

TABLE 1
FORMER MCWILLIAMS 15-34 WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE
ORGANIC COMPOUNDS

Sample ID	Date Sampled	Depth	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	1, 2, 4-TMB (mg/kg)	1, 3, 5-TMB (mg/kg)	Naphthalene (mg/kg)	TPH ⁽⁴⁾ (mg/kg)
Residential SSL ^(1,2)			1.2	490	5.8	58	30	27	2	500
Protection of Groundwater SSL ^(1,2,3)			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500
WH01 @ 6'	12/8/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
FLR01 @ 4'	12/8/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
FL01-02 @ 4'	12/8/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50

Notes:

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

2. Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.

3. SSLs are applicable if a pathway for communication with groundwater is present.

4. Value calculated by adding TVPH-GRO, TEPH-DRO, and TEPH-ORO concentrations.

COGCC = Colorado Oil and Gas Conservation Commission

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

TVPH-GRO = Total volatile petroleum hydrocarbons - gasoline range organics

TEPH-DRO = Total extractable petroleum hydrocarbons - diesel range organics

TEPH-ORO = Total extractable petroleum hydrocarbons - oil range organics

mg/kg = Milligrams per kilogram

TMB = Trimethylbenzene

ft. = Feet

bgs = Below ground surface

TABLE 2
FORMER MCWILLIAMS 15-34 WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE
INORGANIC COMPOUNDS

Sample ID	Date Sampled	Depth	pH (units)	EC (mmhos/cm)	SAR (units)	Boron (mg/L)
Soil Suitability for Reclamation Standard ⁽¹⁾			6-8.3	<4	<6	2
WH01 @ 6'	12/8/2021	6 ft. bgs	7.96	0.897	2.67	0.294
FLR01 @ 4'	12/8/2021	4 ft. bgs	8.02	0.655	2.26	0.271

Notes:

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

COGCC = Colorado Oil and Gas Conservation Commission

EC = Electrical conductivity

SAR = Sodium adsorption ratio

mmhos/cm = Millimhos per centimeter

mg/L = Milligrams per liter

ft. = Feet

bgs = Below ground surface

TABLE 3
FORMER MCWILLIAMS 15-34 WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE
ORGANIC COMPOUNDS - PAHs

Sample ID	Date Sampled	Depth	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benz(a) (mg/kg)	Benzo(a) (mg/kg)	Benzo(b) (mg/kg)	Benzo(k) (mg/kg)	Chrysene (mg/kg)	A,H (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	1,2,3-CD (mg/kg)	Pyrene (mg/kg)	1-M (mg/kg)	2-M (mg/kg)
Residential SSL ^(1,2)			360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
Protection of Groundwater SSL ^(1,2,3)			0.55	5.8	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
WH01 @ 6'	12/8/2021	6 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
FLR01 @ 4'	12/8/2021	4 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500

Notes:

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

COGCC = Colorado Oil and Gas Conservation Commission

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

PAHs = Polycyclic aromatic hydrocarbons

Benzo(a) = Benzantrhacene

Benzo(a) = Benzopyrene

Benzo(b) = Benzoofluoranthene

Benzo(k) = Benzoofluoranthene

A,H = Dibenzoanthracene

1,2,3-CD = Indenopyrene

M = Methylnaphthalene

mg/kg = Milligrams per kilogram

ft. = Feet

bgs = Below ground surface

TABLE 4
FORMER MCWILLIAMS 15-34 WELLHEAD
FIELD DATA SUMMARY TABLE

Sample ID	Date Sampled	Depth	GPS Data ⁽¹⁾ Latitude / Longitude		PDOP Value	VOC Concentration ⁽²⁾ (ppm)
WH01 @ 6'	12/8/2021	6 ft. bgs	40.306631	-104.765566	1.2	0.9
WHS01-N @ 0-6"	12/8/2021	0-6 in. bgs	40.306702	-104.765597	1.4	0.5
WHS01-W @ 0-6"	12/8/2021	0-6 in. bgs	40.306633	-104.765709	1.2	0.1
WHS01-S @ 0-6"	12/8/2021	0-6 in. bgs	40.306555	-104.765601	1.2	0.6
WHS01-E @ 0-6'	12/8/2021	0-6 in. bgs	40.306640	-104.765479	1.2	0.7
FLR01 @ 4'	12/8/2021	4 ft. bgs	40.306630	-104.765595	1.2	1.7
FL01-01 @ 4'	12/8/2021	4 ft. bgs	40.306708	-104.766277	1.1	1.3
FL01-02 @ 4'	12/8/2021	4 ft. bgs	40.306813	-104.767148	1.2	1.3
FL01-03 @ 4'	12/8/2021	4 ft. bgs	40.306937	-104.768039	1.2	1.9
BKG01 @ 4'	12/8/2021	4 ft. bgs	40.306751	-104.765806	1.3	0.8
BKG01 @ 6'	12/8/2021	6 ft. bgs	40.306751	-104.765806	1.3	1.6

Notes:

1. Global Positioning System (GPS) data is provided in decimal degrees using World Geodetic System (WGS) 84 UTM Zone 13 North.
2. Volatile organic compound (VOC) concentrations are measured in the field using a photoionization detector (PID).

