/06/2022 18:37	<a href="#">WG1874732</a>
(S) a,a,a-Trifluorotoluene(FID)	105		77.0-120		06/06/2022 18:37	<a href="#">WG1874732</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.0200	20	06/09/2022 07:18	<a href="#">WG1876600</a>
Toluene	ND		0.100	20	06/09/2022 07:18	<a href="#">WG1876600</a>
Ethylbenzene	ND		0.0500	20	06/09/2022 07:18	<a href="#">WG1876600</a>
Xylenes, Total	29.8		0.130	20	06/09/2022 07:18	<a href="#">WG1876600</a>
1,2,4-Trimethylbenzene	13.6		0.100	20	06/09/2022 07:18	<a href="#">WG1876600</a>
1,3,5-Trimethylbenzene	14.7		0.100	20	06/09/2022 07:18	<a href="#">WG1876600</a>
(S) Toluene-d8	98.7		75.0-131		06/09/2022 07:18	<a href="#">WG1876600</a>
(S) 4-Bromofluorobenzene	102		67.0-138		06/09/2022 07:18	<a href="#">WG1876600</a>
(S) 1,2-Dichloroethane-d4	103		70.0-130		06/09/2022 07:18	<a href="#">WG1876600</a>

## Sample Narrative:

L1501204-11 WG1876600: Non-target compounds too high to run at a lower dilution.

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

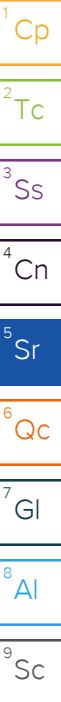
Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	127		4.00	1	06/14/2022 23:18	<a href="#">WG1879143</a>
C28-C36 Motor Oil Range	9.80	<a href="#">B</a>	4.00	1	06/14/2022 23:18	<a href="#">WG1879143</a>
(S) o-Terphenyl	55.7		18.0-148		06/14/2022 23:18	<a href="#">WG1879143</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	0.597	<a href="#">V</a>	0.0200	1	06/14/2022 18:39	<a href="#">WG1878891</a>
2-Methylnaphthalene	1.77	<a href="#">V</a>	0.0200	1	06/14/2022 18:39	<a href="#">WG1878891</a>
Naphthalene	0.407	<a href="#">V</a>	0.0200	1	06/14/2022 18:39	<a href="#">WG1878891</a>
(S) p-Terphenyl-d14	96.6		23.0-120		06/14/2022 18:39	<a href="#">WG1878891</a>
(S) Nitrobenzene-d5	301	<a href="#">J1</a>	14.0-149		06/14/2022 18:39	<a href="#">WG1878891</a>
(S) 2-Fluorobiphenyl	69.9		34.0-125		06/14/2022 18:39	<a href="#">WG1878891</a>

## Sample Narrative:

L1501204-11 WG1878891: Surrogate failure due to matrix interference



Method Blank (MB)

(MB) R3803637-1 06/15/22 17:54

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		0.0852	0.500

Laboratory Control Sample (LCS)

(LCS) R3803637-2 06/15/22 17:56

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

L1500300-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1500300-02 06/15/22 17:59 • (MS) R3803637-5 06/15/22 18:07 • (MSD) R3803637-6 06/15/22 18:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	134	285	255	151	122	1	75.0-125	J5		10.8	20

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc



Method Blank (MB)

(MB) R3806301-1 06/22/22 17:55

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

Laboratory Control Sample (LCS)

(LCS) R3806301-2 06/22/22 17:58

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	92.7	92.7	80.0-120	

L1500028-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1500028-01 06/22/22 18:01 • (MS) R3806301-5 06/22/22 18:11 • (MSD) R3806301-6 06/22/22 18:14

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	100	2.77	86.1	86.0	83.3	83.2	5	75.0-125			0.118	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3799973-4 06/06/22 09:16

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	109			77.0-120

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

(LCS) R3799973-2 06/06/22 07:50 • (LCSD) R3799973-3 06/06/22 08:11

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 %
TPH (GC/FID) Low Fraction	5.50	4.59	4.23	83.5	76.9	72.0-127			8.16	20
(S) a,a,a-Trifluorotoluene(FID)				99.6	99.0	77.0-120				

