

February 1, 2019

Ms. Karen Shanahan Olson
Senior Program Manager
PDC Energy, Inc.
1775 Sherman Street, Suite 3000
Denver, Colorado 20203

**RE: FIRST QUARTER 2019 GROUNDWATER MONITORING SUMMARY
FORMER SITZMAN 1U TANK BATTERY
NWSW SEC 27 T5N R65W
REMEDATION #: 11252**

Dear Ms. Olson:

This report has been prepared by Tasman Geosciences, Inc. (Tasman) to summarize the results of additional site investigation and first quarter 2019 groundwater monitoring activities conducted at the former Sitzman 1U tank battery (Site). Field activities described herein were conducted in accordance with the Colorado Oil and Gas Conservation Commission (COGCC) Condition of Approval (COA) issued on December 5, 2018.

Monitoring Well Installation and Sampling

On December 14, 2018, two boreholes (BH13 and BH14) were advanced down- and cross-gradient to the former source area using hollow stem auger drilling methods to establish point of compliance (Figure 1). Boreholes were advanced to 27 feet below ground surface (bgs), approximately 2 feet below the final depth of the former excavation. Lithological descriptions and volatile organic compound (VOC) concentrations measured using a photoionization detector (PID) were recorded for each borehole. Boring logs are provided in Attachment A.

Soil samples were collected from the saturated interval of each borehole below the depth of the former excavation sidewall samples. Soil samples were collected from the depth intervals most likely to be impacted based on field-measured VOC concentrations. Samples were submitted to Summit Scientific Laboratories (Summit) for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, and total petroleum hydrocarbons (TPH) – gasoline range organics (GRO) by Environmental Protection Agency (EPA) Method 8260B, and TPH – diesel range organics (DRO) by EPA Method 8015.

Analytical results indicated that the soil sample collected between 18 and 19 feet bgs in borehole BH13 exhibited a TPH concentration in exceedance of the COGCC Table 910-1 standard. Organic compound

concentrations were below COGCC standards in the remaining two samples. Soil analytical data is summarized in Table 1.

Saturated soils were encountered in the boreholes at approximately 15.5 feet bgs. Consequently, two 2-inch monitoring wells (BH13 and BH14) were installed at each borehole location (Figure 1). Well completion logs are provided in Attachment A.

On December 17, 2018, the two new monitoring wells (BH13 and BH14) were developed using a combination of an inertial pump and surge block to remove sediment emplaced during installation activities. Approximately 40 gallons of groundwater were purged from each well.

On December 20, 2018, groundwater gauging and sampling were conducted at the new monitoring wells. Prior to sampling, groundwater levels were measured at each well to the nearest 0.01-foot using an oil-water interface probe (IP). Groundwater samples were subsequently collected using low flow sample collection methods to minimize aquifer drawdown. Water quality parameters including pH, specific conductance, oxidation-reduction potential (ORP), dissolved oxygen (DO), and temperature, were collected in 3-minute intervals until stabilization was achieved. Groundwater samples were collected from the two monitoring wells and submitted to Summit for laboratory analysis of BTEX by EPA Method 8260B, dissolved organic carbon (DOC) by Standard Method (SM) 5310C, anions by EPA Method 300, and cations, total metals, and dissolved metals by EPA Method 200.8. Groundwater analytical data is summarized in Table 2A and elevation data is summarized in Table 3. The laboratory report is provided in Attachment B.

Purge water generated during development and monitoring activities was containerized and transported off-Site for disposal at the nearby PDC Energy, Inc. (PDC) Bunting 27-43 tank battery.

Quarterly Groundwater Monitoring

On January 23, 2019, first quarter groundwater monitoring was conducted at the 14 monitoring wells (BH01 – BH14). Groundwater levels and samples were collected using the above-stated procedures. Groundwater samples were submitted to Summit for analysis of BTEX by EPA Method 8260B, DOC by SM 5310C, anions by EPA Method 300, and cations, total metals, and dissolved metals by EPA Method 200.8. In addition, per the COGCC COA, the groundwater sample collected from monitoring well BH03 was submitted for analysis of the full semi-volatile organic compounds (SVOC) suite by EPA Method 8270.

Groundwater analytical results indicated that BTEX concentrations remained below laboratory detection limits in all 14 monitoring wells. In addition, SVOC concentrations were below laboratory detection limits in monitoring well BH03. Groundwater analytical data is summarized in Tables 2A and 2B. Groundwater levels and elevation data are summarized in Table 3. The laboratory report is provided in Attachment B.

Per the COGCC COA, groundwater sampling was attempted at the Shallow Davenport Well (Permit 276778) on January 23, 2019. However, the well and pump were found to be inoperable and therefore a sample could not be collected. Sampling activities will be conducted upon landowner confirmation of well function and access approval.

Purge water generated during quarterly monitoring activities was containerized and transported off-Site for disposal at the nearby PDC Bunting #1 tank battery.

Conclusions

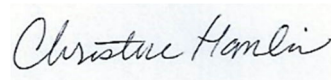
Two additional boreholes were advanced on January 28, 2019, to delineate the extent of remaining saturated soil impacts within the sub-surface. The new monitoring wells were developed on January 29, 2019, and subsequently sampled on February 1, 2019. Upon receipt of laboratory data, soil and groundwater analytical data and borehole/well completion logs will be provided in a forthcoming report.

Based on the groundwater analytical data collected during the fourth quarter 2018 and first quarter 2019, SVOCs and inorganic compounds were not identified as contaminants of concern (COCs) for this Site. Therefore, an expanded groundwater analytical suite is no longer warranted for quarterly sampling. Consequently, it is recommended that the analyte suite is reduced to only BTEX starting in the second quarter 2019. Should sub-surface Site conditions change, analysis of an expanded analyte suite may resume.

Should you have any questions regarding this report or the activities discussed herein, please contact me by phone at (720) 409-8791.

Sincerely,

Tasman Geosciences, Inc.



Christine Hamlin
Program Manager

Enclosures:

Figure 1 – Well Location Map

Table 1 – Soil Analytical Results Summary Table

Table 2A – Groundwater Analytical Results Summary Table

Table 2B – Groundwater Analytical Results Summary Table – Semi-Volatile Organic Compounds

Table 3 – Groundwater Elevation Data Table

Attachment A – Boring and Well Completion Logs

Attachment B – Laboratory Reports



DATE:	January 2019
DESIGNED BY:	C. Hamlin
DRAWN BY:	D. Cavinder



PDC Energy, Inc. – DJ Basin
Former Sitzman 1U Tank Battery
NWSW, Section 27, Township 5 North, Range 65 West
Weld County, Colorado

Well Location Map

FIGURE
1

TABLE 1
FORMER SITZMAN 1U TANK BATTERY
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)
COGCC Standards for Soil (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500
SS01 @ 14'	3/7/2018	14	<0.0020	<0.0050	<0.0050	0.018	0.035	720
SS02 @ 12.5'	3/7/2018	12.5	<0.0020	<0.0050	<0.0050	0.02	<0.010	258
SS03 @ 10'	3/12/2018	10	0.14	0.014	9.4	140	2.4	6,600
SS04 @ 18'	3/12/2018	18	0.10	<0.0050	7.5	120	1.7	5,400
TP1 @ 14'	5/8/2018	14	<0.0020	0.0056	<0.0050	<0.010	0.011	1,080
SS05 @ 15'	6/12/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS06 @ 15'	6/12/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS07 @ 15'	6/12/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS08 @ 15'	6/12/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS09 @ 15'	6/13/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS10 @ 15'	6/18/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS11 @ 15'	6/25/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS12 @ 15'	6/25/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS13 @ 15'	6/25/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS14 @ 15'	7/12/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS15 @ 15'	7/12/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS16 @ 15'	7/12/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS17 @ 15'	7/13/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS18 @ 15'	7/13/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS19 @ 15'	7/17/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS20 @ 15'	7/17/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS21 @ 15'	7/17/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS22 @ 15'	7/17/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS23 @ 15'	7/17/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS24 @ 15'	7/17/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH01 @ 19-24'	10/17/2018	19-24	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH02 @ 14-19'	10/17/2018	14-19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	18
BH02 @ 19-24'	10/17/2018	19-24	<0.0020	<0.0050	<0.0050	<0.010	<0.010	8.1
BH03 @ 14-19'	10/17/2018	14-19	<0.0020	<0.0050	0.014	<0.010	<0.010	3,100
BH03 @ 23-24'	10/17/2018	23-24	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH04 @ 18-22'	10/19/2018	18-22	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH05 @ 18-22'	10/18/2018	18-22	<0.0020	<0.0050	<0.0050	<0.010	<0.010	36
BH05 @ 24-27'	10/18/2018	24-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	0.87
BH06 @ 18-22'	10/18/2018	18-22	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH07 @ 18-22'	10/18/2018	18-22	<0.0020	<0.0050	<0.0050	<0.010	<0.010	1.7
BH08 @ 14-19'	10/18/2018	14-19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	12
BH08 @ 19-24'	10/18/2018	19-24	<0.0020	<0.0050	<0.0050	<0.010	<0.010	1.4
BH09 @ 18-22'	10/19/2018	18-22	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH10 @ 18-22'	10/19/2018	18-22	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH11 @ 18-22'	10/19/2018	18-22	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH12 @ 18-22'	10/19/2018	18-22	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH13 @ 18-19'	12/14/2018	18-19	<0.0020	<0.0050	<0.0050	<0.010	0.011	734
BH13 @ 25-27'	12/14/2018	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH14 @ 14-19'	12/14/2018	14-19	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50

TABLE 1
FORMER SITZMAN 1U TANK BATTERY
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Notes:

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective May 1, 2018.
 2. TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.
- COGCC = Colorado Oil and Gas Conservation Commission
GRO = Total volatile petroleum hydrocarbons - gasoline range organics
DRO = Total extractable petroleum hydrocarbons - diesel range organics
mg/kg = Milligrams per kilogram
bgs = Below ground surface
(<) = Analytical result is less than the indicated laboratory reporting limit.
BOLD = Analytical result is in exceedance of COGCC soil standards.

TABLE 2A
FORMER SITZMAN 1U TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

	Compound	COGCC Groundwater Standard ⁽¹⁾	CDPHE WQCC MCL in Groundwater ⁽²⁾	Davenport Deep Well ⁽³⁾	Davenport Shallow Well ⁽³⁾	GW01 ⁽⁴⁾	BH01		BH02		BH03		BH04		BH05		BH06		BH07		BH08		BH09		BH10		BH11		BH12		BH13		BH14		
	(mg/L)	(mg/L)	(mg/L)	5/15/2018	5/22/2018	7/23/2018	10/30/2018	1/23/2019	10/31/2018	1/23/2019	10/31/2018	1/23/2019	10/30/2018	1/23/2019	10/31/2018	1/23/2019	10/30/2018	1/23/2019	10/31/2018	1/23/2019	10/30/2018	1/23/2019	10/30/2018	1/23/2019	10/30/2018	1/23/2019	10/30/2018	1/23/2019	12/20/2018	1/23/2019	12/20/2018	1/23/2019			
	(mg/L)	(mg/L)	(mg/L)	7/23/2018	7/23/2018	10/30/2018	1/23/2019	10/31/2018	1/23/2019	10/31/2018	1/23/2019	10/30/2018	1/23/2019	10/31/2018	1/23/2019	10/30/2018	1/23/2019	10/31/2018	1/23/2019	10/31/2018	1/23/2019	10/30/2018	1/23/2019	10/30/2018	1/23/2019	10/30/2018	1/23/2019	10/30/2018	1/23/2019	12/20/2018	1/23/2019	12/20/2018	1/23/2019		
Organic Compounds	Benzene	0.005	0.005	<0.001	<0.001	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.001	<0.001	<0.001		
	Toluene	0.56	0.56	<0.001	<0.001	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.001	<0.001	<0.001		
	Ethylbenzene	0.70	0.70	<0.001	<0.001	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.00100	<0.001	<0.001	<0.001	<0.001		
	Total Xylenes	1.4	1.4	<0.003	<0.003	<0.002	<0.00300	<0.002	<0.00300	<0.002	<0.00300	<0.002	<0.00300	<0.002	<0.00300	<0.002	<0.00300	<0.002	<0.00300	<0.002	<0.00300	<0.002	<0.00300	<0.002	<0.00300	<0.002	<0.00300	<0.002	<0.00300	<0.002	<0.002	<0.002	<0.002		
	Dissolved Organic Carbon	-	-	NA	NA	NA	3.30 ⁽⁵⁾	3.2	5.14 ⁽⁶⁾	3.9	6.76 ⁽⁶⁾	4.1	3.82 ⁽⁶⁾	4.4	9.11 ⁽⁶⁾	4.1	5.04 ⁽⁶⁾	4.1	9.81 ⁽⁶⁾	3.5	7.61 ⁽⁶⁾	4.7	NA	NA	NA	NA	4.20 ⁽⁶⁾	2.9	NA	NA	NA	NA	3.73	3.4	3.63
Inorganic Compounds	Nitrate - Nitrite	-	10	0.088	12	NA	11.9	10.0	12.7	9.45	7.82	9.124	5.14	9.08	6.50	4.466	6.84	8.07	7.94	3.01	3.06	NA	NA	9.01	NA	NA	NA	NA	NA	12.0	9.38	12.1	11.3	NA	
	Aluminum	-	-	NA	NA	NA	<0.200	0.135	<0.200	<0.0500	<0.200	<0.0500	<0.200	<0.0500	<0.200	<0.0500	<0.200	<0.0500	<0.200	<0.0500	<0.200	0.0616	NA	NA	<0.200	<0.0500	NA	NA	NA	NA	0.239	<0.0500	0.628	<0.0500	
	Aluminum, Dissolved	-	-	NA	NA	NA	<0.200	0.0659	<0.200	<0.0500	<0.200	<0.0500	<0.200	<0.0500	<0.200	<0.0500	<0.200	<0.0500	<0.200	<0.0500	<0.200	<0.0500	NA	NA	<0.200	<0.0500	NA	NA	NA	NA	0.153	<0.0500	0.175	<0.0500	
	Antimony	-	0.006	NA	NA	NA	<0.0100	<0.000500	<0.0100	<0.000500	<0.0100	<0.000500	<0.0100	<0.000500	<0.0100	<0.000500	<0.0100	<0.000500	<0.0100	<0.000500	<0.0100	<0.000500	NA	NA	<0.0100	<0.000500	NA	NA	NA	NA	<0.000500	<0.000500	<0.000500	<0.000500	
	Antimony, Dissolved	-	0.006	NA	NA	NA	<0.0100	<0.000500	<0.0100	<0.000500	<0.0100	<0.000500	<0.0100	<0.000500	<0.0100	<0.000500	<0.0100	<0.000500	<0.0100	<0.000500	<0.0100	<0.000500	NA	NA	<0.0100	<0.000500	NA	NA	NA	NA	<0.000500	<0.000500	<0.000500	<0.000500	
	Arsenic	-	0.01	NA	NA	NA	<0.0100	0.000607	<0.0100	0.00118	<0.0100	0.00111	<0.0100	0.00116	<0.0100	0.000844	<0.0100	0.000950	<0.0100	0.000777	<0.0100	0.00106	NA	NA	<0.0100	0.000965	NA	NA	NA	NA	0.001419	0.00135	0.001470	0.00111	
	Arsenic, Dissolved	-	0.01	NA	NA	NA	<0.0100	<0.000600	<0.0100	0.00117	<0.0100	0.000662	<0.0100	0.0111	<0.0100	0.000660	<0.0100	0.000863	<0.0100	<0.000660	<0.0100	0.000865	NA	NA	<0.0100	0.000865	NA	NA	NA	NA	0.00125	0.00135	0.00123	0.00110	
	Barium	-	2.0	0.046	0.096	NA	0.0945	0.0561	0.0989	0.0611	0.141	0.0743	0.0894	0.0670	0.0871	0.0598	0.128	0.0664	0.119	0.0941	0.127	0.0791	NA	NA	0.0674	0.0449	NA	NA	NA	NA	0.0905	0.0583	0.0981	0.0624	
	Barium, Dissolved	-	2.0	NA	NA	NA	0.0958	0.0539	0.101	0.0567	0.134	0.0730	0.0920	0.0663	0.0886	0.0566	0.132	0.0655	0.118	0.0845	0.123	0.0770	NA	NA	0.0671	0.0408	NA	NA	NA	NA	0.0856	0.0575	0.0902	0.0606	
	Beryllium	-	0.004	NA	NA	NA	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	NA	NA	<0.00200	<0.000500	NA	NA	NA	NA	<0.00100	<0.000500	<0.000100	<0.000500	
	Beryllium, Dissolved	-	0.004	NA	NA	NA	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	NA	NA	<0.00200	<0.000500	NA	NA	NA	NA	<0.00100	<0.000500	<0.000100	<0.000500	
	Boron	-	0.75	NA	NA	NA	0.274	0.233	0.296	0.242	0.328	0.269	0.310	0.250	0.317	0.250	0.378	0.232	0.337	0.225	0.376	0.230	NA	NA	0.232	0.202	NA	NA	NA	NA	0.299	0.289	0.289	0.248	
	Boron, Dissolved	-	0.75	NA	NA	NA	0.256	0.242	0.265	0.262	0.318	0.266	0.279	0.249	0.297	0.249	0.344	0.227	0.310	0.224	0.342	0.230	NA	NA	0.294	0.200	NA	NA	NA	NA	0.291	0.246	0.282	0.248	
	Cadmium	-	0.005	NA	NA	NA	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	0.0000711	<0.00200	<0.000500	<0.00200	0.0000783	NA	NA	NA	<0.00200	<0.000500	NA	<0.000500		
	Cadmium, Dissolved	-	0.005	NA	NA	NA	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	<0.000500	<0.00200	0.0000749	NA	NA	<0.00200	<0.000500	NA	NA	NA	NA	0.0000804	<0.000500	0.0000801	<0.000500	
	Calcium	-	0.005	40	140	NA	165	98.1	155	105	156	111	158	108	160	118	182	88.7	154	111	155	125	154	NA	NA	82.8	82.8	NA	NA	NA	NA	115	99.6	122	109
	Calcium, Dissolved	-	0.005	NA	NA	NA	170	98.0	160	99.2	163	109	159	108	165	119	188	88.6	160	109	161	125	NA	NA	160	82.4	NA	NA	NA	NA	NA	115	92.2	120	107
	Chromium	-	0.1	0.00038	0.0035	NA	<0.0100	0.00361	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	NA	NA	<0.0100	<0.00100	NA	NA	NA	NA	<0.0100	<0.00100	<0.0115	<0.00100	
	Chromium, Dissolved	-	0.1	NA	NA	NA	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	NA	NA	<0.0100	<0.00100	NA	NA	NA	NA	<0.0100	<0.00100	<0.0100	<0.00100	
	Cobalt	-	-	NA	NA	NA	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	NA	NA	<0.0100	<0.00100	NA	NA	NA	NA	0.00117	<0.00100	<0.00100	<0.00100	
	Cobalt, Dissolved	-	-	NA	NA	NA	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0100	<0.00100	<0.0.														

TABLE 2B
FORMER SITZMAN 1U TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE
SEMI-VOLATILE ORGANIC COMPOUNDS

Compound	BH03
(µg/L)	1/23/2019
4-Bromophenyl phenyl ether	<10
Butyl benzyl phthalate	<10
4-Chloroaniline	<10
4-Chloro-3-methylphenol	<10
2-Chloronaphthalene	<10
2-Chlorophenol	<10
4-Chlorophenyl phenyl ether	<10
Chrysene	<10
Dibenz (a,h) anthracene	<10
Dibenzofuran	<10
Di-n-butyl phthalate	<10
1,2-Dichlorobenzene	<10
1,3-Dichlorobenzene	<10
1,4-Dichlorobenzene	<10
2,4-Dichlorophenol	<10
Diethyl phthalate	<10
2,4-Dimethylphenol	<10
Carbazole	<10
Dimethyl phthalate	<10
4,6-Dinitro-2-methylphenol	<10
2,4-Dinitrophenol	<10
Azobenzene	<10
2,4-Dinitrotoluene	<10
2,6-Dinitrotoluene	<10
Di-n-octyl phthalate	<10
Fluoranthene	<10
Fluorene	<10
Hexachlorobenzene	<10
Hexachlorobutadiene	<10
Hexachlorocyclopentadiene	<10
Hexachloroethane	<10
Indeno (1,2,3-cd) pyrene	<10
Isophorone	<10
2-Methylphenol	<10
4-Methylphenol	<10
1,2-Dinitrobenzene	<10
2-Nitroaniline	<10
1,3-Dinitrobenzene	<10
3-Nitroaniline	<10
1,4-Dinitrobenzene	<10
4-Nitroaniline	<10
Nitrobenzene	<10
2-Nitrophenol	<10
4-Nitrophenol	<10
N-Nitrosodi-n-propylamine	<10
2,3,4,6-Tetrachlorophenol	<10
Pentachlorophenol	<10
Phenanthrene	<10
Phenol	<10
Aniline	<10
Pyrene	<10
1,2,4-Trichlorobenzene	<10
2,4,5-Trichlorophenol	<10
2,4,6-Trichlorophenol	<10
2-Methylnaphthalene	<10
3,3'-Dichlorobenzidine	<10

Notes:

µg/L = Micrograms per liter

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

TABLE 3
FORMER SITZMAN 1U TANK BATTERY
GROUNDWATER ELEVATION DATA TABLE

Sample ID	Date Measured	Measured Depth to Groundwater ⁽¹⁾ (feet)	Corrected Depth to Groundwater ⁽²⁾ (feet)	Groundwater Elevation (feet AMSL)	Change in Groundwater Elevation (feet)
BH01	10/30/2018	9.27	9.65	4643.66	-
BH01	1/23/2019	14.40	14.78	4638.53	-5.13
BH02	10/30/2018	9.36	9.62	4643.71	-
BH02	1/23/2019	13.52	13.78	4639.55	-4.16
BH03	10/30/2018	8.61	8.75	4643.66	-
BH03	1/23/2019	12.77	12.91	4639.5	-4.16
BH04	10/30/2018	9.39	9.73	4643.58	-
BH04	1/23/2019	13.58	13.92	4639.39	-4.19
BH05	10/30/2018	8.43	8.68	4643.71	-
BH05	1/23/2019	12.60	12.85	4639.54	-4.17
BH06	10/30/2018	8.48	8.52	4643.55	-
BH06	1/23/2019	12.67	12.71	4639.36	-4.19
BH07	10/30/2018	8.32	8.37	4643.68	-
BH07	1/23/2019	12.51	12.56	4639.49	-4.19
BH08	10/30/2018	7.90	8.24	4643.73	-
BH08	1/23/2019	12.07	12.41	4639.56	-4.17
BH09	10/30/2018	8.49	8.64	4643.83	-
BH09	1/23/2019	12.65	12.80	4639.67	-4.16
BH10	10/30/2018	8.79	8.95	4643.60	-
BH10	1/23/2019	12.98	13.14	4639.41	-4.19
BH11	10/30/2018	8.27	8.62	4643.76	-
BH11	1/23/2019	12.47	12.82	4639.56	-4.2
BH12	10/30/2018	8.45	8.45	4643.84	-
BH12	1/23/2019	12.51	12.63	4639.66	-4.18
BH13	12/20/2018	12.32	12.90	4640.55	-
BH13	1/23/2019	13.38	13.96	4639.49	-1.06
BH14	12/20/2018	12.48	13.33	4640.47	-
BH14	1/23/2019	13.53	14.38	4639.42	-1.05

Notes:

1. Depth to water measured from top of well casing.
 2. Measurements are adjusted using survey data to reflect depth of water from ground surface.
- AMSL = Above Mean Sea Level

ATTACHMENT A



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: PDC Energy Inc.