PDOP = Position Dilution of Precision

ppm = Parts per million

ft. = Feet

in. = Inches

bgs = Below ground surface

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 22, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: McWilliams 15-34 Wellhead

Work Order #2112153

Enclosed are the results of analyses for samples received by Summit Scientific on 12/08/21 13:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury

President



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

Project: McWilliams 15-34 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH01@6'	2112153-01	Soil	12/08/21 09:45	12/08/21 13:50
FLR01@4'	2112153-02	Soil	12/08/21 09:50	12/08/21 13:50
FL01-02@4'	2112153-03	Soil	12/08/21 12:40	12/08/21 13:50

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.

S₂

2112153

Sample Receipt Checklist

S2 Work Order#

Client: Roc/TosmanClient Project ID: McWilliams 15-34 wellheadShipped Via: ☐ H.D./P.U./FedEx/UPS/USPS/Other

Airbill #: _____

Matrix (check all that apply):

☐ Air☒ Soil/Solid☐ Water☐ Other: _____

(Describe)

Temp (°C)

11.1

Thermometer ID: G86A9201901378

	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 if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>on ICE</u>
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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

Custodian Printed Name or Initials

Date/Time



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

Project: McWilliams 15-34 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

WH01@6'
2112153-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/08/21 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEL0299	12/14/21	12/15/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/08/21 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		87.1 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		87.6 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/08/21 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEL0300	12/14/21	12/15/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **12/08/21 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		65.5 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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1775 Sherman St. STE. 3000
Denver CO, 80203

Project: McWilliams 15-34 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

WH01@6'
2112153-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **12/08/21 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEL0360	12/16/21	12/20/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **12/08/21 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		41.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		68.4 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **12/08/21 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.294	0.0100	mg/L	1	BEL0319	12/15/21	12/20/21	EPA 6020B	

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

Date Sampled: **12/08/21 09:45**

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

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

Project: McWilliams 15-34 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

WH01@6'
2112153-01 (Soil)

Summit Scientific

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

Calcium	47.1	0.0571	mg/L dry	1	BEL0316	12/14/21	12/20/21	EPA 6020B
Magnesium	8.84	0.0571	"	"	"	"	"	"
Sodium	76.2	0.0571	"	"	"	"	"	"

Calculated Analysis

Date Sampled: **12/08/21 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.67	0.00100	units	1	BEL0440	12/20/21	12/20/21	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **12/08/21 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	87.5		%	1	BEL0416	12/20/21	12/20/21	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **12/08/21 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.897	0.0100	mmhos/cm	1	BEL0349	12/15/21	12/15/21	EPA 120.1	

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

Date Sampled: **12/08/21 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.96		pH Units	1	BEL0348	12/15/21	12/15/21	EPA 9045D	

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1775 Sherman St. STE. 3000
Denver CO, 80203

Project: McWilliams 15-34 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

FLR01@4'
2112153-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/08/21 09:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEL0299	12/14/21	12/15/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/08/21 09:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		94.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/08/21 09:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEL0300	12/14/21	12/15/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **12/08/21 09:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		84.4 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: McWilliams 15-34 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

FLR01@4'
2112153-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **12/08/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEL0360	12/16/21	12/20/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **12/08/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		59.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		62.1 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **12/08/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.271	0.0100	mg/L	1	BEL0319	12/15/21	12/20/21	EPA 6020B	

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

Date Sampled: **12/08/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: McWilliams 15-34 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

FLR01@4'
2112153-02 (Soil)

Summit Scientific

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

Calcium	42.4	0.0574	mg/L dry	1	BEL0316	12/14/21	12/20/21	EPA 6020B
Magnesium	8.29	0.0574	"	"	"	"	"	"
Sodium	61.5	0.0574	"	"	"	"	"	"

Calculated Analysis

Date Sampled: **12/08/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.26	0.00100	units	1	BEL0440	12/20/21	12/20/21	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **12/08/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	87.2		%	1	BEL0416	12/20/21	12/20/21	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **12/08/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.655	0.0100	mmhos/cm	1	BEL0349	12/15/21	12/15/21	EPA 120.1	

