

**TABLE 1  
FORMER BUFFALO GARDEN 41-13 TANK BATTERY  
SOIL ANALYTICAL RESULTS SUMMARY TABLE  
CONTAMINANTS OF CONCERN**

Sample ID	Date Sampled	Depth	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	1, 2, 4-TMB (mg/kg)	1, 3, 5-TMB (mg/kg)	Naphthalene (mg/kg)	TPH <sup>(4)</sup> (mg/kg)	Acenaphthene (mg/kg)	Benz(a) (mg/kg)	Chrysene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Pyrene (mg/kg)	1-M (mg/kg)	2-M (mg/kg)	Barium (mg/kg)
Residential SSL <sup>(1,2)</sup>			1.2	490	5.8	58	30	27	2	500	360	1.1	110	240	240	180	18	24	15,000
Protection of Groundwater SSL <sup>(1,2,3)</sup>			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500	0.55	0.011	9	8.9	0.54	1.3	0.006	0.019	82
AST01-B @ 3'	9/7/2021	3 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA
AST01-E @ 2.5'	9/7/2021	2.5 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA
SEP01-FL @ 2.5'	9/7/2021	2.5 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA
PWV01-B @ 4'	9/7/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA
PWV01-S @ 2.5'	9/7/2021	2.5 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA
SS01 @ 2.5'	9/8/2021	2.5 ft. bgs	<0.0020	0.53	0.11	<b>13</b>	<b>0.39</b>	<b>5.2</b>	<b>0.043</b>	<b>2460</b>	0.0195	<b>0.0247</b>	0.0162	0.0152	0.0630	0.0331	<b>0.584</b>	<b>11.1</b>	<b>88.9</b>
SS02 @ 15'	9/9/2021	15 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	25.6
SS03 @ 14'	9/9/2021	14 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<b>135</b>
SS04 @ 6'	9/9/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<b>99.0</b>
SS05 @ 14'	9/9/2021	14 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	31.5
SS06 @ 6'	9/9/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	30.8
SS07 @ 14'	9/9/2021	14 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	32.0
SS08 @ 6'	9/9/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<b>87.0</b>
SS09 @ 14'	9/10/2021	14 ft. bgs	<b>0.017</b>	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<b>0.0078</b>	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	28.5
SS10 @ 6'	9/10/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<b>90.6</b>
SS12 @ 14'	9/13/2021	14 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	39.1
SS13 @ 6'	9/13/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	62.0

**Notes:**

- Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.
  - Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
  - SSLs are applicable if a pathway for communication with groundwater is present.
  - Value calculated by adding TVPH-GRO, TEPH-DRO, and TEPH-ORO concentrations.  
COGCC = Colorado Oil and Gas Conservation Commission
- (-) = Analytical result is less than the indicated laboratory reporting limit.  
 TVPH-GRO = Total volatile petroleum hydrocarbons - gasoline range organics  
 TEPH-DRO = Total extractable petroleum hydrocarbons - diesel range organics  
 TEPH-ORO = Total extractable petroleum hydrocarbons - oil range organics  
 mg/kg = Milligrams per kilogram  
 M = Methylnaphthalene  
 Benz(a) = Benzanthracene  
 TMB = Trimethylbenzene
- = Source material characterization sample  
  = Sample material excavated and transported off-site for disposal
- ft. = Feet  
 bgs = Below ground surface  
**BOLD** = Analytical result is in exceedance of applicable standard  
**BOLD** = Analytical result is in exceedance of applicable standard, but within 1.25x background concentration.

**TABLE 2**  
**FORMER GARDEN 41-13 TANK BATTERY**  
**SOIL ANALYTICAL RESULTS SUMMARY TABLE**  
**INORGANIC COMPOUNDS**

Sample ID	Date Sampled	Depth	pH (units)	EC (mmhos/cm)	SAR (units)	Boron (mg/L)
<b>Soil Suitability for Reclamation Standard <sup>(1)</sup></b>			<b>6-8.3</b>	<b>&lt;4</b>	<b>&lt;6</b>	<b>2</b>
AST01-B @ 3'	9/7/2021	3 ft. bgs	7.92	0.0509	0.0142	0.0676
AST01-E @ 2.5'	9/7/2021	2.5 ft. bgs	7.90	0.0906	0.00264	0.157
PWV01-B @ 4'	9/7/2021	4 ft. bgs	8.08	0.0770	0.0266	<0.0100
PWV01-S @ 2.5'	9/7/2021	2.5 ft. bgs	7.41	0.0377	0.00409	<0.0100
SS01 @ 2.5'	9/8/2021	2.5 ft. bgs	8.12	0.215	0.0299	0.116
SS11 @ 2.5'	9/10/2021	2.5 ft. bgs	<b>8.70</b>	0.146	0.0316	<0.0100
SS14 @ 2.5'	9/13/2021	2.5 ft. bgs	7.90	0.204	0.0390	<0.0100
BKG02 @ 2.5'	9/10/2021	2.5 ft. bgs	<b>8.33</b>	0.0575	0.0208	<0.0100
BKG02 @ 6'	9/10/2021	6 ft. bgs	8.28	1.15	0.144	<0.0100
BKG02 @ 15'	9/10/2021	15 ft. bgs	<b>8.56</b>	0.500	0.205	<0.0100

**Notes:**

1. Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.

COGCC = Colorado Oil and Gas Conservation Commission

EC = Electrical conductivity

SAR = Sodium adsorption ratio

mmhos/cm = millimhos per centimeter

mg/L = milligram per liter

ft. = Feet

bgs = Below ground surface

  = Source material characterization sample

  = Sample material excavated and transported off-site for disposal

**BOLD** = Analytical result is in exceedance of applicable standard.

**TABLE 3**  
**FORMER GARDEN 41-13 TANK BATTERY**  
**SOIL ANALYTICAL RESULTS SUMMARY TABLE**  
**ORGANIC COMPOUNDS - PAHs**

Sample ID	Date Sampled	Depth	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benz(a) (mg/kg)	Benzo(a) (mg/kg)	Benzo(b) (mg/kg)	Benzo(k) (mg/kg)	Chrysene (mg/kg)	A,H (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	1,2,3-CD (mg/kg)	Pyrene (mg/kg)	1-M (mg/kg)	2-M (mg/kg)
Residential SSL <sup>(1,2)</sup>			360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
Protection of Groundwater SSL <sup>(1,2,3)</sup>			0.55	5.8	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
SS01 @ 2.5'	9/8/2021	2.5 ft. bgs	0.0195	<0.00500	0.0247	<0.00500	<0.00500	<0.00500	0.0162	<0.00500	0.0152	0.0630	<0.00500	0.0331	0.584	11.1

**Notes:**

1. Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.
2. Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
3. SSLs are applicable if a pathway for communication with

COGCC = Colorado Oil and Gas Conservation Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

PAHs = Polycyclic aromatic hydrocarbons

Benz(a) = Benzanthracene

Benzo(a) = Benzopyrene

Benzo(b) = Benzofluoranthene

Benzo(k) = Benzofluoranthene

A,H = Dibenzoanthracene

1,2,3-CD = Indenopyrene

M = Methylnaphthalene

mg/kg = Milligrams per kilogram

ft. = Feet

bgs = Below ground surface

**TABLE 4**  
**FORMER BUFFALO GARDEN 41-13 TANK BATTERY**  
**SOIL ANALYTICAL RESULTS SUMMARY TABLE**  
**METALS**

Sample ID	Date Sampled	Depth	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
Residential SSL <sup>(1,2)</sup>			0.68	15,000	71	0.3	3,100	400	1,500	390	390	23,000
Protection of Groundwater SSL <sup>(1,2,3)</sup>			0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
SS01 @ 2.5'	9/8/2021	2.5 ft. bgs	2.61	88.9	<0.246	<0.30 <sup>(4)</sup>	8.88	6.86	9.18	0.624	0.0489	38.7
BKG02 @ 2.5'	9/10/2021	2.5 ft. bgs	1.73	68.1	<0.209	<0.30 <sup>(4)</sup>	7.08	5.53	8.20	0.473	0.0344	30.8
BKG02 @ 6'	9/10/2021	6 ft. bgs	2.34	53.7	<0.212	<0.30 <sup>(4)</sup>	6.71	5.70	4.91	0.474	<0.0212	23.4
BKG02 @ 15'	9/10/2021	15 ft. bgs	5.52	53.1	<0.219	<0.30 <sup>(4)</sup>	15.9	10.9	13.3	0.737	0.0269	94.7
BKG03 @ 2.5'	6/2/2022	2.5 ft. bgs	2.23	89.3	<0.210	<0.30 <sup>(4)</sup>	9.68	6.01	11.2	0.536	0.0521	35.0
BKG03 @ 6'	6/2/2022	6 ft. bgs	2.51	54.6	<0.206	<0.30 <sup>(4)</sup>	6.90	3.67	6.29	0.338	0.0206	22.1
BKG03 @ 14'	6/2/2022	14 ft. bgs	3.49	33.0	<0.225	<0.30 <sup>(4)</sup>	5.22	5.56	4.92	0.375	<0.0225	26.6
BKG04 @ 2.5'	6/2/2022	2.5 ft. bgs	2.78	116	<0.215	<0.30 <sup>(4)</sup>	11.2	7.22	11.7	0.584	0.0571	42.0
BKG04 @ 6'	6/2/2022	6 ft. bgs	2.67	70.0	<0.215	<0.30 <sup>(4)</sup>	7.66	5.08	7.65	0.465	0.0258	27.9
BKG04 @ 11'	6/2/2022	11 ft. bgs	4.40	60.7	<0.217	<0.30 <sup>(4)</sup>	6.62	5.42	6.94	0.400	0.0244	26.3
BKG05 @ 2.5'	6/2/2022	2.5 ft. bgs	2.24	81.6	<0.211	<0.30 <sup>(4)</sup>	9.08	5.88	10.5	0.570	0.0492	33.4
BKG05 @ 6'	6/2/2022	6 ft. bgs	1.74	35.9	<0.205	<0.30 <sup>(4)</sup>	5.48	3.28	4.65	0.318	<0.0205	18.7
BKG05 @ 9'	6/2/2022	9 ft. bgs	2.45	37.4	<0.205	<0.30 <sup>(4)</sup>	7.46	3.75	5.74	0.323	<0.0205	20.3

**Notes:**

1. Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.
2. Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
3. SSLs are applicable if a pathway for communication with groundwater is present.
4. Compound falls within COGCC Table 915-1 Footnote 9.

COGCC = Colorado Oil and Gas Conservation Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

mg/kg = Milligrams per kilogram

Source material characterization sample

ft. = Feet

bgs = Below ground surface

**BOLD** = Analytical result is in exceedance of applicable standard.

**BOLD** = Analytical result is in exceedance of applicable standard, but within 1.25x background concentration.

**TABLE 5  
FORMER GARDEN 41-13 TANK BATTERY  
FIELD DATA SUMMARY TABLE**

Sample ID	Date Sampled	Depth	GPS Data <sup>(1)</sup>		PDOP Value	VOC
			Latitude / Longitude	Concentration <sup>(2)</sup> (ppm)		
MH01 @ 0-6"	9/7/2021	0-6 in. bgs	40.143744	-104.944360	1.1	0.5
SEP01-FL @ 5'	9/7/2021	5 ft. bgs	40.143998	-104.944429	1.1	1.2
PWV01-B @ 4'	9/7/2021	4 ft. bgs	40.144334	-104.944442	1.1	0.2
PWV01-N @ 2.5'	9/7/2021	2.5 ft. bgs	40.144349	-104.944443	1.1	0.0
PWV01-W @ 2.5'	9/7/2021	2.5 ft. bgs	40.144334	-104.944458	1.1	0.0
PWV01-S @ 2.5'	9/7/2021	2.5 ft. bgs	40.144315	-104.944447	1.1	0.3
PWV01-E @ 2.5'	9/7/2021	2.5 ft. bgs	40.144327	-104.944419	1.1	0.1
AST01-B @ 5'	9/7/2021	5 ft. bgs	40.144292	-104.944457	1.3	5.6
AST01-N @ 2.5'	9/7/2021	2.5 ft. bgs	40.144304	-104.944452	1.2	0.4
AST01-W @ 2.5'	9/7/2021	2.5 ft. bgs	40.144300	-104.944470	1.1	1.0
AST01-S @ 2.5'	9/7/2021	2.5 ft. bgs	40.144284	-104.944458	1.1	0.0
AST01-E @ 2.5'	9/7/2021	2.5 ft. bgs	40.144287	-104.944443	1.2	1.1
WDL01 @ 2.5'	9/7/2021	2.5 ft. bgs	40.144264	-104.944375	1.1	5.1
SS01 @ 2.5'	9/8/2021	2.5 ft. bgs	40.143960	-104.944405	1.2	1,962
SS02 @ 15'	9/9/2021	15 ft. bgs	40.143966	-104.944420	1.1	27.8
SS03 @ 14'	9/9/2021	14 ft. bgs	40.143992	-104.944409	1.2	0.3
SS04 @ 6'	9/9/2021	6 ft. bgs	40.143992	-104.944409	1.2	0.1
SS05 @ 14'	9/9/2021	14 ft. bgs	40.143974	-104.944436	1.3	12.0
SS06 @ 6'	9/9/2021	6 ft. bgs	40.143974	-104.944436	1.3	0.1
SS07 @ 14'	9/9/2021	14 ft. bgs	40.143978	-104.944394	1.3	0.2
SS08 @ 6'	9/9/2021	6 ft. bgs	40.143978	-104.944394	1.3	0.0
SS09 @ 14'	9/10/2021	14 ft. bgs	40.143951	-104.944412	1.3	3.8
SS10 @ 6'	9/10/2021	6 ft. bgs	40.143951	-104.944412	1.3	0.0
SS11 @ 2.5'	9/10/2021	2.5 ft. bgs	40.143951	-104.944412	1.3	0.1
SS12 @ 14'	9/13/2021	14 ft. bgs	40.143942	-104.944422	1.4	3.8
SS13 @ 6'	9/13/2021	6 ft. bgs	40.143942	-104.944422	1.4	0.0
SS14 @ 2.5'	9/13/2021	2.5 ft. bgs	40.143985	-104.944393	1.6	0.0
BKG02 @ 2.5'	9/10/2021	2.5 ft. bgs	40.144013	-104.944194	1.6	0.4
BKG02 @ 6'	9/10/2021	6 ft. bgs	40.144013	-104.944194	1.6	0.0
BKG02 @ 14'	9/10/2021	15 ft. bgs	40.144013	-104.944194	1.6	0.1
BKG03 @ 2.5'	6/2/2022	2.5 ft. bgs	40.144099	-104.944603	NC	0.0
BKG03 @ 6'	6/2/2022	6 ft. bgs	40.144099	-104.944603	NC	0.0
BKG03 @ 14'	6/2/2022	14 ft. bgs	40.144099	-104.944603	NC	0.0
BKG04 @ 2.5'	6/2/2022	2.5 ft. bgs	40.143949	-104.944605	NC	0.0
BKG04 @ 6'	6/2/2022	6 ft. bgs	40.143949	-104.944605	NC	0.0
BKG04 @ 11'	6/2/2022	11 ft. bgs	40.143949	-104.944605	NC	0.0
BKG05 @ 2.5'	6/2/2022	2.5 ft. bgs	40.1439862	-104.9441972	NC	0.0
BKG05 @ 6'	6/2/2022	6 ft. bgs	40.1439862	-104.9441972	NC	0.0
BKG05 @ 9'	6/2/2022	9 ft. bgs	40.1439862	-104.9441972	NC	0.0

Notes:

**TABLE 5**  
**FORMER GARDEN 41-13 TANK BATTERY**  
**FIELD DATA SUMMARY TABLE**

1. Global Positioning System (GPS) data is provided in decimal degrees using World Geodetic System (WGS) 84 UTM Zone 13 North.

2. Volatile organic compound (VOC) concentrations are measured in the field using a photoionization detector (PID).

PDOP = Position Dilution of Precision

ppm = Parts per million

ft. = Feet

in. = Inches

bgs = Below ground surface

  = Source material characterization sample

NC = Data not collected

## Attachment A

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 15, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Buffalo Gardens 41-13 Tank Battery

Work Order #2109085

Enclosed are the results of analyses for samples received by Summit Scientific on 09/07/21 19:47. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Muri Premer For Paul Shrewsbury

President



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:46

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AST01-B@3'	2109085-01	Soil	09/07/21 14:54	09/07/21 19:47
AST01-E@2.5'	2109085-05	Soil	09/07/21 15:02	09/07/21 19:47

Summit Scientific

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



### Sample Receipt Checklist

S2 Work Order \_\_\_\_\_

Client: PDC/Tasman Client Project ID Buffalo Gardens 41-13 Tank Batt

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other \_\_\_\_\_ Airbill #: \_\_\_\_\_

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Temp (°C)	4.2
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Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	✓			
Were all samples received intact <sup>(1)</sup> ?	✓			
Was adequate sample volume provided <sup>(1)</sup> ?	✓			
If custody seals are present, are they intact <sup>(1)</sup> ?			✓	
Are samples with holding times due within 48 hours sample due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	✓			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	✓			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	✓			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			✓	
Are samples preserved that require preservation <b>(excluding cooling)</b> <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			✓	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	

Additional Comments (if any):

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

WG  
\_\_\_\_\_  
Custodian Printed Name or Initials

\_\_\_\_\_  
Signature of Custodian

9/2/21  
\_\_\_\_\_  
Date/Time



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:46

**AST01-B@3'**  
**2109085-01 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/07/21 14:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BEI0127	09/07/21	09/07/21	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **09/07/21 14:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		118 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %		21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/07/21 14:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BEI0128	"	09/08/21	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **09/07/21 14:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		126 %		30-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:46

**AST01-B@3'**  
**2109085-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **09/07/21 14:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.0676</b>	0.0100	mg/L	1	BEI0181	09/09/21	09/11/21	EPA 6020B	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **09/07/21 14:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>4.74</b>	0.0547	mg/L dry	1	BEI0197	09/09/21	09/13/21	EPA 6020B	
<b>Magnesium</b>	<b>2.77</b>	0.0547	"	"	"	"	"	"	
<b>Sodium</b>	<b>0.157</b>	0.0547	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **09/07/21 14:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>0.0142</b>	0.00100	units	1	BEI0263	09/13/21	09/13/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/07/21 14:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>91.4</b>		%	1	BEI0132	09/08/21	09/08/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **09/07/21 14:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.0509</b>	0.0100	mmhos/cm	1	BEI0198	09/09/21	09/10/21	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:46

**AST01-B@3'**  
**2109085-01 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **09/07/21 14:54**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>7.92</b>		pH Units	1	BEI0199	09/09/21	09/13/21	EPA 9045D	

Summit Scientific



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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:46

**AST01-E@2.5'**  
**2109085-05 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/07/21 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEI0127	09/07/21	09/07/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/07/21 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/07/21 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEI0128	"	09/08/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/07/21 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		126 %	30-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:46

