

PDC Energy, Inc.
Fourth Quarter 2014 Groundwater Monitoring Summary

December 23, 2014

Steinwald 1 Tank Battery
NWNW S3 T1N R64W
Weld County, API # 05-123-11427

This groundwater summary has been prepared by Tasman Geosciences, LLC for the Steinwald 1 tank battery. On October 20, 2014, groundwater sampling was conducted at four monitoring well locations. Groundwater samples were submitted for laboratory analysis of BTEX constituents using USEPA Method 8260B. Analytical results are summarized in Table 1 below and are illustrated on Figure 1. The laboratory analytical reports are included as Attachment A. Analytical results indicated benzene concentrations in BH04 were in exceedance of COGCC regulatory standards. BTEX concentrations were below regulatory standards at the three remaining sample locations (BH01-BH03). On October 23, 2014, monitoring well BH04 was resampled and analytical results indicated benzene concentrations remained in exceedance of regulatory standards. Subsequently, on November 11, 2014, a monitoring well (BH05) was installed to the south of BH04 to achieve point of compliance. On November 26, 2014, groundwater sampling was completed at BH05 and analytical results indicated BTEX concentrations were below laboratory detection limits.

Monitored natural attenuation was selected as the remedial strategy on site and will remain the strategy through first quarter 2015. Should BTEX concentrations increase, additional remediation strategies will be evaluated.

First quarter 2015 groundwater monitoring will be conducted in February 2015.

TABLE 1
STEINWALD 1
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (feet)
BH01	10/20/2014	4.6	15	<1.0	9.2	67.08
BH02	10/20/2014	<1.0	<1.0	<1.0	<1.0	68.9
BH03	10/20/2014	<1.0	2.7	<1.0	5.7	63.86
BH04	10/20/2014	130	670	29	390	66.58
BH04	10/23/2014	110	320	11	260	66.13
BH05	11/26/2014	<1.0	<1.0	<1.0	<1.0	65.68
COGCC standards for Groundwater (ug/L) ⁽¹⁾		5	560	700	1,400	

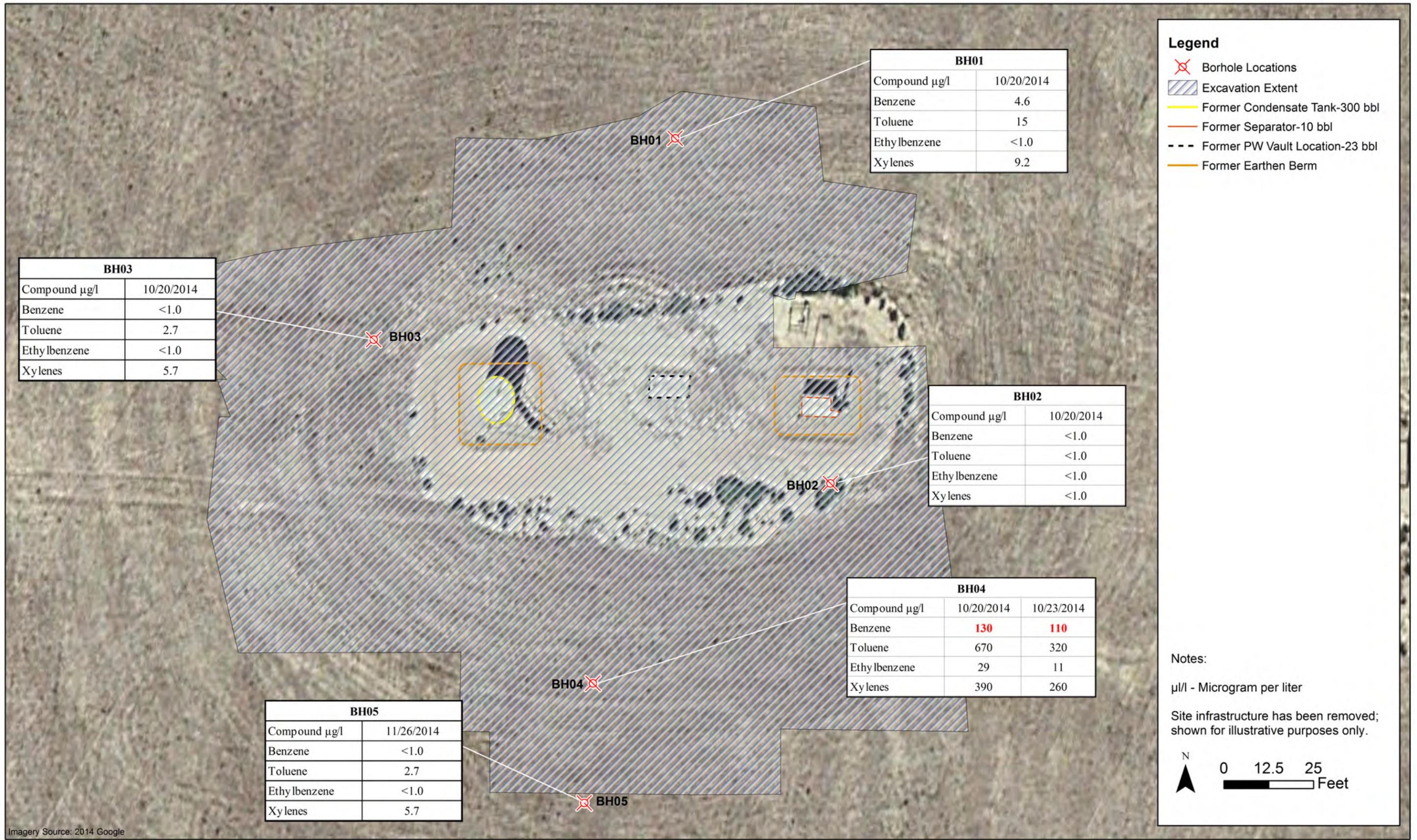
Notes:

