January 4, 2016

Mr. Randall Ferguson
EHS Senior Compliance Specialist
PDC Energy, Inc.
1775 Sherman Street, Suite 3000
Denver, CO 80203

Re: **Produced Water Vessel Closure Report**
Stonehocker 32-8 Tank Battery
Facility ID: 336032
SWNE S8 T1S R67W
Blanket Remediation #: 9440

Dear Mr. Ferguson,

On behalf of PDC Energy, Inc. (PDC), Tasman Geosciences, Inc. (Tasman) has prepared this Produced Water Vessel Closure Report (Report) to document environmental sampling activities performed at the above-referenced site. This Report is being submitted under the Form 27 Management Plan for Closure of Produced Water Vessels, which has been assigned Blanket Remediation #9440 by the Colorado Oil and Gas Conservation Commission (COGCC).

A summary of excavation and environmental sampling activities is provided below.

Site Assessment Activities

On June 15, 2015, excavation and sampling activities were completed following the removal of the partially buried produced water vessel. Approximately 40 cubic yards of material were removed and transported to the Waste Management Facility in Ault, Colorado for disposal under PDC waste manifests. Soil encountered in the excavation area was field screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID). One soil sample (SS01) was collected below the former tank location at approximately 9 feet below ground surface (bgs). Soil samples were submitted to Summit Scientific Laboratories in Golden, Colorado for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, and total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by Environmental Protection Agency (EPA) Method 8260B, TPH - diesel range organics (DRO) by EPA Method 8015, electrical conductivity (EC), pH, and sodium adsorption ratio (SAR).

Analytical results indicated organic compound concentrations and physical parameters were in compliance with COGCC Table 910-1 standards in soil sample SS01.

The excavation extent and soil sample location are illustrated on Figure 1. Soil analytical data is summarized in Table 1 and the laboratory analytical report is provided in Attachment A.

Conclusions

As confirmed by the soil analytical data described herein, petroleum hydrocarbon impacts below the former produced water vessel were successfully removed by excavation activities. Consequently, no further site investigation is recommended at this time.

Please contact me at (720) 409-8791 if you have any questions regarding this report.