LOGGED BY: Brock Nelson

PROJECT MANAGER: Christine Hamlin

DRILLING CONTRACTOR: Site Services LLC

DRILLING EQUIPMENT: CME 75

DRILL BIT SIZE (INCHES): 8.25"

DATE STARTED - COMPLETED: 12/14/2018

TOTAL WELL DEPTH (FT. BGS): 27

DEPTH TO WATER (FT. BGS): 15.5

Sitzman 1U

BORING / WELL ID: BH13

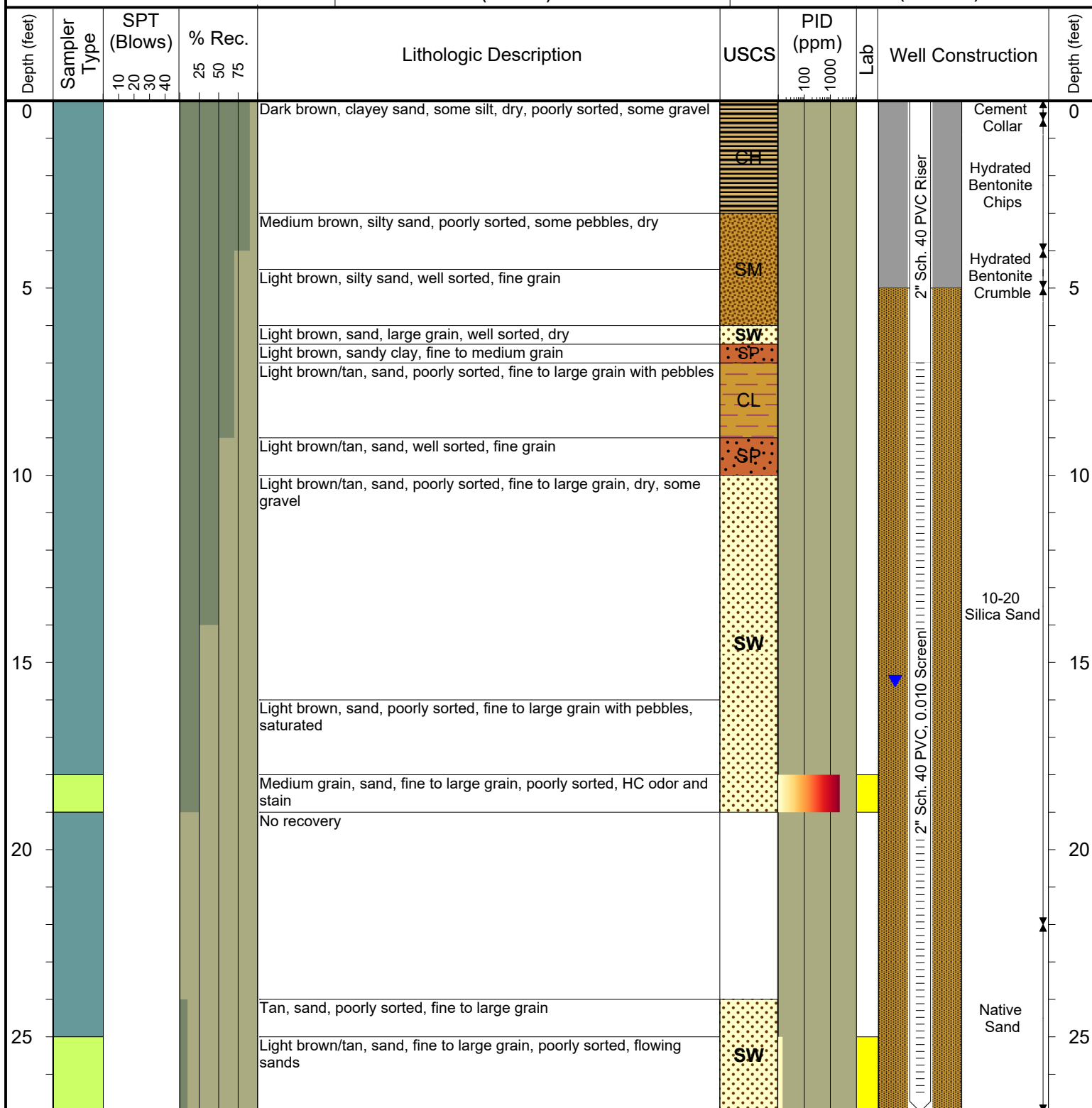
LOCATION: Greeley, CO

NORTHING (CO STATE PLANE): 4468835.2

EASTING (CO STATE PLANE): 529050.1

CASING ELEVATION (FT. AMSL): 4652.87

GROUND ELEVATION (FT. AMSL): 4653.45



Drilling / Sample Method:

Solid Stem Auger
 Hollow Stem Auger

Split Spoon Sampler

CME Continuous Sample Tube

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



6899 Pecos Street, Unit C
Denver, Colorado 80221

CLIENT: PDC Energy Inc.

LOGGED BY: Brock Nelson

PROJECT MANAGER: Christine Hamlin

DRILLING CONTRACTOR: Site Services LLC

DRILLING EQUIPMENT: CME 75

DRILL BIT SIZE (INCHES): 8.25"

DATE STARTED - COMPLETED: 12/14/2018

TOTAL WELL DEPTH (FT. BGS): 27

DEPTH TO WATER (FT. BGS): 16

Sitzman 1U

BORING / WELL ID: BH14

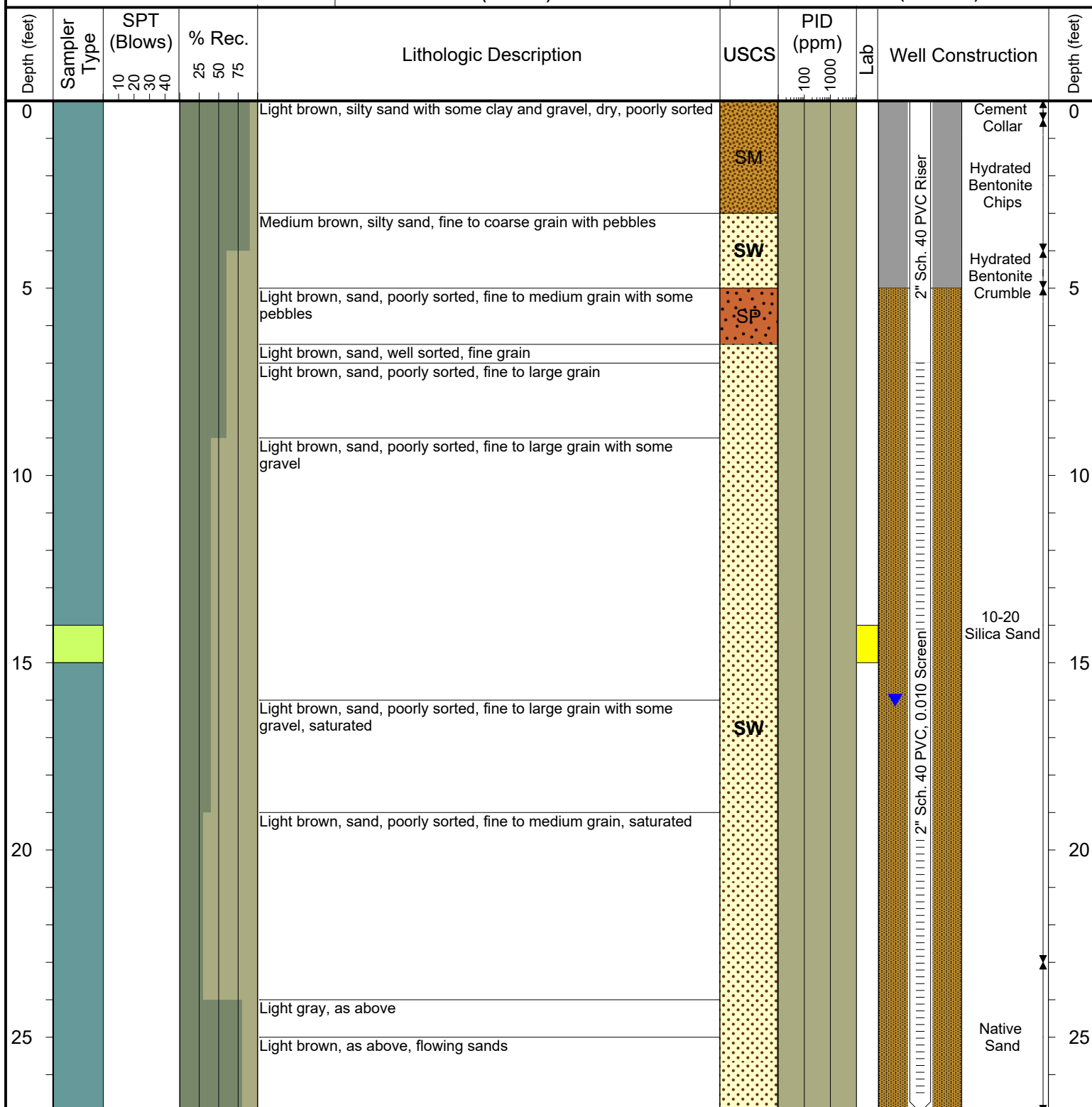
LOCATION: Greeley, CO

NORTHING (CO STATE PLANE): 4468845

EASTING (CO STATE PLANE): 529048.9

CASING ELEVATION (FT. AMSL): 4652.95

GROUND ELEVATION (FT. AMSL): 4653.80



Drilling / Sample Method:

Solid Stem Auger
 Hollow Stem Auger

Split Spoon Sampler

CME Continuous Sample Tube

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab

ATTACHMENT B

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 16, 2018

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Sitzman 1U

Enclosed are the results of analyses for samples received by Summit Scientific on 12/14/18 15:25. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to be 'P. Shrewsbury', written in a cursive style.

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
12/16/18 09:50

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH14@14-19'	1812182-01	Soil	12/14/18 09:31	12/14/18 15:25
BH13@18-19'	1812182-02	Soil	12/14/18 12:03	12/14/18 15:25
BH13@25-27'	1812182-03	Soil	12/14/18 12:17	12/14/18 15:25

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

S₂

1812182

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

Client: PDC Energy

Project Manager: Mark Longhurst

Page 1 of 1

Address:
City/State/Zip:

E-Mail:

Phone:
Sampler Name: Brock Nelson

Project Name: Sitzman 2U
Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	BTEX	TPH-GRO	TPH-DRO						
1	BH14 @ 14-19'	12/14/18	931	1			X			X				X	X	X					
2	BH13 @ 18-19'	↓	1203	1			X			X				X	X	X					
3	BH13 @ 25-27'	↓	1217	1			X			X				X	X	X					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Relinquished by: <u>[Signature]</u>	Date/Time: <u>12/14/18 1525</u>	Received by: <u>[Signature]</u>	Date/Time: <u>12-14-18 1525</u>	Turn Around Time (Check)	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day <input checked="" type="checkbox"/>	72 hours <input type="checkbox"/>
				24 hours <input type="checkbox"/>	Standard <input type="checkbox"/>
				48 hours <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:	
				Temperature Upon Receipt: <u>7.1</u>	
				Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Sample Receipt Checklist

S2 Work Order: 1812182

Client: PDC Energy Client Project ID: Sitzman 1V

Shipped Via: P.U. Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply): Air ☒ Soil/Solid Water Other: _____
(Describe)

Temp (°C)	<u>7.1</u>
-----------	------------

Thermometer ID: 61857155-K

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

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

UP
Custodian Printed Name or Initials

[Signature]
Signature or Initials of Custodian

12-14-18 1845
Date/Time



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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/16/18 09:50

BH14@14-19'
1812182-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/14/18 09:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1812214	12/14/18	12/14/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/14/18 09:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.2 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/14/18 09:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1812215	12/14/18	12/14/18	EPA 8015M	

Date Sampled: **12/14/18 09:31**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		97.9 %	30-150		"	"	"	"	

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: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/16/18 09:50

BH13@18-19'
1812182-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/14/18 12:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1812214	12/14/18	12/15/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	0.011	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	84	50	"	100	"	"	"	"	

Date Sampled: **12/14/18 12:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		647 %	21-167		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/14/18 12:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	650	50	mg/kg	1	1812215	12/14/18	12/15/18	EPA 8015M	

Date Sampled: **12/14/18 12:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		108 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/16/18 09:50

BH13@25-27'
1812182-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/14/18 12:17**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812214	12/14/18	12/14/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/14/18 12:17**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/14/18 12:17**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812215	12/14/18	12/15/18	EPA 8015M	

Date Sampled: **12/14/18 12:17**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		93.7 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/16/18 09:50

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1812214 - EPA 5030 Soil MS

Blank (1812214-BLK1)

Prepared & Analyzed: 12/14/18

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0454		"	0.0396		115	23-173			
Surrogate: Toluene-d8	0.0410		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0426		"	0.0400		106	21-167			

LCS (1812214-BS1)

Prepared & Analyzed: 12/14/18

Benzene	0.116	0.0020	mg/kg	0.100		116	70-130			
Toluene	0.113	0.0050	"	0.100		113	70-130			
Ethylbenzene	0.125	0.0050	"	0.100		125	70-130			
m,p-Xylene	0.234	0.010	"	0.200		117	70-130			
o-Xylene	0.111	0.0050	"	0.100		111	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0443		"	0.0396		112	23-173			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0428		"	0.0400		107	21-167			

Matrix Spike (1812214-MS1)

Source: 1812181-01

Prepared & Analyzed: 12/14/18

Benzene	0.121	0.0020	mg/kg	0.100	ND	121	70-130			
Toluene	0.117	0.0050	"	0.100	ND	117	70-130			
Ethylbenzene	0.122	0.0050	"	0.100	ND	122	70-130			
m,p-Xylene	0.229	0.010	"	0.200	ND	115	70-130			
o-Xylene	0.109	0.0050	"	0.100	ND	109	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0454		"	0.0396		115	23-173			
Surrogate: Toluene-d8	0.0418		"	0.0400		105	20-170			
Surrogate: 4-Bromofluorobenzene	0.0422		"	0.0400		105	21-167			

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: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
12/16/18 09:50

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 1812214 - EPA 5030 Soil MS

Matrix Spike Dup (1812214-MSD1)		Source: 1812181-01			Prepared & Analyzed: 12/14/18					
Benzene	0.122	0.0020	mg/kg	0.100	ND	122	70-130	0.961	30	
Toluene	0.118	0.0050	"	0.100	ND	118	70-130	0.230	30	
Ethylbenzene	0.127	0.0050	"	0.100	ND	127	70-130	3.74	30	
m,p-Xylene	0.238	0.010	"	0.200	ND	119	70-130	3.64	30	
o-Xylene	0.110	0.0050	"	0.100	ND	110	70-130	0.822	30	
Surrogate: 1,2-Dichloroethane-d4	0.0456		"	0.0396		115	23-173			
Surrogate: Toluene-d8	0.0415		"	0.0400		104	20-170			
Surrogate: 4-Bromofluorobenzene	0.0433		"	0.0400		108	21-167			

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: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/16/18 09:50

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1812215 - EPA 3550A

Blank (1812215-BLK1)

Prepared: 12/14/18 Analyzed: 12/15/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1812215-BS1)

Prepared: 12/14/18 Analyzed: 12/15/18

C10-C28 (DRO) 510 50 mg/kg 500 102 70-130

Matrix Spike (1812215-MS1)

Source: 1812181-01

Prepared: 12/14/18 Analyzed: 12/15/18

C10-C28 (DRO) 610 50 mg/kg 500 17.2 119 70-130

Matrix Spike Dup (1812215-MSD1)

Source: 1812181-01

Prepared: 12/14/18 Analyzed: 12/15/18

C10-C28 (DRO) 632 50 mg/kg 500 17.2 123 70-130 3.57 20

Summit Scientific

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PDC Energy

1775 Sherman St. STE. 3000

Denver CO, 80203

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/16/18 09:50

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.
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

December 27, 2018

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Sitzman 1U

Enclosed are the results of analyses for samples received by Summit Scientific on 12/20/18 19:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light blue background. The signature is cursive and reads "Muri Premer".

Muri Premer For Ben Shrewsbury

Laboratory Manager



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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH14	1812284-01	Water	12/20/18 10:11	12/20/18 19:40
BH13	1812284-02	Water	12/20/18 10:47	12/20/18 19:40


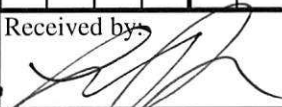
Summit Scientific

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Summit Scientific

Page 1 of 1

Project Manager: Mark Longhurst
E-Mail:
Project Name: Sitzman 10
Project Number:

				Preservative				Matrix				Analyze For:											
Sample Description	Date Sampled	Time Sampled	Number of Containers	HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX	Anions	Cations	Total Metals	Dissolved Metals	DOC			Special Instructions			
BH14	12/20/18	1011	6	X	X	X		X				X	X	X	X	X	X						
BH13	12/20/18	1047	6	X	X	X		X				X	X	X	X	X	X						
Relinquished by: 				Date/Time: 12/20/18 1940				Received by: 				Date/Time: 12-20-18 1940				Turn Around Time (Check)				Notes:			
												Same Day <input type="checkbox"/>				72 Hours <input checked="" type="checkbox"/>							
												24 Hours <input type="checkbox"/>				Standard <input type="checkbox"/>							
Relinquished by:				Date/Time:				Received by:				Date/Time:				48 Hours <input type="checkbox"/>							
Relinquished by:				Date/Time:				Received in Lab by:				Date/Time:				Sample Integrity:							
																Temperature Upon Receipt: 7.1							
																Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>							

Sample Receipt Checklist

S2 Work Order 1812284

Client: PDC Energy Client Project ID: Sitman IV

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

Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: _____
(Describe)

Temp (°C)	<u>7.1</u>
-----------	------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<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 checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCl, HNO ₃
Note the type of preservative in the Comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pH 0
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

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

JP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

12-20-18 1945
Date/Time



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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

BH14
1812284-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/20/18 10:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1812301	12/21/18	12/23/18	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **12/20/18 10:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		92.9 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		89.2 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.4 %		21-167		"	"	"	"	

Total Metals by EPA Method 200.8

Date Sampled: **12/20/18 10:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Phosphorus	ND	0.0100		mg/L	1	1812311	12/21/18	12/21/18	EPA 200.8	
Aluminum	0.628	0.0500		"	"	"	"	"	"	
Strontium	1.61	0.00100		"	"	"	"	"	"	
Vanadium	0.00271	0.0000500		"	"	"	"	"	"	
Antimony	ND	0.0000500		"	"	"	"	"	"	
Arsenic	0.001470	0.0006000		"	"	"	"	"	"	
Barium	0.0981	0.00100		"	"	"	"	"	"	
Beryllium	ND	0.000100		"	"	"	"	"	"	
Cadmium	0.0000811	0.0000500		"	"	"	"	"	"	
Boron	0.289	0.0100		"	"	"	"	"	"	
Calcium	122	0.0500		"	"	"	"	"	"	
Chromium	0.00115	0.00100		"	"	"	"	"	"	
Cobalt	ND	0.00100		"	"	"	"	"	"	
Copper	0.00876	0.00100		"	"	"	"	"	"	
Iron	0.5948	0.01000		"	"	"	"	"	"	
Lead	0.00127	0.000500		"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

BH14
1812284-01 (Water)

Summit Scientific

Total Metals by EPA Method 200.8

Magnesium	56.4	0.0500	mg/L	1	1812311	12/21/18	12/21/18	EPA 200.8
Manganese	0.0562	0.00100	"	"	"	"	"	"
Molybdenum	0.00518	0.00100	"	"	"	"	"	"
Nickel	0.00344	0.00100	"	"	"	"	"	"
Potassium	8.59	0.0500	"	"	"	"	"	"
Selenium	0.00209	0.00100	"	"	"	"	"	"
Silver	ND	0.000250	"	"	"	"	"	"
Sodium	150	0.0500	"	"	"	"	"	"
Thallium	0.000255	0.0000250	"	"	"	"	"	"
Titanium	0.00425	0.00100	"	"	"	"	"	"
Tin	ND	0.00500	"	"	"	"	"	"
Zinc	0.00752	0.00100	"	"	"	"	"	"

Dissolved Metals by EPA Method 200.8

Date Sampled: 12/20/18 10:11

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Aluminum	0.175	0.0500	mg/L	1	1812312	12/21/18	12/21/18	EPA 200.8	
Vanadium	0.00175	0.0000500	"	"	"	"	"	"	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.00123	0.000600	"	"	"	"	"	"	
Barium	0.0902	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.000100	"	"	"	"	"	"	
Boron	0.282	0.0100	"	"	"	"	"	"	
Cadmium	0.0000801	0.0000500	"	"	"	"	"	"	
Calcium	120	0.0500	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00663	0.00100	"	"	"	"	"	"	
Iron	0.133	0.0100	"	"	"	"	"	"	
Lead	ND	0.000500	"	"	"	"	"	"	
Magnesium	55.4	0.0500	"	"	"	"	"	"	
Manganese	0.0176	0.00100	"	"	"	"	"	"	
Molybdenum	0.00508	0.00100	"	"	"	"	"	"	
Nickel	0.00315	0.00100	"	"	"	"	"	"	
Potassium	8.34	0.0500	"	"	"	"	"	"	
Selenium	0.00199	0.00100	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