**AST01-E@2.5'**  
**2109085-05 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **09/07/21 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.157</b>	0.0100	mg/L	1	BEI0193	09/09/21	09/12/21	EPA 6020B	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **09/07/21 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>5.83</b>	0.0569	mg/L dry	1	BEI0197	09/09/21	09/13/21	EPA 6020B	
<b>Magnesium</b>	<b>3.83</b>	0.0569	"	"	"	"	"	"	
<b>Sodium</b>	<b>ND</b>	0.0569	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **09/07/21 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>0.00264</b>	0.00100	units	1	BEI0263	09/13/21	09/13/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/07/21 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>87.8</b>		%	1	BEI0132	09/08/21	09/08/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **09/07/21 15:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.0906</b>	0.0100	mmhos/cm	1	BEI0198	09/09/21	09/10/21	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:46

**AST01-E@2.5'**  
**2109085-05 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **09/07/21 15:02**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>7.90</b>		pH Units	1	BEI0199	09/09/21	09/13/21	EPA 9045D	

Summit Scientific



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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:46

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

#### Batch BEI0127 - EPA 5030 Soil MS

##### Blank (BEI0127-BLK1)

Prepared: 09/07/21 Analyzed: 09/08/21

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
1,2,4-Trimethylbenzene	ND	0.0050	"								
1,3,5-Trimethylbenzene	ND	0.0050	"								
Naphthalene	ND	0.0038	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0466		"	0.0400		117	23-173				
<i>Surrogate: Toluene-d8</i>	0.0433		"	0.0400		108	20-170				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0408		"	0.0400		102	21-167				

##### LCS (BEI0127-BS1)

Prepared: 09/07/21 Analyzed: 09/08/21

Benzene	0.0873	0.0020	mg/kg	0.100		87.3	70-130				
Toluene	0.0992	0.0050	"	0.100		99.2	70-130				
Ethylbenzene	0.0726	0.0050	"	0.100		72.6	70-130				
m,p-Xylene	0.147	0.010	"	0.200		73.5	70-130				
o-Xylene	0.0776	0.0050	"	0.100		77.6	70-130				
1,2,4-Trimethylbenzene	0.0820	0.0050	"	0.100		82.0	70-130				
1,3,5-Trimethylbenzene	0.0765	0.0050	"	0.100		76.5	70-130				
Naphthalene	0.0848	0.0038	"	0.100		84.8	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0388		"	0.0400		97.1	23-173				
<i>Surrogate: Toluene-d8</i>	0.0398		"	0.0400		99.4	20-170				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0400		"	0.0400		100	21-167				

##### Matrix Spike (BEI0127-MS1)

Source: 2109066-01

Prepared: 09/07/21 Analyzed: 09/08/21

Benzene	0.0916	0.0020	mg/kg	0.100	ND	91.6	70-130				
Toluene	0.0782	0.0050	"	0.100	ND	78.2	70-130				
Ethylbenzene	0.0795	0.0050	"	0.100	ND	79.5	70-130				
m,p-Xylene	0.161	0.010	"	0.200	ND	80.6	70-130				
o-Xylene	0.0872	0.0050	"	0.100	ND	87.2	70-130				
1,2,4-Trimethylbenzene	0.0921	0.0050	"	0.100	ND	92.1	70-130				
1,3,5-Trimethylbenzene	0.0848	0.0050	"	0.100	ND	84.8	70-130				
Naphthalene	0.100	0.0038	"	0.100	ND	100	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0380		"	0.0400		95.0	23-173				
<i>Surrogate: Toluene-d8</i>	0.0411		"	0.0400		103	20-170				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0418		"	0.0400		104	21-167				

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:46

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0127 - EPA 5030 Soil MS**

Matrix Spike Dup (BEI0127-MSD1)	Source: 2109066-01			Prepared: 09/07/21 Analyzed: 09/08/21						
Benzene	0.0970	0.0020	mg/kg	0.100	ND	97.0	70-130	5.73	30	
Toluene	0.0785	0.0050	"	0.100	ND	78.5	70-130	0.421	30	
Ethylbenzene	0.0775	0.0050	"	0.100	ND	77.5	70-130	2.60	30	
m,p-Xylene	0.157	0.010	"	0.200	ND	78.7	70-130	2.43	30	
o-Xylene	0.0865	0.0050	"	0.100	ND	86.5	70-130	0.726	30	
1,2,4-Trimethylbenzene	0.0901	0.0050	"	0.100	ND	90.1	70-130	2.17	30	
1,3,5-Trimethylbenzene	0.0823	0.0050	"	0.100	ND	82.3	70-130	2.98	30	
Naphthalene	0.110	0.0038	"	0.100	ND	110	70-130	9.50	30	
Surrogate: 1,2-Dichloroethane-d4	0.0406		"	0.0400		102	23-173			
Surrogate: Toluene-d8	0.0393		"	0.0400		98.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0423		"	0.0400		106	21-167			

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:46

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BEI0128 - EPA 3550A**

**Blank (BEI0128-BLK1)**

Prepared: 09/07/21 Analyzed: 09/08/21

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							

**LCS (BEI0128-BS1)**

Prepared: 09/07/21 Analyzed: 09/08/21

C10-C28 (DRO)	543	50	mg/kg	500	109	70-130				
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**Matrix Spike (BEI0128-MS1)**

Source: 2109066-01

Prepared: 09/07/21 Analyzed: 09/08/21

C10-C28 (DRO)	496	50	mg/kg	500	15.2	96.2	70-130			
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**Matrix Spike Dup (BEI0128-MSD1)**

Source: 2109066-01

Prepared: 09/07/21 Analyzed: 09/08/21

C10-C28 (DRO)	533	50	mg/kg	500	15.2	104	70-130	7.19	20	
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Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:46

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**  
**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BEI0181 - EPA 3050B**

<b>Blank (BEI0181-BLK1)</b>				Prepared: 09/09/21 Analyzed: 09/11/21						
Boron	ND	0.0100	mg/L							
<b>LCS (BEI0181-BS1)</b>				Prepared: 09/09/21 Analyzed: 09/11/21						
Boron	4.89	0.0100	mg/L	5.00	97.8	80-120				
<b>Duplicate (BEI0181-DUP1)</b>				<b>Source: 2108107-08</b>		Prepared: 09/09/21 Analyzed: 09/11/21				
Boron	1.81	0.0100	mg/L		1.80		0.523	20		
<b>Matrix Spike (BEI0181-MS1)</b>				<b>Source: 2108107-08</b>		Prepared: 09/09/21 Analyzed: 09/11/21				
Boron	6.48	0.0100	mg/L	5.00	1.80	93.6	75-125			
<b>Matrix Spike Dup (BEI0181-MSD1)</b>				<b>Source: 2108107-08</b>		Prepared: 09/09/21 Analyzed: 09/11/21				
Boron	6.59	0.0100	mg/L	5.00	1.80	95.9	75-125	1.78	25	

**Batch BEI0193 - EPA 3050B**

<b>Blank (BEI0193-BLK1)</b>				Prepared: 09/09/21 Analyzed: 09/11/21						
Boron	ND	0.0100	mg/L							
<b>LCS (BEI0193-BS1)</b>				Prepared: 09/09/21 Analyzed: 09/11/21						
Boron	5.00	0.0100	mg/L	5.00	100	80-120				
<b>Duplicate (BEI0193-DUP1)</b>				<b>Source: 2108107-10</b>		Prepared: 09/09/21 Analyzed: 09/12/21				
Boron	1.68	0.0100	mg/L		1.67		1.01	20		
<b>Matrix Spike (BEI0193-MS1)</b>				<b>Source: 2108107-10</b>		Prepared: 09/09/21 Analyzed: 09/12/21				
Boron	6.76	0.0100	mg/L	5.00	1.67	102	75-125			

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:46

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BEI0193 - EPA 3050B**

**Matrix Spike Dup (BEI0193-MSD1)**

**Source: 2108107-10**

Prepared: 09/09/21 Analyzed: 09/12/21

Boron	6.50	0.0100	mg/L	5.00	1.67	96.6	75-125	3.94	25	
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Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:46

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BEI0197 - General Preparation**

**Blank (BEI0197-BLK1)**

Prepared: 09/09/21 Analyzed: 09/13/21

Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

**LCS (BEI0197-BS1)**

Prepared: 09/09/21 Analyzed: 09/13/21

Calcium	5.57	0.0500	mg/L wet	5.00		111	70-130			
Magnesium	4.91	0.0500	"	5.00		98.3	70-130			
Sodium	4.79	0.0500	"	5.00		95.8	70-130			

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:46

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BEI0132 - General Preparation**

**Duplicate (BEI0132-DUP1)**

**Source: 2109018-03**

Prepared & Analyzed: 09/08/21

% Solids	80.5		%		80.2			0.379		20	
----------	------	--	---	--	------	--	--	-------	--	----	--

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:46

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BEI0198 - General Preparation**

**Blank (BEI0198-BLK1)**

Prepared: 09/09/21 Analyzed: 09/10/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BEI0198-BS1)**

Prepared: 09/09/21 Analyzed: 09/10/21

Specific Conductance (EC) 0.139 0.0100 mmhos/cm 0.150 92.5 90-110

**Duplicate (BEI0198-DUP1)**

**Source: 2109063-01**

Prepared: 09/09/21 Analyzed: 09/10/21

Specific Conductance (EC) 1.46 0.0100 mmhos/cm 1.46 0.137 20

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:46

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike	Source	%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0199 - General Preparation**

**LCS (BEI0199-BS1)**

Prepared: 09/09/21 Analyzed: 09/13/21

pH	9.34	pH Units	9.21	101	95-105
----	------	----------	------	-----	--------

**Duplicate (BEI0199-DUP1)**

Source: 2109063-01

Prepared: 09/09/21 Analyzed: 09/13/21

pH	7.82	pH Units	7.99	2.15	20
----	------	----------	------	------	----

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:46

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 15, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Buffalo Gardens 41-13 Tank Battery

Work Order #2109091

Enclosed are the results of analyses for samples received by Summit Scientific on 09/07/21 20:59. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Muri Premer For Paul Shrewsbury

President



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:41

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SEP-FL@2.5'	2109091-01	Soil	09/07/21 11:20	09/07/21 20:59
PWV01-B@4'	2109091-02	Soil	09/07/21 12:00	09/07/21 20:59
PWV01-S@2.5'	2109091-05	Soil	09/07/21 12:06	09/07/21 20:59

Summit Scientific

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### Sample Receipt Checklist

S2 Work Order \_\_\_\_\_

Client: PDC/Tasman Client Project ID Buffalo Gardens 41-13 Tank Batt

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other \_\_\_\_\_ Airbill #: \_\_\_\_\_

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Temp (°C)	4.2
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	✓			
Were all samples received intact <sup>(1)</sup> ?	✓			
Was adequate sample volume provided <sup>(1)</sup> ?	✓			
If custody seals are present, are they intact <sup>(1)</sup> ?			✓	
Are samples with holding times due within 48 hours sample due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	✓			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	✓			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	✓			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			✓	
Are samples preserved that require preservation <b>(excluding cooling)</b> <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			✓	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	

Additional Comments (if any):

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

WG  
\_\_\_\_\_  
Custodian Printed Name or Initials

\_\_\_\_\_  
Signature of Custodian

9/2/21  
\_\_\_\_\_  
Date/Time



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:41

**SEP-FL@2.5'**  
**2109091-01 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/07/21 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BEI0160	09/08/21	09/09/21	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **09/07/21 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		113 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		108 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/07/21 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BEI0161	09/08/21	09/09/21	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **09/07/21 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		118 %		30-150		"	"	"	"	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:41

**PWV01-B@4'**  
**2109091-02 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/07/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEI0160	09/08/21	09/09/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/07/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.2 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/07/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEI0161	09/08/21	09/09/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/07/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		117 %	30-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:41

**PWV01-B@4'**  
**2109091-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **09/07/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BEI0244	09/13/21	09/14/21	EPA 6020B	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **09/07/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	<b>2.16</b>	0.0520	mg/L dry	1	BEI0197	09/09/21	09/13/21	EPA 6020B	
Magnesium	<b>1.23</b>	0.0520	"	"	"	"	"	"	
Sodium	<b>0.198</b>	0.0520	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **09/07/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	<b>0.0266</b>	0.00100	units	1	BEI0263	09/13/21	09/13/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/07/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	<b>96.2</b>		%	1	BEI0245	09/13/21	09/13/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **09/07/21 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	<b>0.0770</b>	0.0100	mmhos/cm	1	BEI0198	09/09/21	09/10/21	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:41

**PWV01-B@4'**  
**2109091-02 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **09/07/21 12:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>8.08</b>		pH Units	1	BEI0199	09/09/21	09/13/21	EPA 9045D	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:41

**PWV01-S@2.5'**  
**2109091-05 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/07/21 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEI0160	09/08/21	09/09/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/07/21 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		106 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.6 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/07/21 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEI0161	09/08/21	09/09/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/07/21 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		119 %	30-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:41

**PWV01-S@2.5'**  
**2109091-05 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **09/07/21 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BEI0244	09/13/21	09/14/21	EPA 6020B	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **09/07/21 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	<b>5.95</b>	0.0546	mg/L dry	1	BEI0197	09/09/21	09/13/21	EPA 6020B	
Magnesium	<b>4.40</b>	0.0546	"	"	"	"	"	"	
Sodium	ND	0.0546	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **09/07/21 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	<b>0.00409</b>	0.00100	units	1	BEI0263	09/13/21	09/13/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/07/21 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	<b>91.5</b>		%	1	BEI0245	09/13/21	09/13/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **09/07/21 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	<b>0.0377</b>	0.0100	mmhos/cm	1	BEI0198	09/09/21	09/10/21	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:41

**PWV01-S@2.5'**  
**2109091-05 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **09/07/21 12:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>7.41</b>		pH Units	1	BEI0199	09/09/21	09/13/21	EPA 9045D	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:41

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

#### Batch BEI0160 - EPA 5030 Soil MS

##### Blank (BEI0160-BLK1)

Prepared: 09/08/21 Analyzed: 09/09/21

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
1,2,4-Trimethylbenzene	ND	0.0050	"								
1,3,5-Trimethylbenzene	ND	0.0050	"								
Naphthalene	ND	0.0038	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
Surrogate: 1,2-Dichloroethane-d4	0.0393		"	0.0400		98.2	23-173				
Surrogate: Toluene-d8	0.0422		"	0.0400		106	20-170				
Surrogate: 4-Bromofluorobenzene	0.0400		"	0.0400		100	21-167				

##### LCS (BEI0160-BS1)

Prepared: 09/08/21 Analyzed: 09/09/21

Benzene	0.0656	0.0020	mg/kg	0.0750		87.5	70-130				
Toluene	0.0766	0.0050	"	0.0750		102	70-130				
Ethylbenzene	0.0805	0.0050	"	0.0750		107	70-130				
m,p-Xylene	0.163	0.010	"	0.150		109	70-130				
o-Xylene	0.0864	0.0050	"	0.0750		115	70-130				
1,2,4-Trimethylbenzene	0.0867	0.0050	"	0.0750		116	70-130				
1,3,5-Trimethylbenzene	0.0811	0.0050	"	0.0750		108	70-130				
Naphthalene	0.0933	0.0038	"	0.0750		124	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0333		"	0.0400		83.3	23-173				
Surrogate: Toluene-d8	0.0378		"	0.0400		94.6	20-170				
Surrogate: 4-Bromofluorobenzene	0.0400		"	0.0400		100	21-167				

##### Matrix Spike (BEI0160-MS1)

Source: 2109063-01

Prepared: 09/08/21 Analyzed: 09/09/21

Benzene	0.0596	0.0020	mg/kg	0.0750	ND	79.4	70-130				
Toluene	0.0712	0.0050	"	0.0750	ND	95.0	70-130				
Ethylbenzene	0.0709	0.0050	"	0.0750	ND	94.5	70-130				
m,p-Xylene	0.146	0.010	"	0.150	ND	97.5	70-130				
o-Xylene	0.0769	0.0050	"	0.0750	ND	103	70-130				
1,2,4-Trimethylbenzene	0.0778	0.0050	"	0.0750	ND	104	70-130				
1,3,5-Trimethylbenzene	0.0720	0.0050	"	0.0750	ND	96.0	70-130				
Naphthalene	0.0921	0.0038	"	0.0750	ND	123	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0319		"	0.0400		79.7	23-173				
Surrogate: Toluene-d8	0.0389		"	0.0400		97.3	20-170				
Surrogate: 4-Bromofluorobenzene	0.0387		"	0.0400		96.8	21-167				

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:41

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limit	RPD	Limit	RPD	

**Batch BEI0160 - EPA 5030 Soil MS**

Matrix Spike Dup (BEI0160-MSD1)	Source: 2109063-01			Prepared: 09/08/21 Analyzed: 09/09/21					
Benzene	0.0650	0.0020	mg/kg	0.0750	ND	86.6	70-130	8.62	30
Toluene	0.0816	0.0050	"	0.0750	ND	109	70-130	13.5	30
Ethylbenzene	0.0784	0.0050	"	0.0750	ND	105	70-130	10.1	30
m,p-Xylene	0.163	0.010	"	0.150	ND	109	70-130	10.8	30
o-Xylene	0.0860	0.0050	"	0.0750	ND	115	70-130	11.1	30
1,2,4-Trimethylbenzene	0.0888	0.0050	"	0.0750	ND	118	70-130	13.2	30
1,3,5-Trimethylbenzene	0.0816	0.0050	"	0.0750	ND	109	70-130	12.6	30
Naphthalene	0.0734	0.0038	"	0.0750	ND	97.9	70-130	22.5	30
Surrogate: 1,2-Dichloroethane-d4	0.0363		"	0.0400		90.8	23-173		
Surrogate: Toluene-d8	0.0404		"	0.0400		101	20-170		
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103	21-167		

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:41

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BEI0161 - EPA 3550A**

**Blank (BEI0161-BLK1)**

Prepared: 09/08/21 Analyzed: 09/10/21

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							

**LCS (BEI0161-BS1)**

Prepared: 09/08/21 Analyzed: 09/10/21

C10-C28 (DRO)	595	50	mg/kg	500	119	70-130				
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**Matrix Spike (BEI0161-MS1)**

Source: 2109063-01

Prepared: 09/08/21 Analyzed: 09/10/21

C10-C28 (DRO)	614	50	mg/kg	500	13.0	120	70-130			
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**Matrix Spike Dup (BEI0161-MSD1)**

Source: 2109063-01

Prepared: 09/08/21 Analyzed: 09/10/21

C10-C28 (DRO)	603	50	mg/kg	500	13.0	118	70-130	1.80	20	
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Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:41

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**  
**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BEI0244 - EPA 3050B**

