

TABLE 1
FORMER SWANSON 34-20 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (ft)	Groundwater Elevation (ft AMSL)
COGCC Table 910-1 Groundwater Standard (µg/L)⁽¹⁾		5	560	700	1,400		
GW01	8/17/2018	13	<1.0	<1.0	<2.0	~ 8.0	NM
GW02	8/22/2018	72	<1.0	25	490	~ 8.0	NM
BH01	9/28/2018	3.8	<1.0	16	67	4.97	4726.39
BH01	12/17/2018	<1.0	<1.0	<1.0	<2.0	6.75	4724.61
BH01	3/4/2019	<1.0	<1.0	<1.0	<2.0	7.72	4723.64
BH01	6/21/2019	<1.0	<1.0	<1.0	<2.0	8.21	4723.15
BH02	9/28/2018	<1.0	<1.0	<1.0	<2.0	4.48	4726.24
BH02	12/17/2018	<1.0	<1.0	<1.0	<2.0	6.25	4724.47
BH02	3/4/2019	<1.0	<1.0	<1.0	<2.0	7.18	4723.54
BH02	6/21/2019	<1.0	<1.0	<1.0	<2.0	6.59	4724.13
BH03	9/28/2018	<1.0	<1.0	<1.0	<2.0	4.90	4726.88
BH03	12/17/2018	<1.0	<1.0	<1.0	<2.0	6.79	4724.99
BH03	3/4/2019	<1.0	<1.0	<1.0	<2.0	7.76	4724.02
BH03	6/21/2019	<1.0	<1.0	<1.0	<2.0	7.46	4724.32
BH04	9/28/2018	<1.0	<1.0	<1.0	<2.0	5.84	4725.62
BH04	12/17/2018	<1.0	<1.0	<1.0	<2.0	7.63	4723.83
BH04	3/4/2019	<1.0	<1.0	<1.0	<2.0	8.60	4722.86
BH04	6/21/2019	<1.0	<1.0	<1.0	<2.0	8.55	4722.91
BH05	9/28/2018	<1.0	<1.0	<1.0	<2.0	5.67	4725.18
BH05	12/17/2018	<1.0	<1.0	<1.0	<2.0	7.37	4723.48
BH05	3/4/2019	<1.0	<1.0	<1.0	<2.0	8.28	4722.57
BH05	6/21/2019	<1.0	<1.0	<1.0	<2.0	7.60	4723.25

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective May 1, 2018.

2. Depth to water measurements were collected from top of casing and adjusted using survey data to reflect depth of water from ground surface.

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

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

ft AMSL = Feet Above Mean Sea Level

NM = Not Measured

BOLD = Analytical result is in exceedance of COGCC groundwater standards.

ATTACHMENT A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

July 01, 2019

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Swanson 34-20

Work Order # 1906293

Enclosed are the results of analyses for samples received by Summit Scientific on 06/21/19 17:00. 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: Swanson 34-20

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
07/01/19 07:11

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1906293-01	Water	06/21/19 13:12	06/21/19 17:00
BH02	1906293-02	Water	06/21/19 13:14	06/21/19 17:00
BH03	1906293-03	Water	06/21/19 13:10	06/21/19 17:00
BH04	1906293-04	Water	06/21/19 13:15	06/21/19 17:00
BH05	1906293-05	Water	06/21/19 13:20	06/21/19 17:00

Summit Scientific

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Summit Scientific

1906293

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

Page 1 of 1

Client: PDC / Tasman Geosciences
Address: 6899 Pecos St, Unit C
City/State/Zip: Denver, CO 80221
Phone: 303-487-1228 Fax:
Sampler Name: Alison Dahl

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: Swanson 34-20
Project Number: N/A

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 - 8260													
BH01	6/21/19	1312	3			X		X				X													
BH02	↓	1314	↓			↓		↓				↓													
BH03	↓	1310	↓			↓		↓				↓													
BH04	↓	1315	↓			↓		↓				↓													
BH05	↓	1320	↓			↓		↓				↓													
Relinquished by: <u>Tasman Lock</u>	Date/Time: <u>6/21/19</u>	Received by: <u>Tasman Lock Box</u>		Date/Time: <u>6/21/19</u>		Turn Around Time (Check)		Notes:																	
						Same Day <input type="checkbox"/>		72 Hours <input type="checkbox"/>																	
						24 Hours <input type="checkbox"/>		Standard <input checked="" type="checkbox"/>																	
						48 Hours <input type="checkbox"/>																			
Relinquished by: <u>6-21-19</u>	Date/Time: <u>17:00</u>	Received by: <u>[Signature]</u>		Date/Time: <u>6-21-19</u>		Sample Integrity:																			
						Temperature Upon Receipt: <u>5.8°</u>																			
						Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																			