BH14
1812284-01 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Silver	ND	0.000250	mg/L	1	1812312	12/21/18	12/21/18	EPA 200.8	
Sodium	148	0.0500	"	"	"	"	"	"	
Thallium	0.000251	0.00100	"	"	"	"	"	"	J
Titanium	0.00122	0.00100	"	"	"	"	"	"	
Tin	ND	0.00500	"	"	"	"	"	"	
Zinc	0.00270	0.00100	"	"	"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **12/20/18 10:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	0.256	0.200	mg/L	1	1812305	12/21/18	12/21/18	EPA 300.0	
Chloride	152	3.00	"	50	"	"	"	"	
Fluoride	0.939	0.0400	"	1	"	"	"	"	
Nitrate as N	12.1	0.0500	"	"	"	"	"	"	
Nitrite as N	ND	0.0600	"	"	"	"	"	"	
Orthophosphate as P	ND	0.100	"	"	"	"	"	"	
Sulfate	352	15.0	"	50	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

BH13
1812284-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/20/18 10:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1812301	12/21/18	12/23/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **12/20/18 10:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		97.1 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Total Metals by EPA Method 200.8

Date Sampled: **12/20/18 10:47**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Phosphorus	0.0271	0.0100	mg/L	1	1812311	12/21/18	12/21/18	EPA 200.8	
Aluminum	0.239	0.0500	"	"	"	"	"	"	
Strontium	1.52	0.00100	"	"	"	"	"	"	
Vanadium	0.00211	0.0000500	"	"	"	"	"	"	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.001419	0.0006000	"	"	"	"	"	"	
Barium	0.0905	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.000100	"	"	"	"	"	"	
Cadmium	0.0000791	0.0000500	"	"	"	"	"	"	
Boron	0.299	0.0100	"	"	"	"	"	"	
Calcium	115	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	0.00117	0.00100	"	"	"	"	"	"	
Copper	0.00789	0.00100	"	"	"	"	"	"	
Iron	0.3039	0.01000	"	"	"	"	"	"	
Lead	0.00101	0.000500	"	"	"	"	"	"	
Magnesium	54.7	0.0500	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

BH13
1812284-02 (Water)

Summit Scientific

Total Metals by EPA Method 200.8

Manganese	0.151	0.00100	mg/L	1	1812311	12/21/18	12/21/18	EPA 200.8
Molybdenum	0.00631	0.00100	"	"	"	"	"	"
Nickel	0.00499	0.00100	"	"	"	"	"	"
Potassium	8.47	0.0500	"	"	"	"	"	"
Selenium	0.00180	0.00100	"	"	"	"	"	"
Silver	ND	0.000250	"	"	"	"	"	"
Sodium	149	0.0500	"	"	"	"	"	"
Thallium	0.000201	0.0000250	"	"	"	"	"	"
Titanium	0.00166	0.00100	"	"	"	"	"	"
Tin	ND	0.00500	"	"	"	"	"	"
Zinc	0.00759	0.00100	"	"	"	"	"	"

Dissolved Metals by EPA Method 200.8

Date Sampled: 12/20/18 10:47

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Aluminum	0.153	0.0500	mg/L	1	1812312	12/21/18	12/21/18	EPA 200.8	
Vanadium	0.00183	0.0000500	"	"	"	"	"	"	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.00125	0.000600	"	"	"	"	"	"	
Barium	0.0856	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.000100	"	"	"	"	"	"	
Boron	0.291	0.0100	"	"	"	"	"	"	
Cadmium	0.0000804	0.0000500	"	"	"	"	"	"	
Calcium	115	0.0500	"	"	"	"	"	"	
Cobalt	0.00110	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00921	0.00100	"	"	"	"	"	"	
Iron	0.0958	0.0100	"	"	"	"	"	"	
Lead	ND	0.000500	"	"	"	"	"	"	
Magnesium	54.6	0.0500	"	"	"	"	"	"	
Manganese	0.141	0.00100	"	"	"	"	"	"	
Molybdenum	0.00576	0.00100	"	"	"	"	"	"	
Nickel	0.00486	0.00100	"	"	"	"	"	"	
Potassium	8.28	0.0500	"	"	"	"	"	"	
Selenium	0.00177	0.00100	"	"	"	"	"	"	
Silver	ND	0.000250	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

BH13
1812284-02 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Sodium	148	0.0500	mg/L	1	1812312	12/21/18	12/21/18	EPA 200.8	
Thallium	0.000227	0.00100	"	"	"	"	"	"	J
Titanium	0.00128	0.00100	"	"	"	"	"	"	
Tin	ND	0.00500	"	"	"	"	"	"	
Zinc	0.00729	0.00100	"	"	"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: 12/20/18 10:47

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Bromide	0.382	0.200	mg/L	1	1812305	12/21/18	12/21/18	EPA 300.0		
Chloride	148	3.00	"	50	"	"	"	"		
Fluoride	1.38	0.0400	"	1	"	"	"	"		
Nitrate as N	12.0	0.0500	"	"	"	"	"	"		
Nitrite as N	ND	0.0600	"	"	"	"	"	"		
Orthophosphate as P	0.135	0.100	"	"	"	"	"	"		
Sulfate	348	15.0	"	50	"	"	"	"		

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: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/27/18 14:09

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 1812301 - EPA 5030 Water MS

Blank (1812301-BLK1)

Prepared: 12/21/18 Analyzed: 12/22/18

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.2		105	23-173			
Surrogate: Toluene-d8	12.3		"	13.3		92.3	20-170			
Surrogate: 4-Bromofluorobenzene	13.8		"	13.3		104	21-167			

LCS (1812301-BS1)

Prepared: 12/21/18 Analyzed: 12/26/18

Benzene	50.0	1.0	ug/l	50.0		100	70-130			
Toluene	51.0	1.0	"	50.0		102	70-130			
Ethylbenzene	49.1	1.0	"	50.0		98.2	70-130			
m,p-Xylene	98.3	2.0	"	100		98.3	70-130			
o-Xylene	49.5	1.0	"	50.0		99.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	15.1		"	13.2		115	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.6	20-170			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.8	21-167			

Matrix Spike (1812301-MS1)

Source: 1812257-01

Prepared: 12/21/18 Analyzed: 12/26/18

Benzene	50.0	1.0	ug/l	50.0	ND	99.9	70-130			
Toluene	51.7	1.0	"	50.0	1.18	101	70-130			
Ethylbenzene	50.8	1.0	"	50.0	ND	102	70-130			
m,p-Xylene	100	2.0	"	100	ND	100	70-130			
o-Xylene	52.8	1.0	"	50.0	ND	106	70-130			
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.2		107	23-173			
Surrogate: Toluene-d8	13.0		"	13.3		97.7	20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	21-167			

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

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 1812301 - EPA 5030 Water MS

Matrix Spike Dup (1812301-MSD1)	Source: 1812257-01			Prepared: 12/21/18 Analyzed: 12/27/18						
Benzene	47.6	1.0	ug/l	50.0	ND	95.2	70-130	4.82	30	
Toluene	49.6	1.0	"	50.0	1.18	96.7	70-130	4.21	30	
Ethylbenzene	48.3	1.0	"	50.0	ND	96.7	70-130	5.00	30	
m,p-Xylene	98.5	2.0	"	100	ND	98.5	70-130	1.97	30	
o-Xylene	51.6	1.0	"	50.0	ND	103	70-130	2.28	30	
Surrogate: 1,2-Dichloroethane-d4	14.9		"	13.2		113	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.3	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.2	21-167			

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

Total Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch 1812311 - EPA 200.8

Blank (1812311-BLK1)

Prepared & Analyzed: 12/21/18

Phosphorus	ND	0.0100	mg/L
Aluminum	ND	0.0500	"
Vanadium	ND	0.0000500	"
Antimony	ND	0.0000500	"
Strontium	ND	0.00100	"
Arsenic	ND	0.0006000	"
Barium	ND	0.00100	"
Beryllium	ND	0.000100	"
Cadmium	ND	0.0000500	"
Boron	ND	0.0100	"
Calcium	ND	0.0500	"
Chromium	ND	0.00100	"
Cobalt	ND	0.00100	"
Copper	ND	0.00100	"
Iron	ND	0.01000	"
Lead	ND	0.000500	"
Magnesium	ND	0.0500	"
Manganese	ND	0.00100	"
Molybdenum	ND	0.00100	"
Nickel	ND	0.00100	"
Potassium	ND	0.0500	"
Selenium	ND	0.00100	"
Silver	ND	0.000250	"
Sodium	ND	0.0500	"
Thallium	ND	0.0000250	"
Tin	ND	0.00500	"
Titanium	ND	0.00100	"
Zinc	ND	0.00100	"

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

Total Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch 1812311 - EPA 200.8

LCS (1812311-BS1)

Prepared & Analyzed: 12/21/18

Phosphorus	4.69	0.0100	mg/L	5.00		93.8	0-200			
Aluminum	5.36	0.0500	"	5.00		107	80-120			
Antimony	0.0209	0.0000500	"	0.0250		83.7	80-120			
Vanadium	0.485	0.0000500	"	0.500		97.1	0-200			
Arsenic	0.4470	0.0006000	"	0.500		89.4	80-120			
Barium	0.458	0.00100	"	0.500		91.5	80-120			
Beryllium	0.0238	0.000100	"	0.0250		95.0	80-120			
Boron	2.59	0.0100	"	2.50		104	80-120			
Cadmium	0.0236	0.0000500	"	0.0250		94.4	80-120			
Calcium	5.10	0.0500	"	5.00		102	80-120			
Chromium	0.467	0.00100	"	0.500		93.3	80-120			
Cobalt	0.461	0.00100	"	0.500		92.2	80-120			
Copper	0.457	0.00100	"	0.500		91.4	80-120			
Iron	5.245	0.01000	"	5.00		105	80-120			
Lead	0.230	0.000500	"	0.250		91.9	80-120			
Magnesium	5.32	0.0500	"	5.00		106	80-120			
Manganese	0.463	0.00100	"	0.500		92.5	80-120			
Molybdenum	0.482	0.00100	"	0.500		96.4	80-120			
Nickel	0.463	0.00100	"	0.500		92.7	80-120			
Potassium	5.10	0.0500	"	5.00		102	80-120			
Selenium	0.0471	0.00100	"	0.0500		94.2	80-120			
Silver	0.0237	0.000250	"	0.0250		94.6	80-120			
Sodium	5.32	0.0500	"	5.00		106	80-120			
Thallium	0.0116	0.0000250	"	0.0125		92.5	80-120			
Tin	0.454	0.00500	"	0.500		90.9	80-120			
Titanium	0.0999	0.00100	"	0.500		20.0	0-200			
Zinc	0.465	0.00100	"	0.500		93.0	80-120			

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

Total Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch 1812311 - EPA 200.8

Duplicate (1812311-DUP1)	Source: 1812245-01			Prepared & Analyzed: 12/21/18						
Aluminum	ND	0.0500	mg/L		ND				20	
Phosphorus	ND	0.0100	"		ND				200	
Antimony	ND	0.0000500	"		ND				20	
Vanadium	0.000171	0.0000500	"		0.0000251			149	200	
Strontium	0.0408	0.00100	"		0.0402			1.40	200	
Arsenic	ND	0.0006000	"		ND				20	
Barium	0.0132	0.00100	"		0.0123			6.80	20	
Beryllium	ND	0.000100	"		ND				20	
Boron	0.0156	0.0100	"		0.0165			5.76	20	
Cadmium	ND	0.0000500	"		ND				20	
Calcium	3.91	0.0500	"		3.76			4.04	20	
Chromium	0.000305	0.00100	"		0.000315			3.41	20	
Cobalt	ND	0.00100	"		ND				20	
Copper	0.00593	0.00100	"		0.00557			6.36	20	
Iron	ND	0.01000	"		ND				20	
Lead	0.254	0.000500	"		0.247			3.17	20	
Magnesium	0.0337	0.0500	"		0.0332			1.35	20	
Manganese	ND	0.00100	"		ND				20	
Molybdenum	0.000235	0.00100	"		0.000207			12.6	20	
Nickel	ND	0.00100	"		ND				20	
Potassium	1.79	0.0500	"		1.69			5.71	20	
Selenium	0.000104	0.00100	"		0.0000926			11.2	20	
Silver	ND	0.000250	"		ND				20	
Sodium	377	0.0500	"		360			4.72	20	
Thallium	0.000118	0.0000250	"		0.000143			19.4	20	
Tin	ND	0.00500	"		ND				20	
Titanium	ND	0.00100	"		ND				20	
Zinc	0.0188	0.00100	"		0.0174			7.37	20	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

Total Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch 1812311 - EPA 200.8

Matrix Spike (1812311-MS1)	Source: 1812245-01			Prepared & Analyzed: 12/21/18						
Phosphorus	4.67	0.0100	mg/L	5.00	ND	93.3	0-200			
Aluminum	5.15	0.0500	"	5.00	ND	103	75-125			
Vanadium	0.488	0.0000500	"	0.500	0.0000251	97.7	0-200			
Antimony	0.0216	0.0000500	"	0.0250	ND	86.5	75-125			
Arsenic	0.4925	0.0006000	"	0.500	ND	98.5	75-125			
Barium	0.472	0.00100	"	0.500	0.0123	92.0	75-125			
Beryllium	0.0231	0.000100	"	0.0250	ND	92.3	75-125			
Cadmium	0.0238	0.0000500	"	0.0250	ND	95.0	75-125			
Boron	2.49	0.0100	"	2.50	0.0165	99.0	75-125			
Calcium	8.76	0.0500	"	5.00	3.76	100	75-125			
Chromium	0.503	0.00100	"	0.500	0.000315	101	75-125			
Cobalt	0.488	0.00100	"	0.500	ND	97.7	75-125			
Copper	0.486	0.00100	"	0.500	0.00557	96.1	75-125			
Iron	5.499	0.01000	"	5.00	ND	110	75-125			
Lead	0.474	0.000500	"	0.250	0.247	91.0	75-125			
Magnesium	5.13	0.0500	"	5.00	0.0332	102	75-125			
Manganese	0.489	0.00100	"	0.500	ND	97.8	75-125			
Molybdenum	0.520	0.00100	"	0.500	0.000207	104	75-125			
Nickel	0.487	0.00100	"	0.500	ND	97.4	75-125			
Potassium	6.86	0.0500	"	5.00	1.69	103	75-125			
Selenium	0.0493	0.00100	"	0.0500	0.0000926	98.4	75-125			
Silver	0.0232	0.000250	"	0.0250	ND	92.7	75-125			
Sodium	365	0.0500	"	5.00	360	109	75-125			
Thallium	0.0113	0.0000250	"	0.0125	0.000143	89.2	75-125			
Tin	0.466	0.00500	"	0.500	ND	93.2	75-125			
Titanium	0.101	0.00100	"	0.500	ND	20.2	0-200			
Zinc	0.492	0.00100	"	0.500	0.0174	94.9	75-125			

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

Total Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch 1812311 - EPA 200.8

Matrix Spike Dup (1812311-MSD1)

Source: 1812245-01

Prepared & Analyzed: 12/21/18

Aluminum	5.30	0.0500	mg/L	5.00	ND	106	75-125	2.90	25
Phosphorus	4.76	0.0100	"	5.00	ND	95.2	0-200	1.98	200
Vanadium	0.510	0.0000500	"	0.500	0.0000251	102	0-200	4.31	200
Antimony	0.0229	0.0000500	"	0.0250	ND	91.8	75-125	5.89	25
Arsenic	0.4956	0.0006000	"	0.500	ND	99.1	75-125	0.613	25
Barium	0.484	0.00100	"	0.500	0.0123	94.2	75-125	2.35	25
Beryllium	0.0243	0.000100	"	0.0250	ND	97.1	75-125	5.08	25
Cadmium	0.0239	0.0000500	"	0.0250	ND	95.5	75-125	0.527	25
Boron	2.58	0.0100	"	2.50	0.0165	103	75-125	3.57	25
Calcium	9.00	0.0500	"	5.00	3.76	105	75-125	2.63	25
Chromium	0.511	0.00100	"	0.500	0.000315	102	75-125	1.58	25
Cobalt	0.499	0.00100	"	0.500	ND	99.8	75-125	2.17	25
Copper	0.492	0.00100	"	0.500	0.00557	97.3	75-125	1.28	25
Iron	5.643	0.01000	"	5.00	ND	113	75-125	2.59	25
Lead	0.486	0.000500	"	0.250	0.247	95.9	75-125	2.56	25
Magnesium	5.32	0.0500	"	5.00	0.0332	106	75-125	3.52	25
Manganese	0.497	0.00100	"	0.500	ND	99.4	75-125	1.55	25
Molybdenum	0.531	0.00100	"	0.500	0.000207	106	75-125	2.15	25
Nickel	0.498	0.00100	"	0.500	ND	99.5	75-125	2.19	25
Potassium	7.12	0.0500	"	5.00	1.69	108	75-125	3.66	25
Selenium	0.0496	0.00100	"	0.0500	0.0000926	98.9	75-125	0.537	25
Silver	0.0234	0.000250	"	0.0250	ND	93.7	75-125	1.09	25
Sodium	365	0.0500	"	5.00	360	101	75-125	0.108	25
Thallium	0.0115	0.0000250	"	0.0125	0.000143	90.8	75-125	1.82	25
Tin	0.478	0.00500	"	0.500	ND	95.6	75-125	2.45	25
Titanium	0.105	0.00100	"	0.500	ND	21.0	0-200	3.67	25
Zinc	0.498	0.00100	"	0.500	0.0174	96.0	75-125	1.18	25

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

Dissolved Metals by EPA Method 200.8 - Quality Control

Summit Scientific

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

Batch 1812312 - EPA 200.8

Blank (1812312-BLK1)

Prepared & Analyzed: 12/21/18

Aluminum	ND	0.0500	mg/L
Vanadium	ND	0.0000500	"
Antimony	ND	0.0000500	"
Arsenic	ND	0.000600	"
Barium	ND	0.00100	"
Beryllium	ND	0.000100	"
Boron	ND	0.0100	"
Cadmium	ND	0.0000500	"
Calcium	ND	0.0500	"
Chromium	ND	0.00100	"
Cobalt	ND	0.00100	"
Copper	ND	0.00100	"
Iron	ND	0.0100	"
Lead	ND	0.000500	"
Magnesium	ND	0.0500	"
Manganese	ND	0.00100	"
Molybdenum	ND	0.00100	"
Nickel	ND	0.00100	"
Potassium	ND	0.0500	"
Selenium	ND	0.00100	"
Silver	ND	0.000250	"
Sodium	ND	0.0500	"
Thallium	ND	0.00100	"
Tin	ND	0.00500	"
Titanium	ND	0.00100	"
Zinc	ND	0.00100	"

LCS (1812312-BS1)

Prepared & Analyzed: 12/21/18

Aluminum	5.23	0.0500	mg/L	5.00	105	80-120
Antimony	0.0228	0.0000500	"	0.0250	91.2	80-120
Vanadium	0.485	0.0000500	"	0.500	97.1	0-200
Arsenic	0.425	0.000600	"	0.500	85.1	80-120
Barium	0.482	0.00100	"	0.500	96.5	80-120
Beryllium	0.0223	0.000100	"	0.0250	89.2	80-120
Boron	2.65	0.0100	"	2.50	106	80-120
Cadmium	0.0236	0.0000500	"	0.0250	94.3	80-120
Calcium	5.40	0.0500	"	5.00	108	80-120
Cobalt	0.465	0.00100	"	0.500	92.9	80-120

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

Dissolved Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch 1812312 - EPA 200.8

LCS (1812312-BS1)

Prepared & Analyzed: 12/21/18

Chromium	0.469	0.00100	mg/L	0.500		93.7	80-120
Copper	0.457	0.00100	"	0.500		91.4	80-120
Iron	5.33	0.0100	"	5.00		107	80-120
Lead	0.239	0.000500	"	0.250		95.5	80-120
Magnesium	5.37	0.0500	"	5.00		107	80-120
Manganese	0.461	0.00100	"	0.500		92.1	80-120
Molybdenum	0.511	0.00100	"	0.500		102	80-120
Nickel	0.463	0.00100	"	0.500		92.5	80-120
Potassium	5.16	0.0500	"	5.00		103	80-120
Selenium	0.0473	0.00100	"	0.0500		94.5	80-120
Silver	0.0243	0.000250	"	0.0250		97.1	80-120
Sodium	5.41	0.0500	"	5.00		108	80-120
Thallium	0.0120	0.00100	"	0.0125		96.4	85-115
Tin	0.493	0.00500	"	0.500		98.5	80-120
Titanium	0.104	0.00100	"	0.500		20.7	0-200
Zinc	0.415	0.00100	"	0.500		82.9	80-120

Duplicate (1812312-DUP1)

Source: 1812268-01

Prepared & Analyzed: 12/21/18

Aluminum	ND	0.0500	mg/L		ND		20
Vanadium	0.00314	0.0000500	"		0.00315	0.229	200
Antimony	ND	0.0000500	"		ND		20
Arsenic	0.000753	0.000600	"		0.000867	14.1	20
Barium	0.125	0.00100	"		0.126	0.413	20
Beryllium	ND	0.000100	"		ND		20
Boron	0.239	0.0100	"		0.241	0.766	20
Cadmium	0.0000294	0.0000500	"		0.0000254	14.7	20
Calcium	159	0.0500	"		159	0.159	20
Cobalt	ND	0.00100	"		0.000402		20
Chromium	0.000921	0.00100	"		0.000963	4.43	20
Copper	0.00232	0.00100	"		0.00245	5.59	20
Iron	0.0284	0.0100	"		0.0238	17.7	20
Lead	0.000362	0.000500	"		0.000377	4.11	20
Magnesium	35.9	0.0500	"		36.4	1.23	20
Manganese	ND	0.00100	"		ND		20
Molybdenum	0.000960	0.00100	"		0.000967	0.774	20
Nickel	0.00133	0.00100	"		0.00114	15.5	20
Potassium	7.23	0.0500	"		7.45	3.06	20
Selenium	0.00266	0.00100	"		0.00256	3.83	20

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

Dissolved Metals by EPA Method 200.8 - Quality Control

Summit Scientific

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

Batch 1812312 - EPA 200.8

Duplicate (1812312-DUP1)			Source: 1812268-01		Prepared & Analyzed: 12/21/18					
Silver	ND	0.000250	mg/L		ND				20	
Sodium	92.2	0.0500	"		92.9			0.758	20	
Thallium	0.000172	0.00100	"		0.000187			8.62	200	J
Titanium	0.00102	0.00100	"		0.000976			4.24	20	
Tin	ND	0.00500	"		ND				20	
Zinc	0.00154	0.00100	"		0.00155			0.940	20	