1). The environmental cleanup standards for groundwater that are applicable to this site are the Colorado Oil and Gas Conservation Commission (COGCC) standards for contaminants in groundwater according to Table 910-1 of the COGCC 900 Series Rule for E&P Waste Management.

Bold red values indicate an exceedance of the COGCC groundwater standards for the

ug/L- Micrograms per liter

NM - Not Measured



DATE: December 2014
 DESIGNED BY: M.Lindstrom
 DRAWN BY: D. Arnold



PDC Energy
Steinwald #1
 NWNW Section 3, Township 1 North, Range 64 West
 Weld County, Colorado

Groundwater Analytical
 Results Map

Figure
 1



DATE:	December 2014
DESIGNED BY:	M.Lindstrom
DRAWN BY:	D. Arnold



TASMAN Tasman Geosciences, LLC
6899 Pecos Street - Unit C
Denver, CO 80221

PDC Energy
Steinwald #1
NWNW Section 3, Township 1 North, Range 64 West
Weld County, Colorado

Groundwater Elevation Contour
Map
(November 24, 2014)

Figure
2

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 21, 2014

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Steinwald #1

Enclosed are the results of analyses for samples received by Summit Scientific on 10/20/14 17:15. 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: Steinwald #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/21/14 06:31

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1410164-01	Water	10/20/14 14:16	10/20/14 17:15
BH02	1410164-02	Water	10/20/14 13:12	10/20/14 17:15
BH03	1410164-03	Water	10/20/14 13:47	10/20/14 17:15
BH04	1410164-04	Water	10/20/14 14:47	10/20/14 17:15

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

Project: Steinwald #1

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 10/21/14 06:31

Summit Scientific 1410164

S2

741 Corporate Circle Suite 1 • Golden, Colorado 80401
 303-277-9310 • 303-277-9531 Fax

Page | of |

Client: PDC Energy
 Address: _____
 Project Manager: Brandon Bruns
 City/State/Zip: _____
 E-Mail: bbruns@pdc.com
 Phone: _____
 Project Name: Steinwald #1
 Fax: _____
 Project Number: _____
 Sampler Name: Brock Wilson

