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November 09, 2022

Jenifer Hakkarinen
PDC Energy
1775 Sherman Street
Suite 3000
Denver, CO 80203

Work Order: **HS22101457**

Laboratory Results for: **Calvin 1**

Dear Jenifer Hakkarinen,

ALS Environmental received 1 sample(s) on Oct 26, 2022 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Tyler Monroe

Client: PDC Energy
Project: Calvin 1
Work Order: HS22101457

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22101457-01	Calvin 1	Water		25-Oct-2022 11:30	26-Oct-2022 09:45	<input type="checkbox"/>

Client: PDC Energy
Project: Calvin 1
Work Order: HS22101457

CASE NARRATIVE

GC Semivolatiles by Method RSK-175

Batch ID: R421352

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GC Semivolatiles by Method SW8015M

Batch ID: 185498

Sample ID: Calvin 1 (HS22101457-01)

- Surrogate recoveries were outside of the control limits due to matrix interference.

GC Volatiles by Method SW8015

Batch ID: R420717

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R421166

Sample ID: HS22101651-01MS

- MS and MSD are for an unrelated sample

Metals by Method E200.8

Batch ID: 185812

Sample ID: HS22110043-01MS

- MS and MSD are for an unrelated sample

WetChemistry by Method SM2320B

Batch ID: R421447

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E300

Batch ID: R421129

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method M2540C

Batch ID: R420857

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
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Client: PDC Energy
 Project: Calvin 1
 Sample ID: Calvin 1
 Collection Date: 25-Oct-2022 11:30

ANALYTICAL REPORT
 WorkOrder:HS22101457
 Lab ID:HS22101457-01
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	390		10	ug/L	10	06-Nov-2022 14:24
Ethylbenzene	30		1.0	ug/L	1	06-Nov-2022 14:00
m,p-Xylene	300		2.0	ug/L	1	06-Nov-2022 14:00
o-Xylene	21		1.0	ug/L	1	06-Nov-2022 14:00
Toluene	71		1.0	ug/L	1	06-Nov-2022 14:00
Xylenes, Total	320		1.0	ug/L	1	06-Nov-2022 14:00
Surr: 1,2-Dichloroethane-d4	105		70-126	%REC	1	06-Nov-2022 14:00
Surr: 1,2-Dichloroethane-d4	105		70-126	%REC	10	06-Nov-2022 14:24
Surr: 4-Bromofluorobenzene	98.0		77-113	%REC	1	06-Nov-2022 14:00
Surr: 4-Bromofluorobenzene	96.0		77-113	%REC	10	06-Nov-2022 14:24
Surr: Dibromofluoromethane	105		77-123	%REC	1	06-Nov-2022 14:00
Surr: Dibromofluoromethane	106		77-123	%REC	10	06-Nov-2022 14:24
Surr: Toluene-d8	95.3		82-127	%REC	1	06-Nov-2022 14:00
Surr: Toluene-d8	94.9		82-127	%REC	10	06-Nov-2022 14:24
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: FT		
Gasoline Range Organics	1.86		0.500	mg/L	10	01-Nov-2022 10:56
Surr: 4-Bromofluorobenzene	118		70-123	%REC	10	01-Nov-2022 10:56
DISSOLVED GASES BY RSK-175		Method:RSK-175		Analyst: PPM		
Ethane	881		200	ug/L	200	07-Nov-2022 18:47
Methane	6,000		100	ug/L	200	07-Nov-2022 18:47
Propane	809		200	ug/L	200	07-Nov-2022 18:47
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3511 / 31-Oct-2022		Analyst: PPM
TPH (Diesel Range)	3.4		0.50	mg/L	10	08-Nov-2022 03:56
Surr: 2-Fluorobiphenyl	11.2	JS	60-135	%REC	10	08-Nov-2022 03:56
TOTAL METALS BY E200.8, REV 5.4, 1994		Method:E200.8		Prep:E200.8 / 07-Nov-2022		Analyst: JHD
Calcium	3.82		0.500	mg/L	1	07-Nov-2022 15:56
Magnesium	ND		0.500	mg/L	1	07-Nov-2022 15:56
Potassium	2.06		0.500	mg/L	1	07-Nov-2022 15:56
Sodium	332		1.00	mg/L	5	07-Nov-2022 15:38
ANIONS BY E300.0, REV 2.1, 1993		Method:E300		Analyst: TH		
Chloride	467		5.00	mg/L	10	06-Nov-2022 12:28
Sulfate	ND		0.500	mg/L	1	06-Nov-2022 12:22
TOTAL DISSOLVED SOLIDS BY SM2540C-2011		Method:M2540C		Analyst: KAH		
Total Dissolved Solids (Residue, Filterable)	848		10.0	mg/L	1	31-Oct-2022 17:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: PDC Energy
 Project: Calvin 1
 Sample ID: Calvin 1
 Collection Date: 25-Oct-2022 11:30