L1499427-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1499427-10 06/06/22 11:47 • (MS) R3799973-7 06/06/22 20:24 • (MSD) R3799973-8 06/06/22 20:46

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	219	ND	179	182	90.4	91.9	36	10.0-151			1.66	28
(S) a,a,a-Trifluorotoluene(FID)					99.8	99.3		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3801210-2 06/06/22 08:19

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)	97.2			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3801210-1 06/06/22 07:38

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.92	108	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			110	77.0-120	

<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

Method Blank (MB)

(MB) R3801194-2 06/07/22 18:03

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)	112			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3801194-1 06/07/22 17:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.42	98.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			99.6	77.0-120	

L1501204-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1501204-10 06/07/22 19:19 • (MS) R3801194-3 06/08/22 01:04 • (MSD) R3801194-4 06/08/22 01:26

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	5.45	0.142	2.33	2.31	40.1	39.4	1	10.0-151			0.862	28
(S) a,a,a-Trifluorotoluene(FID)					93.9	94.5		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3801472-2 06/08/22 06:39

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) R3801472-1 06/08/22 05:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.68	103	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			98.4	77.0-120	

<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



Method Blank (MB)

(MB) R3801741-3 06/09/22 01:10

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	102			75.0-131
(S) 4-Bromofluorobenzene	105			67.0-138
(S) 1,2-Dichloroethane-d4	95.5			70.0-130

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

(LCS) R3801741-1 06/08/22 23:53 • (LCSD) R3801741-2 06/09/22 00:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.115	0.112	92.0	89.6	70.0-123			2.64	20
Toluene	0.125	0.114	0.110	91.2	88.0	75.0-121			3.57	20
Ethylbenzene	0.125	0.125	0.117	100	93.6	74.0-126			6.61	20
Xylenes, Total	0.375	0.370	0.353	98.7	94.1	72.0-127			4.70	20
1,2,4-Trimethylbenzene	0.125	0.119	0.116	95.2	92.8	70.0-126			2.55	20
1,3,5-Trimethylbenzene	0.125	0.115	0.109	92.0	87.2	73.0-127			5.36	20
(S) Toluene-d8				99.5	100	75.0-131				
(S) 4-Bromofluorobenzene				104	104	67.0-138				
(S) 1,2-Dichloroethane-d4				108	106	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3802166-3 06/11/22 11:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	109			75.0-131
(S) 4-Bromofluorobenzene	90.6			67.0-138
(S) 1,2-Dichloroethane-d4	98.7			70.0-130

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

(LCS) R3802166-1 06/11/22 10:17 • (LCSD) R3802166-2 06/11/22 10:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Xylenes, Total	0.375	0.349	0.323	93.1	86.1	72.0-127			7.74	20
1,2,4-Trimethylbenzene	0.125	0.123	0.115	98.4	92.0	70.0-126			6.72	20
1,3,5-Trimethylbenzene	0.125	0.127	0.121	102	96.8	73.0-127			4.84	20
(S) Toluene-d8				102	105	75.0-131				
(S) 4-Bromofluorobenzene				93.8	92.9	67.0-138				
(S) 1,2-Dichloroethane-d4				118	119	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3803251-1 06/14/22 22:15

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	2.31	U	1.61	4.00
C28-C36 Motor Oil Range	3.27	U	0.274	4.00
(S) o-Terphenyl	82.0			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3803251-2 06/14/22 22:28

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	40.1	80.2	50.0-150	
(S) o-Terphenyl			59.5	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) R3803083-2 06/14/22 13:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
(S) p-Terphenyl-d14	110			23.0-120
(S) Nitrobenzene-d5	83.1			14.0-149
(S) 2-Fluorobiphenyl	90.2			34.0-125

Laboratory Control Sample (LCS)

(LCS) R3803083-1 06/14/22 13:18

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
1-Methylnaphthalene	0.0800	0.0692	86.5	51.0-121	
2-Methylnaphthalene	0.0800	0.0664	83.0	50.0-120	
Naphthalene	0.0800	0.0678	84.8	50.0-120	
(S) p-Terphenyl-d14			109	23.0-120	
(S) Nitrobenzene-d5			86.9	14.0-149	
(S) 2-Fluorobiphenyl			89.0	34.0-125	