<b>Blank (BEI0244-BLK1)</b>				Prepared: 09/13/21 Analyzed: 09/14/21							
Boron	ND	0.0100	mg/L								
<b>LCS (BEI0244-BS1)</b>				Prepared: 09/13/21 Analyzed: 09/14/21							
Boron	4.88	0.0100	mg/L	5.00	97.6	80-120					
<b>Duplicate (BEI0244-DUP1)</b>				<b>Source: 2109091-02</b>		Prepared: 09/13/21 Analyzed: 09/14/21					
Boron	ND	0.0100	mg/L		ND					20	
<b>Matrix Spike (BEI0244-MS1)</b>				<b>Source: 2109091-02</b>		Prepared: 09/13/21 Analyzed: 09/14/21					
Boron	5.00	0.0100	mg/L	5.00	ND	100	75-125				
<b>Matrix Spike Dup (BEI0244-MSD1)</b>				<b>Source: 2109091-02</b>		Prepared: 09/13/21 Analyzed: 09/14/21					
Boron	4.70	0.0100	mg/L	5.00	ND	94.0	75-125	6.22		25	

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:41

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BEI0197 - General Preparation**

**Blank (BEI0197-BLK1)**

Prepared: 09/09/21 Analyzed: 09/13/21

Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

**LCS (BEI0197-BS1)**

Prepared: 09/09/21 Analyzed: 09/13/21

Calcium	5.57	0.0500	mg/L wet	5.00		111	70-130			
Magnesium	4.91	0.0500	"	5.00		98.3	70-130			
Sodium	4.79	0.0500	"	5.00		95.8	70-130			

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:41

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BEI0245 - General Preparation**

**Duplicate (BEI0245-DUP1)**

**Source: 2109091-02**

Prepared & Analyzed: 09/13/21

% Solids	96.1		%		96.2			0.0998	20	
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Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:41

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BEI0198 - General Preparation**

**Blank (BEI0198-BLK1)**

Prepared: 09/09/21 Analyzed: 09/10/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BEI0198-BS1)**

Prepared: 09/09/21 Analyzed: 09/10/21

Specific Conductance (EC) 0.139 0.0100 mmhos/cm 0.150 92.5 90-110

**Duplicate (BEI0198-DUP1)**

Source: 2109063-01

Prepared: 09/09/21 Analyzed: 09/10/21

Specific Conductance (EC) 1.46 0.0100 mmhos/cm 1.46 0.137 20

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:41

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike	Source	%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0199 - General Preparation**

**LCS (BEI0199-BS1)**

Prepared: 09/09/21 Analyzed: 09/13/21

pH	9.34	pH Units	9.21	101	95-105
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**Duplicate (BEI0199-DUP1)**

Source: 2109063-01

Prepared: 09/09/21 Analyzed: 09/13/21

pH	7.82	pH Units	7.99	2.15	20
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Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:41

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 15, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Buffalo Gardens 41-13 Tank Battery

Work Order #2109098

Enclosed are the results of analyses for samples received by Summit Scientific on 09/08/21 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Muri Premer For Paul Shrewsbury

President



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:53

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@2.5'	2109098-01	Soil	09/08/21 10:30	09/08/21 17:30

Summit Scientific

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

2109098

# Summit Scientific

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310

Page 1 of 1

Client: PDC / Tasman Project Manager: Mark Longhurst  
 Address: 6855 W 119th Ave E-Mail: mark.longhurst@PDCf.com  
 City/State/Zip: Broomfield/ CO/ 80020  
 Phone: 303-487-1228 Project Name: Buffalo Gardens 41-13 Tank Battery  
 Sampler Name: Dylan Brightwell Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested							Special Instructions			
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	GBIENN - 8260B <sup>915</sup>	TPH - (C6 - C36) <sup>915</sup>	pH, EC, SAR <sup>915</sup>	Boron - HWS <sup>915</sup>	VOC - 915	PAH - 915	Metals - 915		TMB5 (V27) (G, B, S) <sup>915</sup>		
1	5501 @ 2.5'	9/8/21	1030	3			X			X				X	X	X	X			X	X		pH, EC, SAR by saturated paste
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							

  

Relinquished by: <u>Dylan Brightwell</u> Date/Time: <u>9/8/21 14:55</u>	Received by: <u>Tasman's Lock Box</u> Date/Time: <u>9/8/21 14:55</u>	<b>Turn Around Time (Check)</b> Same Day <input checked="" type="checkbox"/> 72 hours ___ 24 hours ___ Standard ___ 48 hours ___ <b>Sample Integrity:</b> Temperature Upon Receipt: <u>S</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Notes:</b>
Relinquished by: <u>Tasman's Lock Box</u> Date/Time: <u>09/08/2021 1730</u>	Received by: <u>[Signature]</u> Date/Time: <u>09/08/2021 1730</u>		
Relinquished by: _____ Date/Time: _____	Received by: _____ Date/Time: _____		

### Sample Receipt Checklist

S2 Work Order 2109098

Client: PDC / TARMAN

Client Project ID: Buffalo Gardens 41-13

Shipped Via:  H.D.  P.U.  FedEx  UPS  USPS  Other

Airbill #: \_\_\_\_\_ TANK BATTERY

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_ (Describe)

Temp (°C) 5

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>WEDAY</u>
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation <b>(excluding cooling)</b> <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

[Signature]  
Custodian Printed Name or Initials

[Signature]  
Signature of Custodian

09/08/2004  
Date/Time



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:53

**SS01@2.5'**  
**2109098-01 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/08/21 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BEI0167	09/08/21	09/09/21	EPA 8260B	
<b>Toluene</b>	<b>0.53</b>	0.0050		"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.11</b>	0.0050		"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>13</b>	0.10		"	10	"	"	"	"	
<b>1,2,4-Trimethylbenzene</b>	<b>0.39</b>	0.0050		"	1	"	"	"	"	
<b>1,3,5-Trimethylbenzene</b>	<b>5.2</b>	0.050		"	10	"	"	"	"	
<b>Naphthalene</b>	<b>0.043</b>	0.0038		"	1	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>2300</b>	5.0		"	10	"	"	"	"	E

Date Sampled: **09/08/21 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		70.4 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		90.5 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		275 %		21-167		"	"	"	"	S-02

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/08/21 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>C10-C28 (DRO)</b>	<b>160</b>	50		mg/kg	1	BEI0168	09/08/21	09/08/21	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **09/08/21 10:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		131 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:53

**SS01@2.5'**  
**2109098-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/08/21 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Acenaphthene</b>	<b>0.0195</b>	0.00500	mg/kg	1	BEI0190	09/09/21	09/11/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
<b>Benzo (a) anthracene</b>	<b>0.0247</b>	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
<b>Chrysene</b>	<b>0.0162</b>	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
<b>Fluoranthene</b>	<b>0.0152</b>	0.00500	"	"	"	"	"	"	
<b>Fluorene</b>	<b>0.0630</b>	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
<b>Pyrene</b>	<b>0.0331</b>	0.00500	"	"	"	"	"	"	
<b>1-Methylnaphthalene</b>	<b>0.584</b>	0.0500	"	10	"	"	"	"	
<b>2-Methylnaphthalene</b>	<b>11.1</b>	1.05	"	210	"	"	"	"	

Date Sampled: **09/08/21 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		53.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		40.8 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **09/08/21 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.116</b>	0.0100	mg/L	1	BEI0181	09/09/21	09/11/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **09/08/21 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:53

**SS01@2.5'**  
**2109098-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.61	0.246	mg/kg dry	1	BEI0178	09/09/21	09/11/21	EPA 6020B	
Barium	88.9	0.492	"	"	"	"	"	"	
Cadmium	ND	0.246	"	"	"	"	"	"	
Copper	8.88	0.492	"	"	"	"	"	"	
Lead	6.86	0.246	"	"	"	"	"	"	
Nickel	9.18	0.492	"	"	"	"	"	"	
Selenium	0.624	0.320	"	"	"	"	"	"	
Silver	0.0489	0.0246	"	"	"	"	"	"	
Zinc	38.7	0.492	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **09/08/21 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BEI0257	09/13/21	09/13/21	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **09/08/21 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	3.14	0.0615	mg/L dry	1	BEI0240	09/13/21	09/13/21	EPA 6020B	
Magnesium	2.08	0.0615	"	"	"	"	"	"	
Sodium	0.278	0.0615	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **09/08/21 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0299	0.00100	units	1	BEI0300	09/14/21	09/14/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/08/21 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:53

**SS01@2.5'**  
**2109098-01 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	81.4	%	1	BEI0173	09/09/21	09/09/21	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **09/08/21 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.215	0.0100	mmhos/cm	1	BEI0243	09/13/21	09/13/21	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **09/08/21 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.12		pH Units	1	BEI0242	09/13/21	09/13/21	EPA 9045D	

Summit Scientific

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



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:53

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

#### Batch BEI0167 - EPA 5030 Soil MS

##### Blank (BEI0167-BLK1)

Prepared: 09/08/21 Analyzed: 09/09/21

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
1,2,4-Trimethylbenzene	ND	0.0050	"								
1,3,5-Trimethylbenzene	ND	0.0050	"								
Naphthalene	ND	0.0038	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0436		"	0.0400		109	23-173				
<i>Surrogate: Toluene-d8</i>	0.0435		"	0.0400		109	20-170				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0411		"	0.0400		103	21-167				

##### LCS (BEI0167-BS1)

Prepared: 09/08/21 Analyzed: 09/09/21

Benzene	0.0941	0.0020	mg/kg	0.100		94.1	70-130				
Toluene	0.0740	0.0050	"	0.100		74.0	70-130				
Ethylbenzene	0.0765	0.0050	"	0.100		76.5	70-130				
m,p-Xylene	0.154	0.010	"	0.200		76.9	70-130				
o-Xylene	0.0823	0.0050	"	0.100		82.3	70-130				
1,2,4-Trimethylbenzene	0.0854	0.0050	"	0.100		85.4	70-130				
1,3,5-Trimethylbenzene	0.0791	0.0050	"	0.100		79.1	70-130				
Naphthalene	0.0942	0.0038	"	0.100		94.2	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0370		"	0.0400		92.6	23-173				
<i>Surrogate: Toluene-d8</i>	0.0395		"	0.0400		98.7	20-170				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0404		"	0.0400		101	21-167				

##### Matrix Spike (BEI0167-MS1)

Source: 2109095-01

Prepared: 09/08/21 Analyzed: 09/09/21

Benzene	0.0898	0.0020	mg/kg	0.100	ND	89.8	70-130				
Toluene	0.0977	0.0050	"	0.100	ND	97.7	70-130				
Ethylbenzene	0.0988	0.0050	"	0.100	ND	98.8	70-130				
m,p-Xylene	0.199	0.010	"	0.200	ND	99.6	70-130				
o-Xylene	0.0759	0.0050	"	0.100	ND	75.9	70-130				
1,2,4-Trimethylbenzene	0.0754	0.0050	"	0.100	ND	75.4	70-130				
1,3,5-Trimethylbenzene	0.0700	0.0050	"	0.100	ND	70.0	70-130				
Naphthalene	0.0892	0.0038	"	0.100	ND	89.2	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0340		"	0.0400		85.0	23-173				
<i>Surrogate: Toluene-d8</i>	0.0389		"	0.0400		97.2	20-170				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0385		"	0.0400		96.3	21-167				

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:53

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limit	RPD	Limit	RPD	

**Batch BEI0167 - EPA 5030 Soil MS**

Matrix Spike Dup (BEI0167-MSD1)	Source: 2109095-01			Prepared: 09/08/21 Analyzed: 09/09/21						
Benzene	0.0901	0.0020	mg/kg	0.100	ND	90.1	70-130	0.300	30	
Toluene	0.0988	0.0050	"	0.100	ND	98.8	70-130	1.16	30	
Ethylbenzene	0.0983	0.0050	"	0.100	ND	98.3	70-130	0.487	30	
m,p-Xylene	0.198	0.010	"	0.200	ND	99.2	70-130	0.453	30	
o-Xylene	0.0760	0.0050	"	0.100	ND	76.0	70-130	0.237	30	
1,2,4-Trimethylbenzene	0.0768	0.0050	"	0.100	ND	76.8	70-130	1.81	30	
1,3,5-Trimethylbenzene	0.0706	0.0050	"	0.100	ND	70.6	70-130	0.854	30	
Naphthalene	0.0911	0.0038	"	0.100	ND	91.1	70-130	2.10	30	
Surrogate: 1,2-Dichloroethane-d4	0.0361		"	0.0400		90.2	23-173			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0391		"	0.0400		97.6	21-167			

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:53

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

Analyte	Result	Reporting		Spike	Source		%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

**Batch BEI0168 - EPA 3550A**

**Blank (BEI0168-BLK1)**

Prepared: 09/08/21 Analyzed: 09/09/21

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							

**LCS (BEI0168-BS1)**

Prepared: 09/08/21 Analyzed: 09/09/21

C10-C28 (DRO)	556	50	mg/kg	500	111	70-130				
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**Matrix Spike (BEI0168-MS1)**

Source: 2109095-01

Prepared: 09/08/21 Analyzed: 09/09/21

C10-C28 (DRO)	593	50	mg/kg	500	15.3	115	70-130			
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**Matrix Spike Dup (BEI0168-MSD1)**

Source: 2109095-01

Prepared: 09/08/21 Analyzed: 09/09/21

C10-C28 (DRO)	555	50	mg/kg	500	15.3	108	70-130	6.61	20	
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Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:53

**PAH by EPA Method 8270D SIM - Quality Control**

**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0190 - EPA 5030 Soil MS**

**Blank (BEI0190-BLK1)**

Prepared: 09/09/21 Analyzed: 09/10/21

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.0247		"	0.0333		74.2	40-150			
<i>Surrogate: Fluoranthene-d10</i>	0.0188		"	0.0333		56.4	40-150			

**LCS (BEI0190-BS1)**

Prepared: 09/09/21 Analyzed: 09/10/21

Acenaphthene	0.0296	0.00500	mg/kg	0.0333		88.7	31-137			
Anthracene	0.0286	0.00500	"	0.0333		85.7	30-120			
Benzo (a) anthracene	0.0293	0.00500	"	0.0333		88.0	30-120			
Benzo (a) pyrene	0.0343	0.00500	"	0.0333		103	30-120			
Benzo (b) fluoranthene	0.0365	0.00500	"	0.0333		110	30-120			
Benzo (k) fluoranthene	0.0381	0.00500	"	0.0333		114	30-120			
Chrysene	0.0287	0.00500	"	0.0333		86.1	30-120			
Dibenz (a,h) anthracene	0.0182	0.00500	"	0.0333		54.7	30-120			
Fluoranthene	0.0305	0.00500	"	0.0333		91.5	30-120			
Fluorene	0.0307	0.00500	"	0.0333		92.1	30-120			
Indeno (1,2,3-cd) pyrene	0.0191	0.00500	"	0.0333		57.4	30-120			
Pyrene	0.0278	0.00500	"	0.0333		83.5	35-142			
1-Methylnaphthalene	0.0307	0.00500	"	0.0333		92.1	35-142			
2-Methylnaphthalene	0.0264	0.00500	"	0.0333		79.1	35-142			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.0215		"	0.0333		64.5	40-150			
<i>Surrogate: Fluoranthene-d10</i>	0.0170		"	0.0333		51.0	40-150			

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
09/15/21 10:53

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch BEI0190 - EPA 5030 Soil MS

Matrix Spike (BEI0190-MS1)	Source: 2109097-01			Prepared: 09/09/21 Analyzed: 09/10/21					
Acenaphthene	0.0274	0.00500	mg/kg	0.0333	ND	82.1	31-137		
Anthracene	0.0261	0.00500	"	0.0333	ND	78.4	30-120		
Benzo (a) anthracene	0.0275	0.00500	"	0.0333	ND	82.4	30-120		
Benzo (a) pyrene	0.0307	0.00500	"	0.0333	ND	92.2	30-120		
Benzo (b) fluoranthene	0.0337	0.00500	"	0.0333	ND	101	30-120		
Benzo (k) fluoranthene	0.0357	0.00500	"	0.0333	ND	107	30-120		
Chrysene	0.0268	0.00500	"	0.0333	ND	80.4	30-120		
Dibenz (a,h) anthracene	0.0172	0.00500	"	0.0333	ND	51.7	30-120		
Fluoranthene	0.0282	0.00500	"	0.0333	ND	84.5	30-120		
Fluorene	0.0283	0.00500	"	0.0333	ND	84.8	30-120		
Indeno (1,2,3-cd) pyrene	0.0182	0.00500	"	0.0333	ND	54.7	30-120		
Pyrene	0.0258	0.00500	"	0.0333	ND	77.3	35-142		
1-Methylnaphthalene	0.0303	0.00500	"	0.0333	ND	90.8	15-130		
2-Methylnaphthalene	0.0260	0.00500	"	0.0333	ND	77.9	15-130		
Surrogate: 2-Methylnaphthalene-d10	0.0190		"	0.0333		57.1	40-150		
Surrogate: Fluoranthene-d10	0.0155		"	0.0333		46.4	40-150		

Matrix Spike Dup (BEI0190-MSD1)	Source: 2109097-01			Prepared: 09/09/21 Analyzed: 09/10/21					
Acenaphthene	0.0319	0.00500	mg/kg	0.0333	ND	95.6	31-137	15.2	30
Anthracene	0.0323	0.00500	"	0.0333	ND	96.8	30-120	21.0	30
Benzo (a) anthracene	0.0345	0.00500	"	0.0333	ND	103	30-120	22.6	30
Benzo (a) pyrene	0.0275	0.00500	"	0.0333	ND	82.4	30-120	11.2	30
Benzo (b) fluoranthene	0.0300	0.00500	"	0.0333	ND	90.1	30-120	11.6	30
Benzo (k) fluoranthene	0.0327	0.00500	"	0.0333	ND	98.0	30-120	8.90	30
Chrysene	0.0336	0.00500	"	0.0333	ND	101	30-120	22.5	30
Dibenz (a,h) anthracene	0.0181	0.00500	"	0.0333	ND	54.2	30-120	4.85	30
Fluoranthene	0.0334	0.00500	"	0.0333	ND	100	30-120	17.0	30
Fluorene	0.0333	0.00500	"	0.0333	ND	99.9	30-120	16.3	30
Indeno (1,2,3-cd) pyrene	0.0183	0.00500	"	0.0333	ND	54.9	30-120	0.438	30
Pyrene	0.0301	0.00500	"	0.0333	ND	90.3	35-142	15.5	30
1-Methylnaphthalene	0.0346	0.00500	"	0.0333	ND	104	15-130	13.3	50
2-Methylnaphthalene	0.0274	0.00500	"	0.0333	ND	82.2	15-130	5.33	50
Surrogate: 2-Methylnaphthalene-d10	0.0227		"	0.0333		68.1	40-150		
Surrogate: Fluoranthene-d10	0.0185		"	0.0333		55.5	40-150		

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:53

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**  
**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BEI0181 - EPA 3050B**