Matrix Spike (1812312-MS1)			Source: 1812268-01		Prepared & Analyzed: 12/21/18					
Aluminum	5.43	0.0500	mg/L	5.00	ND	109	75-125			
Antimony	0.0245	0.0000500	"	0.0250	ND	98.2	75-125			
Vanadium	0.530	0.0000500	"	0.500	0.00315	105	0-200			
Arsenic	0.514	0.000600	"	0.500	0.000867	103	75-125			
Barium	0.633	0.00100	"	0.500	0.126	101	75-125			
Beryllium	0.0240	0.000100	"	0.0250	ND	96.2	75-125			
Boron	2.91	0.0100	"	2.50	0.241	107	75-125			
Cadmium	0.0251	0.0000500	"	0.0250	0.0000254	100	75-125			
Calcium	163	0.0500	"	5.00	159	80.9	75-125			
Cobalt	0.508	0.00100	"	0.500	0.000402	102	75-125			
Chromium	0.524	0.00100	"	0.500	0.000963	105	75-125			
Copper	0.493	0.00100	"	0.500	0.00245	98.1	75-125			
Iron	5.81	0.0100	"	5.00	0.0238	116	75-125			
Lead	0.240	0.000500	"	0.250	0.000377	95.8	75-125			
Magnesium	41.8	0.0500	"	5.00	36.4	109	75-125			
Manganese	0.514	0.00100	"	0.500	ND	103	75-125			
Molybdenum	0.556	0.00100	"	0.500	0.000967	111	75-125			
Nickel	0.504	0.00100	"	0.500	0.00114	101	75-125			
Potassium	13.0	0.0500	"	5.00	7.45	110	75-125			
Selenium	0.0537	0.00100	"	0.0500	0.00256	102	75-125			
Silver	0.0249	0.000250	"	0.0250	ND	99.7	75-125			
Sodium	98.6	0.0500	"	5.00	92.9	114	75-125			
Thallium	0.0124	0.00100	"	0.0125	0.000187	97.6	70-130			
Titanium	0.0833	0.00100	"	0.500	0.000976	16.5	0-200			
Tin	0.512	0.00500	"	0.500	ND	102	75-125			
Zinc	0.467	0.00100	"	0.500	0.00155	93.1	75-125			

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: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

Dissolved Metals by EPA Method 200.8 - Quality Control

Summit Scientific

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

Batch 1812312 - EPA 200.8

Matrix Spike Dup (1812312-MSD1)

Source: 1812268-01

Prepared & Analyzed: 12/21/18

Aluminum	5.39	0.0500	mg/L	5.00	ND	108	75-125	0.645	25	
Vanadium	0.516	0.0000500	"	0.500	0.00315	103	0-200	2.77	200	
Antimony	0.0235	0.0000500	"	0.0250	ND	94.0	75-125	4.30	25	
Arsenic	0.493	0.000600	"	0.500	0.000867	98.4	75-125	4.24	25	
Barium	0.596	0.00100	"	0.500	0.126	94.1	75-125	5.94	25	
Beryllium	0.0224	0.000100	"	0.0250	ND	89.5	75-125	7.19	25	
Boron	2.77	0.0100	"	2.50	0.241	101	75-125	4.84	25	
Cadmium	0.0241	0.0000500	"	0.0250	0.0000254	96.5	75-125	3.79	25	
Calcium	165	0.0500	"	5.00	159	108	75-125	0.817	25	
Chromium	0.507	0.00100	"	0.500	0.000963	101	75-125	3.25	25	
Cobalt	0.493	0.00100	"	0.500	0.000402	98.4	75-125	3.15	25	
Copper	0.478	0.00100	"	0.500	0.00245	95.1	75-125	3.06	25	
Iron	5.60	0.0100	"	5.00	0.0238	112	75-125	3.69	25	
Lead	0.228	0.000500	"	0.250	0.000377	90.9	75-125	5.19	25	
Magnesium	41.9	0.0500	"	5.00	36.4	111	75-125	0.135	25	
Manganese	0.498	0.00100	"	0.500	ND	99.7	75-125	3.12	25	
Molybdenum	0.531	0.00100	"	0.500	0.000967	106	75-125	4.58	25	
Nickel	0.486	0.00100	"	0.500	0.00114	96.9	75-125	3.67	25	
Potassium	12.7	0.0500	"	5.00	7.45	106	75-125	1.67	25	
Selenium	0.0517	0.00100	"	0.0500	0.00256	98.2	75-125	3.90	25	
Silver	0.0241	0.000250	"	0.0250	ND	96.4	75-125	3.33	25	
Sodium	98.8	0.0500	"	5.00	92.9	119	75-125	0.233	25	
Thallium	0.0118	0.00100	"	0.0125	0.000187	93.0	70-130	4.74	20	
Tin	0.487	0.00500	"	0.500	ND	97.3	75-125	4.98	25	
Titanium	0.0786	0.00100	"	0.500	0.000976	15.5	0-200	5.74	25	
Zinc	0.453	0.00100	"	0.500	0.00155	90.3	75-125	3.07	25	

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: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

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

Batch 1812305 - General Preparation

Blank (1812305-BLK1)

Prepared & Analyzed: 12/21/18

Bromide	ND	0.200	mg/L
Chloride	ND	0.0600	"
Fluoride	ND	0.0400	"
Nitrate as N	ND	0.0500	"
Nitrite as N	ND	0.0600	"
Orthophosphate as P	ND	0.100	"
Sulfate	ND	0.300	"

LCS (1812305-BS1)

Prepared & Analyzed: 12/21/18

Bromide	9.34	0.200	mg/L	10.0	93.4	90-110
Chloride	3.15	0.0600	"	3.00	105	90-110
Fluoride	1.98	0.0400	"	2.00	99.0	90-110
Nitrate as N	2.93	0.0500	"	3.00	97.7	90-110
Nitrite as N	2.97	0.0600	"	3.00	99.1	90-110
Orthophosphate as P	4.93	0.100	"	5.00	98.5	90-110
Sulfate	15.0	0.300	"	15.0	100	90-110

Duplicate (1812305-DUP1)

Source: 1812284-01

Prepared & Analyzed: 12/21/18

Bromide	0.297	0.200	mg/L	0.256	14.8	20
Chloride	ND	0.0600	"	152		20
Fluoride	1.07	0.0400	"	0.939	12.9	20
Nitrate as N	12.9	0.0500	"	12.1	6.29	20
Nitrite as N	ND	0.0600	"	ND		20
Orthophosphate as P	0.0490	0.100	"	0.0500	2.02	20
Sulfate	162	0.300	"	352	74.2	20

QM-02

Matrix Spike (1812305-MS1)

Source: 1812284-01

Prepared & Analyzed: 12/21/18

Bromide	11.5	0.200	mg/L	10.0	0.256	112	80-120
Chloride	ND	0.0600	"	3.00	152	NR	80-120
Fluoride	3.16	0.0400	"	2.00	0.939	111	80-120
Nitrate as N	14.8	0.0500	"	3.00	12.1	90.1	80-120
Nitrite as N	3.54	0.0600	"	3.00	ND	118	80-120
Orthophosphate as P	5.70	0.100	"	5.00	0.0500	113	80-120
Sulfate	162	0.300	"	15.0	352	NR	80-120

QM-02

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.



Fremont
Analytical

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Summit Scientific
Paul Shrewsbury
4653 Table Mountain Dr
Golden, CO 80403

RE: 1812284
Work Order Number: 1812357

December 28, 2018

Attention Paul Shrewsbury:

Fremont Analytical, Inc. received 2 sample(s) on 12/24/2018 for the analyses presented in the following report.

Dissolved Organic Carbon by SM 5310C

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward
Project Manager

CLIENT: Summit Scientific
Project: 1812284
Work Order: 1812357

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1812357-001	BH14	12/20/2018 10:11 AM	12/24/2018 9:08 AM
1812357-002	BH13	12/20/2018 10:47 AM	12/24/2018 9:08 AM

CLIENT: Summit Scientific**Project:** 1812284

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

1812357-001B

TEST_SUB has been Sub Contracted.

1812357-002B

TEST_SUB has been Sub Contracted.

Qualifiers:

- * - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Analytical Report

Work Order: 1812357

Date Reported: 12/28/2018

CLIENT: Summit Scientific

Project: 1812284

Lab ID: 1812357-001

Client Sample ID: BH14

Collection Date: 12/20/2018 10:11:00 AM

Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
----------	--------	----	------	-------	----	---------------

Dissolved Organic Carbon by SM 5310C

Batch ID: R48642 Analyst: GM

Organic Carbon, Dissolved	3.63	0.500		mg/L	1	12/28/2018 12:32:00 PM
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Lab ID: 1812357-002

Client Sample ID: BH13

Collection Date: 12/20/2018 10:47:00 AM

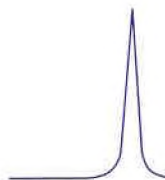
Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
----------	--------	----	------	-------	----	---------------

Dissolved Organic Carbon by SM 5310C

Batch ID: R48642 Analyst: GM

Organic Carbon, Dissolved	3.73	0.500		mg/L	1	12/28/2018 3:03:00 PM
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12/28/2018

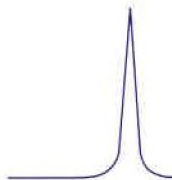
Fremont Analytical
3600 Fremont Ave N
Seattle, WA 98103
Attn: Mike Ridgeway

Sample Matrix: Water
Date Sampled: 12/20/2018
Date Received: 12/26/2018
Spectra Project: 2018120588
Rush

<u>Client ID</u>	<u>Spectra #</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
BH14	1	Dissolved Sulfur	94.9	mg/L	SW846 6010D
BH14	1	Total Sulfur	117	mg/L	SW846 6010D
BH13	2	Dissolved Sulfur	94.5	mg/L	SW846 6010D
BH13	2	Total Sulfur	126	mg/L	SW846 6010D

SPECTRA LABORATORIES


Jeffrey Cooper, Laboratory Manager
a7/scj



12/27/2018

Fremont Analytical
3600 Fremont Ave. N.
Seattle, WA 98103

Units: mg/L
Spectra Project: 2018120588
Applies to Spectra #'s 1-2
Analyst: SCJ

QUALITY CONTROL RESULTS
ICP Metals - Dissolved - SW846 6010D - Water

Dissolved Filter Blank

Date Filtered: 12/27/2018 Date Analyzed: 12/27/2018

<u>Element</u>	<u>Result</u>
Sulfur	< 0.08

Initial Calibration Verification (ICV)

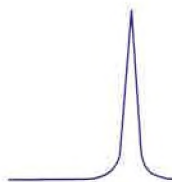
Date Filtered: 12/27/2018 Date Analyzed: 12/27/2018

<u>Element</u>	<u>Spike Added</u>	<u>LCS Conc.</u>	<u>LCS %Rec</u>
Sulfur	1.0	1.004	100.4

ICV Recovery limits 90-110%

Spectra Laboratories


Jeffrey Cooper
Laboratory Manager



12/28/2018

Fremont Analytical
3600 Fremont Ave. N.
Seattle, WA 98103

Units: mg/L
Spectra Project: 2018120588
Applies to Spectra #'s 1-2
Analyst: SCJ

QUALITY CONTROL RESULTS

ICP Metals SW846 6010D - Liquid/Water

Method Blank

Date Digested: 12/28/2018 Date Analyzed: 12/28/2018

Element	Result
Sulfur	< 0.08

Laboratory Control Sample (LCS)

Date Digested: 12/28/2018 Date Analyzed: 12/28/2018

Element	Spike Added	LCS Conc.	LCS %Rec
Sulfur	1.0	1.072	107.2

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 12/28/2018 Date Analyzed: 12/28/2018
Sample Spiked: 2018120588-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Sulfur	116.800	1.0	127.100	1030.0	132.000	1520.0	38.4

Comment: Sulfur concentration exceeds 4 X the spiking level, therefore results are acceptable

Recovery Limits 75-125%

RPD Limit 20

Spectra Laboratories

Jeffrey Cooper
Laboratory Manager



CHAIN OF CUSTODY RECORD

Omega COCID 630

PAGE: 1 OF: 1

ADDRESS

Fremont Analytical, Inc.
3600 Fremont Ave. N.
Seattle, WA 98103
TEL: 206-352-3790
FAX: 206-352-7178

Website: www.fremontanalytical.com

SPS 12/26/18

2018120588

SUB CONTRACTOR: Spectra		COMPANY: SPECTRA Laboratories		SPECIAL INSTRUCTIONS / COMMENTS:			
ADDRESS: 2221 Ross Way				2 Day TAT/ASAP. Please email results to Mike Ridgeway at mridgeway@fremontanalytical.com and Chelsea Ward at cward@fremontanalytical.com.			
CITY, STATE, ZIP: Tacoma, WA 98421							
PHONE: (253) 272-4850		FAX: (253) 572-9838		EMAIL:			
ACCOUNT #:							
ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.
1	1812357-001B	BH14	AMBER GLASS 2	Water	12/20/2018 10:11:00 AM	1	Total / Dissolved Sulfur
2	1812357-002B	BH13	AMBER GLASS 2	Water	12/20/2018 10:47:00 AM	1	Total / Dissolved Sulfur

Relinquished By:	Date: 12/20/18	Time: 9:45	Received By:	Date: 12-20-18	Time: 11:45am
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
TAT: Standard <input type="checkbox"/> RUSH <input type="checkbox"/>			Next BD <input type="checkbox"/> 2nd BD <input type="checkbox"/> 3rd BD <input type="checkbox"/>		
Note: RUSH requests will incur surcharges!					
REPORT TRANSMITTAL DESIRED: <input type="checkbox"/> HARDCOPY (extra cost) <input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE					
FOR LAB USE ONLY					
Temp of samples _____ °C Attempt to Cool? _____					
Comments: _____					

Work Order: 1812357
CLIENT: Summit Scientific
Project: 1812284

QC SUMMARY REPORT

Dissolved Organic Carbon by SM 5310C

Sample ID	MB-48642	SampType:	MBLK	Units:	mg/L	Prep Date:	12/28/2018	RunNo:	48642		
Client ID:	MBLKW	Batch ID:	R48642			Analysis Date:	12/28/2018	SeqNo:	953657		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Organic Carbon, Dissolved ND 0.500

NOTES:
 Filter blank

Sample ID	LCS-48642	SampType:	LCS	Units:	mg/L	Prep Date:	12/28/2018	RunNo:	48642		
Client ID:	LCSW	Batch ID:	R48642			Analysis Date:	12/28/2018	SeqNo:	953658		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Organic Carbon, Dissolved 5.15 0.500 5.000 0 103 80 120

Sample ID	1812357-001ADUP	SampType:	DUP	Units:	mg/L	Prep Date:	12/28/2018	RunNo:	48642		
Client ID:	BH14	Batch ID:	R48642			Analysis Date:	12/28/2018	SeqNo:	953660		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Organic Carbon, Dissolved 3.71 0.500 3.631 2.15 20

Sample ID	1812357-001AMS	SampType:	MS	Units:	mg/L	Prep Date:	12/28/2018	RunNo:	48642		
Client ID:	BH14	Batch ID:	R48642			Analysis Date:	12/28/2018	SeqNo:	953661		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Organic Carbon, Dissolved 8.26 0.500 5.000 3.631 92.6 70 130

Sample ID	1812357-001AMSD	SampType:	MSD	Units:	mg/L	Prep Date:	12/28/2018	RunNo:	48642		
Client ID:	BH14	Batch ID:	R48642			Analysis Date:	12/28/2018	SeqNo:	953662		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Organic Carbon, Dissolved 8.46 0.500 5.000 3.631 96.5 70 130 8.262 2.31 30

Work Order: 1812357
CLIENT: Summit Scientific
Project: 1812284

QC SUMMARY REPORT

Dissolved Organic Carbon by SM 5310C

Sample ID	1812345-001DUP	SampType:	DUP	Units:	mg/L	Prep Date:	12/28/2018	RunNo:	48642		
Client ID:	BATCH	Batch ID:	R48642			Analysis Date:	12/28/2018	SeqNo:	953673		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Dissolved	0.546	0.500						0.5720	4.65	20	

Sample ID	1812345-001DMS	SampType:	MS	Units:	mg/L	Prep Date:	12/28/2018	RunNo:	48642		
Client ID:	BATCH	Batch ID:	R48642	Analysis Date:				12/28/2018	SeqNo:	953674	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Dissolved	5.49	0.500	5.000	0.5720	98.3	70	130				

Client Name: **SUMSCI**
 Logged by: **Clare Griggs**

Work Order Number: **1812357**
 Date Received: **12/24/2018 9:08:00 AM**

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
 2. How was the sample delivered? FedEx

Log In

3. Coolers are present? Yes ☒ No ☐ NA ☐
 4. Shipping container/cooler in good condition? Yes ☒ No ☐
 5. Custody Seals present on shipping container/cooler?
 (Refer to comments for Custody Seals not intact) Yes ☒ No ☐ Not Required ☐
 6. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
 7. Were all items received at a temperature of $>0^{\circ}\text{C}$ to 10.0°C * Yes ☒ No ☐ NA ☐
 8. Sample(s) in proper container(s)? Yes ☒ No ☐
 9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
 10. Are samples properly preserved? Yes ☒ No ☐
 11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
 12. Is there headspace in the VOA vials? Yes ☐ No ☐ NA ☒
 13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐
 14. Does paperwork match bottle labels? Yes ☒ No ☐
 15. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
 16. Is it clear what analyses were requested? Yes ☒ No ☐
 17. Were all holding times able to be met? Yes ☒ No ☐

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:	<input type="text"/>	Date	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

Item Information

Item #	Temp $^{\circ}\text{C}$
Cooler	3.3
Sample	3.4

* Note: DoD/ELAP and TNI require items to be received at $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$



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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 14:09

Notes and Definitions

QM-02	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration
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

January 28, 2019

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Sitzman 1U

Enclosed are the results of analyses for samples received by Summit Scientific on 01/23/19 16:25. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1901287-01	Water	01/23/19 09:38	01/23/19 16:25
BH02	1901287-02	Water	01/23/19 10:11	01/23/19 16:25
BH13	1901287-03	Water	01/23/19 10:40	01/23/19 16:25
BH14	1901287-04	Water	01/23/19 11:05	01/23/19 16:25
BH03	1901287-05	Water	01/23/19 11:31	01/23/19 16:25
BH05	1901287-06	Water	01/23/19 12:16	01/23/19 16:25
BH04	1901287-07	Water	01/23/19 12:40	01/23/19 16:25
BH06	1901287-08	Water	01/23/19 13:05	01/23/19 16:25
BH10	1901287-09	Water	01/23/19 13:28	01/23/19 16:25
BH11	1901287-10	Water	01/23/19 13:52	01/23/19 16:25
BH12	1901287-11	Water	01/23/19 14:10	01/23/19 16:25
BH08	1901287-12	Water	01/23/19 14:28	01/23/19 16:25
BH07	1901287-13	Water	01/23/19 14:54	01/23/19 16:25
BH09	1901287-14	Water	01/23/19 15:15	01/23/19 16:25

Summit Scientific

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19012871

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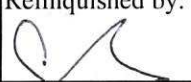
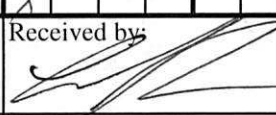
741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 2

Client: PDC Energy
Address: _____
City/State/Zip: _____
Phone: _____ Fax: _____
Sampler Name: C. Hamlin / B. Nelson

Project Manager: Mark Longhurst
E-Mail: _____
Project Name: Sitzman 1U
Project Number: _____

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For:										Special Instructions		
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX by 8260	Total Metals	Dissolved Metals	Cations	Anions	DOC	Full 8270 Suite SVDES						
BH01	1/23/19	938	6	X	X			X					X	X	X	X	X	X						
BH02	1/23/19	1011	6	X	X			X					X	X	X	X	X	X						
BH13	1/23/19	1040	6	X	X			X					X	X	X	X	X	X						
BH04	1/23/19	1125	6	X	X			X					X	X	X	X	X	X						
BH03	1/23/19	1131	8	X	X			X					X	X	X	X	X	X	X					
BH05	1/23/19	1216	6	X	X			X					X	X	X	X	X	X						
BH04	1/23/19	1240	6	X	X			X					X	X	X	X	X	X						
BH00	1/23/19	1305	6	X	X			X					X	X	X	X	X	X						
BH10	1/23/19	1328	6	X	X			X					X	X	X	X	X	X						
BH11	1/23/19	1352	3	X									X											

Relinquished by: 	Date/Time: <u>1/23/19 1625</u>	Received by: 	Date/Time: <u>1.23.19 1625</u>	Turn Around Time (Check) Same Day <input type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/> 72 Hours <input checked="" type="checkbox"/> Standard <input type="checkbox"/>	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:		

Sample Integrity: Temperature Upon Receipt: <u>12.0</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
--	--

Summit Scientific

1901287.2

741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 2 of 2

Client: PDC
Address: _____
City/State/Zip: _____
Phone: _____ Fax: _____
Sampler Name: L. HANSEN / O. NELSON

Project Manager: Mark Longhurst
E-Mail: Mark.Longhurst@pdce.com
Project Name: SILVERMAN IV
Project Number: _____

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For:								Special Instructions
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTX by 8260	PAH metals	Dispersed metals	ANION	CATION	DO	8270 Full suite		
BH12	1/23/19	1410	3	X				X					X							
BH08	1/23/19	1428	6	X	X			X					X	X	X	X	X	X		
BH07	1/23/19	1454	6	X	X			X					X	X	X	X	X	X		
BH09	1/23/19	1515	3	X				X					X							
Relinquished by: <u>[Signature]</u> Date/Time: <u>1/28/2019 1626</u>				Received by: <u>[Signature]</u> Date/Time: <u>1.28.19 1626</u>				Turn Around Time (Check) Same Day <input type="checkbox"/> 72 Hours <input checked="" type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>												
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				Sample Integrity: Temperature Upon Receipt: <u>12.0</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>												
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____																

Sample Receipt Checklist

S2 Work Order 1901287

Client: PDC Energy Client Project ID: Sitaman IV

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

Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: _____
(Describe)

Temp (°C)	<u>12.0</u>
-----------	-------------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? 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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<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 checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCl, HNO3
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pH 0
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

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

WP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

1.23.19 1634
Date/Time



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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH01
1901287-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 09:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1901298	01/24/19	01/25/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/23/19 09:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		122 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Total Recoverable Metals by EPA Method 200.8

Date Sampled: **01/23/19 09:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Aluminum	0.135	0.0500	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.000607	0.000600	"	"	"	"	"	"	
Barium	0.0561	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.233	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	98.1	0.0500	"	"	"	"	"	"	
Chromium	0.00361	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00217	0.00100	"	"	"	"	"	"	
Iron	0.131	0.0100	"	"	"	"	"	"	
Lead	0.000690	0.000500	"	"	"	"	"	"	
Magnesium	38.4	0.0500	"	"	"	"	"	"	
Manganese	0.00999	0.00100	"	"	"	"	"	"	
Molybdenum	0.00484	0.00100	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH01
1901287-01 (Water)