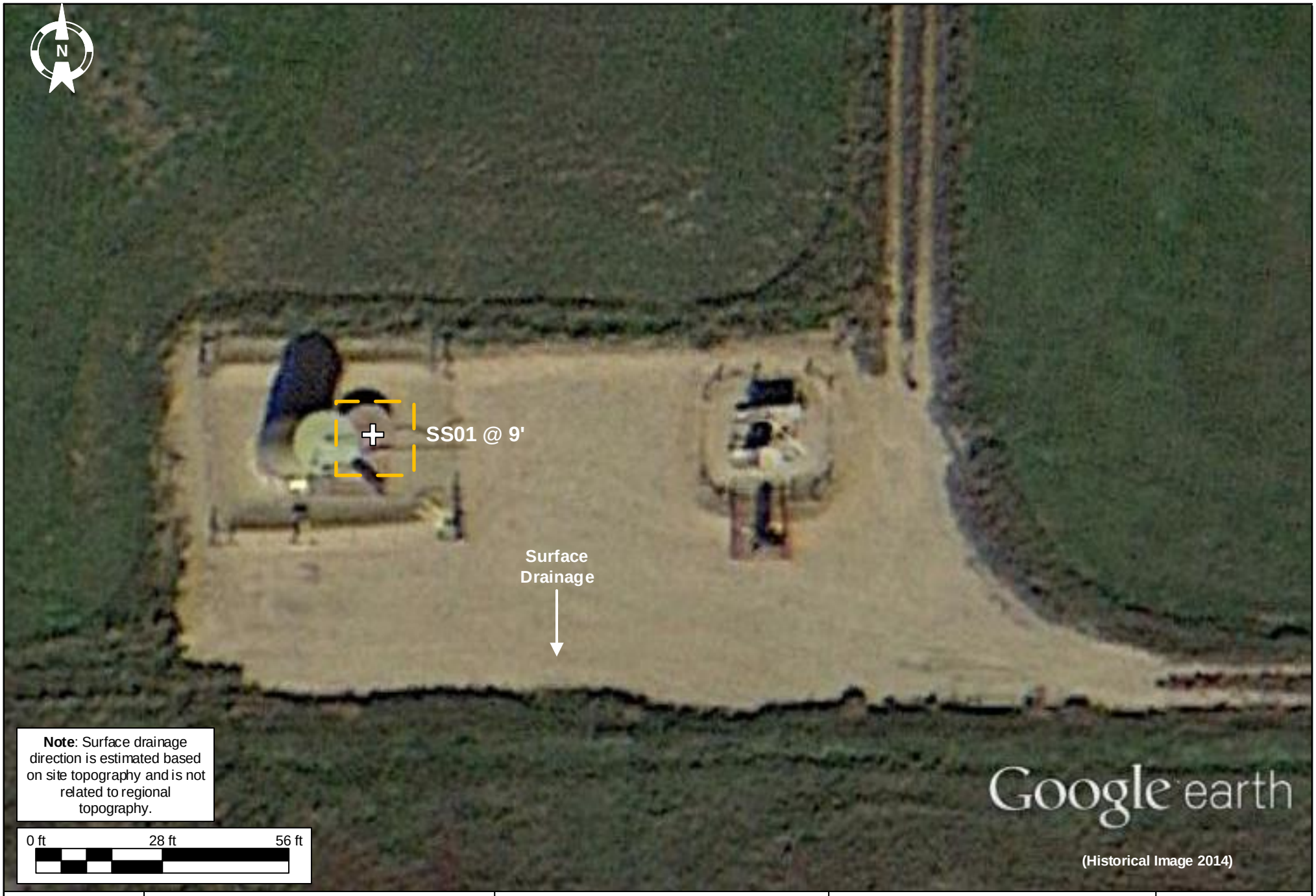
Sincerely,

Christine Wasko

Christine Wasko
Project Manager
Tasman Geosciences, Inc.

Enclosures:

Figure 1 – Soil Sample Location Map
Table 1 – Soil Analytical Results Summary Table
Attachment A – Laboratory Analytical Report



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

0 ft 28 ft 56 ft

DRAWN BY: MAP

DATE: 12/29/2015

Facility Diagram
PDC Energy – DJ Basin
Stonehocker 32-8 Tank Battery
SWNE S8 T1S R67W
Adams County, CO

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

LEGEND
Excavation Extent
Soil Sample Location

All locations are approximate unless otherwise noted

FIGURE 1

SOIL SAMPLE LOCATION MAP

TABLE 1
STONEHOCKER 32-8 TANK BATTERY
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH [2] (mg/kg)	pH (units)	EC (mmhos/cm)	SAR (units)
COGCC standards for soil (mg/kg) [1]			**0.17**	**85**	**100**	**175**	**23**	**500**	**6-9**	**<4**	**<12**
SS01 @ 9'	6/15/2015	9	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	8.46	0.304	1.41

Notes:
1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective February 1, 2014.
2. TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.
COGCC = Colorado Oil and Gas Conservation Commission
(<) = Analytical result is less than the indicated laboratory reporting limit.
GRO = Total volatile petroleum hydrocarbons - gasoline range organics
DRO = Total extractable petroleum hydrocarbons - diesel range organics
mg/kg = Milligrams per kilogram
bgs = Below ground surface
EC = Electrical conductivity
mmhos/cm = millimhos per centimeter
SAR = Sodium adsorption ratio
BOLD = Analytical result is in exceedance of COGCC soil standards.

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

June 16, 2015

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

RE: Stone Hocker 32-8

Enclosed are the results of analyses for samples received by Summit Scientific on 06/15/15 17:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paul Shrewsbury
President

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Stone Hocker 32-8 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 06/16/15 14:53

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@9'	1506137-01	Soil	06/15/15 11:17	06/15/15 17:40

1506137

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

Page 1 of 1

Client: PDC [redacted]/Tasman
Address:
City/State/Zip:
Phone: Fax:
Sampler Name: Matt Petersen

Project Manager: [redacted] Invoice: Mark Longhurst
E-Mail: Mark.longhurst@PDCE.com
Project Name: Stone Hocker 32-8
Project Number:

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative: HCl	Preservative: HNO_3	Preservative: None	Preservative: Other (Specify)	Matrix: Groundwater	Matrix: Soil	Matrix: Air - Canister Serial #	Matrix: Other (Specify)	Analyze For: 8260 BTEX	Analyze For: 8260B GBTEXN	Analyze For: 8015 DRO	Analyze For: PH	Analyze For: SAR	Analyze For: EC	Special Instructions
SS01@9'	6/15/15	1117	1			X			X				X	X	X	X	X	
SS02@7'		1155	1			X			X				↓	↓	↓	↓	↓	SS02-SS05 on hold to run
SS03@7'		1158	1			X			X									
SS04@7'		1200	1			X			X									
SS05@7'		1202	1			X			X									

Relinquished by: Date/Time: 6/15/15 17:00
Received by: Date/Time: 6/15/15 1700
Relinquished by: Date/Time: 6/15/15 1740
Received by: Date/Time: 17:40 6/15/15
Relinquished by: Date/Time:
Received in Lab by: Date/Time:

Turn Around Time (Check)
Same Day
24 Hours X
48 Hours
72 Hours
Standard

Sample Integrity:
Temperature Upon Receipt: 8.1°C
Intact: Yes No

Notes:
on ice

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: Stone Hocker 32-8 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 06/16/15 14:53

SS01@9'
1506137-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/15/15 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1506188	06/15/15	06/15/15	8015M	

Date Sampled: **06/15/15 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		*123 %*	*30-150*		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/15/15 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1506187	06/15/15	06/15/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/15/15 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*123 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*101 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*104 %*	*21-167*		"	"	"	"	

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **06/15/15 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Stone Hocker 32-8 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 06/16/15 14:53

SS01@9'
1506137-01 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**300**	11.0	mg/kg dry	1	1506176	06/15/15	06/16/15	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	**126**	5.50	"	"	"	"	"	"	
Sodium	**85.6**	5.50	"	"	"	"	"	"	

Date Sampled: **06/15/15 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**1.41**		units	"	1506164	06/16/15	06/16/15	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **06/15/15 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	**0.304**	0.0100	mmhos/cm	1	1506191	06/16/15	06/16/15	SM 2510B	

Date Sampled: **06/15/15 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.46**	0.100	pH Units	"	1506190	06/16/15	06/16/15	EPA 9045	

Date Sampled: **06/15/15 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**90.9**		%	"	1506170	06/16/15	06/16/15	% calculation	

Extractable Petroleum Hydrocarbons by 8015 - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1506188 - EPA 3550A										
Blank (1506188-BLK1)				Prepared & Analyzed: 06/15/15						
C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	*16.8*		"	*12.2*		*138*	*30-150*			
LCS (1506188-BS1)				Prepared & Analyzed: 06/15/15						
C10-C28 (DRO)	591	50	mg/kg	501		118	73-134			
Surrogate: o-Terphenyl	*15.5*		"	*12.2*		*127*	*30-150*			
Matrix Spike (1506188-MS1)	**Source: 1506137-01**			Prepared & Analyzed: 06/15/15						
C10-C28 (DRO)	625	50	mg/kg	464	14.4	132	50-148			
Surrogate: o-Terphenyl	*15.2*		"	*11.3*		*135*	*30-150*			
Matrix Spike Dup (1506188-MSD1)	**Source: 1506137-01**			Prepared & Analyzed: 06/15/15						
C10-C28 (DRO)	605	50	mg/kg	463	14.4	128	50-148	3.28	13	
Surrogate: o-Terphenyl	*14.8*		"	*11.3*		*131*	*30-150*			

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1506187 - EPA 5030 Soil MS										
Blank (1506187-BLK1)				Prepared & Analyzed: 06/15/15						
Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	*0.0435*		"	*0.0396*		*110*	*23-173*			
Surrogate: Toluene-d8	*0.0403*		"	*0.0400*		*101*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*0.0409*		"	*0.0400*		*102*	*21-167*			
LCS (1506187-BS1)				Prepared & Analyzed: 06/15/15						
Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.104	0.0020	"	0.100		104	58-130			
Toluene	0.111	0.0050	"	0.100		111	61-134			
Ethylbenzene	0.120	0.0050	"	0.0992		121	74-139			
m,p-Xylene	0.235	0.010	"	0.200		117	73-137			
o-Xylene	0.122	0.0050	"	0.0984		124	73-141			
Surrogate: 1,2-Dichloroethane-d4	*0.0419*		"	*0.0396*		*106*	*23-173*			
Surrogate: Toluene-d8	*0.0413*		"	*0.0400*		*103*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*0.0409*		"	*0.0400*		*102*	*21-167*			
Matrix Spike (1506187-MS1)		**Source: 1506137-01**		Prepared & Analyzed: 06/15/15						
Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.104	0.0020	"	0.0942	ND	111	30-131			
Toluene	0.110	0.0050	"	0.0942	ND	117	30-134			
Ethylbenzene	0.122	0.0050	"	0.0934	ND	131	22-153			
m,p-Xylene	0.237	0.010	"	0.188	ND	126	10-159			
o-Xylene	0.124	0.0050	"	0.0927	ND	134	31-151			
Surrogate: 1,2-Dichloroethane-d4	*0.0431*		"	*0.0373*		*116*	*23-173*			
Surrogate: Toluene-d8	*0.0379*		"	*0.0377*		*101*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*0.0384*		"	*0.0377*		*102*	*21-167*			