<b>Blank (BEI0181-BLK1)</b>				Prepared: 09/09/21 Analyzed: 09/11/21							
Boron	ND	0.0100	mg/L								
<b>LCS (BEI0181-BS1)</b>				Prepared: 09/09/21 Analyzed: 09/11/21							
Boron	4.89	0.0100	mg/L	5.00	97.8	80-120					
<b>Duplicate (BEI0181-DUP1)</b>				<b>Source: 2108107-08</b>		Prepared: 09/09/21 Analyzed: 09/11/21					
Boron	1.81	0.0100	mg/L		1.80				0.523	20	
<b>Matrix Spike (BEI0181-MS1)</b>				<b>Source: 2108107-08</b>		Prepared: 09/09/21 Analyzed: 09/11/21					
Boron	6.48	0.0100	mg/L	5.00	1.80	93.6	75-125				
<b>Matrix Spike Dup (BEI0181-MSD1)</b>				<b>Source: 2108107-08</b>		Prepared: 09/09/21 Analyzed: 09/11/21					
Boron	6.59	0.0100	mg/L	5.00	1.80	95.9	75-125	1.78		25	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:53

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD		

**Batch BEI0178 - EPA 3050B**

**Blank (BEI0178-BLK1)**

Prepared: 09/09/21 Analyzed: 09/11/21

Arsenic	ND	0.200	mg/kg wet						
Barium	ND	0.400	"						
Cadmium	ND	0.200	"						
Copper	ND	0.400	"						
Lead	ND	0.200	"						
Nickel	ND	0.400	"						
Selenium	ND	0.260	"						
Silver	ND	0.0200	"						
Zinc	ND	0.400	"						

**LCS (BEI0178-BS1)**

Prepared: 09/09/21 Analyzed: 09/11/21

Arsenic	44.3	0.200	mg/kg wet	40.0	111	80-120
Barium	37.0	0.400	"	40.0	92.6	80-120
Cadmium	1.99	0.200	"	2.00	99.5	80-120
Copper	37.4	0.400	"	40.0	93.6	80-120
Lead	18.4	0.200	"	20.0	92.1	80-120
Nickel	35.8	0.400	"	40.0	89.4	80-120
Selenium	4.26	0.260	"	4.00	107	80-120
Silver	1.81	0.0200	"	2.00	90.6	80-120
Zinc	44.6	0.400	"	40.0	112	80-120

**Duplicate (BEI0178-DUP1)**

Source: 2109089-07

Prepared: 09/09/21 Analyzed: 09/11/21

Arsenic	6.03	0.270	mg/kg dry	6.36	5.28	20
Barium	206	0.541	"	195	5.42	20
Cadmium	0.223	0.270	"	0.211	5.80	20
Copper	13.6	0.541	"	13.3	2.50	20
Lead	9.31	0.270	"	9.05	2.85	20
Nickel	17.1	0.541	"	16.4	4.34	20
Selenium	0.965	0.351	"	0.887	8.44	20
Silver	0.118	0.0270	"	0.116	1.37	20
Zinc	50.1	0.541	"	48.3	3.66	20

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:53

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

**Batch BEI0178 - EPA 3050B**

**Matrix Spike (BEI0178-MS1)**

Source: 2109089-07

Prepared: 09/09/21 Analyzed: 09/11/21

Arsenic	65.3	0.270	mg/kg dry	54.1	6.36	109	75-125		
Barium	256	0.541	"	54.1	195	114	75-125		
Cadmium	2.98	0.270	"	2.70	0.211	102	75-125		
Copper	61.8	0.541	"	54.1	13.3	89.7	75-125		
Lead	33.6	0.270	"	27.0	9.05	90.7	75-125		
Nickel	65.6	0.541	"	54.1	16.4	91.0	75-125		
Selenium	5.75	0.351	"	5.41	0.887	89.9	75-125		
Silver	2.63	0.0270	"	2.70	0.116	92.9	75-125		
Zinc	107	0.541	"	54.1	48.3	110	75-125		

**Matrix Spike Dup (BEI0178-MSD1)**

Source: 2109089-07

Prepared: 09/09/21 Analyzed: 09/11/21

Arsenic	63.9	0.270	mg/kg dry	54.1	6.36	106	75-125	2.17	25
Barium	255	0.541	"	54.1	195	111	75-125	0.599	25
Cadmium	2.95	0.270	"	2.70	0.211	101	75-125	1.10	25
Copper	60.8	0.541	"	54.1	13.3	87.9	75-125	1.54	25
Lead	33.5	0.270	"	27.0	9.05	90.4	75-125	0.198	25
Nickel	64.2	0.541	"	54.1	16.4	88.4	75-125	2.16	25
Selenium	5.75	0.351	"	5.41	0.887	89.9	75-125	0.000747	25
Silver	2.60	0.0270	"	2.70	0.116	91.7	75-125	1.25	25
Zinc	108	0.541	"	54.1	48.3	110	75-125	0.479	25

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:53

**Hexavalent Chromium by EPA Method 7196 - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0257 - 3060A Mod**

<b>Blank (BEI0257-BLK1)</b>		Prepared & Analyzed: 09/13/21								
Chromium, Hexavalent	ND	0.30	mg/kg wet							
<b>LCS (BEI0257-BS1)</b>		Prepared & Analyzed: 09/13/21								
Chromium, Hexavalent	25.5	0.30	mg/kg wet	25.0		102	80-120			
<b>Duplicate (BEI0257-DUP1)</b>		<b>Source: 2109095-01</b>			Prepared & Analyzed: 09/13/21					
Chromium, Hexavalent	ND	0.30	mg/kg dry		ND				20	
<b>Matrix Spike (BEI0257-MS1)</b>		<b>Source: 2109095-01</b>			Prepared & Analyzed: 09/13/21					
Chromium, Hexavalent	28.5	0.30	mg/kg dry	29.0	ND	98.0	75-125			
<b>Matrix Spike Dup (BEI0257-MSD1)</b>		<b>Source: 2109095-01</b>			Prepared & Analyzed: 09/13/21					
Chromium, Hexavalent	28.5	0.30	mg/kg dry	29.0	ND	98.0	75-125	0.00	20	

Summit Scientific

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



PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:53

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BEI0240 - General Preparation**

**Blank (BEI0240-BLK1)**

Prepared & Analyzed: 09/13/21

Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

**LCS (BEI0240-BS1)**

Prepared & Analyzed: 09/13/21

Calcium	5.12	0.0500	mg/L wet	5.00	102	70-130
Magnesium	4.88	0.0500	"	5.00	97.7	70-130
Sodium	4.83	0.0500	"	5.00	96.6	70-130

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:53

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BEI0173 - General Preparation**

**Duplicate (BEI0173-DUP1)**

**Source: 2108371-09**

Prepared & Analyzed: 09/09/21

% Solids	88.9		%		89.2			0.338		20	
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Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:53

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limits	RPD	Limit		

**Batch BEI0243 - General Preparation**

**Blank (BEI0243-BLK1)**

Prepared & Analyzed: 09/13/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BEI0243-BS1)**

Prepared & Analyzed: 09/13/21

Specific Conductance (EC) 0.165 0.0100 mmhos/cm 0.150 110 90-110

**Duplicate (BEI0243-DUP1)**

Source: 2109095-01

Prepared & Analyzed: 09/13/21

Specific Conductance (EC) 0.311 0.0100 mmhos/cm 0.302 2.97 20

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/15/21 10:53

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike	Source	%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0242 - General Preparation**

**LCS (BEI0242-BS1)**

Prepared & Analyzed: 09/13/21

pH 9.33 pH Units 9.21 101 95-105

**Duplicate (BEI0242-DUP1)**

Source: 2109095-01

Prepared & Analyzed: 09/13/21

pH 8.77 pH Units 8.84 0.795 20

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/15/21 10:53

### Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 04, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Buffalo Gardens 41-13 Tank Battery

Work Order #2109137

Enclosed are the results of analyses for samples received by Summit Scientific on 09/09/21 18:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large, stylized 'M' and 'P'.

Muri Premer For Paul Shrewsbury

President



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS02@15'	2109137-01	Soil	09/09/21 13:00	09/09/21 18:00
SS03@14'	2109137-02	Soil	09/09/21 13:14	09/09/21 18:00
SS04@6'	2109137-03	Soil	09/09/21 13:16	09/09/21 18:00
SS05@14'	2109137-04	Soil	09/09/21 13:30	09/09/21 18:00
SS06@6'	2109137-05	Soil	09/09/21 13:32	09/09/21 18:00
SS07@14'	2109137-06	Soil	09/09/21 13:38	09/09/21 18:00
SS08@6'	2109137-07	Soil	09/09/21 13:40	09/09/21 18:00

Summit Scientific

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

# Summit Scientific

2109137

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310

Page      of     

Client: PDC - Tasman Project Manager: Mark Longhurst  
Address: 6855 W 119th Ave E-Mail: mark.longhurst@PDCI.com  
City/State/Zip: Broomfield/ CO 80020  
Phone: 303-487-1228 Project Name: Buffalo Gardens 41-13 Tank Battery  
Sampler Name: Dylon Brightwell Project Number:                     

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix		Air-Canister #	Other	Analysis Requested								Special Instructions
					HCl	HNO3	None	Other	Water	Soil			Other	GBTEXN - 8260B <sup>915</sup>	TPH - (C6 - C36) <sup>915</sup>	pH, EC, SAR <sup>915</sup>	Boron - HWS <sup>915</sup>	VOC - 915	PAH - 915	Metals - 915	
1	SS02 @ 15'	9/9/21	13:00	3			X			X			X	X						X	pH, EC, SAR by saturated paste
2	SS03 @ 14'		13:14	3			X			X			X	X						X	
3	SS04 @ 6'		13:16	3			X			X			X	X						X	
4	SS05 @ 14'		13:30	3			X			X			X	X						X	
5	SS06 @ 6'		13:32	3			X			X			X	X						X	
6	SS07 @ 14'		13:36	3			X			X			X	X						X	
7	SS09 @ 6'	↓	13:40	3			X			X			X	X						X	
8																					
9																					
10																					

  

Relinquished by: <u>Dylon Brightwell</u> Date/Time: <u>9/9/21 15:20</u>	Received by: <u>Tasman's Lock Box</u> Date/Time: <u>9/9/21 15:20</u>	Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 hours ___ 24 hours ___ Standard ___ 48 hours ___ Sample Integrity: Temperature Upon Receipt: <u>10</u> Samples Intact: <input checked="" type="radio"/> Yes No	Notes:
Relinquished by: <u>Tasman's Lock Box</u> Date/Time: <u>9/9/21 1800</u>	Received by: <u>Will [Signature]</u> Date/Time: <u>9/9/21 1800</u>		
Relinquished by: <u>                    </u> Date/Time: <u>                    </u>	Received by: <u>                    </u> Date/Time: <u>                    </u>		

Sample Receipt Checklist

2109137

S2 Work Order \_\_\_\_\_

Client: PDC HASMAN Client Project ID: Buffalo Gardens 41-13 Tank Battery

Shipped Via:  H.D./P.U./FedEx/UPS/USPS/Other \_\_\_\_\_ Airbill #: \_\_\_\_\_

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Temp (°C)	10
-----------	----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	on ice
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	same day
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

WG  
Custodian Printed Name or Initials

Will Bahi  
Signature of Custodian

9/9/21  
Date/Time



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**SS02@15'**  
**2109137-01 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/09/21 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	BEI0201	09/09/21	09/09/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		98.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/09/21 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	BEI0200	09/09/21	09/09/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		120 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**SS02@15'**  
**2109137-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/09/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEI0589	09/28/21	09/30/21	EPA 8270D SIM	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	68.7 %	40-150	"	"	"	"	"	"	
Surrogate: Fluoranthene-d10	61.4 %	40-150	"	"	"	"	"	"	

**Total Metals by EPA 6020B**

Date Sampled: **09/09/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Barium</b>	<b>25.6</b>	0.400	mg/kg dry	1	BEI0651	09/30/21	10/04/21	EPA 6020B	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/09/21 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>85.2</b>		%	1	BEI0646	09/30/21	09/30/21	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**SS03@14'**  
**2109137-02 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/09/21 13:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEI0201	09/09/21	09/09/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/09/21 13:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEI0200	09/09/21	09/09/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		128 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**SS03@14'**  
**2109137-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/09/21 13:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEI0589	09/28/21	09/30/21	EPA 8270D SIM	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		86.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		69.6 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B**

Date Sampled: **09/09/21 13:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Barium</b>	<b>135</b>	0.400	mg/kg dry	1	BEI0651	09/30/21	10/04/21	EPA 6020B	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/09/21 13:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>86.0</b>		%	1	BEI0646	09/30/21	09/30/21	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**SS04@6'**  
**2109137-03 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/09/21 13:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEI0201	09/09/21	09/09/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.3 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/09/21 13:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEI0200	09/09/21	09/09/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		125 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**SS04@6'**  
**2109137-03 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/09/21 13:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEI0589	09/28/21	09/30/21	EPA 8270D SIM	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		90.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		71.0 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B**

Date Sampled: **09/09/21 13:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Barium</b>	<b>99.0</b>	0.400	mg/kg dry	1	BEI0651	09/30/21	10/04/21	EPA 6020B	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/09/21 13:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>85.3</b>		%	1	BEI0646	09/30/21	09/30/21	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**SS05@14'**  
**2109137-04 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/09/21 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEI0201	09/09/21	09/09/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.9 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/09/21 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEI0200	09/09/21	09/10/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		127 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**SS05@14'**  
**2109137-04 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/09/21 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEI0589	09/28/21	09/30/21	EPA 8270D SIM	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	69.6 %	40-150			"	"	"	"	
Surrogate: Fluoranthene-d10	59.9 %	40-150			"	"	"	"	

**Total Metals by EPA 6020B**

Date Sampled: **09/09/21 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Barium</b>	<b>31.5</b>	0.400	mg/kg dry	1	BEI0651	09/30/21	10/04/21	EPA 6020B	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/09/21 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>85.2</b>		%	1	BEI0646	09/30/21	09/30/21	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**SS06@6'**  
**2109137-05 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/09/21 13:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEI0201	09/09/21	09/09/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.1 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/09/21 13:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEI0200	09/09/21	09/10/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		126 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**SS06@6'**  
**2109137-05 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/09/21 13:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEI0589	09/28/21	09/30/21	EPA 8270D SIM	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		76.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		65.0 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B**

Date Sampled: **09/09/21 13:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Barium</b>	<b>30.8</b>	0.400	mg/kg dry	1	BEI0651	09/30/21	10/04/21	EPA 6020B	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/09/21 13:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>85.8</b>		%	1	BEI0646	09/30/21	09/30/21	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**SS07@14'**  
**2109137-06 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/09/21 13:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEI0201	09/09/21	09/09/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		100 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.4 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/09/21 13:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEI0200	09/09/21	09/10/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		124 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**SS07@14'**  
**2109137-06 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/09/21 13:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEI0589	09/28/21	09/30/21	EPA 8270D SIM	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		67.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		61.1 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B**

Date Sampled: **09/09/21 13:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Barium</b>	<b>32.0</b>	0.400	mg/kg dry	1	BEI0651	09/30/21	10/04/21	EPA 6020B	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/09/21 13:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>86.0</b>		%	1	BEI0646	09/30/21	09/30/21	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**SS08@6'**  
**2109137-07 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/09/21 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEI0201	09/09/21	09/09/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.8 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/09/21 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEI0200	09/09/21	09/10/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		127 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**SS08@6'**  
**2109137-07 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/09/21 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEI0589	09/28/21	09/30/21	EPA 8270D SIM	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/09/21 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		99.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		72.0 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B**

Date Sampled: **09/09/21 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Barium</b>	<b>87.0</b>	0.400	mg/kg dry	1	BEI0651	09/30/21	10/04/21	EPA 6020B	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/09/21 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>83.6</b>		%	1	BEI0646	09/30/21	09/30/21	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

#### Batch BEI0201 - EPA 5030 Soil MS

##### Blank (BEI0201-BLK1)

Prepared: 09/09/21 Analyzed: 09/10/21

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
1,2,4-Trimethylbenzene	ND	0.0050	"								
1,3,5-Trimethylbenzene	ND	0.0050	"								
Naphthalene	ND	0.0038	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
Surrogate: 1,2-Dichloroethane-d4	0.0426		"	0.0400		107		23-173			
Surrogate: Toluene-d8	0.0430		"	0.0400		107		20-170			
Surrogate: 4-Bromofluorobenzene	0.0388		"	0.0400		96.9		21-167			

##### LCS (BEI0201-BS1)

Prepared: 09/09/21 Analyzed: 09/10/21

Benzene	0.0630	0.0020	mg/kg	0.0750		84.0		70-130			
Toluene	0.0760	0.0050	"	0.0750		101		70-130			
Ethylbenzene	0.0772	0.0050	"	0.0750		103		70-130			
m,p-Xylene	0.157	0.010	"	0.150		105		70-130			
o-Xylene	0.0806	0.0050	"	0.0750		107		70-130			
1,2,4-Trimethylbenzene	0.0806	0.0050	"	0.0750		107		70-130			
1,3,5-Trimethylbenzene	0.0765	0.0050	"	0.0750		102		70-130			
Naphthalene	0.0787	0.0038	"	0.0750		105		70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0342		"	0.0400		85.6		23-173			
Surrogate: Toluene-d8	0.0398		"	0.0400		99.6		20-170			
Surrogate: 4-Bromofluorobenzene	0.0400		"	0.0400		100		21-167			

##### Matrix Spike (BEI0201-MS1)

Source: 2109134-01

Prepared: 09/09/21 Analyzed: 09/10/21

Benzene	0.0659	0.0020	mg/kg	0.0750	ND	87.9		70-130			
Toluene	0.0767	0.0050	"	0.0750	ND	102		70-130			
Ethylbenzene	0.0783	0.0050	"	0.0750	ND	104		70-130			
m,p-Xylene	0.159	0.010	"	0.150	ND	106		70-130			
o-Xylene	0.0832	0.0050	"	0.0750	ND	111		70-130			
1,2,4-Trimethylbenzene	0.0830	0.0050	"	0.0750	ND	111		70-130			
1,3,5-Trimethylbenzene	0.0776	0.0050	"	0.0750	ND	103		70-130			
Naphthalene	0.0935	0.0038	"	0.0750	ND	125		70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0372		"	0.0400		93.0		23-173			
Surrogate: Toluene-d8	0.0392		"	0.0400		98.0		20-170			
Surrogate: 4-Bromofluorobenzene	0.0387		"	0.0400		96.8		21-167			