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:	Special Instructions	Notes:	
				HCl	HNO ₃	None	Other (Specify)	Soil	Air - Canister Serial #	Other (Specify)				
B-H01	10/20/14	1416	3	X				Y			STEX (200)			
B-H02	10/20/14	1312	3	X				Y						
B-H03	10/20/14	1347	3	X				X						
B-H04	10/20/14	1447	3	Y				X						
Relinquished by:	Date/Time: 10/20/14	Received by:		Date/Time: 10/20/14	Turn Around Time (Check)		72 Hours <input type="checkbox"/>		Same Day <input checked="" type="checkbox"/>		24 Hours <input type="checkbox"/>		48 Hours <input type="checkbox"/>	
Relinquished by:	Date/Time: 10/20/14	Received in Lab by: _____		Date/Time: _____	Sample Integrity: 2°C		Temperature Upon Receipt: _____		Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No					

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

Project: Steinwald #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 10/21/14 06:31

BH01
1410164-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/20/14 14:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1410210	10/20/14	10/20/14	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/20/14 14:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		90.7 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		95.3 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.3 %	45-146		"	"	"	"	

Summit Scientific

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

Project: Steinwald #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 10/21/14 06:31

BH02
1410164-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/20/14 13:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1410210	10/20/14	10/20/14	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/20/14 13:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		96.7 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.8 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		97.1 %	45-146		"	"	"	"	

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

Project: Steinwald #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 10/21/14 06:31

BH03
1410164-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/20/14 13:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1410210	10/20/14	10/20/14	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/20/14 13:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>105 %</i>	<i>37-154</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>		<i>101 %</i>	<i>45-149</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>99.4 %</i>	<i>45-146</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

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

Project: Steinwald #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 10/21/14 06:31

BH04
1410164-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/20/14 14:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	91	1.0	ug/l	1	1410210	10/20/14	10/20/14	EPA 8260B	
Toluene	720	1.0	"	"	"	"	"	"	E
Ethylbenzene	51	1.0	"	"	"	"	"	"	
Xylenes (total)	1000	1.0	"	"	"	"	"	"	E

Date Sampled: **10/20/14 14:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		101 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		93.8 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		110 %	45-146		"	"	"	"	

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

Project: Steinwald #1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/21/14 06:31

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 1410210 - EPA 5030 Water MS

Blank (1410210-BLK1)

Prepared & Analyzed: 10/20/14

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	11.2		"	13.2		85.2	37-154			
Surrogate: Toluene-d8	12.5		"	13.3		93.8	45-149			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.3	45-146			

LCS (1410210-BS1)

Prepared & Analyzed: 10/20/14

Benzene	39.8	1.0	ug/l	33.3		119	51-132			
Toluene	40.1	1.0	"	33.3		120	51-138			
Ethylbenzene	42.6	1.0	"	33.1		129	58-146			
m,p-Xylene	86.1	2.0	"	66.5		129	57-144			
o-Xylene	42.4	1.0	"	32.8		129	53-146			
Surrogate: 1,2-Dichloroethane-d4	11.1		"	13.2		84.0	37-154			
Surrogate: Toluene-d8	12.9		"	13.3		96.8	45-149			
Surrogate: 4-Bromofluorobenzene	12.9		"	13.3		96.5	45-146			

Matrix Spike (1410210-MS1)

Source: 1410164-02

Prepared & Analyzed: 10/20/14

Benzene	38.4	1.0	ug/l	33.3	ND	115	34-141			
Toluene	42.3	1.0	"	33.3	ND	127	27-151			
Ethylbenzene	42.6	1.0	"	33.1	ND	129	29-160			
m,p-Xylene	84.4	2.0	"	66.5	ND	127	20-166			
o-Xylene	41.7	1.0	"	32.8	ND	127	33-159			
Surrogate: 1,2-Dichloroethane-d4	11.2		"	13.2		84.7	37-154			
Surrogate: Toluene-d8	13.4		"	13.3		101	45-149			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		95.9	45-146			

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

Project: Steinwald #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 10/21/14 06:31

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 1410210 - EPA 5030 Water MS