ANALYTICAL REPORT

WorkOrder:HS22101457
 Lab ID:HS22101457-01
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ALKALINITY BY SM 2320B-2011		Method:SM2320B				Analyst: JAC
Alkalinity, Bicarbonate (As CaCO3)	59.4		5.00	mg/L	1	08-Nov-2022 21:56
Alkalinity, Carbonate (As CaCO3)	40.4		5.00	mg/L	1	08-Nov-2022 21:56
Alkalinity, Total (As CaCO3)	99.8		5.00	mg/L	1	08-Nov-2022 21:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: PDC Energy
Project: Calvin 1
WorkOrder: HS22101457

Batch ID: 185498	Start Date: 31 Oct 2022 09:53	End Date: 31 Oct 2022 12:00
Method: SW3511	Prep Code: 3511_DRO	

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22101457-01		33.07 (mL)	2 (mL)	0.06048	40 mL Amber

Batch ID: 185812	Start Date: 07 Nov 2022 09:30	End Date: 07 Nov 2022 13:30
Method: TOTAL METALS PREP BY E200.8, REV 5.4, 1994	Prep Code: 200.8PR	

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22101457-01		10 (mL)	10 (mL)	1	250 mL plastic, HNO3 to pH <2

Client: PDC Energy
Project: Calvin 1
WorkOrder: HS22101457

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 185498 (0)		Test Name : TPH DRO/ORO BY SW8015C			Matrix: Water	
HS22101457-01	Calvin 1	25 Oct 2022 11:30		31 Oct 2022 09:53	08 Nov 2022 03:56	10
Batch ID: 185812 (0)		Test Name : TOTAL METALS BY E200.8, REV 5.4, 1994			Matrix: Water	
HS22101457-01	Calvin 1	25 Oct 2022 11:30		07 Nov 2022 09:30	07 Nov 2022 15:56	1
HS22101457-01	Calvin 1	25 Oct 2022 11:30		07 Nov 2022 09:30	07 Nov 2022 15:38	5
Batch ID: R420717 (0)		Test Name : GASOLINE RANGE ORGANICS BY SW8015C			Matrix: Water	
HS22101457-01	Calvin 1	25 Oct 2022 11:30			01 Nov 2022 10:56	10
Batch ID: R420857 (0)		Test Name : TOTAL DISSOLVED SOLIDS BY SM2540C-2011			Matrix: Water	
HS22101457-01	Calvin 1	25 Oct 2022 11:30			31 Oct 2022 17:25	1
Batch ID: R421129 (0)		Test Name : ANIONS BY E300.0, REV 2.1, 1993			Matrix: Water	
HS22101457-01	Calvin 1	25 Oct 2022 11:30			06 Nov 2022 12:28	10
HS22101457-01	Calvin 1	25 Oct 2022 11:30			06 Nov 2022 12:22	1
Batch ID: R421166 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22101457-01	Calvin 1	25 Oct 2022 11:30			06 Nov 2022 14:24	10
HS22101457-01	Calvin 1	25 Oct 2022 11:30			06 Nov 2022 14:00	1
Batch ID: R421352 (0)		Test Name : DISSOLVED GASES BY RSK-175			Matrix: Water	
HS22101457-01	Calvin 1	25 Oct 2022 11:30			07 Nov 2022 18:47	200
Batch ID: R421447 (0)		Test Name : ALKALINITY BY SM 2320B-2011			Matrix: Water	
HS22101457-01	Calvin 1	25 Oct 2022 11:30			08 Nov 2022 21:56	1

Client: PDC Energy
Project: Calvin 1
WorkOrder: HS22101457

QC BATCH REPORT

Batch ID: 185498 (0)	Instrument: FID-16	Method: TPH DRO/ORO BY SW8015C
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MBLK	Sample ID: MBLK-185498	Units: mg/L	Analysis Date: 07-Nov-2022 13:17						
Client ID:	Run ID: FID-16_421293	SeqNo: 6968129	PrepDate: 31-Oct-2022	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	ND	0.050							
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.04935</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>82.3</i>	<i>60 - 135</i>			