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:11

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0201 - EPA 5030 Soil MS**

Matrix Spike Dup (BEI0201-MSD1)	Source: 2109134-01			Prepared: 09/09/21 Analyzed: 09/10/21						
Benzene	0.0624	0.0020	mg/kg	0.0750	ND	83.2	70-130	5.47	30	
Toluene	0.0764	0.0050	"	0.0750	ND	102	70-130	0.431	30	
Ethylbenzene	0.0768	0.0050	"	0.0750	ND	102	70-130	1.90	30	
m,p-Xylene	0.152	0.010	"	0.150	ND	102	70-130	4.12	30	
o-Xylene	0.0820	0.0050	"	0.0750	ND	109	70-130	1.49	30	
1,2,4-Trimethylbenzene	0.0827	0.0050	"	0.0750	ND	110	70-130	0.326	30	
1,3,5-Trimethylbenzene	0.0776	0.0050	"	0.0750	ND	103	70-130	0.00	30	
Naphthalene	0.0909	0.0038	"	0.0750	ND	121	70-130	2.83	30	
Surrogate: 1,2-Dichloroethane-d4	0.0376		"	0.0400		94.0	23-173			
Surrogate: Toluene-d8	0.0394		"	0.0400		98.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400		97.6	21-167			

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:11

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BEI0200 - EPA 3550A**

**Blank (BEI0200-BLK1)**

Prepared: 09/09/21 Analyzed: 09/10/21

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							

**LCS (BEI0200-BS1)**

Prepared: 09/09/21 Analyzed: 09/10/21

C10-C28 (DRO)	601	50	mg/kg	500	120	70-130				
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**Matrix Spike (BEI0200-MS1)**

Source: 2109134-01

Prepared: 09/09/21 Analyzed: 09/10/21

C10-C28 (DRO)	401	50	mg/kg	500	18.5	76.4	70-130			
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**Matrix Spike Dup (BEI0200-MSD1)**

Source: 2109134-01

Prepared: 09/09/21 Analyzed: 09/10/21

C10-C28 (DRO)	395	50	mg/kg	500	18.5	75.2	70-130	1.47	20	
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Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

**PAH by EPA Method 8270D SIM - Quality Control**

**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0589 - EPA 5030 Soil MS**

**Blank (BEI0589-BLK1)**

Prepared: 09/28/21 Analyzed: 09/30/21

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0188</i>		"	<i>0.0333</i>		<i>56.4</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0203</i>		"	<i>0.0333</i>		<i>60.9</i>	<i>40-150</i>			

**LCS (BEI0589-BS1)**

Prepared: 09/28/21 Analyzed: 09/30/21

Acenaphthene	0.0274	0.00500	mg/kg	0.0333		82.2	31-137			
Anthracene	0.0316	0.00500	"	0.0333		94.7	30-120			
Benzo (a) anthracene	0.0314	0.00500	"	0.0333		94.2	30-120			
Benzo (a) pyrene	0.0318	0.00500	"	0.0333		95.3	30-120			
Benzo (b) fluoranthene	0.0228	0.00500	"	0.0333		68.4	30-120			
Benzo (k) fluoranthene	0.0290	0.00500	"	0.0333		87.1	30-120			
Chrysene	0.0313	0.00500	"	0.0333		94.0	30-120			
Dibenz (a,h) anthracene	0.0337	0.00500	"	0.0333		101	30-120			
Fluoranthene	0.0330	0.00500	"	0.0333		98.9	30-120			
Fluorene	0.0273	0.00500	"	0.0333		82.0	30-120			
Indeno (1,2,3-cd) pyrene	0.0321	0.00500	"	0.0333		96.3	30-120			
Pyrene	0.0336	0.00500	"	0.0333		101	35-142			
1-Methylnaphthalene	0.0363	0.00500	"	0.0333		109	35-142			
2-Methylnaphthalene	0.0319	0.00500	"	0.0333		95.8	35-142			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0167</i>		"	<i>0.0333</i>		<i>50.0</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0138</i>		"	<i>0.0333</i>		<i>41.3</i>	<i>40-150</i>			

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
10/04/21 13:11

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch BEI0589 - EPA 5030 Soil MS

Matrix Spike (BEI0589-MS1)	Source: 2109388-01			Prepared: 09/28/21 Analyzed: 09/30/21						
Acenaphthene	0.0401	0.00500	mg/kg	0.0333	0.0153	74.5	31-137			
Anthracene	0.0253	0.00500	"	0.0333	ND	76.0	30-120			
Benzo (a) anthracene	0.0313	0.00500	"	0.0333	0.00645	74.6	30-120			
Benzo (a) pyrene	0.0262	0.00500	"	0.0333	ND	78.7	30-120			
Benzo (b) fluoranthene	0.0233	0.00500	"	0.0333	ND	69.8	30-120			
Benzo (k) fluoranthene	0.0253	0.00500	"	0.0333	ND	75.8	30-120			
Chrysene	0.0310	0.00500	"	0.0333	ND	93.1	30-120			
Dibenz (a,h) anthracene	0.0224	0.00500	"	0.0333	ND	67.1	30-120			
Fluoranthene	0.0293	0.00500	"	0.0333	ND	88.0	30-120			
Fluorene	0.0366	0.00500	"	0.0333	0.0329	11.1	30-120			QM-07
Indeno (1,2,3-cd) pyrene	0.0228	0.00500	"	0.0333	ND	68.3	30-120			
Pyrene	0.0357	0.00500	"	0.0333	ND	107	35-142			
1-Methylnaphthalene	0.382	0.00500	"	0.0333	0.297	256	15-130			QM-07
2-Methylnaphthalene	0.495	0.00500	"	0.0333	0.411	254	15-130			QM-07
Surrogate: 2-Methylnaphthalene-d10	0.0149		"	0.0333		44.6	40-150			
Surrogate: Fluoranthene-d10	0.0168		"	0.0333		50.4	40-150			

Matrix Spike Dup (BEI0589-MSD1)	Source: 2109388-01			Prepared: 09/28/21 Analyzed: 09/30/21						
Acenaphthene	0.0435	0.00500	mg/kg	0.0333	0.0153	84.8	31-137	8.25	30	
Anthracene	0.0241	0.00500	"	0.0333	ND	72.3	30-120	5.00	30	
Benzo (a) anthracene	0.0329	0.00500	"	0.0333	0.00645	79.4	30-120	5.07	30	
Benzo (a) pyrene	0.0265	0.00500	"	0.0333	ND	79.4	30-120	0.930	30	
Benzo (b) fluoranthene	0.0231	0.00500	"	0.0333	ND	69.3	30-120	0.739	30	
Benzo (k) fluoranthene	0.0255	0.00500	"	0.0333	ND	76.5	30-120	0.932	30	
Chrysene	0.0307	0.00500	"	0.0333	ND	92.0	30-120	1.15	30	
Dibenz (a,h) anthracene	0.0236	0.00500	"	0.0333	ND	70.7	30-120	5.20	30	
Fluoranthene	0.0301	0.00500	"	0.0333	ND	90.2	30-120	2.45	30	
Fluorene	0.0411	0.00500	"	0.0333	0.0329	24.6	30-120	11.6	30	QM-07
Indeno (1,2,3-cd) pyrene	0.0244	0.00500	"	0.0333	ND	73.1	30-120	6.69	30	
Pyrene	0.0406	0.00500	"	0.0333	ND	122	35-142	12.8	30	
1-Methylnaphthalene	0.392	0.00500	"	0.0333	0.297	285	15-130	2.52	50	QM-07
2-Methylnaphthalene	0.571	0.00500	"	0.0333	0.411	482	15-130	14.2	50	QM-07
Surrogate: 2-Methylnaphthalene-d10	0.0172		"	0.0333		51.6	40-150			
Surrogate: Fluoranthene-d10	0.0156		"	0.0333		46.7	40-150			

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:11

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BEI0651 - EPA 3050B**

<b>Blank (BEI0651-BLK1)</b>		Prepared: 09/30/21 Analyzed: 10/04/21									
Barium	ND	0.400	mg/kg wet								
<b>LCS (BEI0651-BS1)</b>		Prepared: 09/30/21 Analyzed: 10/04/21									
Barium	44.6	0.400	mg/kg wet	40.0		112	80-120				
<b>Duplicate (BEI0651-DUP1)</b>		<b>Source: 2109137-01</b>		Prepared: 09/30/21 Analyzed: 10/04/21							
Barium	27.6	0.400	mg/kg dry		25.6			7.55	20		
<b>Matrix Spike (BEI0651-MS1)</b>		<b>Source: 2109137-01</b>		Prepared: 09/30/21 Analyzed: 10/04/21							
Barium	73.3	0.400	mg/kg dry	46.9	25.6	102	75-125				
<b>Matrix Spike Dup (BEI0651-MSD1)</b>		<b>Source: 2109137-01</b>		Prepared: 09/30/21 Analyzed: 10/04/21							
Barium	70.6	0.400	mg/kg dry	46.9	25.6	96.0	75-125	3.76	25		

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:11

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike	Source	%REC			RPD	Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0646 - General Preparation**

**Duplicate (BEI0646-DUP1)**

**Source: 2109137-01**

Prepared & Analyzed: 09/30/21

% Solids	86.0		%		85.2			0.886	20	
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Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:11

### Notes and Definitions

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 04, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Buffalo Gardens 41-13 Tank Battery

Work Order #2109148

Enclosed are the results of analyses for samples received by Summit Scientific on 09/10/21 18:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large, stylized 'M' and 'P'.

Muri Premer For Paul Shrewsbury  
President



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BKG02@2.5'	2109148-01	Soil	09/10/21 08:16	09/10/21 18:00
BKG02@6'	2109148-02	Soil	09/10/21 08:18	09/10/21 18:00
BKG02@15'	2109148-03	Soil	09/10/21 08:35	09/10/21 18:00
SS09@14'	2109148-04	Soil	09/10/21 10:46	09/10/21 18:00
SS10@6'	2109148-05	Soil	09/10/21 11:04	09/10/21 18:00
SS11@2.5'	2109148-06	Soil	09/10/21 11:24	09/10/21 18:00

Summit Scientific

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2109148

# Summit Scientific

S.

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310

Page | of |

Client: PDC / Tasman Project Manager: Mark Longhurst  
 Address: 6855 W 119th Ave E-Mail: mark.longhurst@PDCE.com  
 City/State/Zip: Broomfield/ CO/ 80020  
 Phone: 303-487-1228 Project Name: Buffalo Gardens 41-13 Tank Battery  
 Sampler Name: Dylan Brightwell Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5-TMB	Boron - HWS	pH, EC, SAR	Metals - 915	
1	BK602 @ 2.5'	9/10/21	8:16	1			X			X						X	X	X	pH, EC, SAR by saturated paste
2	BK602 @ 6'	↓	8:18	1			X			X					X	X	X		
3	BK602 @ 15'		8:35	1			X			X					X	X	X		
4	SS09 @ 14'		10:46	3			X			X		X	X						
5	SS10 @ 6'		11:04	3			X			X		X	X						
6	SS11 @ 2.5'		11:24	3			X			X				X	X				
7																			
8																			
9																			
10																			

Relinquished by: Dylan Brightwell Date/Time: 9/10/21 12:30	Received by: Tasman's Lock Box Date/Time: 9/10/21 12:30	<b>Turn Around Time (Check)</b> Same Day <input checked="" type="checkbox"/> 72 hours ___ 24 hours ___ Standard ___ 48 hours ___ <b>Sample Integrity:</b> Temperature Upon Receipt: 5 Samples Intact: <input checked="" type="radio"/> Yes No	<b>Notes:</b>
Relinquished by: Tasman's Lock Box Date/Time: 9/10/21 1800	Received by: Will Spahr Date/Time: 9/10/21 1800		
Relinquished by:	Received by:		

### Sample Receipt Checklist

S2 Work Order 2109148

Client: PDC Client Project ID: Buffalo Gardens 41-13 TB

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other \_\_\_\_\_ Airbill #: \_\_\_\_\_

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Temp (°C)	5.0
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	✓			
Were all samples received intact <sup>(1)</sup> ?	✓			
Was adequate sample volume provided <sup>(1)</sup> ?	✓			
If custody seals are present, are they intact <sup>(1)</sup> ?			✓	
Are samples with holding times due within 48 hours sample due within 48 hours present?	✓			Rush
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	✓			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	✓			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	✓			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			✓	
Are samples preserved that require preservation <b>(excluding cooling)</b> <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			✓	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	

Additional Comments (if any):

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

PS  
Custodian Printed Name or Initials

\_\_\_\_\_  
Signature of Custodian

9/10/21  
Date/Time



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**BKG02@2.5'**  
**2109148-01 (Soil)**

Summit Scientific

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **09/10/21 08:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BEI0244	09/13/21	09/14/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **09/10/21 08:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.73	0.209	mg/kg dry	1	BEI0295	09/14/21	09/15/21	EPA 6020B	
Barium	68.1	0.418	"	"	"	"	"	"	
Cadmium	ND	0.209	"	"	"	"	"	"	
Copper	7.08	0.418	"	"	"	"	"	"	
Lead	5.53	0.209	"	"	"	"	"	"	
Nickel	8.20	0.418	"	"	"	"	"	"	
Selenium	0.473	0.272	"	"	"	"	"	"	
Silver	0.0344	0.0209	"	"	"	"	"	"	
Zinc	30.8	0.418	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **09/10/21 08:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BEI0321	09/15/21	09/15/21	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **09/10/21 08:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	0.970	0.0523	mg/L dry	1	BEI0240	09/13/21	09/14/21	EPA 6020B	
Magnesium	0.745	0.0523	"	"	"	"	"	"	
Sodium	0.112	0.0523	"	"	"	"	"	"	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**BKG02@2.5'**  
**2109148-01 (Soil)**

**Summit Scientific**

**Calculated Analysis**

Date Sampled: **09/10/21 08:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0208	0.00100	units	1	BEI0300	09/14/21	09/14/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/10/21 08:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	95.6		%	1	BEI0245	09/13/21	09/13/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **09/10/21 08:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.0575	0.0100	mmhos/cm	1	BEI0243	09/13/21	09/13/21	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **09/10/21 08:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.33		pH Units	1	BEI0242	09/13/21	09/13/21	EPA 9045D	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**BKG02@6'**  
**2109148-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **09/10/21 08:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Boron	ND	0.0100		mg/L	1	BEI0244	09/13/21	09/14/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **09/10/21 08:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Arsenic	<b>2.34</b>	0.212		mg/kg dry	1	BEI0295	09/14/21	09/15/21	EPA 6020B	
Barium	<b>53.7</b>	0.425		"	"	"	"	"	"	
Cadmium	ND	0.212		"	"	"	"	"	"	
Copper	<b>6.71</b>	0.425		"	"	"	"	"	"	
Lead	<b>5.70</b>	0.212		"	"	"	"	"	"	
Nickel	<b>4.91</b>	0.425		"	"	"	"	"	"	
Selenium	<b>0.474</b>	0.276		"	"	"	"	"	"	
Silver	ND	0.0212		"	"	"	"	"	"	
Zinc	<b>23.4</b>	0.425		"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **09/10/21 08:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BEI0321	09/15/21	09/15/21	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **09/10/21 08:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Calcium	<b>12.7</b>	0.0531		mg/L dry	1	BEI0240	09/13/21	09/14/21	EPA 6020B	
Magnesium	<b>2.07</b>	0.0531		"	"	"	"	"	"	
Sodium	<b>2.10</b>	0.0531		"	"	"	"	"	"	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**BKG02@6'**  
**2109148-02 (Soil)**

**Summit Scientific**

**Calculated Analysis**

Date Sampled: **09/10/21 08:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	<b>0.144</b>	0.00100	units	1	BEI0300	09/14/21	09/14/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/10/21 08:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	<b>94.1</b>		%	1	BEI0245	09/13/21	09/13/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **09/10/21 08:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	<b>1.15</b>	0.0100	mmhos/cm	1	BEI0243	09/13/21	09/13/21	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **09/10/21 08:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	<b>8.28</b>		pH Units	1	BEI0242	09/13/21	09/13/21	EPA 9045D	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**BKG02@15'**  
**2109148-03 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **09/10/21 08:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Boron	ND	0.0100		mg/L	1	BEI0244	09/13/21	09/14/21	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **09/10/21 08:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Arsenic	5.52	0.219		mg/kg dry	1	BEI0295	09/14/21	09/15/21	EPA 6020B	
Barium	53.1	0.437		"	"	"	"	"	"	
Cadmium	ND	0.219		"	"	"	"	"	"	
Copper	15.9	0.437		"	"	"	"	"	"	
Lead	10.9	0.219		"	"	"	"	"	"	
Nickel	13.3	0.437		"	"	"	"	"	"	
Selenium	0.737	0.284		"	"	"	"	"	"	
Silver	0.0269	0.0219		"	"	"	"	"	"	
Zinc	94.7	0.437		"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **09/10/21 08:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BEI0321	09/15/21	09/15/21	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **09/10/21 08:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Calcium	4.98	0.0547		mg/L dry	1	BEI0240	09/13/21	09/14/21	EPA 6020B	
Magnesium	2.27	0.0547		"	"	"	"	"	"	
Sodium	2.20	0.0547		"	"	"	"	"	"	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**BKG02@15'**  
**2109148-03 (Soil)**

**Summit Scientific**

**Calculated Analysis**

Date Sampled: **09/10/21 08:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	<b>0.205</b>	0.00100	units	1	BEI0300	09/14/21	09/14/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/10/21 08:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	<b>91.4</b>		%	1	BEI0245	09/13/21	09/13/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **09/10/21 08:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	<b>0.500</b>	0.0100	mmhos/cm	1	BEI0243	09/13/21	09/13/21	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **09/10/21 08:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	<b>8.56</b>		pH Units	1	BEI0242	09/13/21	09/13/21	EPA 9045D	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**SS09@14'**  
**2109148-04 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/10/21 10:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>0.017</b>	0.0020	mg/kg	1	BEI0228	09/10/21	09/11/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
<b>Naphthalene</b>	<b>0.0078</b>	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/10/21 10:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.3 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/10/21 10:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEI0229	"	09/11/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/10/21 10:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		86.9 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**SS09@14'**  
**2109148-04 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/10/21 10:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEI0589	09/28/21	09/30/21	EPA 8270D SIM	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/10/21 10:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	98.3 %	40-150	"	"	"	"	"	"	
Surrogate: Fluoranthene-d10	74.5 %	40-150	"	"	"	"	"	"	

**Total Metals by EPA 6020B**

Date Sampled: **09/10/21 10:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Barium</b>	<b>28.5</b>	0.400	mg/kg dry	1	BEI0651	09/30/21	10/04/21	EPA 6020B	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/10/21 10:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>76.6</b>		%	1	BEI0646	09/30/21	09/30/21	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**SS10@6'**  
**2109148-05 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/10/21 11:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEI0228	09/10/21	09/11/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/10/21 11:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		121 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.5 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/10/21 11:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEI0229	"	09/11/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/10/21 11:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		86.6 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**SS10@6'**  
**2109148-05 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/10/21 11:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEI0589	09/28/21	09/30/21	EPA 8270D SIM	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/10/21 11:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		90.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		71.2 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B**