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

Date Sampled: **12/08/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.02		pH Units	1	BEL0348	12/15/21	12/15/21	EPA 9045D	

Summit Scientific

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

Project: McWilliams 15-34 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

FL01-02@4'
2112153-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/08/21 12:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEL0299	12/14/21	12/15/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/08/21 12:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		126 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/08/21 12:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEL0300	12/14/21	12/15/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **12/08/21 12:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		76.0 %	30-150		"	"	"	"	

Summit Scientific

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

Project: McWilliams 15-34 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

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 BEL0299 - EPA 5030 Soil MS

Blank (BEL0299-BLK1)

Prepared & Analyzed: 12/14/21

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0330		"	0.0400		82.4	23-173			
Surrogate: Toluene-d8	0.0401		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0408		"	0.0400		102	21-167			

LCS (BEL0299-BS1)

Prepared & Analyzed: 12/14/21

Benzene	0.0898	0.0020	mg/kg	0.100		89.8	70-130			
Toluene	0.0725	0.0050	"	0.100		72.5	70-130			
Ethylbenzene	0.0923	0.0050	"	0.100		92.3	70-130			
m,p-Xylene	0.173	0.010	"	0.200		86.3	70-130			
o-Xylene	0.0849	0.0050	"	0.100		84.9	70-130			
1,2,4-Trimethylbenzene	0.107	0.0050	"	0.100		107	70-130			
1,3,5-Trimethylbenzene	0.112	0.0050	"	0.100		112	70-130			
Naphthalene	0.0968	0.0038	"	0.100		96.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0399		"	0.0400		99.8	23-173			
Surrogate: Toluene-d8	0.0485		"	0.0400		121	20-170			
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.3	21-167			

Matrix Spike (BEL0299-MS1)

Source: 2112149-01

Prepared & Analyzed: 12/14/21

Benzene	0.128	0.0020	mg/kg	0.100	ND	128	70-130			
Toluene	0.103	0.0050	"	0.100	ND	103	70-130			
Ethylbenzene	0.104	0.0050	"	0.100	ND	104	70-130			
m,p-Xylene	0.191	0.010	"	0.200	ND	95.6	70-130			
o-Xylene	0.0887	0.0050	"	0.100	ND	88.7	70-130			
1,2,4-Trimethylbenzene	0.0884	0.0050	"	0.100	ND	88.4	70-130			
1,3,5-Trimethylbenzene	0.0991	0.0050	"	0.100	ND	99.1	70-130			
Naphthalene	0.0893	0.0038	"	0.100	0.00483	84.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0346		"	0.0400		86.5	23-173			
Surrogate: Toluene-d8	0.0504		"	0.0400		126	20-170			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.1	21-167			

Summit Scientific

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

Project: McWilliams 15-34 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

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 BEL0299 - EPA 5030 Soil MS

Matrix Spike Dup (BEL0299-MSD1)	Source: 2112149-01			Prepared & Analyzed: 12/14/21						
Benzene	0.127	0.0020	mg/kg	0.100	ND	127	70-130	0.847	30	
Toluene	0.114	0.0050	"	0.100	ND	114	70-130	9.57	30	
Ethylbenzene	0.0922	0.0050	"	0.100	ND	92.2	70-130	12.2	30	
m,p-Xylene	0.186	0.010	"	0.200	ND	92.8	70-130	3.01	30	
o-Xylene	0.0880	0.0050	"	0.100	ND	88.0	70-130	0.849	30	
1,2,4-Trimethylbenzene	0.0890	0.0050	"	0.100	ND	89.0	70-130	0.710	30	
1,3,5-Trimethylbenzene	0.0952	0.0050	"	0.100	ND	95.2	70-130	4.01	30	
Naphthalene	0.101	0.0038	"	0.100	0.00483	96.4	70-130	12.5	30	
Surrogate: 1,2-Dichloroethane-d4	0.0347		"	0.0400		86.7	23-173			
Surrogate: Toluene-d8	0.0434		"	0.0400		109	20-170			
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400		98.4	21-167			

Summit Scientific

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

Project: McWilliams 15-34 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

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 BEL0300 - EPA 3550A

Blank (BEL0300-BLK1)

Prepared & Analyzed: 12/14/21

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

LCS (BEL0300-BS1)

Prepared & Analyzed: 12/14/21

C10-C28 (DRO)	439	50	mg/kg	500	87.7	70-130
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Matrix Spike (BEL0300-MS1)