LCS	Sample ID: LCS-185498	Units: mg/L	Analysis Date: 07-Nov-2022 13:47						
Client ID:	Run ID: FID-16_421293	SeqNo: 6968130	PrepDate: 31-Oct-2022	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	0.5711	0.050	0.6	0	95.2	70 - 130			
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.06694</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>112</i>	<i>60 - 135</i>			

LCSD	Sample ID: LCSD-185498	Units: mg/L	Analysis Date: 07-Nov-2022 14:16						
Client ID:	Run ID: FID-16_421293	SeqNo: 6968131	PrepDate: 31-Oct-2022	DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	0.5403	0.050	0.6	0	90.0	70 - 130	0.5711	5.55	20
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.06654</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>111</i>	<i>60 - 135</i>	<i>0.06694</i>	<i>0.595</i>	<i>20</i>

The following samples were analyzed in this batch: HS22101457-01

Client: PDC Energy
Project: Calvin 1
WorkOrder: HS22101457

QC BATCH REPORT

Batch ID: R421352 (0) **Instrument:** FID-4 **Method:** DISSOLVED GASES BY RSK-175

MBLK		Sample ID: MBLK-221107		Units: ug/L		Analysis Date: 07-Nov-2022 11:34			
Client ID:		Run ID: FID-4_421352		SeqNo: 6969312		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	ND	1.00							
Methane	ND	0.500							
Propane	ND	1.00							

LCS		Sample ID: LCS-221107		Units: ug/L		Analysis Date: 07-Nov-2022 11:52			
Client ID:		Run ID: FID-4_421352		SeqNo: 6969313		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	17.51	1.00	18.04	0	97.1	75 - 125			
Methane	7.329	0.500	9.647	0	76.0	75 - 125			
Propane	27.31	1.00	26.46	0	103	75 - 125			

LCSD		Sample ID: LCSD-221107		Units: ug/L		Analysis Date: 07-Nov-2022 12:26			
Client ID:		Run ID: FID-4_421352		SeqNo: 6969314		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	18.49	1.00	18.04	0	102	75 - 125	17.51	5.44	30
Methane	8.302	0.500	9.647	0	86.1	75 - 125	7.329	12.4	30
Propane	27.6	1.00	26.46	0	104	75 - 125	27.31	1.06	30

The following samples were analyzed in this batch: HS22101457-01

Client: PDC Energy
Project: Calvin 1
WorkOrder: HS22101457

QC BATCH REPORT

Batch ID: R420717 (0)		Instrument: FID-20		Method: GASOLINE RANGE ORGANICS BY SW8015C						
MBLK	Sample ID: MBLK-221101	Units: mg/L			Analysis Date: 01-Nov-2022 10:41					
Client ID:	Run ID: FID-20_420717	SeqNo: 6953467		PrepDate:			DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	

Gasoline Range Organics	ND	0.0500							
<i>Surr: 4-Bromofluorobenzene</i>	<i>0.1127</i>	<i>0.00500</i>	<i>0.1</i>	<i>0</i>	<i>113</i>	<i>70 - 121</i>			

LCS	Sample ID: LCS-221101	Units: mg/L			Analysis Date: 01-Nov-2022 10:10				
Client ID:	Run ID: FID-20_420717	SeqNo: 6953465		PrepDate:			DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Gasoline Range Organics	0.9667	0.0500	1	0	96.7	76 - 124			
<i>Surr: 4-Bromofluorobenzene</i>	<i>0.0962</i>	<i>0.00500</i>	<i>0.1</i>	<i>0</i>	<i>96.2</i>	<i>52 - 138</i>			

LCSD	Sample ID: LCSD-221101	Units: mg/L			Analysis Date: 01-Nov-2022 10:25				
Client ID:	Run ID: FID-20_420717	SeqNo: 6953466		PrepDate:			DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Gasoline Range Organics	0.8654	0.0500	1	0	86.5	76 - 124	0.9667	11.1	20
<i>Surr: 4-Bromofluorobenzene</i>	<i>0.08468</i>	<i>0.00500</i>	<i>0.1</i>	<i>0</i>	<i>84.7</i>	<i>52 - 138</i>	<i>0.0962</i>	<i>12.7</i>	<i>20</i>

The following samples were analyzed in this batch: HS22101457-01

Client: PDC Energy
Project: Calvin 1
WorkOrder: HS22101457

QC BATCH REPORT

Batch ID: 185812 (0) **Instrument:** ICPMS07 **Method:** TOTAL METALS BY E200.8, REV 5.4, 1994