Matrix Spike Dup (1410210-MSD1)	Source: 1410164-02			Prepared & Analyzed: 10/20/14						
Benzene	39.5	1.0	ug/l	33.3	ND	118	34-141	2.88	32	
Toluene	43.3	1.0	"	33.3	ND	130	27-151	2.48	25	
Ethylbenzene	42.8	1.0	"	33.1	ND	129	29-160	0.375	50	
m,p-Xylene	85.2	2.0	"	66.5	ND	128	20-166	1.00	36	
o-Xylene	42.4	1.0	"	32.8	ND	129	33-159	1.57	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>11.2</i>		<i>"</i>	<i>13.2</i>		<i>84.8</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.5</i>		<i>"</i>	<i>13.3</i>		<i>102</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>12.7</i>		<i>"</i>	<i>13.3</i>		<i>95.2</i>	<i>45-146</i>			

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

Project: Steinwald #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/21/14 06:31

Notes and Definitions

- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

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Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 24, 2014

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Steinwald #1

Enclosed are the results of analyses for samples received by Summit Scientific on 10/23/14 19:13. 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: Steinwald #1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/24/14 06:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH04	1410204-01	Water	10/23/14 14:30	10/23/14 19:13

Summit Scientific 1410203

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

Page 1 of 1

Client: Noble Energy/Tasman
Address: 6899 Pecos St Unit C
City/State/Zip: Denver, CO
Phone: 303-487-1228 Fax:
Sampler Name: Andrew T Fisher

Project Manager: Dan Wade
E-Mail: dwade@tasman-geo.com
Project Name: ~~XXXXXXXXXXXX~~ N DENW KELLER -1
Project Number:

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For:				Special Instructions	Notes:		
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO	Turn Around Time (Check)			72 Hours Standard	
550103	10/23	1640	1			X													
550402	10/23	1645	1			X													

Relinquished by: *[Signature]* Date/Time: 10/23/14 1645
Relinquished by: *[Signature]* Date/Time: 10/23/14 1645
Relinquished by: *[Signature]* Date/Time: 10/23/14 1645

Received by: Date/Time: _____
Received by: Date/Time: _____
Received in Lab by: Date/Time: _____

Sample Integrity: Temperature Upon Receipt: 2.0
Inact: Yes No

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

Project: Steinwald #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 10/24/14 06:40

BH04
1410204-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/23/14 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	110	1.0	ug/l	1	1410262	10/23/14	10/23/14	EPA 8260B	
Toluene	320	1.0	"	"	"	"	"	"	
Ethylbenzene	11	1.0	"	"	"	"	"	"	
Xylenes (total)	260	1.0	"	"	"	"	"	"	

Date Sampled: **10/23/14 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		85.5 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.7 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		93.9 %	45-146		"	"	"	"	

Summit Scientific

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

Project: Steinwald #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/24/14 06:40

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 1410262 - EPA 5030 Water MS

Blank (1410262-BLK1)

Prepared & Analyzed: 10/23/14

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	11.3		"	13.2		85.5	37-154			
Surrogate: Toluene-d8	12.5		"	13.3		93.8	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.5	45-146			

LCS (1410262-BS1)

Prepared & Analyzed: 10/23/14

Benzene	41.1	1.0	ug/l	33.3		123	51-132			
Toluene	40.6	1.0	"	33.3		122	51-138			
Ethylbenzene	41.3	1.0	"	33.1		125	58-146			
m,p-Xylene	82.1	2.0	"	66.5		123	57-144			
o-Xylene	41.0	1.0	"	32.8		125	53-146			
Surrogate: 1,2-Dichloroethane-d4	11.7		"	13.2		88.4	37-154			
Surrogate: Toluene-d8	12.7		"	13.3		95.3	45-149			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.2	45-146			

Matrix Spike (1410262-MS1)

Source: 1410204-01

Prepared & Analyzed: 10/23/14

Benzene	4200	100	ug/l	3330	107	123	34-141			
Toluene	4340	100	"	3330	322	121	27-151			S-02
Ethylbenzene	4240	100	"	3310	10.5	128	29-160			
m,p-Xylene	8440	200	"	6650	176	124	20-166			
o-Xylene	4200	100	"	3280	88.8	125	33-159			
Surrogate: 1,2-Dichloroethane-d4	1130		"	1320		85.8	37-154			
Surrogate: Toluene-d8	1250		"	1330		94.1	45-149			
Surrogate: 4-Bromofluorobenzene	1280		"	1330		96.0	45-146			