Summit Scientific

Total Recoverable Metals by EPA Method 200.8

Nickel	0.00153	0.00100	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8
Phosphorus	0.0628	0.0200	"	"	"	"	"	"
Potassium	5.33	0.0500	"	"	"	"	"	"
Selenium	0.00109	0.00100	"	"	"	"	"	"
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	118	0.0500	"	"	"	"	"	"
Strontium	1.13	0.00100	"	"	"	"	"	"
Thallium	0.00139	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00590	0.00100	"	"	"	"	"	"
Uranium	0.0142	0.000500	"	"	"	"	"	"
Vanadium	0.00172	0.00100	"	"	"	"	"	"
Zinc	0.00679	0.00100	"	"	"	"	"	"

Dissolved Metals by EPA Method 200.8

Date Sampled: **01/23/19 09:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Aluminum	0.0659	0.0500	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	ND	0.000600	"	"	"	"	"	"	
Barium	0.0539	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.242	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	98.0	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00214	0.00100	"	"	"	"	"	"	
Iron	ND	0.0100	"	"	"	"	"	"	
Lead	0.000636	0.000500	"	"	"	"	"	"	
Magnesium	38.0	0.0500	"	"	"	"	"	"	
Manganese	ND	0.00100	"	"	"	"	"	"	
Molybdenum	0.00468	0.00100	"	"	"	"	"	"	
Nickel	0.00145	0.00100	"	"	"	"	"	"	
Phosphorus	0.0574	0.0200	"	"	"	"	"	"	
Potassium	5.19	0.0500	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH01
1901287-01 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Selenium	0.00105	0.00100	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	118	0.0500	"	"	"	"	"	"
Strontium	1.12	0.00100	"	"	"	"	"	"
Thallium	0.00130	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00188	0.00100	"	"	"	"	"	"
Uranium	0.0137	0.000500	"	"	"	"	"	"
Vanadium	0.00142	0.00100	"	"	"	"	"	"
Zinc	ND	0.00100	"	"	"	"	"	"

Anions by EPA Method 300.0

Date Sampled: **01/23/19 09:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Bromide	0.344	0.200	mg/L	1	1901286	01/24/19	01/24/19	EPA 300.0		
Chloride	123	3.00	"	50	"	"	"	"		
Fluoride	1.96	0.0400	"	1	"	"	"	"		
Nitrate as N	10.0	0.0500	"	"	"	"	"	"		
Nitrite as N	ND	0.0600	"	"	"	"	"	"		
Orthophosphate as P	ND	0.100	"	"	"	"	"	"		
Sulfate	249	60.0	"	200	"	"	"	"		

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH02
1901287-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 10:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1901298	01/24/19	01/25/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/23/19 10:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		116 %	21-167		"	"	"	"	

Total Recoverable Metals by EPA Method 200.8

Date Sampled: **01/23/19 10:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Aluminum	ND	0.0500	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.00118	0.000600	"	"	"	"	"	"	
Barium	0.0611	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.242	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	105	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00293	0.00100	"	"	"	"	"	"	
Iron	0.110	0.0100	"	"	"	"	"	"	
Lead	0.000961	0.000500	"	"	"	"	"	"	
Magnesium	42.7	0.0500	"	"	"	"	"	"	
Manganese	0.00696	0.00100	"	"	"	"	"	"	
Molybdenum	0.00604	0.00100	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH02
1901287-02 (Water)

Summit Scientific

Total Recoverable Metals by EPA Method 200.8

Nickel	0.00199	0.00100	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8
Phosphorus	0.128	0.0200	"	"	"	"	"	"
Potassium	6.16	0.0500	"	"	"	"	"	"
Selenium	0.00109	0.00100	"	"	"	"	"	"
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	123	0.0500	"	"	"	"	"	"
Strontium	1.20	0.00100	"	"	"	"	"	"
Thallium	0.00142	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00208	0.00100	"	"	"	"	"	"
Uranium	0.0175	0.000500	"	"	"	"	"	"
Vanadium	0.00356	0.00100	"	"	"	"	"	"
Zinc	0.00779	0.00100	"	"	"	"	"	"

Dissolved Metals by EPA Method 200.8

Date Sampled: 01/23/19 10:11

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Aluminum	ND	0.0500	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.00117	0.000600	"	"	"	"	"	"	
Barium	0.0567	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.262	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	99.2	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00286	0.00100	"	"	"	"	"	"	
Iron	0.0258	0.0100	"	"	"	"	"	"	
Lead	0.000899	0.000500	"	"	"	"	"	"	
Magnesium	40.6	0.0500	"	"	"	"	"	"	
Manganese	0.00686	0.00100	"	"	"	"	"	"	
Molybdenum	0.00515	0.00100	"	"	"	"	"	"	
Nickel	0.00166	0.00100	"	"	"	"	"	"	
Phosphorus	0.122	0.0200	"	"	"	"	"	"	
Potassium	5.74	0.0500	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH02
1901287-02 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Selenium	0.00100	0.00100	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	117	0.0500	"	"	"	"	"	"
Strontium	1.14	0.00100	"	"	"	"	"	"
Thallium	0.00136	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00168	0.00100	"	"	"	"	"	"
Uranium	0.0171	0.000500	"	"	"	"	"	"
Vanadium	0.00351	0.00100	"	"	"	"	"	"
Zinc	0.00246	0.00100	"	"	"	"	"	"

Anions by EPA Method 300.0

Date Sampled: **01/23/19 10:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	0.367	0.200	mg/L	1	1901286	01/24/19	01/24/19	EPA 300.0	
Chloride	109	3.00	"	50	"	"	"	"	
Fluoride	1.35	0.0400	"	1	"	"	"	"	
Nitrate as N	9.45	0.0500	"	"	"	"	"	"	
Nitrite as N	ND	0.0600	"	"	"	"	"	"	
Orthophosphate as P	0.153	0.100	"	"	"	"	"	"	
Sulfate	253	60.0	"	200	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH13
1901287-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 10:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1901298	01/24/19	01/25/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/23/19 10:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		127 %	21-167		"	"	"	"	

Total Recoverable Metals by EPA Method 200.8

Date Sampled: **01/23/19 10:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Aluminum	ND	0.0500	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.00135	0.000600	"	"	"	"	"	"	
Barium	0.0583	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.289	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	99.6	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00228	0.00100	"	"	"	"	"	"	
Iron	0.0120	0.0100	"	"	"	"	"	"	
Lead	0.000908	0.000500	"	"	"	"	"	"	
Magnesium	39.7	0.0500	"	"	"	"	"	"	
Manganese	0.00707	0.00100	"	"	"	"	"	"	
Molybdenum	0.00557	0.00100	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH13
1901287-03 (Water)

Summit Scientific

Total Recoverable Metals by EPA Method 200.8

Nickel	0.00174	0.00100	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8
Phosphorus	0.166	0.0200	"	"	"	"	"	"
Potassium	5.97	0.0500	"	"	"	"	"	"
Selenium	ND	0.00100	"	"	"	"	"	"
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	118	0.0500	"	"	"	"	"	"
Strontium	1.08	0.00100	"	"	"	"	"	"
Thallium	0.00141	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00245	0.00100	"	"	"	"	"	"
Uranium	0.0130	0.000500	"	"	"	"	"	"
Vanadium	0.00211	0.00100	"	"	"	"	"	"
Zinc	0.00590	0.00100	"	"	"	"	"	"

Dissolved Metals by EPA Method 200.8

Date Sampled: 01/23/19 10:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Aluminum	ND	0.0500	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.00135	0.000600	"	"	"	"	"	"	
Barium	0.0575	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.246	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	92.2	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00167	0.00100	"	"	"	"	"	"	
Iron	ND	0.0100	"	"	"	"	"	"	
Lead	0.000894	0.000500	"	"	"	"	"	"	
Magnesium	39.4	0.0500	"	"	"	"	"	"	
Manganese	0.00269	0.00100	"	"	"	"	"	"	
Molybdenum	0.00568	0.00100	"	"	"	"	"	"	
Nickel	0.00165	0.00100	"	"	"	"	"	"	
Phosphorus	0.162	0.0200	"	"	"	"	"	"	
Potassium	5.88	0.0500	"	"	"	"	"	"	

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH13
1901287-03 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Selenium	ND	0.00100	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	118	0.0500	"	"	"	"	"	"
Strontium	1.05	0.00100	"	"	"	"	"	"
Thallium	0.00132	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00174	0.00100	"	"	"	"	"	"
Uranium	0.0129	0.000500	"	"	"	"	"	"
Vanadium	0.00203	0.00100	"	"	"	"	"	"
Zinc	ND	0.00100	"	"	"	"	"	"

Anions by EPA Method 300.0

Date Sampled: **01/23/19 10:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Bromide	0.357	0.200	mg/L	1	1901286	01/24/19	01/24/19	EPA 300.0		
Chloride	107	3.00	"	50	"	"	"	"		
Fluoride	1.62	0.0400	"	1	"	"	"	"		
Nitrate as N	9.38	0.0500	"	"	"	"	"	"		
Nitrite as N	ND	0.0600	"	"	"	"	"	"		
Orthophosphate as P	0.183	0.100	"	"	"	"	"	"		
Sulfate	237	60.0	"	200	"	"	"	"		

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH14
1901287-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 11:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1901298	01/24/19	01/25/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/23/19 11:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		117 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		121 %	21-167		"	"	"	"	

Total Recoverable Metals by EPA Method 200.8

Date Sampled: **01/23/19 11:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Aluminum	ND	0.0500	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.00111	0.000600	"	"	"	"	"	"	
Barium	0.0624	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.248	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	109	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00244	0.00100	"	"	"	"	"	"	
Iron	0.0145	0.0100	"	"	"	"	"	"	
Lead	0.00102	0.000500	"	"	"	"	"	"	
Magnesium	44.6	0.0500	"	"	"	"	"	"	
Manganese	0.0109	0.00100	"	"	"	"	"	"	
Molybdenum	0.00481	0.00100	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH14
1901287-04 (Water)

Summit Scientific

Total Recoverable Metals by EPA Method 200.8

Nickel	0.00158	0.00100	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8
Phosphorus	0.127	0.0200	"	"	"	"	"	"
Potassium	6.65	0.0500	"	"	"	"	"	"
Selenium	ND	0.00100	"	"	"	"	"	"
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	125	0.0500	"	"	"	"	"	"
Strontium	1.23	0.00100	"	"	"	"	"	"
Thallium	0.00141	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.0124	0.00100	"	"	"	"	"	"
Uranium	0.0156	0.000500	"	"	"	"	"	"
Vanadium	0.00158	0.00100	"	"	"	"	"	"
Zinc	0.00625	0.00100	"	"	"	"	"	"

Dissolved Metals by EPA Method 200.8

Date Sampled: 01/23/19 11:05

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Aluminum	ND	0.0500	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.00110	0.000600	"	"	"	"	"	"	
Barium	0.0606	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.248	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	107	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00221	0.00100	"	"	"	"	"	"	
Iron	ND	0.0100	"	"	"	"	"	"	
Lead	0.000999	0.000500	"	"	"	"	"	"	
Magnesium	43.2	0.0500	"	"	"	"	"	"	
Manganese	0.0103	0.00100	"	"	"	"	"	"	
Molybdenum	0.00487	0.00100	"	"	"	"	"	"	
Nickel	0.00160	0.00100	"	"	"	"	"	"	
Phosphorus	0.125	0.0200	"	"	"	"	"	"	
Potassium	6.15	0.0500	"	"	"	"	"	"	

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH14
1901287-04 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Selenium	ND	0.00100	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	120	0.0500	"	"	"	"	"	"
Strontium	1.22	0.00100	"	"	"	"	"	"
Thallium	0.00137	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00170	0.00100	"	"	"	"	"	"
Uranium	0.0156	0.000500	"	"	"	"	"	"
Vanadium	0.00137	0.00100	"	"	"	"	"	"
Zinc	ND	0.00100	"	"	"	"	"	"

Anions by EPA Method 300.0

Date Sampled: **01/23/19 11:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Bromide	0.384	0.200	mg/L	1	1901286	01/24/19	01/24/19	EPA 300.0		
Chloride	161	3.00	"	50	"	"	"	"		
Fluoride	1.29	0.0400	"	1	"	"	"	"		
Nitrate as N	11.3	0.0500	"	"	"	"	"	"		
Nitrite as N	ND	0.0600	"	"	"	"	"	"		
Orthophosphate as P	0.148	0.100	"	"	"	"	"	"		
Sulfate	262	60.0	"	200	"	"	"	"		

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH03
1901287-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 11:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1901298	01/24/19	01/25/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/23/19 11:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		126 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		132 %	21-167		"	"	"	"	

Semivolatile Organic Compounds by EPA Method 8270D

Date Sampled: **01/23/19 11:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	10.0	ug/l	1	1901311	01/25/19	01/26/19	EPA 8270D	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)adipate	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	20.0	"	"	"	"	"	"	
Benzo (g,h,i) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzyl alcohol	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	10.0	"	"	"	"	"	"	
N-Nitrosodimethylamine	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH03
1901287-05 (Water)

Summit Scientific

Semivolatile Organic Compounds by EPA Method 8270D

4-Bromophenyl phenyl ether	ND	10.0	ug/l	1	1901311	01/25/19	01/26/19	EPA 8270D
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"
4-Chloroaniline	ND	10.0	"	"	"	"	"	"
4-Chloro-3-methylphenol	ND	10.0	"	"	"	"	"	"
2-Chloronaphthalene	ND	10.0	"	"	"	"	"	"
2-Chlorophenol	ND	10.0	"	"	"	"	"	"
4-Chlorophenyl phenyl ether	ND	10.0	"	"	"	"	"	"
Chrysene	ND	10.0	"	"	"	"	"	"
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"
Dibenzofuran	ND	10.0	"	"	"	"	"	"
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"
2,4-Dichlorophenol	ND	10.0	"	"	"	"	"	"
Diethyl phthalate	ND	10.0	"	"	"	"	"	"
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"
Carbazole	ND	10.0	"	"	"	"	"	"
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"
4,6-Dinitro-2-methylphenol	ND	10.0	"	"	"	"	"	"
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"
Azobenzene	ND	10.0	"	"	"	"	"	"
2,4-Dinitrotoluene	ND	10.0	"	"	"	"	"	"
2,6-Dinitrotoluene	ND	10.0	"	"	"	"	"	"
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"
Fluoranthene	ND	10.0	"	"	"	"	"	"
Fluorene	ND	10.0	"	"	"	"	"	"
Hexachlorobenzene	ND	10.0	"	"	"	"	"	"
Hexachlorobutadiene	ND	10.0	"	"	"	"	"	"
Hexachlorocyclopentadiene	ND	10.0	"	"	"	"	"	"
Hexachloroethane	ND	10.0	"	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"
Isophorone	ND	10.0	"	"	"	"	"	"
2-Methylphenol	ND	10.0	"	"	"	"	"	"
4-Methylphenol	ND	10.0	"	"	"	"	"	"
1,2-Dinitrobenzene	ND	10.0	"	"	"	"	"	"
2-Nitroaniline	ND	10.0	"	"	"	"	"	"

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH03
1901287-05 (Water)

Summit Scientific

Semivolatile Organic Compounds by EPA Method 8270D

1,3-Dinitrobenzene	ND	10.0	ug/l	1	1901311	01/25/19	01/26/19	EPA 8270D
3-Nitroaniline	ND	10.0	"	"	"	"	"	"
1,4-Dinitrobenzene	ND	10.0	"	"	"	"	"	"
4-Nitroaniline	ND	10.0	"	"	"	"	"	"
Nitrobenzene	ND	10.0	"	"	"	"	"	"
2-Nitrophenol	ND	10.0	"	"	"	"	"	"
4-Nitrophenol	ND	10.0	"	"	"	"	"	"
N-Nitrosodi-n-propylamine	ND	10.0	"	"	"	"	"	"
2,3,4,6-Tetrachlorophenol	ND	10.0	"	"	"	"	"	"
Pentachlorophenol	ND	10.0	"	"	"	"	"	"
Phenanthrene	ND	10.0	"	"	"	"	"	"
Phenol	ND	10.0	"	"	"	"	"	"
Aniline	ND	10.0	"	"	"	"	"	"
Pyrene	ND	10.0	"	"	"	"	"	"
1,2,4-Trichlorobenzene	ND	10.0	"	"	"	"	"	"
2,4,5-Trichlorophenol	ND	10.0	"	"	"	"	"	"
2,4,6-Trichlorophenol	ND	10.0	"	"	"	"	"	"
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"
3,3'-Dichlorobenzidine	ND	30.0	"	"	"	"	"	"

Date Sampled: **01/23/19 11:31**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Fluorophenol		21.6 %		20-120		"	"	"	"	
Surrogate: Phenol-d5		24.3 %		20-120		"	"	"	"	
Surrogate: Nitrobenzene-d5		57.1 %		20-120		"	"	"	"	
Surrogate: 2-Fluorobiphenyl		111 %		20-120		"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		85.1 %		20-120		"	"	"	"	
Surrogate: Terphenyl-d14		32.0 %		20-120		"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH03
1901287-05 (Water)

Summit Scientific

Total Recoverable Metals by EPA Method 200.8

Date Sampled: **01/23/19 11:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Aluminum	ND	0.0500	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.00111	0.000600	"	"	"	"	"	"	
Barium	0.0743	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.269	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	111	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00307	0.00100	"	"	"	"	"	"	
Iron	0.545	0.0100	"	"	"	"	"	"	
Lead	0.000985	0.000500	"	"	"	"	"	"	
Magnesium	46.6	0.0500	"	"	"	"	"	"	
Manganese	0.0100	0.00100	"	"	"	"	"	"	
Molybdenum	0.00490	0.00100	"	"	"	"	"	"	
Nickel	0.00208	0.00100	"	"	"	"	"	"	
Phosphorus	0.0990	0.0200	"	"	"	"	"	"	
Potassium	8.11	0.0500	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Silver	ND	0.0000500	"	"	"	"	"	"	
Sodium	133	0.0500	"	"	"	"	"	"	
Strontium	1.31	0.00100	"	"	"	"	"	"	
Thallium	0.00140	0.0000250	"	"	"	"	"	"	
Tin	ND	0.00100	"	"	"	"	"	"	
Titanium	0.00214	0.00100	"	"	"	"	"	"	
Uranium	0.0164	0.000500	"	"	"	"	"	"	
Vanadium	0.00243	0.00100	"	"	"	"	"	"	
Zinc	0.00640	0.00100	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH03
1901287-05 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Date Sampled: **01/23/19 11:31**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Aluminum	ND	0.0500	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.000962	0.000600	"	"	"	"	"	"	
Barium	0.0730	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.266	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	109	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00236	0.00100	"	"	"	"	"	"	
Iron	0.0314	0.0100	"	"	"	"	"	"	
Lead	0.000901	0.000500	"	"	"	"	"	"	
Magnesium	46.3	0.0500	"	"	"	"	"	"	
Manganese	0.00990	0.00100	"	"	"	"	"	"	
Molybdenum	0.00497	0.00100	"	"	"	"	"	"	
Nickel	0.00187	0.00100	"	"	"	"	"	"	
Phosphorus	0.0915	0.0200	"	"	"	"	"	"	
Potassium	8.09	0.0500	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Silver	ND	0.0000500	"	"	"	"	"	"	
Sodium	136	0.0500	"	"	"	"	"	"	
Strontium	1.30	0.00100	"	"	"	"	"	"	
Thallium	0.00136	0.0000250	"	"	"	"	"	"	
Tin	ND	0.00100	"	"	"	"	"	"	
Titanium	0.00163	0.00100	"	"	"	"	"	"	
Uranium	0.0162	0.000500	"	"	"	"	"	"	
Vanadium	0.00236	0.00100	"	"	"	"	"	"	
Zinc	0.00125	0.00100	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH03
1901287-05 (Water)

Summit Scientific

Anions by EPA Method 300.0

Date Sampled: **01/23/19 11:31**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Bromide	0.354	0.200		mg/L	1	1901286	01/24/19	01/24/19	EPA 300.0	
Chloride	111	3.00		"	50	"	"	"	"	
Fluoride	1.32	0.0400		"	1	"	"	"	"	
Nitrate as N	8.21	0.0500		"	"	"	"	"	"	
Nitrite as N	0.914	0.0600		"	"	"	"	"	"	
Orthophosphate as P	0.105	0.100		"	"	"	"	"	"	
Sulfate	262	60.0		"	200	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH05
1901287-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 12:16**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1901298	01/24/19	01/25/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/23/19 12:16**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		123 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		105 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		127 %	21-167		"	"	"	"	

Total Recoverable Metals by EPA Method 200.8

Date Sampled: **01/23/19 12:16**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Aluminum	ND	0.0500	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.000844	0.000600	"	"	"	"	"	"	
Barium	0.0598	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.250	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	118	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00154	0.00100	"	"	"	"	"	"	
Iron	0.625	0.0100	"	"	"	"	"	"	
Lead	0.000776	0.000500	"	"	"	"	"	"	
Magnesium	49.3	0.0500	"	"	"	"	"	"	
Manganese	0.0466	0.00100	"	"	"	"	"	"	
Molybdenum	0.00384	0.00100	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH05
1901287-06 (Water)

Summit Scientific

Total Recoverable Metals by EPA Method 200.8

Nickel	0.00469	0.00100	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8
Phosphorus	ND	0.0200	"	"	"	"	"	"
Potassium	6.93	0.0500	"	"	"	"	"	"
Selenium	ND	0.00100	"	"	"	"	"	"
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	128	0.0500	"	"	"	"	"	"
Strontium	1.29	0.00100	"	"	"	"	"	"
Thallium	0.00143	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00227	0.00100	"	"	"	"	"	"
Uranium	0.0164	0.000500	"	"	"	"	"	"
Vanadium	0.00175	0.00100	"	"	"	"	"	"
Zinc	0.00669	0.00100	"	"	"	"	"	"

Dissolved Metals by EPA Method 200.8

Date Sampled: **01/23/19 12:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Aluminum	ND	0.0500	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	ND	0.000600	"	"	"	"	"	"	
Barium	0.0566	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.249	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	119	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	ND	0.00100	"	"	"	"	"	"	
Iron	0.321	0.0100	"	"	"	"	"	"	
Lead	0.000758	0.000500	"	"	"	"	"	"	
Magnesium	47.4	0.0500	"	"	"	"	"	"	
Manganese	0.0445	0.00100	"	"	"	"	"	"	
Molybdenum	0.00355	0.00100	"	"	"	"	"	"	
Nickel	0.00204	0.00100	"	"	"	"	"	"	
Phosphorus	ND	0.0200	"	"	"	"	"	"	
Potassium	6.71	0.0500	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH05
1901287-06 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Selenium	ND	0.00100	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	129	0.0500	"	"	"	"	"	"
Strontium	1.29	0.00100	"	"	"	"	"	"
Thallium	0.00131	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00138	0.00100	"	"	"	"	"	"
Uranium	0.0159	0.000500	"	"	"	"	"	"
Vanadium	0.00124	0.00100	"	"	"	"	"	"
Zinc	ND	0.00100	"	"	"	"	"	"