Source: 2112149-01

Prepared: 12/14/21 Analyzed: 12/15/21

C10-C28 (DRO)	455	50	mg/kg	500	30.8	84.8	70-130
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Matrix Spike Dup (BEL0300-MSD1)

Source: 2112149-01

Prepared: 12/14/21 Analyzed: 12/15/21

C10-C28 (DRO)	442	50	mg/kg	500	30.8	82.3	70-130	2.74	20
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Summit Scientific

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

Project: McWilliams 15-34 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BEL0360 - EPA 5030 Soil MS

Blank (BEL0360-BLK1)

Prepared: 12/16/21 Analyzed: 12/20/21

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
Surrogate: 2-Methylnaphthalene-d10	0.0306		"	0.0333		91.9	40-150			
Surrogate: Fluoranthene-d10	0.0279		"	0.0333		83.6	40-150			

LCS (BEL0360-BS1)

Prepared: 12/16/21 Analyzed: 12/20/21

Acenaphthene	0.0325	0.00500	mg/kg	0.0333		97.4	31-137			
Anthracene	0.0344	0.00500	"	0.0333		103	30-120			
Benzo (a) anthracene	0.0276	0.00500	"	0.0333		82.9	30-120			
Benzo (a) pyrene	0.0286	0.00500	"	0.0333		85.7	30-120			
Benzo (b) fluoranthene	0.0390	0.00500	"	0.0333		117	30-120			
Benzo (k) fluoranthene	0.0317	0.00500	"	0.0333		95.0	30-120			
Chrysene	0.0321	0.00500	"	0.0333		96.3	30-120			
Dibenz (a,h) anthracene	0.0118	0.00500	"	0.0333		35.5	30-120			
Fluoranthene	0.0352	0.00500	"	0.0333		106	30-120			
Fluorene	0.0279	0.00500	"	0.0333		83.8	30-120			
Indeno (1,2,3-cd) pyrene	0.0129	0.00500	"	0.0333		38.6	30-120			
Pyrene	0.0336	0.00500	"	0.0333		101	35-142			
1-Methylnaphthalene	0.0275	0.00500	"	0.0333		82.6	35-142			
2-Methylnaphthalene	0.0242	0.00500	"	0.0333		72.7	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0255		"	0.0333		76.6	40-150			
Surrogate: Fluoranthene-d10	0.0324		"	0.0333		97.2	40-150			

Summit Scientific

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

Project: McWilliams 15-34 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BEL0360 - EPA 5030 Soil MS

Matrix Spike (BEL0360-MS1)

Source: 2112153-01

Prepared: 12/16/21 Analyzed: 12/20/21

Acenaphthene	0.0256	0.00500	mg/kg	0.0333	ND	76.8	31-137		
Anthracene	0.0260	0.00500	"	0.0333	ND	77.9	30-120		
Benzo (a) anthracene	0.0225	0.00500	"	0.0333	ND	67.6	30-120		
Benzo (a) pyrene	0.0237	0.00500	"	0.0333	ND	71.2	30-120		
Benzo (b) fluoranthene	0.0312	0.00500	"	0.0333	ND	93.7	30-120		
Benzo (k) fluoranthene	0.0367	0.00500	"	0.0333	ND	110	30-120		
Chrysene	0.0256	0.00500	"	0.0333	ND	76.8	30-120		
Dibenz (a,h) anthracene	0.0225	0.00500	"	0.0333	ND	67.4	30-120		
Fluoranthene	0.0260	0.00500	"	0.0333	ND	78.0	30-120		
Fluorene	0.0285	0.00500	"	0.0333	ND	85.5	30-120		
Indeno (1,2,3-cd) pyrene	0.0232	0.00500	"	0.0333	ND	69.5	30-120		
Pyrene	0.0328	0.00500	"	0.0333	ND	98.4	35-142		
1-Methylnaphthalene	0.0160	0.00500	"	0.0333	ND	48.1	15-130		
2-Methylnaphthalene	0.0138	0.00500	"	0.0333	ND	41.3	15-130		
Surrogate: 2-Methylnaphthalene-d10	0.0163		"	0.0333		49.0	40-150		
Surrogate: Fluoranthene-d10	0.0242		"	0.0333		72.7	40-150		

Matrix Spike Dup (BEL0360-MSD1)