Date Sampled: **09/10/21 11:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Barium</b>	<b>90.6</b>	0.400	mg/kg dry	1	BEI0651	09/30/21	10/04/21	EPA 6020B	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/10/21 11:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>76.6</b>		%	1	BEI0646	09/30/21	09/30/21	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**SS11@2.5'**  
**2109148-06 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **09/10/21 11:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BEI0244	09/13/21	09/14/21	EPA 6020B	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **09/10/21 11:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	<b>13.4</b>	0.0545	mg/L dry	1	BEI0240	09/13/21	09/14/21	EPA 6020B	
Magnesium	<b>2.23</b>	0.0545	"	"	"	"	"	"	
Sodium	<b>0.474</b>	0.0545	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **09/10/21 11:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	<b>0.0316</b>	0.00100	units	1	BEI0300	09/14/21	09/14/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/10/21 11:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	<b>91.8</b>		%	1	BEI0282	09/14/21	09/14/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **09/10/21 11:24**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	<b>0.146</b>	0.0100	mmhos/cm	1	BEI0243	09/13/21	09/13/21	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:17

**SS11@2.5'**  
**2109148-06 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **09/10/21 11:24**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>8.70</b>		pH Units	1	BEI0242	09/13/21	09/13/21	EPA 9045D	

Summit Scientific



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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

#### Batch BEI0228 - EPA 5030 Soil MS

##### Blank (BEI0228-BLK1)

Prepared: 09/10/21 Analyzed: 09/11/21

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
1,2,4-Trimethylbenzene	ND	0.0050	"								
1,3,5-Trimethylbenzene	ND	0.0050	"								
Naphthalene	ND	0.0038	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0414</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>		<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0373</i>		<i>"</i>	<i>0.0400</i>		<i>93.2</i>		<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0367</i>		<i>"</i>	<i>0.0400</i>		<i>91.8</i>		<i>21-167</i>			

##### LCS (BEI0228-BS1)

Prepared: 09/10/21 Analyzed: 09/11/21

Benzene	0.0942	0.0020	mg/kg	0.100		94.2		70-130			
Toluene	0.0761	0.0050	"	0.100		76.1		70-130			
Ethylbenzene	0.0784	0.0050	"	0.100		78.4		70-130			
m,p-Xylene	0.157	0.010	"	0.200		78.5		70-130			
o-Xylene	0.0808	0.0050	"	0.100		80.8		70-130			
1,2,4-Trimethylbenzene	0.0772	0.0050	"	0.100		77.2		70-130			
1,3,5-Trimethylbenzene	0.0738	0.0050	"	0.100		73.8		70-130			
Naphthalene	0.0786	0.0038	"	0.100		78.6		70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0345</i>		<i>"</i>	<i>0.0400</i>		<i>86.2</i>		<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0389</i>		<i>"</i>	<i>0.0400</i>		<i>97.2</i>		<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0376</i>		<i>"</i>	<i>0.0400</i>		<i>94.1</i>		<i>21-167</i>			

##### Matrix Spike (BEI0228-MS1)

Source: 2109148-04

Prepared: 09/10/21 Analyzed: 09/11/21

Benzene	0.110	0.0020	mg/kg	0.100	0.0174	92.3		70-130			
Toluene	0.0741	0.0050	"	0.100	ND	74.1		70-130			
Ethylbenzene	0.0798	0.0050	"	0.100	ND	79.8		70-130			
m,p-Xylene	0.158	0.010	"	0.200	ND	79.2		70-130			
o-Xylene	0.0836	0.0050	"	0.100	ND	83.6		70-130			
1,2,4-Trimethylbenzene	0.0825	0.0050	"	0.100	ND	82.5		70-130			
1,3,5-Trimethylbenzene	0.0778	0.0050	"	0.100	ND	77.8		70-130			
Naphthalene	0.0872	0.0038	"	0.100	0.00783	79.4		70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0327</i>		<i>"</i>	<i>0.0400</i>		<i>81.8</i>		<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0382</i>		<i>"</i>	<i>0.0400</i>		<i>95.5</i>		<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0386</i>		<i>"</i>	<i>0.0400</i>		<i>96.4</i>		<i>21-167</i>			

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:17

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BEI0228 - EPA 5030 Soil MS**

Matrix Spike Dup (BEI0228-MSD1)	Source: 2109148-04			Prepared: 09/10/21 Analyzed: 09/11/21						
Benzene	0.0903	0.0020	mg/kg	0.100	0.0174	72.9	70-130	19.4	30	
Toluene	0.0732	0.0050	"	0.100	ND	73.2	70-130	1.22	30	
Ethylbenzene	0.0773	0.0050	"	0.100	ND	77.3	70-130	3.13	30	
m,p-Xylene	0.154	0.010	"	0.200	ND	76.8	70-130	3.04	30	
o-Xylene	0.0830	0.0050	"	0.100	ND	83.0	70-130	0.828	30	
1,2,4-Trimethylbenzene	0.0823	0.0050	"	0.100	ND	82.3	70-130	0.218	30	
1,3,5-Trimethylbenzene	0.0767	0.0050	"	0.100	ND	76.7	70-130	1.40	30	
Naphthalene	0.0964	0.0038	"	0.100	0.00783	88.6	70-130	9.97	30	
Surrogate: 1,2-Dichloroethane-d4	0.0353		"	0.0400		88.3	23-173			
Surrogate: Toluene-d8	0.0374		"	0.0400		93.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.2	21-167			

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:17

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BEI0229 - EPA 3550A**

**Blank (BEI0229-BLK1)**

Prepared: 09/10/21 Analyzed: 09/11/21

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							

**LCS (BEI0229-BS1)**

Prepared: 09/10/21 Analyzed: 09/11/21

C10-C28 (DRO)	612	50	mg/kg	500	122	70-130				
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**Matrix Spike (BEI0229-MS1)**

Source: 2109148-04

Prepared: 09/10/21 Analyzed: 09/11/21

C10-C28 (DRO)	536	50	mg/kg	500	14.8	104	70-130			
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**Matrix Spike Dup (BEI0229-MSD1)**

Source: 2109148-04

Prepared: 09/10/21 Analyzed: 09/11/21

C10-C28 (DRO)	512	50	mg/kg	500	14.8	99.5	70-130	4.51	20	
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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**PAH by EPA Method 8270D SIM - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BEI0589 - EPA 5030 Soil MS**

**Blank (BEI0589-BLK1)**

Prepared: 09/28/21 Analyzed: 09/30/21

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0188</i>		"	<i>0.0333</i>		<i>56.4</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0203</i>		"	<i>0.0333</i>		<i>60.9</i>	<i>40-150</i>			

**LCS (BEI0589-BS1)**

Prepared: 09/28/21 Analyzed: 09/30/21

Acenaphthene	0.0274	0.00500	mg/kg	0.0333		82.2	31-137			
Anthracene	0.0316	0.00500	"	0.0333		94.7	30-120			
Benzo (a) anthracene	0.0314	0.00500	"	0.0333		94.2	30-120			
Benzo (a) pyrene	0.0318	0.00500	"	0.0333		95.3	30-120			
Benzo (b) fluoranthene	0.0228	0.00500	"	0.0333		68.4	30-120			
Benzo (k) fluoranthene	0.0290	0.00500	"	0.0333		87.1	30-120			
Chrysene	0.0313	0.00500	"	0.0333		94.0	30-120			
Dibenz (a,h) anthracene	0.0337	0.00500	"	0.0333		101	30-120			
Fluoranthene	0.0330	0.00500	"	0.0333		98.9	30-120			
Fluorene	0.0273	0.00500	"	0.0333		82.0	30-120			
Indeno (1,2,3-cd) pyrene	0.0321	0.00500	"	0.0333		96.3	30-120			
Pyrene	0.0336	0.00500	"	0.0333		101	35-142			
1-Methylnaphthalene	0.0363	0.00500	"	0.0333		109	35-142			
2-Methylnaphthalene	0.0319	0.00500	"	0.0333		95.8	35-142			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0167</i>		"	<i>0.0333</i>		<i>50.0</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0138</i>		"	<i>0.0333</i>		<i>41.3</i>	<i>40-150</i>			

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
10/04/21 13:17

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch BEI0589 - EPA 5030 Soil MS

Matrix Spike (BEI0589-MS1)	Source: 2109388-01			Prepared: 09/28/21 Analyzed: 09/30/21					
Acenaphthene	0.0401	0.00500	mg/kg	0.0333	0.0153	74.5	31-137		
Anthracene	0.0253	0.00500	"	0.0333	ND	76.0	30-120		
Benzo (a) anthracene	0.0313	0.00500	"	0.0333	0.00645	74.6	30-120		
Benzo (a) pyrene	0.0262	0.00500	"	0.0333	ND	78.7	30-120		
Benzo (b) fluoranthene	0.0233	0.00500	"	0.0333	ND	69.8	30-120		
Benzo (k) fluoranthene	0.0253	0.00500	"	0.0333	ND	75.8	30-120		
Chrysene	0.0310	0.00500	"	0.0333	ND	93.1	30-120		
Dibenz (a,h) anthracene	0.0224	0.00500	"	0.0333	ND	67.1	30-120		
Fluoranthene	0.0293	0.00500	"	0.0333	ND	88.0	30-120		
Fluorene	0.0366	0.00500	"	0.0333	0.0329	11.1	30-120		QM-07
Indeno (1,2,3-cd) pyrene	0.0228	0.00500	"	0.0333	ND	68.3	30-120		
Pyrene	0.0357	0.00500	"	0.0333	ND	107	35-142		
1-Methylnaphthalene	0.382	0.00500	"	0.0333	0.297	256	15-130		QM-07
2-Methylnaphthalene	0.495	0.00500	"	0.0333	0.411	254	15-130		QM-07
Surrogate: 2-Methylnaphthalene-d10	0.0149		"	0.0333		44.6	40-150		
Surrogate: Fluoranthene-d10	0.0168		"	0.0333		50.4	40-150		

Matrix Spike Dup (BEI0589-MSD1)	Source: 2109388-01			Prepared: 09/28/21 Analyzed: 09/30/21					
Acenaphthene	0.0435	0.00500	mg/kg	0.0333	0.0153	84.8	31-137	8.25	30
Anthracene	0.0241	0.00500	"	0.0333	ND	72.3	30-120	5.00	30
Benzo (a) anthracene	0.0329	0.00500	"	0.0333	0.00645	79.4	30-120	5.07	30
Benzo (a) pyrene	0.0265	0.00500	"	0.0333	ND	79.4	30-120	0.930	30
Benzo (b) fluoranthene	0.0231	0.00500	"	0.0333	ND	69.3	30-120	0.739	30
Benzo (k) fluoranthene	0.0255	0.00500	"	0.0333	ND	76.5	30-120	0.932	30
Chrysene	0.0307	0.00500	"	0.0333	ND	92.0	30-120	1.15	30
Dibenz (a,h) anthracene	0.0236	0.00500	"	0.0333	ND	70.7	30-120	5.20	30
Fluoranthene	0.0301	0.00500	"	0.0333	ND	90.2	30-120	2.45	30
Fluorene	0.0411	0.00500	"	0.0333	0.0329	24.6	30-120	11.6	30
Indeno (1,2,3-cd) pyrene	0.0244	0.00500	"	0.0333	ND	73.1	30-120	6.69	30
Pyrene	0.0406	0.00500	"	0.0333	ND	122	35-142	12.8	30
1-Methylnaphthalene	0.392	0.00500	"	0.0333	0.297	285	15-130	2.52	50
2-Methylnaphthalene	0.571	0.00500	"	0.0333	0.411	482	15-130	14.2	50
Surrogate: 2-Methylnaphthalene-d10	0.0172		"	0.0333		51.6	40-150		
Surrogate: Fluoranthene-d10	0.0156		"	0.0333		46.7	40-150		

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:17

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**  
**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BEI0244 - EPA 3050B**

**Blank (BEI0244-BLK1)**

Prepared: 09/13/21 Analyzed: 09/14/21

Boron ND 0.0100 mg/L

**LCS (BEI0244-BS1)**

Prepared: 09/13/21 Analyzed: 09/14/21

Boron 4.88 0.0100 mg/L 5.00 97.6 80-120

**Duplicate (BEI0244-DUP1)**

**Source: 2109091-02**

Prepared: 09/13/21 Analyzed: 09/14/21

Boron ND 0.0100 mg/L ND 20

**Matrix Spike (BEI0244-MS1)**

**Source: 2109091-02**

Prepared: 09/13/21 Analyzed: 09/14/21

Boron 5.00 0.0100 mg/L 5.00 ND 100 75-125

**Matrix Spike Dup (BEI0244-MSD1)**

**Source: 2109091-02**

Prepared: 09/13/21 Analyzed: 09/14/21

Boron 4.70 0.0100 mg/L 5.00 ND 94.0 75-125 6.22 25

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0295 - EPA 3050B**

**Blank (BEI0295-BLK1)**

Prepared: 09/14/21 Analyzed: 09/15/21

Arsenic	ND	0.200	mg/kg wet							
Barium	ND	0.400	"							
Cadmium	ND	0.200	"							
Copper	ND	0.400	"							
Lead	ND	0.200	"							
Nickel	ND	0.400	"							
Selenium	ND	0.260	"							
Silver	ND	0.0200	"							
Zinc	ND	0.400	"							

**LCS (BEI0295-BS1)**

Prepared: 09/14/21 Analyzed: 09/15/21

Arsenic	42.7	0.200	mg/kg wet	40.0		107	80-120
Barium	37.0	0.400	"	40.0		92.5	80-120
Cadmium	2.07	0.200	"	2.00		103	80-120
Copper	38.9	0.400	"	40.0		97.3	80-120
Lead	18.0	0.200	"	20.0		90.2	80-120
Nickel	37.7	0.400	"	40.0		94.2	80-120
Selenium	3.86	0.260	"	4.00		96.5	80-120
Silver	1.72	0.0200	"	2.00		85.9	80-120
Zinc	45.0	0.400	"	40.0		112	80-120

**Duplicate (BEI0295-DUP1)**

Source: 2109136-01

Prepared: 09/14/21 Analyzed: 09/15/21

Arsenic	10.4	0.235	mg/kg dry		9.27		11.6	20
Barium	12.6	0.471	"		13.8		9.56	20
Cadmium	0.0453	0.235	"		0.0513		12.5	20
Copper	11.7	0.471	"		13.2		12.2	20
Lead	18.7	0.235	"		17.0		9.68	20
Nickel	9.32	0.471	"		9.18		1.50	20
Selenium	1.80	0.306	"		1.70		5.80	20
Silver	0.0388	0.0235	"		0.0403		3.58	20
Zinc	125	0.471	"		125		0.397	20

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

**Batch BEI0295 - EPA 3050B**

**Matrix Spike (BEI0295-MS1)**

Source: 2109136-01

Prepared: 09/14/21 Analyzed: 09/15/21

Arsenic	52.0	0.235	mg/kg dry	47.1	9.27	90.8	75-125			
Barium	55.9	0.471	"	47.1	13.8	89.4	75-125			
Cadmium	2.40	0.235	"	2.35	0.0513	99.9	75-125			
Copper	54.7	0.471	"	47.1	13.2	88.3	75-125			
Lead	44.7	0.235	"	23.5	17.0	117	75-125			
Nickel	50.7	0.471	"	47.1	9.18	88.2	75-125			
Selenium	5.64	0.306	"	4.71	1.70	83.8	75-125			
Silver	1.99	0.0235	"	2.35	0.0403	82.8	75-125			
Zinc	176	0.471	"	47.1	125	109	75-125			

**Matrix Spike Dup (BEI0295-MSD1)**

Source: 2109136-01

Prepared: 09/14/21 Analyzed: 09/15/21

Arsenic	63.1	0.235	mg/kg dry	47.1	9.27	114	75-125	19.3	25
Barium	55.9	0.471	"	47.1	13.8	89.3	75-125	0.129	25
Cadmium	2.50	0.235	"	2.35	0.0513	104	75-125	3.95	25
Copper	61.7	0.471	"	47.1	13.2	103	75-125	12.0	25
Lead	45.3	0.235	"	23.5	17.0	120	75-125	1.48	25
Nickel	57.0	0.471	"	47.1	9.18	102	75-125	11.7	25
Selenium	5.60	0.306	"	4.71	1.70	83.0	75-125	0.676	25
Silver	2.03	0.0235	"	2.35	0.0403	84.4	75-125	1.82	25
Zinc	175	0.471	"	47.1	125	107	75-125	0.521	25

**Batch BEI0651 - EPA 3050B**

**Blank (BEI0651-BLK1)**

Prepared: 09/30/21 Analyzed: 10/04/21

Barium	ND	0.400	mg/kg wet						
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**LCS (BEI0651-BS1)**

Prepared: 09/30/21 Analyzed: 10/04/21

Barium	44.6	0.400	mg/kg wet	40.0		112	80-120		
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Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:17

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0651 - EPA 3050B**

<b>Duplicate (BEI0651-DUP1)</b>		<b>Source: 2109137-01</b>			Prepared: 09/30/21		Analyzed: 10/04/21		
Barium	27.6	0.400	mg/kg dry	25.6		7.55		20	
<b>Matrix Spike (BEI0651-MS1)</b>		<b>Source: 2109137-01</b>			Prepared: 09/30/21		Analyzed: 10/04/21		
Barium	73.3	0.400	mg/kg dry	46.9	25.6	102	75-125		
<b>Matrix Spike Dup (BEI0651-MSD1)</b>		<b>Source: 2109137-01</b>			Prepared: 09/30/21		Analyzed: 10/04/21		
Barium	70.6	0.400	mg/kg dry	46.9	25.6	96.0	75-125	3.76	25

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:17

**Hexavalent Chromium by EPA Method 7196 - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0321 - 3060A Mod**

<b>Blank (BEI0321-BLK1)</b>		Prepared & Analyzed: 09/15/21								
Chromium, Hexavalent	ND	0.30	mg/kg wet							
<b>LCS (BEI0321-BS1)</b>		Prepared & Analyzed: 09/15/21								
Chromium, Hexavalent	24.5	0.30	mg/kg wet	25.0		98.0	80-120			
<b>Duplicate (BEI0321-DUP1)</b>		<b>Source: 2109148-01</b>			Prepared & Analyzed: 09/15/21					
Chromium, Hexavalent	ND	0.30	mg/kg dry		ND				20	
<b>Matrix Spike (BEI0321-MS1)</b>		<b>Source: 2109148-01</b>			Prepared & Analyzed: 09/15/21					
Chromium, Hexavalent	27.7	0.30	mg/kg dry	26.2	ND	106	75-125			
<b>Matrix Spike Dup (BEI0321-MSD1)</b>		<b>Source: 2109148-01</b>			Prepared & Analyzed: 09/15/21					
Chromium, Hexavalent	27.7	0.30	mg/kg dry	26.2	ND	106	75-125	0.00	20	

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:17

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BEI0240 - General Preparation**

**Blank (BEI0240-BLK1)**

Prepared & Analyzed: 09/13/21

Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

**LCS (BEI0240-BS1)**

Prepared & Analyzed: 09/13/21

Calcium	5.12	0.0500	mg/L wet	5.00		102	70-130			
Magnesium	4.88	0.0500	"	5.00		97.7	70-130			
Sodium	4.83	0.0500	"	5.00		96.6	70-130			

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:17

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BEI0245 - General Preparation**

<b>Duplicate (BEI0245-DUP1)</b>		<b>Source: 2109091-02</b>			<b>Prepared &amp; Analyzed: 09/13/21</b>					
% Solids	96.1		%		96.2			0.0998	20	

**Batch BEI0282 - General Preparation**

<b>Duplicate (BEI0282-DUP1)</b>		<b>Source: 2107097-07</b>			<b>Prepared &amp; Analyzed: 09/14/21</b>					
% Solids	84.8		%		84.4			0.434	20	

**Batch BEI0646 - General Preparation**

<b>Duplicate (BEI0646-DUP1)</b>		<b>Source: 2109137-01</b>			<b>Prepared &amp; Analyzed: 09/30/21</b>					
% Solids	86.0		%		85.2			0.886	20	

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:17

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			Limits	RPD	Limit		

**Batch BEI0243 - General Preparation**

**Blank (BEI0243-BLK1)**

Prepared & Analyzed: 09/13/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BEI0243-BS1)**

Prepared & Analyzed: 09/13/21

Specific Conductance (EC) 0.165 0.0100 mmhos/cm 0.150 110 90-110

**Duplicate (BEI0243-DUP1)**

Source: 2109095-01

Prepared & Analyzed: 09/13/21

Specific Conductance (EC) 0.311 0.0100 mmhos/cm 0.302 2.97 20

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:17

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike	Source	%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0242 - General Preparation**

**LCS (BEI0242-BS1)**

Prepared & Analyzed: 09/13/21

pH 9.33 pH Units 9.21 101 95-105

**Duplicate (BEI0242-DUP1)**

Source: 2109095-01

Prepared & Analyzed: 09/13/21

pH 8.77 pH Units 8.84 0.795 20

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:17

### Notes and Definitions

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 04, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Buffalo Gardens 41-13 Tank Battery

Work Order #2109179

Enclosed are the results of analyses for samples received by Summit Scientific on 09/13/21 18:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large, stylized 'M' and 'P'.