Anions by EPA Method 300.0

Date Sampled: **01/23/19 12:16**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Bromide	0.418	0.200	mg/L	1	1901286	01/24/19	01/24/19	EPA 300.0		
Chloride	116	3.00	"	50	"	"	"	"		
Fluoride	1.14	0.0400	"	1	"	"	"	"		
Nitrate as N	4.37	0.0500	"	"	"	"	"	"		
Nitrite as N	0.0960	0.0600	"	"	"	"	"	"		
Orthophosphate as P	ND	0.100	"	"	"	"	"	"		
Sulfate	573	60.0	"	200	"	"	"	"		

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH04
1901287-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 12:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1901298	01/24/19	01/25/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/23/19 12:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		129 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		121 %	21-167		"	"	"	"	

Total Recoverable Metals by EPA Method 200.8

Date Sampled: **01/23/19 12:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Aluminum	ND	0.0500	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.00126	0.000600	"	"	"	"	"	"	
Barium	0.0670	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.250	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	108	0.0500	"	"	"	"	"	"	
Chromium	0.00106	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00333	0.00100	"	"	"	"	"	"	
Iron	ND	0.0100	"	"	"	"	"	"	
Lead	0.00101	0.000500	"	"	"	"	"	"	
Magnesium	47.2	0.0500	"	"	"	"	"	"	
Manganese	0.00213	0.00100	"	"	"	"	"	"	
Molybdenum	0.00533	0.00100	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH04
1901287-07 (Water)

Summit Scientific

Total Recoverable Metals by EPA Method 200.8

Nickel	0.00165	0.00100	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8
Phosphorus	0.190	0.0200	"	"	"	"	"	"
Potassium	6.83	0.0500	"	"	"	"	"	"
Selenium	ND	0.00100	"	"	"	"	"	"
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	125	0.0500	"	"	"	"	"	"
Strontium	1.29	0.00100	"	"	"	"	"	"
Thallium	0.00141	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00226	0.00100	"	"	"	"	"	"
Uranium	0.0167	0.000500	"	"	"	"	"	"
Vanadium	0.00149	0.00100	"	"	"	"	"	"
Zinc	0.00589	0.00100	"	"	"	"	"	"

Dissolved Metals by EPA Method 200.8

Date Sampled: 01/23/19 12:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Aluminum	ND	0.0500	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.00111	0.000600	"	"	"	"	"	"	
Barium	0.0663	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.249	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	108	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00332	0.00100	"	"	"	"	"	"	
Iron	ND	0.0100	"	"	"	"	"	"	
Lead	0.000977	0.000500	"	"	"	"	"	"	
Magnesium	47.1	0.0500	"	"	"	"	"	"	
Manganese	0.00114	0.00100	"	"	"	"	"	"	
Molybdenum	0.00526	0.00100	"	"	"	"	"	"	
Nickel	0.00152	0.00100	"	"	"	"	"	"	
Phosphorus	0.164	0.0200	"	"	"	"	"	"	
Potassium	6.82	0.0500	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH04
1901287-07 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Selenium	ND	0.00100	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	124	0.0500	"	"	"	"	"	"
Strontium	1.28	0.00100	"	"	"	"	"	"
Thallium	0.00134	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00223	0.00100	"	"	"	"	"	"
Uranium	0.0163	0.000500	"	"	"	"	"	"
Vanadium	0.00148	0.00100	"	"	"	"	"	"
Zinc	0.00102	0.00100	"	"	"	"	"	"

Anions by EPA Method 300.0

Date Sampled: **01/23/19 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	0.415	0.200	mg/L	1	1901286	01/24/19	01/24/19	EPA 300.0	
Chloride	110	3.00	"	50	"	"	"	"	
Fluoride	1.30	0.0400	"	1	"	"	"	"	
Nitrate as N	9.08	0.0500	"	"	"	"	"	"	
Nitrite as N	ND	0.0600	"	"	"	"	"	"	
Orthophosphate as P	0.165	0.100	"	"	"	"	"	"	
Sulfate	256	60.0	"	200	"	"	"	"	

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: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH06
1901287-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1901298	01/24/19	01/25/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/23/19 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		117 %	21-167		"	"	"	"	

Total Recoverable Metals by EPA Method 200.8

Date Sampled: **01/23/19 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Aluminum	ND	0.0500	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.000950	0.000600	"	"	"	"	"	"	
Barium	0.0664	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.232	0.0100	"	"	"	"	"	"	
Cadmium	0.0000711	0.0000500	"	"	"	"	"	"	
Calcium	88.7	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00430	0.00100	"	"	"	"	"	"	
Iron	ND	0.0100	"	"	"	"	"	"	
Lead	0.00110	0.000500	"	"	"	"	"	"	
Magnesium	41.4	0.0500	"	"	"	"	"	"	
Manganese	0.0121	0.00100	"	"	"	"	"	"	
Molybdenum	0.00588	0.00100	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH06
1901287-08 (Water)

Summit Scientific

Total Recoverable Metals by EPA Method 200.8

Nickel	0.00193	0.00100	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8
Phosphorus	0.113	0.0200	"	"	"	"	"	"
Potassium	6.14	0.0500	"	"	"	"	"	"
Selenium	0.00134	0.00100	"	"	"	"	"	"
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	113	0.0500	"	"	"	"	"	"
Strontium	1.09	0.00100	"	"	"	"	"	"
Thallium	0.00139	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00227	0.00100	"	"	"	"	"	"
Uranium	0.0105	0.000500	"	"	"	"	"	"
Vanadium	0.00140	0.00100	"	"	"	"	"	"
Zinc	0.00799	0.00100	"	"	"	"	"	"

Dissolved Metals by EPA Method 200.8

Date Sampled: **01/23/19 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Aluminum	ND	0.0500	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.000863	0.000600	"	"	"	"	"	"	
Barium	0.0655	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.227	0.0100	"	"	"	"	"	"	
Cadmium	0.0000571	0.0000500	"	"	"	"	"	"	
Calcium	88.6	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00358	0.00100	"	"	"	"	"	"	
Iron	ND	0.0100	"	"	"	"	"	"	
Lead	0.00102	0.000500	"	"	"	"	"	"	
Magnesium	41.1	0.0500	"	"	"	"	"	"	
Manganese	0.00568	0.00100	"	"	"	"	"	"	
Molybdenum	0.00557	0.00100	"	"	"	"	"	"	
Nickel	0.00193	0.00100	"	"	"	"	"	"	
Phosphorus	0.105	0.0200	"	"	"	"	"	"	
Potassium	6.07	0.0500	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH06
1901287-08 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Selenium	0.00114	0.00100	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	113	0.0500	"	"	"	"	"	"
Strontium	1.08	0.00100	"	"	"	"	"	"
Thallium	0.00140	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00223	0.00100	"	"	"	"	"	"
Uranium	0.0103	0.000500	"	"	"	"	"	"
Vanadium	0.00136	0.00100	"	"	"	"	"	"
Zinc	ND	0.00100	"	"	"	"	"	"

Anions by EPA Method 300.0

Date Sampled: **01/23/19 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	0.393	0.200	mg/L	1	1901286	01/24/19	01/24/19	EPA 300.0	
Chloride	111	3.00	"	50	"	"	"	"	
Fluoride	1.70	0.0400	"	1	"	"	"	"	
Nitrate as N	10.2	0.0500	"	"	"	"	"	"	
Nitrite as N	ND	0.0600	"	"	"	"	"	"	
Orthophosphate as P	0.123	0.100	"	"	"	"	"	"	
Sulfate	224	60.0	"	200	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH10
1901287-09 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 13:28**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1901298	01/24/19	01/25/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/23/19 13:28**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		120 %	21-167		"	"	"	"	

Total Recoverable Metals by EPA Method 200.8

Date Sampled: **01/23/19 13:28**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Aluminum	ND	0.0500	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.000965	0.000600	"	"	"	"	"	"	
Barium	0.0449	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.202	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	82.8	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00280	0.00100	"	"	"	"	"	"	
Iron	0.0124	0.0100	"	"	"	"	"	"	
Lead	0.000992	0.000500	"	"	"	"	"	"	
Magnesium	35.9	0.0500	"	"	"	"	"	"	
Manganese	ND	0.00100	"	"	"	"	"	"	
Molybdenum	0.00449	0.00100	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH10
1901287-09 (Water)

Summit Scientific

Total Recoverable Metals by EPA Method 200.8

Nickel	0.00139	0.00100	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8
Phosphorus	0.174	0.0200	"	"	"	"	"	"
Potassium	6.42	0.0500	"	"	"	"	"	"
Selenium	0.00123	0.00100	"	"	"	"	"	"
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	105	0.0500	"	"	"	"	"	"
Strontium	1.00	0.00100	"	"	"	"	"	"
Thallium	0.00142	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00244	0.00100	"	"	"	"	"	"
Uranium	0.00790	0.000500	"	"	"	"	"	"
Vanadium	0.00164	0.00100	"	"	"	"	"	"
Zinc	0.00541	0.00100	"	"	"	"	"	"

Dissolved Metals by EPA Method 200.8

Date Sampled: **01/23/19 13:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Aluminum	ND	0.0500	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.000885	0.000600	"	"	"	"	"	"	
Barium	0.0408	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.200	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	82.4	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00250	0.00100	"	"	"	"	"	"	
Iron	ND	0.0100	"	"	"	"	"	"	
Lead	0.000970	0.000500	"	"	"	"	"	"	
Magnesium	35.9	0.0500	"	"	"	"	"	"	
Manganese	ND	0.00100	"	"	"	"	"	"	
Molybdenum	0.00442	0.00100	"	"	"	"	"	"	
Nickel	0.00137	0.00100	"	"	"	"	"	"	
Phosphorus	0.173	0.0200	"	"	"	"	"	"	
Potassium	6.37	0.0500	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH10
1901287-09 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Selenium	0.00122	0.00100	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	105	0.0500	"	"	"	"	"	"
Strontium	0.988	0.00100	"	"	"	"	"	"
Thallium	0.00135	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00217	0.00100	"	"	"	"	"	"
Uranium	0.00758	0.000500	"	"	"	"	"	"
Vanadium	0.00157	0.00100	"	"	"	"	"	"
Zinc	0.00198	0.00100	"	"	"	"	"	"

Anions by EPA Method 300.0

Date Sampled: **01/23/19 13:28**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Bromide	0.321	0.200	mg/L	1	1901286	01/24/19	01/25/19	EPA 300.0		
Chloride	97.5	3.00	"	50	"	"	"	"		
Fluoride	1.90	0.0400	"	1	"	"	"	"		
Nitrate as N	9.67	0.0500	"	"	"	"	"	"		
Nitrite as N	ND	0.0600	"	"	"	"	"	"		
Orthophosphate as P	ND	0.100	"	"	"	"	"	"		
Sulfate	221	60.0	"	200	"	"	"	"		

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH11
1901287-10 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 13:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1901298	01/24/19	01/25/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/23/19 13:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		122 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		121 %	21-167		"	"	"	"	

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: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH12
1901287-11 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 14:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1901298	01/24/19	01/25/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/23/19 14:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		117 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %	21-167		"	"	"	"	

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: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH08
1901287-12 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 14:28**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1901298	01/24/19	01/25/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/23/19 14:28**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.3 %	21-167		"	"	"	"	

Total Recoverable Metals by EPA Method 200.8

Date Sampled: **01/23/19 14:28**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Aluminum	0.0616	0.0500	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.00106	0.000600	"	"	"	"	"	"	
Barium	0.0791	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.230	0.0100	"	"	"	"	"	"	
Cadmium	0.0000783	0.0000500	"	"	"	"	"	"	
Calcium	125	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	0.00219	0.00100	"	"	"	"	"	"	
Copper	0.00186	0.00100	"	"	"	"	"	"	
Iron	1.08	0.0100	"	"	"	"	"	"	
Lead	0.00119	0.000500	"	"	"	"	"	"	
Magnesium	58.6	0.0500	"	"	"	"	"	"	
Manganese	0.568	0.00100	"	"	"	"	"	"	
Molybdenum	0.00690	0.00100	"	"	"	"	"	"	
Nickel	0.00347	0.00100	"	"	"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH08
1901287-12 (Water)

Summit Scientific

Total Recoverable Metals by EPA Method 200.8

Phosphorus	ND	0.0200	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8
Potassium	47.1	0.0500	"	"	"	"	"	"
Selenium	ND	0.00100	"	"	"	"	"	"
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	124	0.0500	"	"	"	"	"	"
Strontium	1.45	0.00100	"	"	"	"	"	"
Thallium	0.00140	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00233	0.00100	"	"	"	"	"	"
Uranium	0.0444	0.000500	"	"	"	"	"	"
Vanadium	ND	0.00100	"	"	"	"	"	"
Zinc	0.00670	0.00100	"	"	"	"	"	"

Dissolved Metals by EPA Method 200.8

Date Sampled: **01/23/19 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Aluminum	ND	0.0500	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	ND	0.000600	"	"	"	"	"	"	
Barium	0.0770	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.230	0.0100	"	"	"	"	"	"	
Cadmium	0.0000749	0.0000500	"	"	"	"	"	"	
Calcium	125	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	0.00215	0.00100	"	"	"	"	"	"	
Copper	0.00182	0.00100	"	"	"	"	"	"	
Iron	0.200	0.0100	"	"	"	"	"	"	
Lead	0.000995	0.000500	"	"	"	"	"	"	
Magnesium	55.5	0.0500	"	"	"	"	"	"	
Manganese	0.556	0.00100	"	"	"	"	"	"	
Molybdenum	0.00670	0.00100	"	"	"	"	"	"	
Nickel	0.00330	0.00100	"	"	"	"	"	"	
Phosphorus	ND	0.0200	"	"	"	"	"	"	
Potassium	45.1	0.0500	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	

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: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH08
1901287-12 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Silver	ND	0.0000500	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8
Sodium	123	0.0500	"	"	"	"	"	"
Strontium	1.45	0.00100	"	"	"	"	"	"
Thallium	0.00138	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00123	0.00100	"	"	"	"	"	"
Uranium	0.0435	0.000500	"	"	"	"	"	"
Vanadium	ND	0.00100	"	"	"	"	"	"
Zinc	0.00165	0.00100	"	"	"	"	"	"

Anions by EPA Method 300.0

Date Sampled: **01/23/19 14:28**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Bromide	0.530	0.200	mg/L	1	1901286	01/24/19	01/25/19	EPA 300.0		
Chloride	144	3.00	"	50	"	"	"	"		
Fluoride	1.72	0.0400	"	1	"	"	"	"		
Nitrate as N	3.06	0.0500	"	"	"	"	"	"		
Nitrite as N	ND	0.0600	"	"	"	"	"	"		
Orthophosphate as P	ND	0.100	"	"	"	"	"	"		
Sulfate	324	60.0	"	200	"	"	"	"		

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH07
1901287-13 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 14:54**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1901298	01/24/19	01/25/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/23/19 14:54**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		123 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

Total Recoverable Metals by EPA Method 200.8

Date Sampled: **01/23/19 14:54**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Aluminum	ND	0.0500	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	0.000777	0.000600	"	"	"	"	"	"	
Barium	0.0841	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.225	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	111	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00186	0.00100	"	"	"	"	"	"	
Iron	0.925	0.0100	"	"	"	"	"	"	
Lead	0.00117	0.000500	"	"	"	"	"	"	
Magnesium	46.8	0.0500	"	"	"	"	"	"	
Manganese	0.445	0.00100	"	"	"	"	"	"	
Molybdenum	0.00445	0.00100	"	"	"	"	"	"	

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH07
1901287-13 (Water)

Summit Scientific

Total Recoverable Metals by EPA Method 200.8

Nickel	0.00198	0.00100	mg/L	1	1901312	01/25/19	01/25/19	EPA 200.8
Phosphorus	ND	0.0200	"	"	"	"	"	"
Potassium	11.1	0.0500	"	"	"	"	"	"
Selenium	ND	0.00100	"	"	"	"	"	"
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	115	0.0500	"	"	"	"	"	"
Strontium	1.31	0.00100	"	"	"	"	"	"
Thallium	0.00139	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00241	0.00100	"	"	"	"	"	"
Uranium	0.0174	0.000500	"	"	"	"	"	"
Vanadium	0.00135	0.00100	"	"	"	"	"	"
Zinc	0.00558	0.00100	"	"	"	"	"	"

Dissolved Metals by EPA Method 200.8

Date Sampled: **01/23/19 14:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Aluminum	ND	0.0500	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8	
Antimony	ND	0.0000500	"	"	"	"	"	"	
Arsenic	ND	0.000600	"	"	"	"	"	"	
Barium	0.0845	0.00100	"	"	"	"	"	"	
Beryllium	ND	0.0000500	"	"	"	"	"	"	
Boron	0.224	0.0100	"	"	"	"	"	"	
Cadmium	ND	0.0000500	"	"	"	"	"	"	
Calcium	109	0.0500	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Copper	0.00181	0.00100	"	"	"	"	"	"	
Iron	0.361	0.0100	"	"	"	"	"	"	
Lead	0.00108	0.000500	"	"	"	"	"	"	
Magnesium	46.2	0.0500	"	"	"	"	"	"	
Manganese	0.442	0.00100	"	"	"	"	"	"	
Molybdenum	0.00440	0.00100	"	"	"	"	"	"	
Nickel	0.00186	0.00100	"	"	"	"	"	"	
Phosphorus	ND	0.0200	"	"	"	"	"	"	
Potassium	10.9	0.0500	"	"	"	"	"	"	

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH07
1901287-13 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Selenium	ND	0.00100	mg/L	1	1901305	01/25/19	01/25/19	EPA 200.8
Silver	ND	0.0000500	"	"	"	"	"	"
Sodium	112	0.0500	"	"	"	"	"	"
Strontium	1.29	0.00100	"	"	"	"	"	"
Thallium	0.00137	0.0000250	"	"	"	"	"	"
Tin	ND	0.00100	"	"	"	"	"	"
Titanium	0.00158	0.00100	"	"	"	"	"	"
Uranium	0.0173	0.000500	"	"	"	"	"	"
Vanadium	ND	0.00100	"	"	"	"	"	"
Zinc	0.00132	0.00100	"	"	"	"	"	"

Anions by EPA Method 300.0

Date Sampled: **01/23/19 14:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Bromide	0.442	0.200	mg/L	1	1901286	01/24/19	01/25/19	EPA 300.0		
Chloride	108	3.00	"	50	"	"	"	"		
Fluoride	1.47	0.0400	"	1	"	"	"	"		
Nitrate as N	7.94	0.0500	"	"	"	"	"	"		
Nitrite as N	ND	0.0600	"	"	"	"	"	"		
Orthophosphate as P	ND	0.100	"	"	"	"	"	"		
Sulfate	257	60.0	"	200	"	"	"	"		

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

BH09
1901287-14 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 15:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1901298	01/24/19	01/25/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/23/19 15:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		115 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

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 1901298 - EPA 5030 Water MS

Blank (1901298-BLK1)

Prepared: 01/24/19 Analyzed: 01/25/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	16.0		"	13.3		120	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.0	20-170			
Surrogate: 4-Bromofluorobenzene	15.5		"	13.3		116	21-167			

LCS (1901298-BS1)

Prepared: 01/24/19 Analyzed: 01/25/19

Benzene	26.2	1.0	ug/l	33.3		78.5	70-130			
Toluene	32.8	1.0	"	33.3		98.5	70-130			
Ethylbenzene	35.2	1.0	"	33.3		106	70-130			
m,p-Xylene	62.4	2.0	"	66.7		93.6	70-130			
o-Xylene	34.9	1.0	"	33.3		105	70-130			
Surrogate: 1,2-Dichloroethane-d4	14.8		"	13.3		111	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.3	20-170			
Surrogate: 4-Bromofluorobenzene	15.1		"	13.3		113	21-167			

Matrix Spike (1901298-MS1)

Source: 1901287-01

Prepared: 01/24/19 Analyzed: 01/25/19

Benzene	25.8	1.0	ug/l	33.3	ND	77.5	70-130			
Toluene	32.8	1.0	"	33.3	ND	98.3	70-130			
Ethylbenzene	33.6	1.0	"	33.3	ND	101	70-130			
m,p-Xylene	58.1	2.0	"	66.7	ND	87.2	70-130			
o-Xylene	33.1	1.0	"	33.3	ND	99.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	15.6		"	13.3		117	23-173			
Surrogate: Toluene-d8	12.6		"	13.3		94.9	20-170			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	21-167			

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

Project: Sitzman 1U

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

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 1901298 - EPA 5030 Water MS

Matrix Spike Dup (1901298-MSD1)	Source: 1901287-01			Prepared: 01/24/19 Analyzed: 01/25/19						
Benzene	29.9	1.0	ug/l	33.3	ND	89.6	70-130	14.5	30	
Toluene	37.4	1.0	"	33.3	ND	112	70-130	13.1	30	
Ethylbenzene	37.5	1.0	"	33.3	ND	112	70-130	10.9	30	
m,p-Xylene	67.1	2.0	"	66.7	ND	101	70-130	14.4	30	
o-Xylene	36.6	1.0	"	33.3	ND	110	70-130	9.92	30	
Surrogate: 1,2-Dichloroethane-d4	16.6		"	13.3		124	23-173			
Surrogate: Toluene-d8	14.1		"	13.3		106	20-170			
Surrogate: 4-Bromofluorobenzene	13.9		"	13.3		105	21-167			

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Semivolatile Organic Compounds by EPA Method 8270D - Quality Control
Summit Scientific

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

Batch 1901311 - EPA 5030 Water MS

Blank (1901311-BLK1)