Summit Scientific

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

Project: Steinwald #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 10/24/14 06:40

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

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

Batch 1410262 - EPA 5030 Water MS

Matrix Spike Dup (1410262-MSD1)	Source: 1410204-01			Prepared & Analyzed: 10/23/14						
Benzene	4230	100	ug/l	3330	107	124	34-141	0.712	32	
Toluene	4330	100	"	3330	322	120	27-151	0.254	25	S-02
Ethylbenzene	4260	100	"	3310	10.5	129	29-160	0.659	50	
m,p-Xylene	8530	200	"	6650	176	126	20-166	1.03	36	
o-Xylene	4290	100	"	3280	88.8	128	33-159	2.14	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>1130</i>		<i>"</i>	<i>1320</i>		<i>85.4</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>1270</i>		<i>"</i>	<i>1330</i>		<i>95.2</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>1290</i>		<i>"</i>	<i>1330</i>		<i>96.5</i>	<i>45-146</i>			

Summit Scientific

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

Project: Steinwald #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/24/14 06:40

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

741 Corporate Circle – Suite J ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.374.5933 - fax

December 03, 2014

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Steinwald #1

Enclosed are the results of analyses for samples received by Summit Scientific on 11/26/14 17:25. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Joseph J. Egry IV". The signature is fluid and cursive, with a small "IV" superscripted at the end.

Joseph J Egry IV For Paul Shrewsbury
President

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

Project: Steinwald #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/03/14 12:57

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH05	1411196-01	Water	11/26/14 13:30	11/26/14 17:25

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Joseph J Egry IV For Paul Shrewsbury, President



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

Project: Steinwald #1

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 12/03/14 12:57

Sample Receipt Checklist

S2 Work Order: 1411196

Client: PDC Client Project ID: Steinwald #1

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

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

Cooler ID	<u>1</u>				
Temp (°C)	<u>2.0</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is waived 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 short holding time analytes or samples with HTs 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⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, etc.	<input checked="" type="checkbox"/>			<u>HCl</u>
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
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.

Joseph J Egr IV
 Custodian Printed Name

[Signature]
 Signature or Initials of Custodian

12/03/14
 Date/Time

Soil samples reported on a wet-weight basis unless otherwise indicated on results page.

[Signature]



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

Project: Steinwald #1
 Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 12/03/14 12:57

BH05
1411196-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/26/14 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1412009	12/02/14	12/02/14 08:06	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **11/26/14 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	115 %	37-154				"	"	"	"
Surrogate: Toluene-d8	96.8 %	45-149				"	"	"	"
Surrogate: 4-Bromofluorobenzene	97.2 %	45-146				"	"	"	"

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Joseph J Egrý IV For Paul Shrewsbury, President



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

Project: Steinwald #1
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
12/03/14 12:57

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 1412009 - EPA 5030 Water MS

Blank (1412009-BLK1)

Prepared & Analyzed: 12/01/14

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
<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>13.1</i>		<i>"</i>	<i>13.3</i>		<i>98.3</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.5</i>		<i>"</i>	<i>13.3</i>		<i>101</i>	<i>45-146</i>			

LCS (1412009-BS1)

Prepared & Analyzed: 12/01/14

Benzene	31.7	1.0	ug/l	33.3		95.1	51-132			
Toluene	30.8	1.0	"	33.3		92.4	51-138			
Ethylbenzene	33.5	1.0	"	33.1		101	58-146			
m,p-Xylene	63.5	2.0	"	66.5		95.5	57-144			
o-Xylene	34.2	1.0	"	32.8		104	53-146			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>14.8</i>		<i>"</i>	<i>13.2</i>		<i>112</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.6</i>		<i>"</i>	<i>13.3</i>		<i>102</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.0</i>		<i>"</i>	<i>13.3</i>		<i>97.9</i>	<i>45-146</i>			

LCS (1412009-BS2)