L1501204-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1501204-11 06/14/22 18:39 • (MS) R3803083-3 06/14/22 18:56 • (MSD) R3803083-4 06/14/22 19:14

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1-Methylnaphthalene	0.0796	0.597	0.731	0.768	168	216	1	10.0-142	V	V	4.94	28
2-Methylnaphthalene	0.0796	1.77	2.14	2.25	465	606	1	10.0-137	V	V	5.01	28
Naphthalene	0.0796	0.407	0.616	0.632	263	284	1	10.0-135	V	V	2.56	27
(S) p-Terphenyl-d14					101	103		23.0-120				
(S) Nitrobenzene-d5					318	318		14.0-149	J1	J1		
(S) 2-Fluorobiphenyl					70.7	71.8		34.0-125				

Sample Narrative:  
OS: Surrogate failure due to matrix interference

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

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

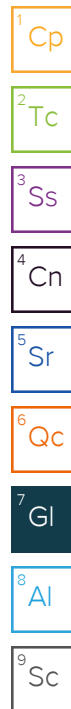
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

### Abbreviations and Definitions

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

### Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
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.



Caerus Oil & Gas LLC

143 Diamond Avenue

Parachute, CO 81635

970-285-9606

Report to:

bmiddleton@caerusoilandgas.com

Project

Description:

YCF 35-33-1

Phone:

Fax:

949 314 2500

Collected by (print):

Collected by (signature):

R. Monahan

Immediately

Packed on Ice

N

Y

X

Billing Information:

Same as above

Email To:

bmiddleton@caerusoilandgas.com

City/State

Collected:

Yellow Creek, CO

Lab Project #

YCF 35-33-1

P.O. #

YCF 35-33-1

Quote #

Standard TAT

Date Results Needed

No. of Cntrs

Analysis / Container / Preservative

TPH- GRO, DRO, ORO

BTEX

1&2-methylnaphthalene

SAR

naphthalene

arsenic, barium

1,2,4-trimethylbenzene

1,3,5-trimethylbenzene

Chain of Custody

Page 1 of 2

Peace Analytical

National Center for Testing & Innovation

12065 Lebanon Rd

Mount Juliet, TN 37122

Phone: 615-758-5858

Phone: 800-767-5859

Fax: 615-758-5859

L #

F144

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	TPH- GRO, DRO, ORO	BTEX	1&2-methylnaphthalene	SAR	naphthalene	arsenic, barium	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Remarks	Sample # (lab only)
20220601-YCF 35-33-1(PH01)@ 2'-4'	GRAB	SS	2'-4'	6/1/22	912	2	X	X	X	X	X	X	X	X		-01
20220601-YCF 35-33-1(PH02)@ 2'-4'			2'-4'		945										HOLD	-02
20220601-YCF 35-33-1(PH02)@ 4.5'			4.5'		955											-03
20220601-YCF 35-33-1(PH03)@ 2'-4'			2'-4'		1005											-04
20220601-YCF 35-33-1(PH04)@ 2'			2'		1030											-05
20220601-YCF 35-33-1(PH05)@ 2.5'			2.5'		1045										HOLD	-06
20220601-YCF 35-33-1(PH05)@ 3'			3'		1055											-07
20220601-YCF 35-33-1(PH06)@ 2'			2'		1110										HOLD	-08
20220601-YCF 35-33-1(PH07)@ 2.25'			2.25'		1130											-09
20220601-YCF 35-33-1(PH07)@ 7'			7'		1225											-10

\* Matrix:

SS - Soil

AIR - Air

F - Filter

GW - Groundwater

B - Bioassay

WW - WasteWater

DW - Drinking Water

OT - Other

Remarks:

\* HOLD - Pending client approval

- Submit all others

Samples returned via:

UPS

FedEx

Courier

Tracking #

pH

Temp

Flow

Other

Sample Receipt Checklist

COC Seal Present/Intact:

COC Signed/Accurate:

Bottles arrive intact:

Correct bottles used:

Sufficient volume sent:

VOA Zero Headspace:

Preservation Correct/Checked:

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received:

Yes

No

HCL / MeOH

TBR

Bottles Received:

22

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Date:

Time:

Hold:

Condition:

NCF

OK