MBLK Sample ID: **MBLK-185812** Units: **ug/L** Analysis Date: **07-Nov-2022 15:34**
 Client ID: Run ID: **ICPMS07_421198** SeqNo: **6967071** PrepDate: **07-Nov-2022** DF: **1**
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Calcium	ND	500								
Magnesium	ND	500								
Potassium	ND	500								
Sodium	ND	200								

LCS Sample ID: **LCS-185812** Units: **ug/L** Analysis Date: **07-Nov-2022 15:36**
 Client ID: Run ID: **ICPMS07_421198** SeqNo: **6967072** PrepDate: **07-Nov-2022** DF: **1**
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Calcium	5186	500	5000	0	104	85 - 115				
Magnesium	5157	500	5000	0	103	85 - 115				
Potassium	5177	500	5000	0	104	85 - 115				
Sodium	4941	200	5000	0	98.8	85 - 115				

MS Sample ID: **HS22110043-01MS** Units: **ug/L** Analysis Date: **07-Nov-2022 15:43**
 Client ID: Run ID: **ICPMS07_421198** SeqNo: **6967076** PrepDate: **07-Nov-2022** DF: **1**
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Calcium	267300	500	5000	254900	248	70 - 130				SEO
Magnesium	34110	500	5000	27860	125	70 - 130				O
Potassium	42120	500	5000	35920	124	70 - 130				O
Sodium	317400	200	5000	302700	293	70 - 130				SEO

MSD Sample ID: **HS22110043-01MSD** Units: **ug/L** Analysis Date: **07-Nov-2022 15:45**
 Client ID: Run ID: **ICPMS07_421198** SeqNo: **6967077** PrepDate: **07-Nov-2022** DF: **1**
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Calcium	272100	500	5000	254900	344	70 - 130	267300	1.77	20	SEO
Magnesium	34780	500	5000	27860	138	70 - 130	34110	1.93	20	SO
Potassium	42970	500	5000	35920	141	70 - 130	42120	1.99	20	SO
Sodium	324600	200	5000	302700	438	70 - 130	317400	2.26	20	SEO

The following samples were analyzed in this batch: HS22101457-01

Client: PDC Energy
Project: Calvin 1
WorkOrder: HS22101457

QC BATCH REPORT

Batch ID: R421166 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK		Sample ID: VBLKW-221106		Units: ug/L		Analysis Date: 06-Nov-2022 10:34			
Client ID:		Run ID: VOA4_421166		SeqNo: 6965272		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	ND	1.0							
Ethylbenzene	ND	1.0							
m,p-Xylene	ND	2.0							
o-Xylene	ND	1.0							
Toluene	ND	1.0							
Xylenes, Total	ND	1.0							
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>52.37</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>105</i>	<i>70 - 123</i>			
<i>Surr: 4-Bromofluorobenzene</i>	<i>47.73</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>95.5</i>	<i>77 - 113</i>			
<i>Surr: Dibromofluoromethane</i>	<i>54.32</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>109</i>	<i>73 - 126</i>			
<i>Surr: Toluene-d8</i>	<i>48.39</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>96.8</i>	<i>81 - 120</i>			

LCS		Sample ID: VLCSW-221106		Units: ug/L		Analysis Date: 06-Nov-2022 09:52			
Client ID:		Run ID: VOA4_421166		SeqNo: 6965271		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	20.78	1.0	20	0	104	74 - 120			
Ethylbenzene	18.91	1.0	20	0	94.5	77 - 117			
m,p-Xylene	34.61	2.0	40	0	86.5	77 - 122			
o-Xylene	18.47	1.0	20	0	92.3	75 - 119			
Toluene	19.73	1.0	20	0	98.7	77 - 118			
Xylenes, Total	53.08	1.0	60	0	88.5	75 - 122			
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>52.9</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>106</i>	<i>70 - 123</i>			
<i>Surr: 4-Bromofluorobenzene</i>	<i>49.15</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>98.3</i>	<i>77 - 113</i>			
<i>Surr: Dibromofluoromethane</i>	<i>54.09</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>108</i>	<i>73 - 126</i>			
<i>Surr: Toluene-d8</i>	<i>49.81</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>99.6</i>	<i>81 - 120</i>			