Prepared & Analyzed: 01/25/19

Acenaphthene	ND	10.0	ug/l
Acenaphthylene	ND	10.0	"
Anthracene	ND	10.0	"
Bis(2-ethylhexyl)adipate	ND	10.0	"
Benzo (a) anthracene	ND	10.0	"
Benzo (b) fluoranthene	ND	10.0	"
Benzo (k) fluoranthene	ND	20.0	"
Benzo (g,h,i) perylene	ND	10.0	"
Benzo (a) pyrene	ND	10.0	"
Benzyl alcohol	ND	10.0	"
Pyridine	ND	10.0	"
Bis(2-chloroethoxy)methane	ND	10.0	"
N-Nitrosodimethylamine	ND	10.0	"
Bis(2-chloroethyl)ether	ND	10.0	"
Bis(2-chloroisopropyl)ether	ND	10.0	"
Bis(2-ethylhexyl)phthalate	ND	10.0	"
4-Bromophenyl phenyl ether	ND	10.0	"
Butyl benzyl phthalate	ND	10.0	"
4-Chloroaniline	ND	10.0	"
4-Chloro-3-methylphenol	ND	10.0	"
2-Chloronaphthalene	ND	10.0	"
2-Chlorophenol	ND	10.0	"
4-Chlorophenyl phenyl ether	ND	10.0	"
Chrysene	ND	10.0	"
Dibenz (a,h) anthracene	ND	10.0	"
Dibenzofuran	ND	10.0	"
Di-n-butyl phthalate	ND	10.0	"
1,2-Dichlorobenzene	ND	10.0	"
1,3-Dichlorobenzene	ND	10.0	"
1,4-Dichlorobenzene	ND	10.0	"
2,4-Dichlorophenol	ND	10.0	"
Diethyl phthalate	ND	10.0	"
2,4-Dimethylphenol	ND	10.0	"
Carbazole	ND	10.0	"
Dimethyl phthalate	ND	10.0	"
4,6-Dinitro-2-methylphenol	ND	10.0	"
2,4-Dinitrophenol	ND	10.0	"
Azobenzene	ND	10.0	"

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Semivolatile Organic Compounds by EPA Method 8270D - Quality Control
Summit Scientific

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

Batch 1901311 - EPA 5030 Water MS

Blank (1901311-BLK1)

Prepared & Analyzed: 01/25/19

2,4-Dinitrotoluene	ND	10.0	ug/l							
2,6-Dinitrotoluene	ND	10.0	"							
Di-n-octyl phthalate	ND	10.0	"							
Fluoranthene	ND	10.0	"							
Fluorene	ND	10.0	"							
Hexachlorobenzene	ND	10.0	"							
Hexachlorobutadiene	ND	10.0	"							
Hexachlorocyclopentadiene	ND	10.0	"							
Hexachloroethane	ND	10.0	"							
Indeno (1,2,3-cd) pyrene	ND	10.0	"							
Isophorone	ND	10.0	"							
2-Methylphenol	ND	10.0	"							
4-Methylphenol	ND	10.0	"							
1,2-Dinitrobenzene	ND	10.0	"							
2-Nitroaniline	ND	10.0	"							
1,3-Dinitrobenzene	ND	10.0	"							
3-Nitroaniline	ND	10.0	"							
1,4-Dinitrobenzene	ND	10.0	"							
4-Nitroaniline	ND	10.0	"							
Nitrobenzene	ND	10.0	"							
2-Nitrophenol	ND	10.0	"							
4-Nitrophenol	ND	10.0	"							
N-Nitrosodi-n-propylamine	ND	10.0	"							
2,3,4,6-Tetrachlorophenol	ND	10.0	"							
Pentachlorophenol	ND	10.0	"							
Phenanthrene	ND	10.0	"							
Phenol	ND	10.0	"							
Aniline	ND	10.0	"							
Pyrene	ND	10.0	"							
1,2,4-Trichlorobenzene	ND	10.0	"							
2,4,5-Trichlorophenol	ND	10.0	"							
2,4,6-Trichlorophenol	ND	10.0	"							
2-Methylnaphthalene	ND	10.0	"							
3,3'-Dichlorobenzidine	ND	30.0	"							
Surrogate: 2-Fluorophenol	29.7		"	100		29.7	20-120			
Surrogate: Phenol-d5	27.1		"	100		27.1	20-120			
Surrogate: Nitrobenzene-d5	54.4		"	100		54.4	20-120			
Surrogate: 2-Fluorobiphenyl	108		"	100		108	20-120			

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Semivolatile Organic Compounds by EPA Method 8270D - Quality Control
Summit Scientific

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

Batch 1901311 - EPA 5030 Water MS

Blank (1901311-BLK1)

Prepared & Analyzed: 01/25/19

Surrogate: 2,4,6-Tribromophenol	84.7		ug/l	100		84.7	20-120
Surrogate: Terphenyl-d14	30.8		"	100		30.8	20-120

LCS (1901311-BS1)

Prepared & Analyzed: 01/25/19

Acenaphthene	40.1	10.0	ug/l	100		40.1	20-120
4-Chloro-3-methylphenol	73.0	10.0	"	200		36.5	20-120
2-Chlorophenol	73.9	10.0	"	200		36.9	20-120
1,4-Dichlorobenzene	39.7	10.0	"	100		39.7	20-120
2,4-Dinitrotoluene	44.5	10.0	"	100		44.5	20-120
4-Nitrophenol	57.7	10.0	"	200		28.9	20-120
N-Nitrosodi-n-propylamine	32.8	10.0	"	100		32.8	20-120
Pentachlorophenol	90.6	10.0	"	200		45.3	20-120
Phenol	49.5	10.0	"	200		24.7	20-120
Pyrene	52.4	10.0	"	100		52.4	20-120
1,2,4-Trichlorobenzene	45.0	10.0	"	100		45.0	20-120
Surrogate: 2-Fluorophenol	29.4		"	100		29.4	20-120
Surrogate: Phenol-d5	29.4		"	100		29.4	20-120
Surrogate: Nitrobenzene-d5	61.3		"	100		61.3	20-120
Surrogate: 2-Fluorobiphenyl	117		"	100		117	20-120
Surrogate: 2,4,6-Tribromophenol	88.6		"	100		88.6	20-120
Surrogate: Terphenyl-d14	33.7		"	100		33.7	20-120

Matrix Spike (1901311-MS1)

Source: 1901287-05

Prepared & Analyzed: 01/25/19

Acenaphthene	37.4	10.0	ug/l	100	ND	37.4	20-120	
4-Chloro-3-methylphenol	66.4	10.0	"	200	ND	33.2	20-120	
2-Chlorophenol	66.0	10.0	"	200	ND	33.0	20-120	
1,4-Dichlorobenzene	35.1	10.0	"	100	ND	35.1	20-120	
2,4-Dinitrotoluene	41.1	10.0	"	100	ND	41.1	20-120	
4-Nitrophenol	ND	10.0	"	200	ND		20-120	QM-07
N-Nitrosodi-n-propylamine	44.3	10.0	"	100	ND	44.3	20-12	QM-07
Pentachlorophenol	55.1	10.0	"	200	ND	27.6	20-120	
Phenol	45.6	10.0	"	200	ND	22.8	20-120	
Pyrene	44.6	10.0	"	100	ND	44.6	20-120	
1,2,4-Trichlorobenzene	39.8	10.0	"	100	ND	39.8	20-120	
Surrogate: 2-Fluorophenol	26.5		"	100		26.5	20-120	
Surrogate: Phenol-d5	24.2		"	100		24.2	20-120	
Surrogate: Nitrobenzene-d5	53.2		"	100		53.2	20-120	
Surrogate: 2-Fluorobiphenyl	104		"	100		104	20-120	

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Semivolatile Organic Compounds by EPA Method 8270D - Quality Control
Summit Scientific

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

Batch 1901311 - EPA 5030 Water MS

Matrix Spike (1901311-MS1)

Source: 1901287-05

Prepared & Analyzed: 01/25/19

Surrogate: 2,4,6-Tribromophenol	80.3		ug/l	100		80.3	20-120			
Surrogate: Terphenyl-d14	29.4		"	100		29.4	20-120			

Matrix Spike Dup (1901311-MSD1)

Source: 1901287-05

Prepared: 01/25/19 Analyzed: 01/26/19

Acenaphthene	41.4	10.0	ug/l	100	ND	41.4	20-120	10.3	30	
4-Chloro-3-methylphenol	71.7	10.0	"	200	ND	35.9	20-120	7.76	30	
2-Chlorophenol	75.0	10.0	"	200	ND	37.5	20-120	12.7	30	
1,4-Dichlorobenzene	40.5	10.0	"	100	ND	40.5	20-120	14.4	30	
2,4-Dinitrotoluene	44.9	10.0	"	100	ND	44.9	20-120	8.74	30	
4-Nitrophenol	ND	10.0	"	200	ND		20-120		30	QM-07
N-Nitrosodi-n-propylamine	33.1	10.0	"	100	ND	33.1	20-12	29.1	30	QM-07
Pentachlorophenol	61.4	10.0	"	200	ND	30.7	20-120	10.7	30	
Phenol	48.2	10.0	"	200	ND	24.1	20-120	5.55	30	
Pyrene	50.5	10.0	"	100	ND	50.5	20-120	12.5	30	
1,2,4-Trichlorobenzene	45.9	10.0	"	100	ND	45.9	20-120	14.3	30	
Surrogate: 2-Fluorophenol	28.4		"	100		28.4	20-120			
Surrogate: Phenol-d5	27.4		"	100		27.4	20-120			
Surrogate: Nitrobenzene-d5	63.0		"	100		63.0	20-120			
Surrogate: 2-Fluorobiphenyl	101		"	100		101	20-120			
Surrogate: 2,4,6-Tribromophenol	92.8		"	100		92.8	20-120			
Surrogate: Terphenyl-d14	33.8		"	100		33.8	20-120			

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: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Total Recoverable Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch 1901312 - EPA 200.8

Blank (1901312-BLK1)

Prepared & Analyzed: 01/25/19

Aluminum	ND	0.0500	mg/L
Antimony	ND	0.0000500	"
Arsenic	ND	0.000600	"
Barium	ND	0.00100	"
Beryllium	ND	0.0000500	"
Boron	ND	0.0100	"
Cadmium	ND	0.0000500	"
Calcium	ND	0.0500	"
Chromium	ND	0.00100	"
Cobalt	ND	0.00100	"
Copper	ND	0.00100	"
Iron	ND	0.0100	"
Lead	ND	0.000500	"
Magnesium	ND	0.0500	"
Manganese	ND	0.00100	"
Molybdenum	ND	0.00100	"
Nickel	ND	0.00100	"
Phosphorus	ND	0.0200	"
Potassium	ND	0.0500	"
Selenium	ND	0.00100	"
Silver	ND	0.0000500	"
Sodium	ND	0.0500	"
Strontium	ND	0.00100	"
Thallium	ND	0.0000250	"
Tin	ND	0.00100	"
Titanium	ND	0.00100	"
Uranium	ND	0.000500	"
Vanadium	ND	0.00100	"
Zinc	ND	0.00100	"

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Total Recoverable Metals by EPA Method 200.8 - Quality Control

Summit Scientific

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

Batch 1901312 - EPA 200.8

LCS (1901312-BS1)

Prepared & Analyzed: 01/25/19

Aluminum	5.89	0.0500	mg/L	5.00		118	80-120			
Antimony	0.0225	0.0000500	"	0.0250		90.0	80-120			
Arsenic	0.452	0.000600	"	0.500		90.5	80-120			
Barium	0.437	0.00100	"	0.500		87.4	80-120			
Beryllium	0.0216	0.0000500	"	0.0250		86.4	80-120			
Boron	2.16	0.0100	"	2.50		86.2	80-120			
Cadmium	0.0219	0.0000500	"	0.0250		87.4	80-120			
Calcium	5.03	0.0500	"	5.00		101	80-120			
Chromium	0.440	0.00100	"	0.500		88.1	80-120			
Cobalt	0.437	0.00100	"	0.500		87.4	80-120			
Copper	0.435	0.00100	"	0.500		86.9	80-120			
Iron	4.55	0.0100	"	5.00		91.0	80-120			
Lead	0.215	0.000500	"	0.250		86.0	80-120			
Magnesium	4.88	0.0500	"	5.00		97.5	80-120			
Manganese	0.410	0.00100	"	0.500		82.0	80-120			
Molybdenum	0.446	0.00100	"	0.500		89.1	80-120			
Nickel	0.431	0.00100	"	0.500		86.1	80-120			
Phosphorus	4.73	0.0200	"	5.00		94.6	80-120			
Potassium	4.90	0.0500	"	5.00		97.9	80-120			
Selenium	0.0440	0.00100	"	0.0500		87.9	80-120			
Silver	0.0216	0.0000500	"	0.0250		86.5	80-120			
Sodium	4.90	0.0500	"	5.00		98.1	80-120			
Strontium	0.435	0.00100	"	0.500		86.9	80-120			
Thallium	0.0103	0.0000250	"	0.0125		82.3	80-120			
Tin	0.434	0.00100	"	0.500		86.8	80-120			
Titanium	0.463	0.00100	"	0.500		92.5	80-120			
Uranium	0.213	0.000500	"	0.250		85.1	80-120			
Vanadium	0.461	0.00100	"	0.500		92.3	80-120			
Zinc	0.467	0.00100	"	0.500		93.4	80-120			

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Total Recoverable Metals by EPA Method 200.8 - Quality Control

Summit Scientific

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

Batch 1901312 - EPA 200.8

Duplicate (1901312-DUP1)	Source: 1901276-01			Prepared & Analyzed: 01/25/19							
Aluminum	4.66	0.0500	mg/L			4.90			5.03	20	
Antimony	0.00386	0.0000500	"			0.00435			11.9	20	
Arsenic	0.00330	0.000600	"			0.00347			5.18	20	
Barium	0.483	0.00100	"			0.500			3.41	20	
Beryllium	0.0000680	0.0000500	"			0.0000645			5.35	20	
Boron	0.154	0.0100	"			0.157			2.31	20	
Cadmium	0.000703	0.0000500	"			0.000734			4.37	20	
Calcium	42.2	0.0500	"			45.1			6.63	20	
Chromium	0.00698	0.00100	"			0.00731			4.63	20	
Cobalt	0.00269	0.00100	"			0.00278			3.06	20	
Copper	0.0343	0.00100	"			0.0336			2.03	20	
Iron	3.15	0.0100	"			3.29			4.37	20	
Lead	0.0119	0.000500	"			0.0131			9.85	20	
Magnesium	49.3	0.0500	"			51.9			5.18	20	
Manganese	0.133	0.00100	"			0.137			3.07	20	
Molybdenum	0.0178	0.00100	"			0.0195			9.19	20	
Nickel	0.00870	0.00100	"			0.00854			1.83	20	
Phosphorus	0.372	0.0200	"			0.420			12.1	20	
Potassium	7.86	0.0500	"			8.22			4.51	20	
Selenium	ND	0.00100	"			0.00109				20	
Silver	ND	0.0000500	"			0.000130				20	
Sodium	105	0.0500	"			110			4.32	20	
Strontium	0.302	0.00100	"			0.324			7.21	20	
Thallium	0.000719	0.0000250	"			0.000822			13.4	20	
Tin	0.00189	0.00100	"			ND				20	
Titanium	0.112	0.00100	"			0.125			10.6	20	
Uranium	0.00157	0.000500	"			0.00171			8.85	20	
Vanadium	0.0177	0.00100	"			0.0187			5.30	20	
Zinc	0.221	0.00100	"			0.224			1.60	20	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Total Recoverable Metals by EPA Method 200.8 - Quality Control

Summit Scientific

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

Batch 1901312 - EPA 200.8

Matrix Spike (1901312-MS1)	Source: 1901276-01			Prepared & Analyzed: 01/25/19							
Aluminum	9.33	0.0500	mg/L	5.00	4.90	88.5	75-125				
Antimony	0.0266	0.0000500	"	0.0250	0.00435	88.9	75-125				
Arsenic	0.449	0.000600	"	0.500	0.00347	89.2	75-125				
Barium	0.882	0.00100	"	0.500	0.500	76.5	75-125				
Beryllium	0.0240	0.0000500	"	0.0250	0.0000645	95.7	75-125				
Boron	2.54	0.0100	"	2.50	0.157	95.3	75-125				
Cadmium	0.0214	0.0000500	"	0.0250	0.000734	82.6	75-125				
Calcium	48.9	0.0500	"	5.00	45.1	76.5	75-125				
Chromium	0.431	0.00100	"	0.500	0.00731	84.8	75-125				
Cobalt	0.425	0.00100	"	0.500	0.00278	84.5	75-125				
Copper	0.459	0.00100	"	0.500	0.0336	85.1	75-125				
Iron	7.73	0.0100	"	5.00	3.29	88.8	75-125				
Lead	0.213	0.000500	"	0.250	0.0131	79.9	75-125				
Magnesium	57.5	0.0500	"	5.00	51.9	111	75-125				
Manganese	0.549	0.00100	"	0.500	0.137	82.3	75-125				
Molybdenum	0.451	0.00100	"	0.500	0.0195	86.4	75-125				
Nickel	0.422	0.00100	"	0.500	0.00854	82.8	75-125				
Phosphorus	4.34	0.0200	"	5.00	0.420	78.4	75-125				
Potassium	12.9	0.0500	"	5.00	8.22	94.5	75-125				
Selenium	0.0452	0.00100	"	0.0500	0.00109	88.2	75-125				
Silver	0.0208	0.0000500	"	0.0250	0.000130	82.6	75-125				
Sodium	115	0.0500	"	5.00	110	101	75-125				
Strontium	0.703	0.00100	"	0.500	0.324	75.8	75-125				
Thallium	0.0122	0.0000250	"	0.0125	0.000822	90.8	75-125				
Tin	0.418	0.00100	"	0.500	ND	83.7	75-125				
Titanium	0.500	0.00100	"	0.500	0.125	75.0	75-125				
Uranium	0.206	0.000500	"	0.250	0.00171	81.7	75-125				
Vanadium	0.445	0.00100	"	0.500	0.0187	85.3	75-125				
Zinc	0.648	0.00100	"	0.500	0.224	84.8	75-125				

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Total Recoverable Metals by EPA Method 200.8 - Quality Control

Summit Scientific

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

Batch 1901312 - EPA 200.8

Matrix Spike Dup (1901312-MSD1)

Source: 1901276-01

Prepared & Analyzed: 01/25/19

Aluminum	8.91	0.0500	mg/L	5.00	4.90	80.1	75-125	4.61	25	
Antimony	0.0276	0.0000500	"	0.0250	0.00435	93.0	75-125	3.77	25	
Arsenic	0.438	0.000600	"	0.500	0.00347	86.8	75-125	2.62	25	
Barium	0.918	0.00100	"	0.500	0.500	83.5	75-125	3.89	25	
Beryllium	0.0239	0.0000500	"	0.0250	0.0000645	95.5	75-125	0.197	25	
Boron	2.57	0.0100	"	2.50	0.157	96.6	75-125	1.28	25	
Cadmium	0.0221	0.0000500	"	0.0250	0.000734	85.6	75-125	3.41	25	
Calcium	49.1	0.0500	"	5.00	45.1	80.5	75-125	0.406	25	
Chromium	0.415	0.00100	"	0.500	0.00731	81.5	75-125	3.87	25	
Cobalt	0.411	0.00100	"	0.500	0.00278	81.6	75-125	3.45	25	
Copper	0.440	0.00100	"	0.500	0.0336	81.2	75-125	4.35	25	
Iron	7.56	0.0100	"	5.00	3.29	85.4	75-125	2.27	25	
Lead	0.216	0.000500	"	0.250	0.0131	81.3	75-125	1.66	25	
Magnesium	56.8	0.0500	"	5.00	51.9	97.2	75-125	1.25	25	
Manganese	0.527	0.00100	"	0.500	0.137	77.9	75-125	4.16	25	
Molybdenum	0.468	0.00100	"	0.500	0.0195	89.6	75-125	3.49	25	
Nickel	0.408	0.00100	"	0.500	0.00854	80.0	75-125	3.39	25	
Phosphorus	4.60	0.0200	"	5.00	0.420	83.7	75-125	5.85	25	
Potassium	12.0	0.0500	"	5.00	8.22	76.5	75-125	7.19	25	
Selenium	0.0432	0.00100	"	0.0500	0.00109	84.3	75-125	4.42	25	
Silver	0.0214	0.0000500	"	0.0250	0.000130	85.0	75-125	2.93	25	
Sodium	116	0.0500	"	5.00	110	119	75-125	0.784	25	
Strontium	0.724	0.00100	"	0.500	0.324	80.0	75-125	2.97	25	
Thallium	0.0104	0.0000250	"	0.0125	0.000822	76.8	75-125	15.5	25	
Tin	0.427	0.00100	"	0.500	ND	85.4	75-125	2.00	25	
Titanium	0.506	0.00100	"	0.500	0.125	76.2	75-125	1.22	25	
Uranium	0.210	0.000500	"	0.250	0.00171	83.3	75-125	1.87	25	
Vanadium	0.436	0.00100	"	0.500	0.0187	83.4	75-125	2.11	25	
Zinc	0.628	0.00100	"	0.500	0.224	80.8	75-125	3.10	25	

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Dissolved Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch 1901305 - EPA 200.8

Blank (1901305-BLK1)

Prepared & Analyzed: 01/25/19

Aluminum	ND	0.0500	mg/L
Antimony	ND	0.0000500	"
Arsenic	ND	0.000600	"
Barium	ND	0.00100	"
Beryllium	ND	0.0000500	"
Boron	ND	0.0100	"
Cadmium	ND	0.0000500	"
Calcium	ND	0.0500	"
Chromium	ND	0.00100	"
Cobalt	ND	0.00100	"
Copper	ND	0.00100	"
Iron	ND	0.0100	"
Lead	ND	0.000500	"
Magnesium	ND	0.0500	"
Manganese	ND	0.00100	"
Molybdenum	ND	0.00100	"
Nickel	ND	0.00100	"
Phosphorus	ND	0.0200	"
Potassium	ND	0.0500	"
Selenium	ND	0.00100	"
Silver	ND	0.0000500	"
Sodium	ND	0.0500	"
Strontium	ND	0.00100	"
Thallium	ND	0.0000250	"
Tin	ND	0.00100	"
Titanium	ND	0.00100	"
Uranium	ND	0.000500	"
Vanadium	ND	0.00100	"
Zinc	ND	0.00100	"

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Dissolved Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch 1901305 - EPA 200.8

LCS (1901305-BS1)

Prepared & Analyzed: 01/25/19

Aluminum	9.25	0.0500	mg/L	10.0		92.5	80-120			
Antimony	0.0130	0.0000500	"	0.0125		104	80-120			
Arsenic	0.239	0.000600	"	0.250		95.7	80-120			
Barium	0.237	0.00100	"	0.250		94.8	80-120			
Beryllium	0.0118	0.0000500	"	0.0125		94.2	80-120			
Boron	4.14	0.0100	"	5.00		82.7	80-120			
Cadmium	0.0118	0.0000500	"	0.0125		94.4	80-120			
Calcium	8.72	0.0500	"	10.0		87.2	80-120			
Chromium	0.247	0.00100	"	0.250		98.9	80-120			
Cobalt	0.248	0.00100	"	0.250		99.2	80-120			
Copper	0.247	0.00100	"	0.250		98.8	80-120			
Iron	8.80	0.0100	"	10.0		88.0	80-120			
Lead	0.130	0.000500	"	0.125		104	80-120			
Magnesium	9.23	0.0500	"	10.0		92.3	80-120			
Manganese	0.238	0.00100	"	0.250		95.1	80-120			
Molybdenum	0.200	0.00100	"	0.250		80.1	80-120			
Nickel	0.241	0.00100	"	0.250		96.3	80-120			
Phosphorus	8.17	0.0200	"	10.0		81.7	80-120			
Potassium	9.19	0.0500	"	10.0		91.9	80-120			
Selenium	0.0290	0.00100	"	0.0250		116	80-120			
Silver	0.0115	0.0000500	"	0.0125		92.1	80-120			
Sodium	9.30	0.0500	"	10.0		93.0	80-120			
Strontium	0.244	0.00100	"	0.250		97.6	80-120			
Thallium	0.00659	0.0000250	"	0.00625		105	80-120			
Tin	0.201	0.00100	"	0.250		80.3	80-120			
Titanium	0.216	0.00100	"	0.250		86.4	80-120			
Uranium	0.116	0.000500	"	0.125		93.2	80-120			
Vanadium	0.249	0.00100	"	0.250		99.5	80-120			
Zinc	0.238	0.00100	"	0.250		95.4	80-120			

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Dissolved Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch 1901305 - EPA 200.8

Duplicate (1901305-DUP1)		Source: 1901287-01			Prepared & Analyzed: 01/25/19					
Aluminum	0.0544	0.0500	mg/L		0.0659			19.1	20	
Antimony	ND	0.0000500	"		ND				20	
Arsenic	0.000607	0.000600	"		0.000580			4.56	20	
Barium	0.0534	0.00100	"		0.0539			0.977	20	
Beryllium	ND	0.0000500	"		ND				20	
Boron	0.241	0.0100	"		0.242			0.218	20	
Cadmium	0.0000184	0.0000500	"		0.0000168			9.06	20	
Calcium	98.3	0.0500	"		98.0			0.349	20	
Chromium	0.000294	0.00100	"		0.000273			7.29	20	
Cobalt	0.000214	0.00100	"		0.000230			7.07	20	
Copper	0.00226	0.00100	"		0.00214			5.39	20	
Iron	ND	0.0100	"		0.00638				20	
Lead	0.000632	0.000500	"		0.000636			0.714	20	
Magnesium	38.3	0.0500	"		38.0			0.977	20	
Manganese	0.000464	0.00100	"		0.000430			7.47	20	
Molybdenum	0.00464	0.00100	"		0.00468			0.867	20	
Nickel	0.00125	0.00100	"		0.00145			15.1	20	
Phosphorus	0.0594	0.0200	"		0.0574			3.35	20	
Potassium	5.27	0.0500	"		5.19			1.42	20	
Selenium	0.00110	0.00100	"		0.00105			4.73	20	
Silver	ND	0.0000500	"		ND				20	
Sodium	120	0.0500	"		118			1.40	20	
Strontium	1.12	0.00100	"		1.12			0.230	20	
Thallium	0.00138	0.0000250	"		0.00130			5.99	20	
Tin	ND	0.00100	"		ND				20	
Titanium	0.00180	0.00100	"		0.00188			4.10	20	
Uranium	0.0136	0.000500	"		0.0137			0.412	20	
Vanadium	0.00144	0.00100	"		0.00142			1.88	20	
Zinc	ND	0.00100	"		ND				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: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Dissolved Metals by EPA Method 200.8 - Quality Control

Summit Scientific

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

Batch 1901305 - EPA 200.8

Matrix Spike (1901305-MS1)	Source: 1901287-01			Prepared & Analyzed: 01/25/19						
Aluminum	9.40	0.0500	mg/L	10.0	0.0659	93.4	75-125			
Antimony	0.0135	0.0000500	"	0.0125	ND	108	75-125			
Arsenic	0.206	0.000600	"	0.250	0.000580	82.3	75-125			
Barium	0.256	0.00100	"	0.250	0.0539	80.9	75-125			
Beryllium	0.0142	0.0000500	"	0.0125	ND	114	75-125			
Boron	4.32	0.0100	"	5.00	0.242	81.6	75-125			
Cadmium	0.00976	0.0000500	"	0.0125	0.0000168	78.0	75-125			
Calcium	107	0.0500	"	10.0	98.0	89.9	75-125			
Chromium	0.203	0.00100	"	0.250	0.000273	80.9	75-125			
Cobalt	0.201	0.00100	"	0.250	0.000230	80.5	75-125			
Copper	0.196	0.00100	"	0.250	0.00214	77.4	75-125			
Iron	8.99	0.0100	"	10.0	0.00638	89.9	75-125			
Lead	0.142	0.000500	"	0.125	0.000636	113	75-125			
Magnesium	46.9	0.0500	"	10.0	38.0	89.5	75-125			
Manganese	0.192	0.00100	"	0.250	0.000430	76.7	75-125			
Molybdenum	0.219	0.00100	"	0.250	0.00468	85.6	75-125			
Nickel	0.194	0.00100	"	0.250	0.00145	77.1	75-125			
Phosphorus	8.47	0.0200	"	10.0	0.0574	84.1	75-125			
Potassium	14.2	0.0500	"	10.0	5.19	90.4	75-125			
Selenium	0.0262	0.00100	"	0.0250	0.00105	100	75-125			
Silver	0.0146	0.0000500	"	0.0125	ND	117	75-125			
Sodium	127	0.0500	"	10.0	118	93.6	75-125			
Strontium	1.33	0.00100	"	0.250	1.12	84.8	75-125			
Thallium	0.00621	0.0000250	"	0.00625	0.00130	78.6	75-125			
Tin	0.197	0.00100	"	0.250	ND	79.0	75-125			
Titanium	0.215	0.00100	"	0.250	0.00188	85.1	75-125			
Uranium	0.114	0.000500	"	0.125	0.0137	80.4	75-125			
Vanadium	0.202	0.00100	"	0.250	0.00142	80.3	75-125			
Zinc	0.196	0.00100	"	0.250	ND	78.5	75-125			

Summit Scientific

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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Dissolved Metals by EPA Method 200.8 - Quality Control

Summit Scientific

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

Batch 1901305 - EPA 200.8

Matrix Spike Dup (1901305-MSD1)

Source: 1901287-01

Prepared & Analyzed: 01/25/19

Aluminum	8.89	0.0500	mg/L	10.0	0.0659	88.2	75-125	5.63	25	
Antimony	0.0134	0.0000500	"	0.0125	ND	107	75-125	0.905	25	
Arsenic	0.192	0.000600	"	0.250	0.000580	76.5	75-125	7.24	25	
Barium	0.248	0.00100	"	0.250	0.0539	77.8	75-125	3.07	25	
Beryllium	0.0136	0.0000500	"	0.0125	ND	109	75-125	4.23	25	
Boron	4.22	0.0100	"	5.00	0.242	79.5	75-125	2.42	25	
Cadmium	0.0120	0.0000500	"	0.0125	0.0000168	96.3	75-125	21.0	25	
Calcium	108	0.0500	"	10.0	98.0	98.3	75-125	0.785	25	
Chromium	0.238	0.00100	"	0.250	0.000273	95.3	75-125	16.3	25	
Cobalt	0.239	0.00100	"	0.250	0.000230	95.4	75-125	17.0	25	
Copper	0.233	0.00100	"	0.250	0.00214	92.3	75-125	17.4	25	
Iron	8.73	0.0100	"	10.0	0.00638	87.2	75-125	2.98	25	
Lead	0.138	0.000500	"	0.125	0.000636	110	75-125	3.02	25	
Magnesium	45.8	0.0500	"	10.0	38.0	78.4	75-125	2.40	25	
Manganese	0.200	0.00100	"	0.250	0.000430	79.7	75-125	3.77	25	
Molybdenum	0.204	0.00100	"	0.250	0.00468	79.6	75-125	7.00	25	
Nickel	0.198	0.00100	"	0.250	0.00145	78.5	75-125	1.78	25	
Phosphorus	8.17	0.0200	"	10.0	0.0574	81.1	75-125	3.53	25	
Potassium	14.0	0.0500	"	10.0	5.19	87.6	75-125	1.96	25	
Selenium	0.0298	0.00100	"	0.0250	0.00105	115	75-125	12.8	25	
Silver	0.0139	0.0000500	"	0.0125	ND	111	75-125	4.78	25	
Sodium	126	0.0500	"	10.0	118	78.1	75-125	1.23	25	
Strontium	1.34	0.00100	"	0.250	1.12	87.5	75-125	0.506	25	
Thallium	0.00648	0.0000250	"	0.00625	0.00130	82.9	75-125	4.21	25	
Tin	0.190	0.00100	"	0.250	ND	76.1	75-125	3.79	25	
Titanium	0.201	0.00100	"	0.250	0.00188	79.7	75-125	6.47	25	
Uranium	0.109	0.000500	"	0.125	0.0137	76.4	75-125	4.47	25	
Vanadium	0.200	0.00100	"	0.250	0.00142	79.4	75-125	1.06	25	
Zinc	0.199	0.00100	"	0.250	ND	79.6	75-125	1.44	25	

Summit Scientific

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

Project: Sitzman 1U
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

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

Batch 1901286 - General Preparation

Blank (1901286-BLK1)

Prepared & Analyzed: 01/24/19

Bromide	ND	0.200	mg/L
Chloride	ND	0.0600	"
Fluoride	ND	0.0400	"
Nitrate as N	ND	0.0500	"
Nitrite as N	ND	0.0600	"
Orthophosphate as P	ND	0.100	"
Sulfate	ND	0.300	"

LCS (1901286-BS1)

Prepared & Analyzed: 01/24/19

Bromide	10.2	0.200	mg/L	10.0	102	90-110
Chloride	3.06	0.0600	"	3.00	102	90-110
Fluoride	2.18	0.0400	"	2.00	109	90-110
Nitrate as N	3.30	0.0500	"	3.00	110	90-110
Nitrite as N	3.20	0.0600	"	3.00	107	90-110
Orthophosphate as P	5.05	0.100	"	5.00	101	90-110
Sulfate	15.3	0.300	"	15.0	102	90-110

Duplicate (1901286-DUP1)

Source: 1901287-01

Prepared & Analyzed: 01/24/19

Bromide	0.345	0.200	mg/L	0.344	0.290	20
Chloride	ND	0.0600	"	123		20
Fluoride	1.96	0.0400	"	1.96	0.408	20
Nitrate as N	10.0	0.0500	"	10.0	0.0500	20
Nitrite as N	ND	0.0600	"	ND		20
Orthophosphate as P	0.0650	0.100	"	0.0710	8.82	20
Sulfate	159	0.300	"	249	44.0	20

QM-02

Matrix Spike (1901286-MS1)

Source: 1901287-01

Prepared & Analyzed: 01/24/19

Bromide	11.5	0.200	mg/L	10.0	0.344	112	80-120
Chloride	ND	0.0600	"	3.00	123	NR	80-120
Fluoride	4.22	0.0400	"	2.00	1.96	113	80-120
Nitrate as N	12.6	0.0500	"	3.00	10.0	86.6	80-120
Nitrite as N	3.61	0.0600	"	3.00	ND	120	80-120
Orthophosphate as P	5.75	0.100	"	5.00	0.0710	114	80-120
Sulfate	160	0.300	"	15.0	249	NR	80-120

QM-02

Summit Scientific

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Analytical Results

TASK NO: 190124058

Report To: Paul Shrewsbury
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Bill To: Accounts Payable
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Task No.: 190124058
Client PO:
Client Project: 1901287

Date Received: 1/24/19
Date Reported: 1/29/19
Matrix: Wastewater

Customer Sample ID BH01

Sample Date/Time: 1/23/19 9:38 AM

Lab Number: 190124058-01

Test	Result	Method	ML	Date Analyzed	Analyzed By
Dissolved Organic Carbon	3.2 mg/L	EPA 415.1	0.5 mg/L	1/29/19	ISG

Abbreviations/ References:

ML = Minimum Level = LRL = RL
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



DATA APPROVED FOR RELEASE BY

Analytical Results

TASK NO: 190124058

Report To: Paul Shrewsbury
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Bill To: Accounts Payable
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Task No.: 190124058
Client PO:
Client Project: 1901287

Date Received: 1/24/19
Date Reported: 1/29/19
Matrix: Wastewater

Customer Sample ID BH02

Sample Date/Time: 1/23/19 10:11 AM

Lab Number: 190124058-02

Test	Result	Method	ML	Date Analyzed	Analyzed By
Dissolved Organic Carbon	3.9 mg/L	EPA 415.1	0.5 mg/L	1/29/19	ISG

Abbreviations/ References:

ML = Minimum Level = LRL = RL
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



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Analytical Results

TASK NO: 190124058

Report To: Paul Shrewsbury
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Bill To: Accounts Payable
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Task No.: 190124058
Client PO:
Client Project: 1901287

Date Received: 1/24/19
Date Reported: 1/29/19
Matrix: Wastewater

Customer Sample ID BH13
Sample Date/Time: 1/23/19 10:40 AM
Lab Number: 190124058-03

Test	Result	Method	ML	Date Analyzed	Analyzed By
Dissolved Organic Carbon	3.4 mg/L	EPA 415.1	0.5 mg/L	1/29/19	ISG

Abbreviations/ References:

ML = Minimum Level = LRL = RL
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



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Analytical Results

TASK NO: 190124058

Report To: Paul Shrewsbury
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Bill To: Accounts Payable
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Task No.: 190124058
Client PO:
Client Project: 1901287

Date Received: 1/24/19
Date Reported: 1/29/19
Matrix: Wastewater

Customer Sample ID BH14

Sample Date/Time: 1/23/19 11:05 AM

Lab Number: 190124058-04

Test	Result	Method	ML	Date Analyzed	Analyzed By
Dissolved Organic Carbon	3.7 mg/L	EPA 415.1	0.5 mg/L	1/29/19	ISG

Abbreviations/ References:

ML = Minimum Level = LRL = RL
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



DATA APPROVED FOR RELEASE BY

Analytical Results

TASK NO: 190124058

Report To: Paul Shrewsbury
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Bill To: Accounts Payable
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Task No.: 190124058
Client PO:
Client Project: 1901287

Date Received: 1/24/19
Date Reported: 1/29/19
Matrix: Wastewater

Customer Sample ID BH03

Sample Date/Time: 1/23/19 11:31 AM

Lab Number: 190124058-05

Test	Result	Method	ML	Date Analyzed	Analyzed By
Dissolved Organic Carbon	4.1 mg/L	EPA 415.1	0.5 mg/L	1/29/19	ISG

Abbreviations/ References:

ML = Minimum Level = LRL = RL
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



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Analytical Results

TASK NO: 190124058

Report To: Paul Shrewsbury
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Bill To: Accounts Payable
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Task No.: 190124058
Client PO:
Client Project: 1901287

Date Received: 1/24/19
Date Reported: 1/29/19
Matrix: Wastewater

Customer Sample ID BH05

Sample Date/Time: 1/23/19 12:16 PM

Lab Number: 190124058-06

Test	Result	Method	ML	Date Analyzed	Analyzed By
Dissolved Organic Carbon	4.1 mg/L	EPA 415.1	0.5 mg/L	1/29/19	ISG

Abbreviations/ References:

ML = Minimum Level = LRL = RL
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



DATA APPROVED FOR RELEASE BY

Analytical Results

TASK NO: 190124058

Report To: Paul Shrewsbury
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Bill To: Accounts Payable
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Task No.: 190124058
Client PO:
Client Project: 1901287

Date Received: 1/24/19
Date Reported: 1/29/19
Matrix: Wastewater

Customer Sample ID BH04

Sample Date/Time: 1/23/19 12:40 PM

Lab Number: 190124058-07

Test	Result	Method	ML	Date Analyzed	Analyzed By
Dissolved Organic Carbon	4.4 mg/L	EPA 415.1	0.5 mg/L	1/29/19	ISG

Abbreviations/ References:

ML = Minimum Level = LRL = RL
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



DATA APPROVED FOR RELEASE BY

Analytical Results

TASK NO: 190124058

Report To: Paul Shrewsbury
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Bill To: Accounts Payable
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Task No.: 190124058
Client PO:
Client Project: 1901287

Date Received: 1/24/19
Date Reported: 1/29/19
Matrix: Wastewater

Customer Sample ID BH06

Sample Date/Time: 1/23/19 1:05 PM

Lab Number: 190124058-08

Test	Result	Method	ML	Date Analyzed	Analyzed By
Dissolved Organic Carbon	4.1 mg/L	EPA 415.1	0.5 mg/L	1/29/19	ISG

Abbreviations/ References:

ML = Minimum Level = LRL = RL
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



DATA APPROVED FOR RELEASE BY

Analytical Results

TASK NO: 190124058

Report To: Paul Shrewsbury
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Bill To: Accounts Payable
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Task No.: 190124058
Client PO:
Client Project: 1901287

Date Received: 1/24/19
Date Reported: 1/29/19
Matrix: Wastewater

Customer Sample ID BH10

Sample Date/Time: 1/23/19 1:28 PM

Lab Number: 190124058-09

Test	Result	Method	ML	Date Analyzed	Analyzed By
Dissolved Organic Carbon	2.9 mg/L	EPA 415.1	0.5 mg/L	1/29/19	ISG

Abbreviations/ References:

ML = Minimum Level = LRL = RL
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



DATA APPROVED FOR RELEASE BY

Analytical Results

TASK NO: 190124058

Report To: Paul Shrewsbury
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Bill To: Accounts Payable
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Task No.: 190124058
Client PO:
Client Project: 1901287

Date Received: 1/24/19
Date Reported: 1/29/19
Matrix: Wastewater

Customer Sample ID BH08

Sample Date/Time: 1/23/19 2:28 PM

Lab Number: 190124058-10

Test	Result	Method	ML	Date Analyzed	Analyzed By
Dissolved Organic Carbon	4.7 mg/L	EPA 415.1	0.5 mg/L	1/29/19	ISG

Abbreviations/ References:

ML = Minimum Level = LRL = RL
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



DATA APPROVED FOR RELEASE BY

Analytical Results

TASK NO: 190124058

Report To: Paul Shrewsbury
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Bill To: Accounts Payable
Company: Summit Scientific
741 Corporate Circle, Suite J
Golden CO 80401

Task No.: 190124058
Client PO:
Client Project: 1901287

Date Received: 1/24/19
Date Reported: 1/29/19
Matrix: Wastewater

Customer Sample ID BH07

Sample Date/Time: 1/23/19 2:54 PM

Lab Number: 190124058-11

Test	Result	Method	ML	Date Analyzed	Analyzed By
Dissolved Organic Carbon	3.5 mg/L	EPA 415.1	0.5 mg/L	1/29/19	ISG

Abbreviations/ References:

ML = Minimum Level = LRL = RL
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



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**Colorado Analytical
Laboratories, Inc.**

Brighton Lab

**240 South Main Street
Brighton, CO 80601**

Lakewood Lab

12860 W. Cedar Dr, Suite 100A
Lakewood CO 80228

Phone: 303-659-2313
Fax: 303-659-2315


www.coloradolab.com

Report To Information		Bill To Information (If different from report to)		Project Name
Company Name: <u>Summit Scientific</u>		Company Name: <u>Same</u>		<u>1901287</u>
Contact Name: <u>Paul Shrewsbury</u>		Contact Name: _____		_____
Address: <u>741 Corporate Circle</u> <u>Suite J</u>		Address: <u>Same</u> _____		Task Number (Lab Use Only) CAL Task No. 190124058
City <u>Golden</u>	State <u>CO</u>	City _____	State _____ Zip _____	
Phone: <u>303-277-9310</u>		Phone: _____		Disposal Date (Lab Use Only)
Fax: <u>303-374-5933</u>		Fax: _____		
Email: <u>psshrewsbury@s2scientific.com</u>		Email: _____		
Sample Collector:		PO No.:		


Sample Matrix (Select One Only)										Seals Present Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>										Temp. °C/Ice		Sample Pres. Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Date/Time:																														
Waste Water <input checked="" type="checkbox"/>					Soil <input type="checkbox"/>					Plant Tissue <input type="checkbox"/>					Ground Water <input type="checkbox"/>					Sludge <input type="checkbox"/>					Other <input type="checkbox"/>					Surface Water <input type="checkbox"/>					Compost <input type="checkbox"/>					DOC <input checked="" type="checkbox"/>					Grab or (Check One Only) Composite <input type="checkbox"/>					No. of Containers				
Date	Time	Sample ID																																																				
1/23/19	9:38	BH01																																																				
1/23/19	10:11	BH02																																																				
1/23/19	10:40	BH13																																																				
1/23/19	11:05	BH14																																																				
1/23/19	11:31	BH03																																																				
1/23/19	12:16	BH05																																																				
1/23/19	12:40	BH04																																																				
1/23/19	13:05	BH06																																																				
1/23/19	13:28	BH10																																																				
1/23/19	14:28	BH08																																																				

Instructions: Rush Please 48hr TAT, if possible Data by the EOB 28th.

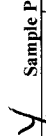
C/S Info: 3 Day TAT

Relinquished By:  **Received By:** Glenn Anderson

Date/Time: 1-24-19 11:55 **Date/Time:** 1/24/19 11:55

Relinquished By:  **Received By:** hnd

Date/Time: 1-24-19 11:55 **Date/Time:** 1/24/19 11:55

Relinquished By:  **Received By:** hnd

Date/Time: 1-24-19 11:55 **Date/Time:** 1/24/19 11:55

58 2022



**Colorado Analytical
Laboratories, Inc.**

Brighton Lab

240 South Main Street

Brighton, CO 80601

Lakewood Lab

12860 W. Cedar Dr, Suite 100A

Lakewood CO 80228

Phone: 303-659-2313

Fax: 303-659-2315

www.coloradolab.com

Report To Information		Bill To Information (If different from report to)		Project Name
Company Name: <u>Summit Scientific</u>		Company Name: <u>Same</u>		<u>1901287</u>
Contact Name: <u>Paul Shrewsbury</u>		Contact Name: _____		_____
Address: <u>741 Corporate Circle</u> <u>Suite J</u>		Address: <u>Same</u> _____		Task Number (Lab Use Only) CAL Task No. 190124058
<u>City</u> <u>Golden</u>	<u>State</u> <u>CO</u>	<u>Zip</u> <u>80401</u>	<u>City</u> _____ <u>State</u> _____ <u>Zip</u> _____	
Phone: 303-277-9310		Fax: 303-374-5933		EMN
Email: pshrewsbury@ss2scientific.com		PO No.:		
Sample Collector:		Disposal Date (Lab Use Only)		

[illegible]



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

Project: Sitzman 1U

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/28/19 12:54

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.
QM-02	The RPD and/or percent recovery for this QC spike 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