Muri Premer For Paul Shrewsbury  
President



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:25

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS12@14'	2109179-01	Soil	09/13/21 13:30	09/13/21 18:00
SS13@6'	2109179-02	Soil	09/13/21 13:34	09/13/21 18:00
SS14@2.5'	2109179-03	Soil	09/13/21 13:40	09/13/21 18:00

Summit Scientific

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# Summit Scientific

S<sub>2</sub>

2109179

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310

Client: PDC / Tasman Project Manager: Mark Longhurst  
Address: 6855 W 119th Ave E-Mail: mark.longhurst@PDCE.com  
City/State/Zip: Broomfield/ CO/ 80020  
Phone: 303-487-1228 Project Name: Buffalo Gardens 41-13 Tank Battery  
Sampler Name: Dylan Brightwell Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions			
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5-TMB	Boron - HWS	pH, EC, SAR					
1	SS 12 @ 14'	9/13/21	13:30	3			X			X				X	X	X						pH, EC, SAR by saturated paste
2	SS 13 @ 6'	↓	13:34	3			X			X				X	X	X						
3	SS 14 @ 2.5'	↓	13:40	3			X			X							X	X				
4																						
5																						
6																						
7																						
8																						
9																						
10																						

  

Relinquished by: Dylan Brightwell	Date/Time: 9/13/21 15:02	Received by: Tasman's Lock Box	Date/Time: 9/13/21 15:02	<b>Turn Around Time</b> (Check) Same Day <input checked="" type="checkbox"/> 72 hours ___ 24 hours ___ Standard ___ 48 hours ___ <b>Sample Integrity:</b> Temperature Upon Receipt: 10 Samples Intact: Yes No	<b>Notes:</b>
Relinquished by: Tasman's Lock Box	Date/Time: 09/13/2021	Received by: Will Sabi	Date/Time: 9/13/21 1800		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

2109179

Sample Receipt Checklist

S2 Work Order \_\_\_\_\_

Client: PDC/TASMAN Client Project ID: Buffalo Gardens 41-13 Tank Battery

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other \_\_\_\_\_ Airbill #: \_\_\_\_\_

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Temp (°C)	10
-----------	----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	on ice
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	same day
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

WG  
Custodian Printed Name or Initials

Will Labi  
Signature of Custodian

9/13/21  
Date/Time



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:25

**SS12@14'**  
**2109179-01 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/13/21 13:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BEI0273	09/13/21	09/13/21	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **09/13/21 13:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		103 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		105 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.2 %		21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/13/21 13:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BEI0274	09/13/21	09/13/21	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **09/13/21 13:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		85.3 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:25

**SS12@14'**  
**2109179-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/13/21 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEI0589	09/28/21	09/30/21	EPA 8270D SIM	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/13/21 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		75.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		62.4 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B**

Date Sampled: **09/13/21 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Barium</b>	<b>39.1</b>	0.400	mg/kg dry	1	BEI0651	09/30/21	10/04/21	EPA 6020B	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/13/21 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>86.3</b>		%	1	BEI0646	09/30/21	09/30/21	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:25

**SS13@6'**  
**2109179-02 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/13/21 13:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEI0273	09/13/21	09/13/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/13/21 13:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		106 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.5 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/13/21 13:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEI0274	09/13/21	09/13/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/13/21 13:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		88.8 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:25

**SS13@6'**  
**2109179-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/13/21 13:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEI0589	09/28/21	09/30/21	EPA 8270D SIM	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **09/13/21 13:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		72.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		64.4 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B**

Date Sampled: **09/13/21 13:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Barium</b>	<b>62.0</b>	0.400	mg/kg dry	1	BEI0651	09/30/21	10/04/21	EPA 6020B	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/13/21 13:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>88.5</b>		%	1	BEI0646	09/30/21	09/30/21	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:25

**SS14@2.5'**  
**2109179-03 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **09/13/21 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	0.0100	mg/L	1	BEI0313	09/15/21	09/17/21	EPA 6020B	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **09/13/21 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	<b>6.75</b>	0.0576	mg/L dry	1	BEI0350	09/16/21	09/21/21	EPA 6020B	
Magnesium	<b>3.52</b>	0.0576	"	"	"	"	"	"	
Sodium	<b>0.502</b>	0.0576	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **09/13/21 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	<b>0.0390</b>	0.00100	units	1	BEI0475	09/22/21	09/22/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **09/13/21 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	<b>86.8</b>		%	1	BEI0305	09/15/21	09/15/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **09/13/21 13:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	<b>0.204</b>	0.0100	mmhos/cm	1	BEI0351	09/16/21	09/17/21	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Summit Scientific

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



PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:25

**SS14@2.5'**  
**2109179-03 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **09/13/21 13:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>7.90</b>		pH Units	1	BEI0352	09/16/21	09/17/21	EPA 9045D	

Summit Scientific



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



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:25

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

#### Batch BEI0273 - EPA 5030 Soil MS

##### Blank (BEI0273-BLK1)

Prepared & Analyzed: 09/13/21

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0405</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0411</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.2</i>	<i>21-167</i>			

##### LCS (BEI0273-BS1)

Prepared & Analyzed: 09/13/21

Benzene	0.147	0.0020	mg/kg	0.150		97.7	70-130			
Toluene	0.121	0.0050	"	0.150		80.4	70-130			
Ethylbenzene	0.142	0.0050	"	0.150		94.5	70-130			
m,p-Xylene	0.270	0.010	"	0.300		89.9	70-130			
o-Xylene	0.147	0.0050	"	0.150		98.0	70-130			
1,2,4-Trimethylbenzene	0.137	0.0050	"	0.150		91.2	70-130			
1,3,5-Trimethylbenzene	0.134	0.0050	"	0.150		89.6	70-130			
Naphthalene	0.157	0.0038	"	0.150		105	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0413</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0373</i>		<i>"</i>	<i>0.0400</i>		<i>93.3</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0407</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>21-167</i>			

##### Matrix Spike (BEI0273-MS1)

Source: 2109170-01

Prepared & Analyzed: 09/13/21

Benzene	0.133	0.0020	mg/kg	0.150	ND	88.7	70-130			
Toluene	0.122	0.0050	"	0.150	ND	81.4	70-130			
Ethylbenzene	0.127	0.0050	"	0.150	ND	84.7	70-130			
m,p-Xylene	0.243	0.010	"	0.300	ND	81.0	70-130			
o-Xylene	0.130	0.0050	"	0.150	ND	86.8	70-130			
1,2,4-Trimethylbenzene	0.120	0.0050	"	0.150	ND	79.7	70-130			
1,3,5-Trimethylbenzene	0.118	0.0050	"	0.150	ND	78.7	70-130			
Naphthalene	0.139	0.0038	"	0.150	ND	92.5	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0423</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0419</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0414</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>21-167</i>			

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:25

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BEI0273 - EPA 5030 Soil MS**

Matrix Spike Dup (BEI0273-MSD1)	Source: 2109170-01			Prepared & Analyzed: 09/13/21						
Benzene	0.138	0.0020	mg/kg	0.150	ND	91.7	70-130	3.35	30	
Toluene	0.113	0.0050	"	0.150	ND	75.1	70-130	8.05	30	
Ethylbenzene	0.131	0.0050	"	0.150	ND	87.5	70-130	3.30	30	
m,p-Xylene	0.248	0.010	"	0.300	ND	82.7	70-130	2.02	30	
o-Xylene	0.133	0.0050	"	0.150	ND	89.0	70-130	2.46	30	
1,2,4-Trimethylbenzene	0.124	0.0050	"	0.150	ND	82.7	70-130	3.62	30	
1,3,5-Trimethylbenzene	0.122	0.0050	"	0.150	ND	81.0	70-130	2.98	30	
Naphthalene	0.141	0.0038	"	0.150	ND	94.2	70-130	1.78	30	
Surrogate: 1,2-Dichloroethane-d4	0.0424		"	0.0400		106	23-173			
Surrogate: Toluene-d8	0.0370		"	0.0400		92.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0399		"	0.0400		99.7	21-167			

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:25

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BEI0274 - EPA 3550A**

**Blank (BEI0274-BLK1)**

Prepared & Analyzed: 09/13/21

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							

**LCS (BEI0274-BS1)**

Prepared & Analyzed: 09/13/21

C10-C28 (DRO)	579	50	mg/kg	500	116	70-130				
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**Matrix Spike (BEI0274-MS1)**

Source: 2109174-01

Prepared & Analyzed: 09/13/21

C10-C28 (DRO)	575	50	mg/kg	500	13.3	112	70-130			
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**Matrix Spike Dup (BEI0274-MSD1)**

Source: 2109174-01

Prepared & Analyzed: 09/13/21

C10-C28 (DRO)	590	50	mg/kg	500	13.3	115	70-130	2.48	20	
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Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:25

**PAH by EPA Method 8270D SIM - Quality Control**

**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0589 - EPA 5030 Soil MS**

**Blank (BEI0589-BLK1)**

Prepared: 09/28/21 Analyzed: 09/30/21

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0188</i>		"	<i>0.0333</i>		<i>56.4</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0203</i>		"	<i>0.0333</i>		<i>60.9</i>	<i>40-150</i>			

**LCS (BEI0589-BS1)**

Prepared: 09/28/21 Analyzed: 09/30/21

Acenaphthene	0.0274	0.00500	mg/kg	0.0333		82.2	31-137			
Anthracene	0.0316	0.00500	"	0.0333		94.7	30-120			
Benzo (a) anthracene	0.0314	0.00500	"	0.0333		94.2	30-120			
Benzo (a) pyrene	0.0318	0.00500	"	0.0333		95.3	30-120			
Benzo (b) fluoranthene	0.0228	0.00500	"	0.0333		68.4	30-120			
Benzo (k) fluoranthene	0.0290	0.00500	"	0.0333		87.1	30-120			
Chrysene	0.0313	0.00500	"	0.0333		94.0	30-120			
Dibenz (a,h) anthracene	0.0337	0.00500	"	0.0333		101	30-120			
Fluoranthene	0.0330	0.00500	"	0.0333		98.9	30-120			
Fluorene	0.0273	0.00500	"	0.0333		82.0	30-120			
Indeno (1,2,3-cd) pyrene	0.0321	0.00500	"	0.0333		96.3	30-120			
Pyrene	0.0336	0.00500	"	0.0333		101	35-142			
1-Methylnaphthalene	0.0363	0.00500	"	0.0333		109	35-142			
2-Methylnaphthalene	0.0319	0.00500	"	0.0333		95.8	35-142			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0167</i>		"	<i>0.0333</i>		<i>50.0</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0138</i>		"	<i>0.0333</i>		<i>41.3</i>	<i>40-150</i>			

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
10/04/21 13:25

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch BEI0589 - EPA 5030 Soil MS

Matrix Spike (BEI0589-MS1)	Source: 2109388-01			Prepared: 09/28/21 Analyzed: 09/30/21					
Acenaphthene	0.0401	0.00500	mg/kg	0.0333	0.0153	74.5	31-137		
Anthracene	0.0253	0.00500	"	0.0333	ND	76.0	30-120		
Benzo (a) anthracene	0.0313	0.00500	"	0.0333	0.00645	74.6	30-120		
Benzo (a) pyrene	0.0262	0.00500	"	0.0333	ND	78.7	30-120		
Benzo (b) fluoranthene	0.0233	0.00500	"	0.0333	ND	69.8	30-120		
Benzo (k) fluoranthene	0.0253	0.00500	"	0.0333	ND	75.8	30-120		
Chrysene	0.0310	0.00500	"	0.0333	ND	93.1	30-120		
Dibenz (a,h) anthracene	0.0224	0.00500	"	0.0333	ND	67.1	30-120		
Fluoranthene	0.0293	0.00500	"	0.0333	ND	88.0	30-120		
Fluorene	0.0366	0.00500	"	0.0333	0.0329	11.1	30-120		QM-07
Indeno (1,2,3-cd) pyrene	0.0228	0.00500	"	0.0333	ND	68.3	30-120		
Pyrene	0.0357	0.00500	"	0.0333	ND	107	35-142		
1-Methylnaphthalene	0.382	0.00500	"	0.0333	0.297	256	15-130		QM-07
2-Methylnaphthalene	0.495	0.00500	"	0.0333	0.411	254	15-130		QM-07
Surrogate: 2-Methylnaphthalene-d10	0.0149		"	0.0333		44.6	40-150		
Surrogate: Fluoranthene-d10	0.0168		"	0.0333		50.4	40-150		

Matrix Spike Dup (BEI0589-MSD1)	Source: 2109388-01			Prepared: 09/28/21 Analyzed: 09/30/21					
Acenaphthene	0.0435	0.00500	mg/kg	0.0333	0.0153	84.8	31-137	8.25	30
Anthracene	0.0241	0.00500	"	0.0333	ND	72.3	30-120	5.00	30
Benzo (a) anthracene	0.0329	0.00500	"	0.0333	0.00645	79.4	30-120	5.07	30
Benzo (a) pyrene	0.0265	0.00500	"	0.0333	ND	79.4	30-120	0.930	30
Benzo (b) fluoranthene	0.0231	0.00500	"	0.0333	ND	69.3	30-120	0.739	30
Benzo (k) fluoranthene	0.0255	0.00500	"	0.0333	ND	76.5	30-120	0.932	30
Chrysene	0.0307	0.00500	"	0.0333	ND	92.0	30-120	1.15	30
Dibenz (a,h) anthracene	0.0236	0.00500	"	0.0333	ND	70.7	30-120	5.20	30
Fluoranthene	0.0301	0.00500	"	0.0333	ND	90.2	30-120	2.45	30
Fluorene	0.0411	0.00500	"	0.0333	0.0329	24.6	30-120	11.6	30
Indeno (1,2,3-cd) pyrene	0.0244	0.00500	"	0.0333	ND	73.1	30-120	6.69	30
Pyrene	0.0406	0.00500	"	0.0333	ND	122	35-142	12.8	30
1-Methylnaphthalene	0.392	0.00500	"	0.0333	0.297	285	15-130	2.52	50
2-Methylnaphthalene	0.571	0.00500	"	0.0333	0.411	482	15-130	14.2	50
Surrogate: 2-Methylnaphthalene-d10	0.0172		"	0.0333		51.6	40-150		
Surrogate: Fluoranthene-d10	0.0156		"	0.0333		46.7	40-150		

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:25

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD		

**Batch BEI0313 - EPA 3050B**

**Blank (BEI0313-BLK1)**

Prepared: 09/15/21 Analyzed: 09/17/21

Boron ND 0.0100 mg/L

**LCS (BEI0313-BS1)**

Prepared: 09/15/21 Analyzed: 09/17/21

Boron 5.04 0.0100 mg/L 5.00 101 80-120

**Duplicate (BEI0313-DUP1)**

**Source: 2109170-01**

Prepared: 09/15/21 Analyzed: 09/17/21

Boron 0.0823 0.0100 mg/L 0.0889 7.73 20

**Matrix Spike (BEI0313-MS1)**

**Source: 2109170-01**

Prepared: 09/15/21 Analyzed: 09/17/21

Boron 5.34 0.0100 mg/L 5.00 0.0889 105 75-125

**Matrix Spike Dup (BEI0313-MSD1)**

**Source: 2109170-01**

Prepared: 09/15/21 Analyzed: 09/17/21

Boron 5.16 0.0100 mg/L 5.00 0.0889 101 75-125 3.50 25

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:25

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BEI0651 - EPA 3050B**

<b>Blank (BEI0651-BLK1)</b>		Prepared: 09/30/21 Analyzed: 10/04/21									
Barium	ND	0.400	mg/kg wet								
<b>LCS (BEI0651-BS1)</b>		Prepared: 09/30/21 Analyzed: 10/04/21									
Barium	44.6	0.400	mg/kg wet	40.0		112	80-120				
<b>Duplicate (BEI0651-DUP1)</b>		<b>Source: 2109137-01</b>		Prepared: 09/30/21 Analyzed: 10/04/21							
Barium	27.6	0.400	mg/kg dry		25.6			7.55	20		
<b>Matrix Spike (BEI0651-MS1)</b>		<b>Source: 2109137-01</b>		Prepared: 09/30/21 Analyzed: 10/04/21							
Barium	73.3	0.400	mg/kg dry	46.9	25.6	102	75-125				
<b>Matrix Spike Dup (BEI0651-MSD1)</b>		<b>Source: 2109137-01</b>		Prepared: 09/30/21 Analyzed: 10/04/21							
Barium	70.6	0.400	mg/kg dry	46.9	25.6	96.0	75-125	3.76	25		

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:25

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BEI0350 - General Preparation**