Prepared & Analyzed: 12/01/14

Benzene	30.8	1.0	ug/l	33.3		92.4	51-132			
Toluene	30.1	1.0	"	33.3		90.2	51-138			
Ethylbenzene	33.3	1.0	"	33.1		101	58-146			
m,p-Xylene	63.8	2.0	"	66.5		95.9	57-144			
o-Xylene	34.2	1.0	"	32.8		104	53-146			
<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>13.2</i>		<i>"</i>	<i>13.3</i>		<i>98.8</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>12.9</i>		<i>"</i>	<i>13.3</i>		<i>97.1</i>	<i>45-146</i>			

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Joseph J Egry IV For Paul Shrewsbury, President



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

Project: Steinwald #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/03/14 12:57

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 1412009 - EPA 5030 Water MS

Matrix Spike (1412009-MS1)	Source: 1411195-08			Prepared & Analyzed: 12/01/14							
Benzene	177	1.0	ug/l	33.3	143	101	34-141				
Toluene	31.0	1.0	"	33.3	1.01	90.1	27-151				
Ethylbenzene	96.7	1.0	"	33.1	61.8	106	29-160				
m,p-Xylene	289	2.0	"	66.5	205	126	20-166				
o-Xylene	40.7	1.0	"	32.8	5.27	108	33-159				
Surrogate: 1,2-Dichloroethane-d4	13.9		"	13.2		105	37-154				
Surrogate: Toluene-d8	14.4		"	13.3		108	45-149				
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.7	45-146				

Matrix Spike (1412009-MS2)	Source: 1411197-01			Prepared & Analyzed: 12/01/14							
Benzene	31.0	1.0	ug/l	33.3	ND	93.1	34-141				
Toluene	28.9	1.0	"	33.3	ND	86.6	27-151				
Ethylbenzene	35.9	1.0	"	33.1	2.21	102	29-160				
m,p-Xylene	71.2	2.0	"	66.5	7.03	96.5	20-166				
o-Xylene	35.4	1.0	"	32.8	ND	108	33-159				
Surrogate: 1,2-Dichloroethane-d4	14.8		"	13.2		112	37-154				
Surrogate: Toluene-d8	12.9		"	13.3		96.7	45-149				
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	45-146				

Matrix Spike Dup (1412009-MSD1)	Source: 1411195-08			Prepared & Analyzed: 12/01/14							
Benzene	164	1.0	ug/l	33.3	143	62.3	34-141	7.50	32		
Toluene	30.7	1.0	"	33.3	1.01	89.1	27-151	1.07	25		
Ethylbenzene	90.3	1.0	"	33.1	61.8	86.2	29-160	6.81	50		
m,p-Xylene	268	2.0	"	66.5	205	94.2	20-166	7.63	36		
o-Xylene	39.3	1.0	"	32.8	5.27	104	33-159	3.40	26		
Surrogate: 1,2-Dichloroethane-d4	14.5		"	13.2		110	37-154				
Surrogate: Toluene-d8	14.3		"	13.3		108	45-149				
Surrogate: 4-Bromofluorobenzene	12.9		"	13.3		96.5	45-146				

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Joseph J Egry IV For Paul Shrewsbury, President



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

Project: Steinwald #1
 Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 12/03/14 12:57

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 1412009 - EPA 5030 Water MS

Matrix Spike Dup (1412009-MSD2)	Source: 1411197-01			Prepared & Analyzed: 12/01/14						
Benzene	31.9	1.0	ug/l	33.3	ND	95.6	34-141	2.61	32	
Toluene	29.9	1.0	"	33.3	ND	89.7	27-151	3.50	25	
Ethylbenzene	35.2	1.0	"	33.1	2.21	99.8	29-160	1.80	50	
m,p-Xylene	69.5	2.0	"	66.5	7.03	93.9	20-166	2.44	36	
o-Xylene	35.1	1.0	"	32.8	ND	107	33-159	0.765	26	
Surrogate: 1,2-Dichloroethane-d4	15.0		"	13.2		113	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		99.1	45-149			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	45-146			

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

Project: Steinwald #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/03/14 12:57

Notes and Definitions

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

Summit Scientific

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