Source: 2112153-01

Prepared: 12/16/21 Analyzed: 12/20/21

Acenaphthene	0.0231	0.00500	mg/kg	0.0333	ND	69.2	31-137	10.5	30
Anthracene	0.0245	0.00500	"	0.0333	ND	73.4	30-120	5.90	30
Benzo (a) anthracene	0.0208	0.00500	"	0.0333	ND	62.3	30-120	8.16	30
Benzo (a) pyrene	0.0206	0.00500	"	0.0333	ND	61.7	30-120	14.2	30
Benzo (b) fluoranthene	0.0271	0.00500	"	0.0333	ND	81.3	30-120	14.1	30
Benzo (k) fluoranthene	0.0331	0.00500	"	0.0333	ND	99.3	30-120	10.2	30
Chrysene	0.0243	0.00500	"	0.0333	ND	73.0	30-120	5.08	30
Dibenz (a,h) anthracene	0.0231	0.00500	"	0.0333	ND	69.2	30-120	2.72	30
Fluoranthene	0.0249	0.00500	"	0.0333	ND	74.6	30-120	4.43	30
Fluorene	0.0250	0.00500	"	0.0333	ND	75.0	30-120	13.1	30
Indeno (1,2,3-cd) pyrene	0.0216	0.00500	"	0.0333	ND	64.9	30-120	6.81	30
Pyrene	0.0286	0.00500	"	0.0333	ND	85.7	35-142	13.8	30
1-Methylnaphthalene	0.0225	0.00500	"	0.0333	ND	67.4	15-130	33.4	50
2-Methylnaphthalene	0.0194	0.00500	"	0.0333	ND	58.2	15-130	33.9	50
Surrogate: 2-Methylnaphthalene-d10	0.0214		"	0.0333		64.2	40-150		
Surrogate: Fluoranthene-d10	0.0236		"	0.0333		70.8	40-150		

Summit Scientific

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

Project: McWilliams 15-34 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

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

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

Batch BEL0319 - EPA 3050B

Blank (BEL0319-BLK1)

Prepared: 12/15/21 Analyzed: 12/20/21

Boron ND 0.0100 mg/L

LCS (BEL0319-BS1)

Prepared: 12/15/21 Analyzed: 12/20/21

Boron 4.45 0.0100 mg/L 5.00 89.1 80-120

Duplicate (BEL0319-DUP1)

Source: 2112152-04

Prepared: 12/15/21 Analyzed: 12/20/21

Boron 0.196 0.0100 mg/L 0.207 5.14 20

Matrix Spike (BEL0319-MS1)

Source: 2112152-04

Prepared: 12/15/21 Analyzed: 12/20/21

Boron 4.79 0.0100 mg/L 5.00 0.207 91.7 75-125

Matrix Spike Dup (BEL0319-MSD1)

Source: 2112152-04

Prepared: 12/15/21 Analyzed: 12/20/21

Boron 4.90 0.0100 mg/L 5.00 0.207 93.8 75-125 2.15 25

Summit Scientific

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

Project: McWilliams 15-34 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

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

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

Batch BEL0316 - General Preparation

Blank (BEL0316-BLK1)

Prepared: 12/14/21 Analyzed: 12/20/21

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

LCS (BEL0316-BS1)

Prepared: 12/14/21 Analyzed: 12/20/21

Calcium	5.80	0.0500	mg/L wet	5.00	116	70-130
Magnesium	6.02	0.0500	"	5.00	120	70-130
Sodium	6.23	0.0500	"	5.00	125	70-130

Summit Scientific

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

Project: McWilliams 15-34 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

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

Summit Scientific

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

Batch BEL0416 - General Preparation

Duplicate (BEL0416-DUP1)			Source: 2112139-01			Prepared & Analyzed: 12/20/21				
% Solids	94.3		%		94.8		0.578		20	

Summit Scientific

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

Project: McWilliams 15-34 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

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

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

Batch BEL0349 - General Preparation

Blank (BEL0349-BLK1)

Prepared & Analyzed: 12/15/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BEL0349-BS1)

Prepared & Analyzed: 12/15/21

Specific Conductance (EC) 0.155 0.0100 mmhos/cm 0.150 104 95-105

Duplicate (BEL0349-DUP1)

Source: 2112153-01

Prepared & Analyzed: 12/15/21

Specific Conductance (EC) 0.868 0.0100 mmhos/cm 0.897 3.23 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: McWilliams 15-34 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

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

Summit Scientific

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

Batch BEL0348 - General Preparation

LCS (BEL0348-BS1)

Prepared & Analyzed: 12/15/21

pH	8.98	pH Units	9.18	97.8	95-105
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Duplicate (BEL0348-DUP1)

Source: 2112153-01

Prepared & Analyzed: 12/15/21

pH	8.02	pH Units	7.96	0.751	20
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Summit Scientific

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

Project: McWilliams 15-34 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/22/21 09:40

Notes and Definitions

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