**Blank (BEI0350-BLK1)**

Prepared: 09/16/21 Analyzed: 09/21/21

Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

**LCS (BEI0350-BS1)**

Prepared: 09/16/21 Analyzed: 09/21/21

Calcium	5.50	0.0500	mg/L wet	5.00		110	70-130			
Magnesium	5.11	0.0500	"	5.00		102	70-130			
Sodium	4.96	0.0500	"	5.00		99.2	70-130			

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:25

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BEI0305 - General Preparation**

<b>Duplicate (BEI0305-DUP1)</b>		<b>Source: 2109174-01</b>			<b>Prepared &amp; Analyzed: 09/15/21</b>			
% Solids	88.1		%		88.3		0.225	20

**Batch BEI0646 - General Preparation**

<b>Duplicate (BEI0646-DUP1)</b>		<b>Source: 2109137-01</b>			<b>Prepared &amp; Analyzed: 09/30/21</b>			
% Solids	86.0		%		85.2		0.886	20

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:25

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BEI0351 - General Preparation**

**Blank (BEI0351-BLK1)**

Prepared: 09/16/21 Analyzed: 09/17/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BEI0351-BS1)**

Prepared: 09/16/21 Analyzed: 09/17/21

Specific Conductance (EC) 0.161 0.0100 mmhos/cm 0.150 107 90-110

**Duplicate (BEI0351-DUP1)**

**Source: 2109173-01**

Prepared: 09/16/21 Analyzed: 09/17/21

Specific Conductance (EC) 4.08 0.0100 mmhos/cm 4.08 0.00 20

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/04/21 13:25

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike	Source	%REC		RPD		Notes
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BEI0352 - General Preparation**

**LCS (BEI0352-BS1)**

Prepared: 09/16/21 Analyzed: 09/17/21

pH	9.27	pH Units	9.21	101	95-105
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**Duplicate (BEI0352-DUP1)**

Source: 2109173-01

Prepared: 09/16/21 Analyzed: 09/17/21

pH	8.31	pH Units	8.31	0.00	20
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Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/04/21 13:25

### Notes and Definitions

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 17, 2022

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Buffalo Gardens 41-13 Tank Battery

Work Order #2206061

Enclosed are the results of analyses for samples received by Summit Scientific on 06/02/22 17:48. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury

President



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
06/17/22 11:50

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BKG03@2.5'	2206061-01	Soil	06/02/22 09:20	06/02/22 17:48
BKG03@6'	2206061-02	Soil	06/02/22 09:25	06/02/22 17:48
BKG03@14'	2206061-03	Soil	06/02/22 10:38	06/02/22 17:48
BKG04@2.5'	2206061-04	Soil	06/02/22 09:50	06/02/22 17:48
BKG04@6'	2206061-05	Soil	06/02/22 10:00	06/02/22 17:48
BKG04@11'	2206061-06	Soil	06/02/22 10:25	06/02/22 17:48
BKG05@2.5'	2206061-07	Soil	06/02/22 10:55	06/02/22 17:48
BKG05@6'	2206061-08	Soil	06/02/22 11:11	06/02/22 17:48
BKG05@9'	2206061-09	Soil	06/02/22 11:38	06/02/22 17:48

Summit Scientific

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

# Summit Scientific

2206061

S<sub>2</sub>

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310

Page 1 of 7

Client: PDC / Tasman Project Manager: Mark Longhurst  
 Address: 6855 W 119th Ave E-Mail: mark.longhurst@PDCE.com  
 City/State/Zip: Broomfield/ CO/ 80020  
 Phone: 303-487-1228 Project Name: BUFFALO GARDENS 41-13 Tank Battery  
 Sampler Name: Dyer Muffin Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions		
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5-TMB	Boron - HWS	pH, EC, SAR	PAHs - 915		Metals - 915	
1	BK603 @ 2.5'	6.2.22	920	1			X			X											pH, EC, SAR by saturated paste
2	BK603 @ 6'		925																		
3	BK603 @ 10'		1038																		
4	BK604 @ 2.5'		956																		
5	BK604 @ 6'		1000																		
6	BK604 @ 11'		1025																		
7	BK605 @ 2.5'		1055																		
8	BK605 @ 6'		1111																		
9	BK605 @ 9'		1138																		
10																					

Relinquished by: <u>Tyr</u> Date/Time: <u>6.2.22 1240</u>	Received by: <u>Tasman's Lock Box</u> Date/Time:	Turn Around Time (Check) Same Day <u>—</u> 72 hours <u>—</u> 24 hours <u>—</u> Standard <u>X</u> 48 hours <u>—</u>	Notes:
Relinquished by: <u>Tasman's Lock Box</u> Date/Time: <u>6222 1748</u>	Received by: <u>[Signature]</u> Date/Time: <u>6222 1748</u>	Sample Integrity:	
Relinquished by:	Received by:	Temperature Upon Receipt: <u>7.1</u> Samples Intact: <u>(Yes)</u> No	

S<sub>2</sub>

Sample Receipt Checklist

S2 Work Order# 2206061

Client: Procterman Client Project ID: Buffalo Gardens 4113 Tank Battery

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other \_\_\_\_\_ Airbill #: \_\_\_\_\_

	-			
--	---	--	--	--

Matrix (Check all that apply) Air  Soil/Solid  Water  Other

Temp (°C)  Thermometer #

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6 °C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	-			on ICE
Were all samples received intact <sup>(1)</sup> ?	-			
Was adequate sample volume provided <sup>(1)</sup> ?	-			
If custody seals are present, are they intact <sup>(1)</sup> ?	-			
Are samples due within 48 hours present?		-		
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen			-	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	-			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	-			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	-			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	-			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			-	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the comments column – HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , etc.			-	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			-	
If dissolved metals are requested, were samples field filtered?			-	
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

[Signature]  
Custodian Printed Name

6222  
Date/Time



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/17/22 11:50

**BKG03@2.5'**  
**2206061-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **06/02/22 09:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	2.23	0.210	mg/kg dry	1	BFF0425	06/15/22	06/17/22	EPA 6020B	
Barium	89.3	0.420	"	"	"	"	"	"	
Cadmium	ND	0.210	"	"	"	"	"	"	
Copper	9.68	0.420	"	"	"	"	"	"	
Lead	6.01	0.210	"	"	"	"	"	"	
Nickel	11.2	0.420	"	"	"	"	"	"	
Selenium	0.536	0.273	"	"	"	"	"	"	
Silver	0.0521	0.0210	"	"	"	"	"	"	
Zinc	35.0	0.420	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **06/02/22 09:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0340	06/13/22	06/13/22	EPA 7196A	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **06/02/22 09:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	95.3		%	1	BFF0359	06/13/22	06/14/22	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/17/22 11:50

**BKG03@6'**  
**2206061-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **06/02/22 09:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	2.51	0.206	mg/kg dry	1	BFF0425	06/15/22	06/17/22	EPA 6020B	
Barium	54.6	0.412	"	"	"	"	"	"	
Cadmium	ND	0.206	"	"	"	"	"	"	
Copper	6.90	0.412	"	"	"	"	"	"	
Lead	3.67	0.206	"	"	"	"	"	"	
Nickel	6.29	0.412	"	"	"	"	"	"	
Selenium	0.388	0.268	"	"	"	"	"	"	
Silver	ND	0.0206	"	"	"	"	"	"	
Zinc	22.1	0.412	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **06/02/22 09:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0340	06/13/22	06/13/22	EPA 7196A	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **06/02/22 09:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.0		%	1	BFF0359	06/13/22	06/14/22	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/17/22 11:50

**BKG03@14'**  
**2206061-03 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **06/02/22 10:38**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	3.49	0.225	mg/kg dry	1	BFF0425	06/15/22	06/17/22	EPA 6020B	
Barium	33.0	0.450	"	"	"	"	"	"	
Cadmium	ND	0.225	"	"	"	"	"	"	
Copper	5.22	0.450	"	"	"	"	"	"	
Lead	5.56	0.225	"	"	"	"	"	"	
Nickel	4.92	0.450	"	"	"	"	"	"	
Selenium	0.375	0.292	"	"	"	"	"	"	
Silver	ND	0.0225	"	"	"	"	"	"	
Zinc	26.6	0.450	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **06/02/22 10:38**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0340	06/13/22	06/13/22	EPA 7196A	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **06/02/22 10:38**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	88.9		%	1	BFF0359	06/13/22	06/14/22	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/17/22 11:50

**BKG04@2.5'**  
**2206061-04 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **06/02/22 09:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	2.78	0.215	mg/kg dry	1	BFF0425	06/15/22	06/17/22	EPA 6020B	
Barium	116	0.429	"	"	"	"	"	"	"
Cadmium	ND	0.215	"	"	"	"	"	"	"
Copper	11.2	0.429	"	"	"	"	"	"	"
Lead	7.22	0.215	"	"	"	"	"	"	"
Nickel	11.7	0.429	"	"	"	"	"	"	"
Selenium	0.584	0.279	"	"	"	"	"	"	"
Silver	0.0571	0.0215	"	"	"	"	"	"	"
Zinc	42.0	0.429	"	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **06/02/22 09:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0340	06/13/22	06/13/22	EPA 7196A	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **06/02/22 09:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	93.2		%	1	BFF0359	06/13/22	06/14/22	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/17/22 11:50

**BKG04@6'**  
**2206061-05 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **06/02/22 10:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	2.67	0.215	mg/kg dry	1	BFF0425	06/15/22	06/17/22	EPA 6020B	
Barium	70.0	0.431	"	"	"	"	"	"	"
Cadmium	ND	0.215	"	"	"	"	"	"	"
Copper	7.66	0.431	"	"	"	"	"	"	"
Lead	5.08	0.215	"	"	"	"	"	"	"
Nickel	7.65	0.431	"	"	"	"	"	"	"
Selenium	0.465	0.280	"	"	"	"	"	"	"
Silver	0.0258	0.0215	"	"	"	"	"	"	"
Zinc	27.9	0.431	"	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **06/02/22 10:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0340	06/13/22	06/13/22	EPA 7196A	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **06/02/22 10:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	92.9		%	1	BFF0359	06/13/22	06/14/22	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/17/22 11:50

**BKG04@11'**  
**2206061-06 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **06/02/22 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	4.40	0.217	mg/kg dry	1	BFF0425	06/15/22	06/17/22	EPA 6020B	
Barium	60.7	0.434	"	"	"	"	"	"	
Cadmium	ND	0.217	"	"	"	"	"	"	
Copper	6.62	0.434	"	"	"	"	"	"	
Lead	5.42	0.217	"	"	"	"	"	"	
Nickel	6.94	0.434	"	"	"	"	"	"	
Selenium	0.400	0.282	"	"	"	"	"	"	
Silver	0.0244	0.0217	"	"	"	"	"	"	
Zinc	26.3	0.434	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **06/02/22 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0340	06/13/22	06/13/22	EPA 7196A	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **06/02/22 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	92.1		%	1	BFF0359	06/13/22	06/14/22	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/17/22 11:50

**BKG05@2.5'**  
**2206061-07 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **06/02/22 10:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	2.24	0.211	mg/kg dry	1	BFF0425	06/15/22	06/17/22	EPA 6020B	
Barium	81.6	0.423	"	"	"	"	"	"	"
Cadmium	ND	0.211	"	"	"	"	"	"	"
Copper	9.08	0.423	"	"	"	"	"	"	"
Lead	5.88	0.211	"	"	"	"	"	"	"
Nickel	10.5	0.423	"	"	"	"	"	"	"
Selenium	0.570	0.275	"	"	"	"	"	"	"
Silver	0.0492	0.0211	"	"	"	"	"	"	"
Zinc	33.4	0.423	"	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **06/02/22 10:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0340	06/13/22	06/13/22	EPA 7196A	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **06/02/22 10:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	94.6		%	1	BFF0359	06/13/22	06/14/22	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/17/22 11:50

**BKG05@6'**  
**2206061-08 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **06/02/22 11:11**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.74	0.205	mg/kg dry	1	BFF0425	06/15/22	06/17/22	EPA 6020B	
Barium	35.9	0.411	"	"	"	"	"	"	
Cadmium	ND	0.205	"	"	"	"	"	"	
Copper	5.48	0.411	"	"	"	"	"	"	
Lead	3.28	0.205	"	"	"	"	"	"	
Nickel	4.65	0.411	"	"	"	"	"	"	
Selenium	0.318	0.267	"	"	"	"	"	"	
Silver	ND	0.0205	"	"	"	"	"	"	
Zinc	18.7	0.411	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **06/02/22 11:11**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0340	06/13/22	06/13/22	EPA 7196A	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **06/02/22 11:11**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.4		%	1	BFF0359	06/13/22	06/14/22	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/17/22 11:50

**BKG05@9'**  
**2206061-09 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **06/02/22 11:38**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	2.45	0.205	mg/kg dry	1	BFF0425	06/15/22	06/17/22	EPA 6020B	
Barium	37.4	0.410	"	"	"	"	"	"	
Cadmium	ND	0.205	"	"	"	"	"	"	
Copper	7.46	0.410	"	"	"	"	"	"	
Lead	3.75	0.205	"	"	"	"	"	"	
Nickel	5.74	0.410	"	"	"	"	"	"	
Selenium	0.323	0.267	"	"	"	"	"	"	
Silver	ND	0.0205	"	"	"	"	"	"	
Zinc	20.3	0.410	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **06/02/22 11:38**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0340	06/13/22	06/13/22	EPA 7196A	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **06/02/22 11:38**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	97.5		%	1	BFF0359	06/13/22	06/14/22	Calculation	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/17/22 11:50

**Total Metals by EPA 6020B - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**Batch BFF0425 - EPA 3050B**

**Blank (BFF0425-BLK1)**

Prepared: 06/15/22 Analyzed: 06/16/22

Arsenic	ND	0.200	mg/kg wet							
Barium	ND	0.400	"							
Cadmium	ND	0.200	"							
Copper	ND	0.400	"							
Lead	ND	0.200	"							
Nickel	ND	0.400	"							
Selenium	ND	0.260	"							
Silver	ND	0.0200	"							
Zinc	ND	0.400	"							

**LCS (BFF0425-BS1)**

Prepared: 06/15/22 Analyzed: 06/16/22

Arsenic	47.9	0.200	mg/kg wet	40.0	120	80-120
Barium	44.4	0.400	"	40.0	111	80-120
Cadmium	2.12	0.200	"	2.00	106	80-120
Copper	47.5	0.400	"	40.0	119	80-120
Lead	19.6	0.200	"	20.0	98.2	80-120
Nickel	46.2	0.400	"	40.0	116	80-120
Selenium	3.95	0.260	"	4.00	98.7	80-120
Silver	2.08	0.0200	"	2.00	104	80-120
Zinc	44.6	0.400	"	40.0	111	80-120

**Duplicate (BFF0425-DUP1)**

Source: 2206059-01

Prepared: 06/15/22 Analyzed: 06/16/22

Arsenic	2.97	0.236	mg/kg dry	3.37	12.5	20
Barium	112	0.473	"	94.2	16.9	20
Cadmium	0.147	0.236	"	0.161	9.20	20
Copper	6.88	0.473	"	7.99	15.0	20
Lead	5.37	0.236	"	5.32	1.04	20
Nickel	8.41	0.473	"	9.18	8.79	20
Selenium	0.496	0.307	"	0.530	6.72	20
Silver	0.0282	0.0236	"	0.0314	10.9	20
Zinc	23.8	0.473	"	27.8	15.6	20

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/17/22 11:50

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

**Batch BFF0425 - EPA 3050B**

**Matrix Spike (BFF0425-MS1)**

Source: 2206059-01

Prepared: 06/15/22 Analyzed: 06/16/22

Arsenic	57.6	0.236	mg/kg dry	47.3	3.37	115	75-125			
Barium	191	0.473	"	47.3	94.2	205	75-125			QM-02
Cadmium	2.66	0.236	"	2.36	0.161	106	75-125			
Copper	64.3	0.473	"	47.3	7.99	119	75-125			
Lead	26.5	0.236	"	23.6	5.32	89.8	75-125			
Nickel	63.8	0.473	"	47.3	9.18	115	75-125			
Selenium	4.33	0.307	"	4.73	0.530	80.5	75-125			
Silver	2.41	0.0236	"	2.36	0.0314	101	75-125			
Zinc	87.7	0.473	"	47.3	27.8	127	75-125			QM-05

**Matrix Spike Dup (BFF0425-MSD1)**

Source: 2206059-01

Prepared: 06/15/22 Analyzed: 06/16/22

Arsenic	57.5	0.236	mg/kg dry	47.3	3.37	114	75-125	0.196	25	
Barium	204	0.473	"	47.3	94.2	232	75-125	6.55	25	QM-02
Cadmium	2.62	0.236	"	2.36	0.161	104	75-125	1.84	25	
Copper	62.0	0.473	"	47.3	7.99	114	75-125	3.77	25	
Lead	27.3	0.236	"	23.6	5.32	92.8	75-125	2.66	25	
Nickel	62.3	0.473	"	47.3	9.18	112	75-125	2.41	25	
Selenium	4.41	0.307	"	4.73	0.530	82.0	75-125	1.65	25	
Silver	2.39	0.0236	"	2.36	0.0314	99.7	75-125	1.08	25	
Zinc	86.8	0.473	"	47.3	27.8	125	75-125	0.997	25	

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 06/17/22 11:50

**Hexavalent Chromium by EPA Method 7196 - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BFF0340 - 3060A Mod**

**Blank (BFF0340-BLK1)**

Prepared & Analyzed: 06/13/22

Chromium, Hexavalent      ND      0.30    mg/kg wet

**LCS (BFF0340-BS1)**

Prepared & Analyzed: 06/13/22

Chromium, Hexavalent      29.2      0.30    mg/kg wet      25.0      117      80-120

**Duplicate (BFF0340-DUP1)**

**Source: 2206054-01**

Prepared & Analyzed: 06/13/22

Chromium, Hexavalent      ND      0.30    mg/kg dry      ND      20

**Matrix Spike (BFF0340-MS1)**

**Source: 2206054-01**

Prepared & Analyzed: 06/13/22

Chromium, Hexavalent      32.3      0.30    mg/kg dry      26.5      ND      122      75-125

**Matrix Spike Dup (BFF0340-MSD1)**

**Source: 2206054-01**

Prepared & Analyzed: 06/13/22

Chromium, Hexavalent      31.4      0.30    mg/kg dry      26.5      ND      119      75-125      2.83      20

Summit Scientific

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PDC Energy  
 1775 Sherman St. STE. 3000  
 Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 06/17/22 11:50

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**

**Summit Scientific**

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch BFF0359 - General Preparation**

Duplicate (BFF0359-DUP1)	Source: 2206061-01		Prepared: 06/13/22 Analyzed: 06/14/22		
% Solids	95.2	%	95.3	0.0978	20

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Buffalo Gardens 41-13 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
06/17/22 11:50

### Notes and Definitions

- QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
- QM-02 The RPD and/or percent recovery for this QC sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference