



PDC Energy, Inc.
Fourth Quarter 2015 Groundwater Monitoring Summary

January 20, 2016

Seele 31, 41, 42-31 Tank Battery
NENE Section 31 T4N R67W
Weld County, API # 05-123-20280
Spill Tracking # 2223041
Remediation # 6926

This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the Seele 31, 41, 42-31 tank battery. On October 6, 2015, groundwater sampling was conducted at four of the six temporary monitoring well locations. Monitoring wells BH01 and BH03 contained insufficient water and were not sampled. Groundwater samples were submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylene (BTEX) constituents using USEPA Method 8260B. Analytical results are summarized in Table 1, and the laboratory report is included as Attachment A. Sample locations and corresponding analytical results are illustrated on Figure 1. Fourth quarter 2015 analytical results indicate that constituent concentrations are below applicable COGCC Table 910-1 groundwater standards at each of the four locations sampled.

Bi-weekly enhanced fluid recovery (EFR) with air sparge (AS) events were initiated on August 22, 2012. EFR/AS events were discontinued in the second quarter of 2013 due to a site-wide decrease in groundwater elevation. EFR/AS events were restarted during the third quarter 2014, following the installation of new wells. A summary of EFR/AS operational data is provided in Table 2. EFR/AS were discontinued during the fourth quarter 2015, as constituent concentrations have remained below regulatory standards. Monitored natural attenuation (MNA) was implemented as the selected remediation strategy during the fourth quarter 2015, and will continue through the first quarter 2016.

Historical groundwater sampling results for naphthalene, methyl tert-butyl ether (MTBE) and gasoline range organics (GRO) are presented in Table 3. Analysis of these constituents was discontinued following the third quarter 2012, as they are not regulated in the COGCC 900 Series.

First quarter 2016 groundwater sampling will be conducted during January 2016.

TABLE 1
SEEE 31, 41, 42-31 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 (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
BH01	1/27/2012	5,300	1,200	180	1,300	13.14
BH01	7/17/2012	900	2.2	10	78	12.60
BH01	10/1/2012	<1.0	<1.0	<1.0	<1.0	13.82
BH01	1/28/2013	DRY	DRY	DRY	DRY	DRY
BH01	5/3/2013	3,000	2.3	17	240	13.90
BH01	7/25/2013	DRY	DRY	DRY	DRY	DRY
BH01	11/1/2013	<1.0	<1.0	4.2	28	13.09
BH01	1/29/2014	DRY	DRY	DRY	DRY	DRY
BH01	4/28/2014	DRY	DRY	DRY	DRY	14.26
BH01	7/25/2014	<1.0	<1.0	1.6	4.3	12.47
BH01	10/27/2014	DRY	DRY	DRY	DRY	13.36
BH01	1/20/2015	DRY	DRY	DRY	DRY	DRY
BH01	4/24/2015	DRY	DRY	DRY	DRY	DRY
BH01	7/31/2015	<1.0	<1.0	49	100	12.87
BH01	10/6/2015	DRY	DRY	DRY	DRY	13.82
BH02	1/27/2012	7,500	680	240	1,400	11.93
BH02	7/17/2012	10,000	2,200	220	2,140	10.92
BH02	10/1/2012	DRY	DRY	DRY	DRY	DRY
BH02	1/28/2013	DRY	DRY	DRY	DRY	DRY
BH02	5/3/2013	DRY	DRY	DRY	DRY	DRY
BH02	7/25/2013	DRY	DRY	DRY	DRY	DRY
BH02	10/31/2013	DRY	DRY	DRY	DRY	DRY
BH02	1/29/2014	DRY	DRY	DRY	DRY	DRY
BH02	4/28/2014	DRY	DRY	DRY	DRY	DRY
BH02R	7/25/2014	93	14	89	230	10.12
BH02R	10/27/2014	1.4	<1.0	1.5	8.7	10.72
BH02R	1/20/2015	<1.0	<1.0	<1.0	<1.0	11.42
BH02R	4/24/2015	<1.0	<1.0	<1.0	<1.0	11.28
BH02R	7/31/2015	<1.0	<1.0	<1.0	<1.0	9.70
BH02R	10/6/2015	<1.0	<1.0	<1.0	<1.0	10.68

TABLE 1
SEEE 31, 41, 42-31 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 (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
BH03	1/27/2012	16,000	4,400	420	2,900	15.02
BH03	7/17/2012	18,000	2,700	15	3,590	12.56
BH03	10/1/2012	7,300	1,400	250	2,400	12.69
BH03	1/28/2013	DRY	DRY	DRY	DRY	DRY
BH03	5/3/2013	DRY	DRY	DRY	DRY	DRY
BH03	7/25/2013	DRY	DRY	DRY	DRY	DRY
BH03	10/31/2013	DRY	DRY	DRY	DRY	DRY
BH03	1/29/2014	DRY	DRY	DRY	DRY	DRY
BH03	4/28/2014	DRY	DRY	DRY	DRY	DRY
BH03	7/25/2014	DRY	DRY	DRY	DRY	DRY
BH03	10/27/2014	DRY	DRY	DRY	DRY	DRY
BH03	1/20/2015	DRY	DRY	DRY	DRY	DRY
BH03	4/24/2015	DRY	DRY	DRY	DRY	DRY
BH03	7/31/2015	DRY	DRY	DRY	DRY	DRY
BH03	10/6/2015	DRY	DRY	DRY	DRY	DRY
BH07	7/25/2014	<1.0	<1.0	<1.0	<1.0	9.01
BH07	10/27/2014	160	<1.0	<1.0	<1.0	9.75
BH07	1/20/2015	120	<1.0	<1.0	<1.0	10.63
BH07	4/24/2015	<1.0	<1.0	<1.0	<1.0	10.60
BH07	7/31/2015	<1.0	<1.0	<1.0	<1.0	9.69
BH07	10/6/2015	<1.0	<1.0	<1.0	<1.0	10.49
BH08	7/25/2014	3.8	<1.0	6.2	210	9.95
BH08	10/27/2014	5.5	<1.0	<1.0	36	10.86
BH08	1/20/2015	<1.0	<1.0	<1.0	<1.0	11.57
BH08	4/24/2015	<1.0	<1.0	<1.0	<1.0	11.43
BH08	7/31/2015	<1.0	<1.0	<1.0	<1.0	9.74
BH08	10/6/2015	<1.0	<1.0	<1.0	<1.0	10.87

TABLE 1
SEELE 31, 41, 42-31 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 (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
BH09	7/25/2014	810	<1.0	72	510	11.46
BH09	10/27/2014	<1.0	<1.0	<1.0	<1.0	11.73
BH09	1/20/2015	<1.0	<1.0	<1.0	<1.0	12.62
BH09	4/24/2015	<1.0	<1.0	<1.0	<1.0	12.33
BH09	7/31/2015	<1.0	<1.0	<1.0	<1.0	10.78
BH09	10/6/2015	<1.0	<1.0	<1.0	<1.0	11.85

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective January 30, 2015.

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

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

DRY = Well contained insufficient volume to collect sample.

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

TABLE 2
SEELE 31, 41, 42-31 TANK BATTERY
EFR / AS OPERATIONAL SUMMARY TABLE

Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Air Injection Pressure (psi)
Third Quarter 2012					
8/22/2012	BH01, BH02, BH03	7	42	BH01, BH02, BH03	8
9/5/2012		7	42		8
Quarterly Totals		14	84		-
Fourth Quarter 2012					
10/2/2012	BH01, BH02, BH03	7	42	BH01, BH02, BH03	8
10/15/2012		7	42		8
10/29/2012		7	0		8
11/12/2012		6.25	0		8
11/26/2012		6	0		8
Quarterly Totals		33.25	84		-
First Quarter 2013					
1/8/2013	BH01, BH02, BH03	5	0	BH01, BH02, BH03	10
1/21/2013		7	6.5		10
2/8/2013		6.5	6		10
3/14/2013		6	3		10
Quarterly Totals		24.5	15.5		-
Second Quarter 2013					
4/2/2013	BH01, BH02, BH03	4.25	6	BH01, BH02, BH03	10
Quarterly Totals		4.25	6		
Third Quarter 2014					
9/3/2014	BH02, BH03, BH08	6	0	BH02R, BH09	20
9/17/2014		6	75		20
Quarterly Totals		12	75		
Fourth Quarter 2014					
10/3/2014	BH02, BH03, BH08	6	9	BH02R, BH09	20
10/21/2014		6	50		20
11/4/2014		8	45		20
11/19/2014		6	0		20
12/5/2014		6	10		20
12/15/2014		6	50		20
12/28/2014		6	0		20
Quarterly Totals		44	164		
First Quarter 2015					
1/12/2015	BH02, BH07, BH08	6	10	BH02R, BH09	20
1/22/2015	BH02, BH03, BH08	6	0		20
2/11/2015	BH02, BH02R, BH03, BH07, BH08	6	50	BH02R, BH07, BH09	20
3/11/2015		6	50		20
3/26/2015		6	50		20
Quarterly Totals		30	160		

TABLE 2
SEELE 31, 41, 42-31 TANK BATTERY
EFR / AS OPERATIONAL SUMMARY TABLE

Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Air Injection Pressure (psi)
Second Quarter 2015					
4/1/2015	BH02, BH02R, BH03, BH07, BH08	6	10	BH02R, BH07, BH09	20
4/22/2015		6	90		20
5/6/2015		6	50		20
5/20/2015		6	40		20
6/3/2015		6	30		20
6/17/2015		6	30		30
Quarterly Totals		36	250		
Third Quarter 2015					
7/1/2015	BH02, BH02R, BH03, BH07, BH08	6	60	BH02R, BH07, BH09	20
7/15/2015		6	45		20
7/29/2015		6	75		20
8/12/2015		6	40		20
8/26/2015		6	50		20
9/9/2015		6	50		20
9/23/2015		6	80		20
Quarterly Totals		42	400		
Fourth Quarter 2015					
10/21/2015	BH02, BH02R, BH03, BH07, BH08	6	60	BH02R, BH07, BH09	20
Quarterly Totals		6	60		

Notes:

EFR = Enhanced fluid recovery

AS = Air sparge

psi = Pounds per square inch

TABLE 3
SEELE 31, 41, 42-31 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Naphthalene (µg/L)	MTBE (µg/L)	TPH-GRO (µg/L)
CDPHE WQCC Groundwater Standard ⁽¹⁾		140	20	NS
BH01	1/27/2012	58	<5.0	11,000
BH01	7/12/2012	18	NA	2,000
BH02	1/27/2012	7,900	<5.0	24,000
BH02	7/12/2012	57	NA	20,000
BH03	1/27/2012	73	<5.0	62,000
BH03	7/12/2012	52	NA	20,000

Notes:

1. Groundwater standards referenced from Colorado Department of Public Health Water Quality Control Commission 5CCR 1002-41 Basic Standards for Groundwater.

TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics

MTBE = Methyl tert-butyl ether

µg/L = Micrograms per liter

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

NS = No Standard

NA = Not Analyzed

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



County Road 40

BH07		
Compound (µg/L)	7/31/2015	10/6/2015
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

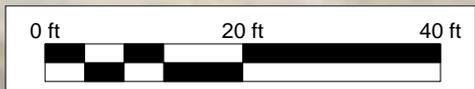
BH01		
Compound (µg/L)	7/31/2015	10/6/2015
Benzene	<1.0	DRY
Toluene	<1.0	DRY
Ethylbenzene	49	DRY
Total Xylenes	100	DRY

BH03		
Compound (µg/L)	7/31/2015	10/6/2015
Benzene	DRY	DRY
Toluene	DRY	DRY
Ethylbenzene	DRY	DRY
Total Xylenes	DRY	DRY

BH02R		
Compound (µg/L)	7/31/2015	10/6/2015
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

BH08		
Compound (µg/L)	7/31/2015	10/6/2015
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

BH09		
Compound (µg/L)	7/31/2015	10/6/2015
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0



Surface Drainage

Note: Surface drainage direction is estimated based on site topography and is not related to regional topography.

DRAWN BY: ESS
DATE: 11/19/2015

Facility Diagram
PDC Energy – DJ Basin
Seele 31, 41, 42-31 Tank Battery
NENE S31 T4N R67W
Weld County, CO

TASMAN GEOSCIENCES
6899 Pecos St., Unit C
Denver CO 80221

LEGEND

- Excavation Extent
- Monitoring Well Location
- Monitoring Well Location – Sampling Discontinued
- Bore Hole Location – No Well Installed
- Point of Release
- Groundwater Flow Direction

All locations are approximate unless otherwise noted

FIGURE 1
GROUNDWATER ANALYTICAL RESULTS MAP

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 12, 2015

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Seele 31, 41, 42-31

Enclosed are the results of analyses for samples received by Summit Scientific on 10/06/15 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury
President



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

Project: Seele 31, 41, 42-31

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/15 09:57

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH02R	1510034-01	Water	10/06/15 11:35	10/06/15 17:30
BH07	1510034-02	Water	10/06/15 11:43	10/06/15 17:30
BH08	1510034-03	Water	10/06/15 11:38	10/06/15 17:30
BH09	1510034-04	Water	10/06/15 11:30	10/06/15 17:30

Summit Scientific

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



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

Project: Seele 31, 41, 42-31

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/15 09:57

Summit Scientific

1510034

741 Corporate Circle Suite 1 • Golden, Colorado 80401
 303-277-9310 • 303-374-5933 Fax

Page 1 of 1

Client: PDC
 Address: _____
 City/State/Zip: _____
 Phone: _____ Fax: _____
 Sampler Name: MP, KF

Project Manager: Mark Longhurst
 E-Mail: Mark.Longhurst@PDC.E.COM
 Project Name: Seele 31, 41, 42-31
 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)				
BH02R	10/6/15	11:35	3	X				X				X	BTEX (26)		
BH07		11:43													
BH08		11:38													
BH09		11:30													
Relinquished by: <u>[Signature]</u>	Date/Time: <u>10/6/15 1600</u>	Received by: <u>[Signature]</u>	Date/Time: <u>10/6/15 1730</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>[Signature]</u>	Date/Time: <u>10/6/15 1810</u>	Received by: <u>[Signature]</u>	Date/Time: <u>10/6/15 (810)</u>	Sample Integrity:				Temperature Upon Receipt: <u>29°C</u>							
				Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				onico							

www.szscientific.com



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

Project: Seele 31, 41, 42-31

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/15 09:57

BH02R
1510034-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/06/15 11:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1510056	10/08/15	10/08/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: 10/06/15 11:35

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		119 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.0 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		108 %	45-146		"	"	"	"	

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: Seele 31, 41, 42-31

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/15 09:57

BH07
1510034-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/06/15 11:43

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1510056	10/08/15	10/08/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: 10/06/15 11:43

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		122 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.7 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		108 %	45-146		"	"	"	"	

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: Seele 31, 41, 42-31

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/15 09:57

BH08
1510034-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/06/15 11:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1510056	10/08/15	10/08/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/06/15 11:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>130 %</i>	<i>37-154</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>		<i>102 %</i>	<i>45-149</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>109 %</i>	<i>45-146</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

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: Seele 31, 41, 42-31

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/15 09:57

BH09
1510034-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/06/15 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1510056	10/08/15	10/08/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/06/15 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>127 %</i>	<i>37-154</i>		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		<i>101 %</i>	<i>45-149</i>		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>109 %</i>	<i>45-146</i>		"	"	"	"	

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: Seele 31, 41, 42-31

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/15 09:57

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1510056 - EPA 5030 Water MS

Blank (1510056-BLK1)

Prepared & Analyzed: 10/08/15

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.9		"	13.2		97.9	37-154			
Surrogate: Toluene-d8	12.8		"	13.3		95.6	45-149			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.3	45-146			

LCS (1510056-BS1)

Prepared & Analyzed: 10/08/15

Benzene	27.8	1.0	ug/l	33.3		83.4	51-132			
Toluene	27.5	1.0	"	33.3		82.6	51-138			
Ethylbenzene	31.7	1.0	"	33.1		95.9	58-146			
m,p-Xylene	57.6	2.0	"	66.5		86.5	57-144			
o-Xylene	28.6	1.0	"	32.8		87.2	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.1		"	13.2		98.9	37-154			
Surrogate: Toluene-d8	12.6		"	13.3		94.7	45-149			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		92.9	45-146			

Matrix Spike (1510056-MS1)

Source: 1510033-01

Prepared & Analyzed: 10/08/15

Benzene	29.0	1.0	ug/l	33.3	1.62	82.2	34-141			
Toluene	27.6	1.0	"	33.3	ND	82.7	27-151			
Ethylbenzene	69.9	1.0	"	33.1	55.8	42.6	29-160			
m,p-Xylene	247	2.0	"	66.5	285	NR	20-166			QM-07
o-Xylene	29.5	1.0	"	32.8	ND	90.0	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.2		102	37-154			
Surrogate: Toluene-d8	12.9		"	13.3		96.7	45-149			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		95.6	45-146			

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: Seele 31, 41, 42-31

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/12/15 09:57

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch 1510056 - EPA 5030 Water MS

Matrix Spike Dup (1510056-MSD1)	Source: 1510033-01			Prepared & Analyzed: 10/08/15						
Benzene	28.8	1.0	ug/l	33.3	1.62	81.5	34-141	0.796	32	
Toluene	27.8	1.0	"	33.3	ND	83.5	27-151	0.938	25	
Ethylbenzene	61.5	1.0	"	33.1	55.8	17.2	29-160	12.8	50	QM-07
m,p-Xylene	205	2.0	"	66.5	285	NR	20-166	18.5	36	QM-07
o-Xylene	29.4	1.0	"	32.8	ND	89.7	33-159	0.407	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>14.3</i>		<i>"</i>	<i>13.2</i>		<i>108</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>12.8</i>		<i>"</i>	<i>13.3</i>		<i>96.2</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.0</i>		<i>"</i>	<i>13.3</i>		<i>97.4</i>	<i>45-146</i>			

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: Seele 31, 41, 42-31

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/12/15 09:57

Notes and Definitions

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