Client: PDC Energy
Project: Calvin 1
WorkOrder: HS22101457

QC BATCH REPORT

Batch ID: R421166 (0)		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C						
MS	Sample ID: HS22101651-01MS	Units: ug/L			Analysis Date: 06-Nov-2022 15:08					
Client ID:	Run ID: VOA4_421166	SeqNo: 6965284		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	197.2	1.0	20	197	0.629	70 - 127				SO
Ethylbenzene	33.39	1.0	20	10.84	113	70 - 124				
m,p-Xylene	46.5	2.0	40	0	116	70 - 130				
o-Xylene	25.42	1.0	20	0	127	70 - 124				S
Toluene	28.13	1.0	20	0.3784	139	70 - 123				S
Xylenes, Total	71.92	1.0	60	0	120	70 - 130				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>49.67</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>99.3</i>	<i>70 - 126</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>49.19</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>98.4</i>	<i>77 - 113</i>				
<i>Surr: Dibromofluoromethane</i>	<i>53.52</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>107</i>	<i>77 - 123</i>				
<i>Surr: Toluene-d8</i>	<i>49.71</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>99.4</i>	<i>82 - 127</i>				

MSD	Sample ID: HS22101651-01MSD	Units: ug/L			Analysis Date: 06-Nov-2022 15:30					
Client ID:	Run ID: VOA4_421166	SeqNo: 6965285		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	207.7	1.0	20	197	53.2	70 - 127	197.2	5.19	20	SEO
Ethylbenzene	35.08	1.0	20	10.84	121	70 - 124	33.39	4.95	20	
m,p-Xylene	46.61	2.0	40	0	117	70 - 130	46.5	0.226	20	
o-Xylene	25.65	1.0	20	0	128	70 - 124	25.42	0.909	20	S
Toluene	26.84	1.0	20	0.3784	132	70 - 123	28.13	4.7	20	S
Xylenes, Total	72.26	1.0	60	0	120	70 - 130	71.92	0.468	20	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>54.68</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>109</i>	<i>70 - 126</i>	<i>49.67</i>	<i>9.62</i>	<i>20</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>50.58</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>77 - 113</i>	<i>49.19</i>	<i>2.79</i>	<i>20</i>	
<i>Surr: Dibromofluoromethane</i>	<i>53.1</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>106</i>	<i>77 - 123</i>	<i>53.52</i>	<i>0.787</i>	<i>20</i>	
<i>Surr: Toluene-d8</i>	<i>49.35</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>98.7</i>	<i>82 - 127</i>	<i>49.71</i>	<i>0.728</i>	<i>20</i>	

The following samples were analyzed in this batch: HS22101457-01

Client: PDC Energy
Project: Calvin 1
WorkOrder: HS22101457

QC BATCH REPORT

Batch ID: R420857 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK	Sample ID: WBLK-103122	Units: mg/L		Analysis Date: 31-Oct-2022 17:25						
Client ID:	Run ID: Balance1_420857	SeqNo: 6956934		PrepDate:			DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	

Total Dissolved Solids (Residue, Filterable) ND 10.0

LCS	Sample ID: WLCS-103122	Units: mg/L		Analysis Date: 31-Oct-2022 17:25						
Client ID:	Run ID: Balance1_420857	SeqNo: 6956935		PrepDate:			DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	

Total Dissolved Solids (Residue, Filterable) 1056 10.0 1000 0 106 85 - 115

DUP	Sample ID: HS22101457-01DUP	Units: mg/L		Analysis Date: 31-Oct-2022 17:25						
Client ID: Calvin 1	Run ID: Balance1_420857	SeqNo: 6956933		PrepDate:			DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	

Total Dissolved Solids (Residue, Filterable) 822 10.0 848 3.11 5

DUP	Sample ID: HS22101430-08DUP	Units: mg/L		Analysis Date: 31-Oct-2022 17:25						
Client ID:	Run ID: Balance1_420857	SeqNo: 6956913		PrepDate:			DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	