Sample Receipt Checklist

S2 Work Order

1906293

Client: PDC/Tasman

Client Project ID: Swanson 34-20

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

Airbill #:

Matrix (check all that apply): Air

Soil/Solid

X Water

Other:

(Describe)

Temp (°C)

5.8

Thermometer ID: 61857155-K

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

Signature of Custodian

Date/Time

6-21-19 17:00



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

Project: Swanson 34-20

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/01/19 07:11

BH01
1906293-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/21/19 13:12**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1906352	06/24/19	06/29/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **06/21/19 13:12**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		115 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.9 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %		21-167		"	"	"	"	

Summit Scientific

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

Project: Swanson 34-20

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/01/19 07:11

BH02
1906293-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/21/19 13:14**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1906352	06/24/19	06/29/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **06/21/19 13:14**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		118 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.5 %	21-167		"	"	"	"	

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1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Swanson 34-20

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
07/01/19 07:11

BH03
1906293-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/21/19 13:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1906352	06/24/19	06/29/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **06/21/19 13:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		118 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

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

Project: Swanson 34-20

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
07/01/19 07:11

BH04
1906293-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/21/19 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1906352	06/24/19	06/29/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **06/21/19 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.1 %	21-167		"	"	"	"	

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

Project: Swanson 34-20

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/01/19 07:11

BH05
1906293-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/21/19 13:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1906352	06/24/19	06/29/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **06/21/19 13:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		117 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

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

Project: Swanson 34-20

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/01/19 07:11

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 1906352 - EPA 5030 Water MS

Blank (1906352-BLK1)

Prepared: 06/24/19 Analyzed: 06/29/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.5		"	13.3		109	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.6	20-170			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		96.4	21-167			

LCS (1906352-BS1)

Prepared: 06/24/19 Analyzed: 06/29/19

Benzene	37.0	1.0	ug/l	33.3		111	51-132			
Toluene	37.8	1.0	"	33.3		113	51-138			
Ethylbenzene	39.0	1.0	"	33.3		117	58-146			
m,p-Xylene	75.5	2.0	"	66.7		113	57-144			
o-Xylene	37.6	1.0	"	33.3		113	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.5		"	13.3		109	23-173			
Surrogate: Toluene-d8	13.4		"	13.3		101	20-170			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.3	21-167			

Matrix Spike (1906352-MS1)

Source: 1906293-01

Prepared: 06/24/19 Analyzed: 06/29/19

Benzene	43.3	1.0	ug/l	33.3	ND	130	34-141			
Toluene	43.8	1.0	"	33.3	ND	131	27-151			
Ethylbenzene	45.5	1.0	"	33.3	ND	137	29-160			
m,p-Xylene	88.1	2.0	"	66.7	ND	132	20-166			
o-Xylene	45.1	1.0	"	33.3	ND	135	33-159			
Surrogate: 1,2-Dichloroethane-d4	15.6		"	13.3		117	23-173			
Surrogate: Toluene-d8	13.4		"	13.3		100	20-170			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.6	21-167			

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

Project: Swanson 34-20

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/01/19 07:11

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 1906352 - EPA 5030 Water MS

Matrix Spike Dup (1906352-MSD1)	Source: 1906293-01			Prepared: 06/24/19 Analyzed: 06/29/19						
Benzene	41.8	1.0	ug/l	33.3	ND	125	34-141	3.53	30	
Toluene	42.7	1.0	"	33.3	ND	128	27-151	2.71	30	
Ethylbenzene	43.9	1.0	"	33.3	ND	132	29-160	3.67	30	
m,p-Xylene	84.8	2.0	"	66.7	ND	127	20-166	3.86	30	
o-Xylene	43.2	1.0	"	33.3	ND	129	33-159	4.44	30	
Surrogate: 1,2-Dichloroethane-d4	15.1		"	13.3		113	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.8	20-170			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.8	21-167			

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

Project: Swanson 34-20

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/01/19 07:11

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