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Stone Hocker 32-8 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 06/16/15 14:53

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1506187 - EPA 5030 Soil MS										
Matrix Spike Dup (1506187-MSD1)		**Source: 1506137-01**		Prepared & Analyzed: 06/15/15						
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.0982	0.0020	"	0.0882	ND	111	30-131	5.83	34	
Toluene	0.106	0.0050	"	0.0882	ND	120	30-134	3.99	30	
Ethylbenzene	0.118	0.0050	"	0.0875	ND	135	22-153	3.35	24	
m,p-Xylene	0.230	0.010	"	0.176	ND	131	10-159	2.86	68	
o-Xylene	0.120	0.0050	"	0.0868	ND	139	31-151	3.25	38	
Surrogate: 1,2-Dichloroethane-d4	*0.0415*		"	*0.0349*		*119*	*23-173*			
Surrogate: Toluene-d8	*0.0360*		"	*0.0353*		*102*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*0.0359*		"	*0.0353*		*102*	*21-167*			

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Stone Hocker 32-8 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 06/16/15 14:53

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1506176 - EPA 3050B										
Blank (1506176-BLK1)				Prepared: 06/15/15 Analyzed: 06/16/15						
Calcium	ND	10.0	mg/kg wet							
Magnesium	ND	5.00	"							
Sodium	ND	5.00	"							
LCS (1506176-BS1)				Prepared: 06/15/15 Analyzed: 06/16/15						
Calcium	512	10.0	mg/kg wet	500		102	82.9-118			
Magnesium	465	5.00	"	500		93.0	77.1-123			
Sodium	467	5.00	"	500		93.3	71-129			
Duplicate (1506176-DUP1)		**Source: 1506118-21**		Prepared: 06/15/15 Analyzed: 06/16/15						
Calcium	3090	10.3	mg/kg dry		3160			2.16	200	
Magnesium	442	5.17	"		448			1.36	200	
Sodium	116	5.17	"		113			2.48	200	
Matrix Spike (1506176-MS1)		**Source: 1506118-21**		Prepared: 06/15/15 Analyzed: 06/16/15						
Calcium	3140	9.38	mg/kg dry	469	3160	NR	75-125			QM-07
Magnesium	794	4.69	"	469	448	73.8	75-125			QM-07
Sodium	570	4.69	"	469	113	97.4	75-125			
Matrix Spike Dup (1506176-MSD1)		**Source: 1506118-21**		Prepared: 06/15/15 Analyzed: 06/16/15						
Calcium	2790	10.2	mg/kg dry	508	3160	NR	75-125	12.0	25	QM-07
Magnesium	791	5.08	"	508	448	67.6	75-125	0.353	25	QM-07
Sodium	611	5.08	"	508	113	97.9	75-125	6.88	25	

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Stone Hocker 32-8 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 06/16/15 14:53

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

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1506170 - General Preparation										
Duplicate (1506170-DUP1)		**Source: 1506117-01**		Prepared & Analyzed: 06/15/15						
% Solids	98.6		%		98.3			0.305	20	
Batch 1506190 - General Preparation										
LCS (1506190-BS1)				Prepared & Analyzed: 06/16/15						
pH	8.30	0.100	pH Units	8.00		104	95-105			
Duplicate (1506190-DUP1)		**Source: 1506137-01**		Prepared & Analyzed: 06/16/15						
pH	8.37	0.100	pH Units		8.46			1.07	20	
Batch 1506191 - General Preparation										
Blank (1506191-BLK1)				Prepared & Analyzed: 06/16/15						
Specific Conductance (EC)	ND	0.0100	mmhos/cm							
LCS (1506191-BS1)				Prepared & Analyzed: 06/16/15						
Specific Conductance (EC)	487	0.0100	mmhos/cm	500		97.4	90-110			
Duplicate (1506191-DUP1)		**Source: 1506137-01**		Prepared & Analyzed: 06/16/15						
Specific Conductance (EC)	0.279	0.0100	mmhos/cm		0.304			8.67	20	

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