Total Dissolved Solids (Residue, Filterable) 438 10.0 444 1.36 5

The following samples were analyzed in this batch: HS22101457-01

Client: PDC Energy
Project: Calvin 1
WorkOrder: HS22101457

QC BATCH REPORT

Batch ID: R421129 (0)		Instrument: ICS-Integrion		Method: ANIONS BY E300.0, REV 2.1, 1993						
MBLK	Sample ID: MBLK	Units: mg/L			Analysis Date: 06-Nov-2022 08:41					
Client ID:		Run ID: ICS-Integrion_421129		SeqNo: 6964028		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Chloride	ND	0.500								
Sulfate	ND	0.500								
LCS	Sample ID: LCS	Units: mg/L			Analysis Date: 06-Nov-2022 08:52					
Client ID:		Run ID: ICS-Integrion_421129		SeqNo: 6964029		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Chloride	20.34	0.500	20	0	102	90 - 110				
Sulfate	19.7	0.500	20	0	98.5	90 - 110				
MS	Sample ID: HS22101448-10MS	Units: mg/L			Analysis Date: 06-Nov-2022 11:29					
Client ID:		Run ID: ICS-Integrion_421129		SeqNo: 6964048		PrepDate:		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Chloride	5831	50.0	1000	4886	94.5	80 - 120			O	
Sulfate	1840	50.0	1000	844.6	99.5	80 - 120				
MS	Sample ID: HS22101448-01MS	Units: mg/L			Analysis Date: 06-Nov-2022 10:10					
Client ID:		Run ID: ICS-Integrion_421129		SeqNo: 6964035		PrepDate:		DF: 250		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Chloride	11250	125	2500	8932	92.7	80 - 120				
Sulfate	2494	125	2500	77.9	96.6	80 - 120				
MSD	Sample ID: HS22101448-10MSD	Units: mg/L			Analysis Date: 06-Nov-2022 11:35					
Client ID:		Run ID: ICS-Integrion_421129		SeqNo: 6964049		PrepDate:		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Chloride	5825	50.0	1000	4886	93.9	80 - 120	5831	0.11	20 O	
Sulfate	1838	50.0	1000	844.6	99.3	80 - 120	1840	0.106	20	

Client: PDC Energy
Project: Calvin 1
WorkOrder: HS22101457

QC BATCH REPORT

Batch ID: R421129 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0, REV 2.1, 1993

MSD	Sample ID: HS22101448-01MSD	Units: mg/L		Analysis Date: 06-Nov-2022 10:15						
Client ID:	Run ID: ICS-Integrion_421129	SeqNo: 6964036	PrepDate:	DF: 250						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	11320	125	2500	8932	95.3	80 - 120	11250	0.585	20	
Sulfate	2520	125	2500	77.9	97.7	80 - 120	2494	1.03	20	

The following samples were analyzed in this batch: HS22101457-01

Client: PDC Energy
Project: Calvin 1
WorkOrder: HS22101457

QC BATCH REPORT

Batch ID: R421447 (0)	Instrument: ManTech01	Method: ALKALINITY BY SM 2320B-2011
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MBLK	Sample ID: WBLKW1-110822	Units: mg/L	Analysis Date: 08-Nov-2022 20:13							
Client ID:	Run ID: ManTech01_421447	SeqNo: 6971826	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00								
Alkalinity, Carbonate (As CaCO3)	ND	5.00								
Alkalinity, Total (As CaCO3)	ND	5.00								

LCS	Sample ID: LCS1-110822	Units: mg/L	Analysis Date: 08-Nov-2022 20:21							
Client ID:	Run ID: ManTech01_421447	SeqNo: 6971827	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	985.8	5.00	1000	0	98.6	85 - 115				
Alkalinity, Total (As CaCO3)	1007	5.00	1000	0	101	85 - 115				

LCSD	Sample ID: LCSD1-110822	Units: mg/L	Analysis Date: 08-Nov-2022 20:30							
Client ID:	Run ID: ManTech01_421447	SeqNo: 6971828	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	999.3	5.00	1000	0	99.9	85 - 115	985.8	1.36	20	
Alkalinity, Total (As CaCO3)	1016	5.00	1000	0	102	85 - 115	1007	0.955	20	

DUP	Sample ID: HS22101441-09DUP	Units: mg/L	Analysis Date: 08-Nov-2022 20:44							
Client ID:	Run ID: ManTech01_421447	SeqNo: 6971830	PrepDate: DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	477.4	5.00					498.7	4.35	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	477.4	5.00					498.7	4.35	20	

The following samples were analyzed in this batch: HS22101457-01

Client: PDC Energy
Project: Calvin 1
WorkOrder: HS22101457

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	22-041-0	27-Mar-2023
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-36	30-Jun-2023
Illinois	2000322022-9	09-May-2023
Kansas	E-10352; 2022-2023	31-Jul-2023
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2022-2023	30-Jun-2023
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2022	31-Dec-2022
North Dakota	R-193 2022-2023	30-Apr-2023
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932022-13	31-Jul-2023

Sample Receipt Checklist

Work Order ID: HS22101457

Date/Time Received: 26-Oct-2022 09:45

Client Name: PDC Energy 80203

Received by: Malcolm Burleson

Completed By: /S/ Corey Grandits	26-Oct-2022 20:06	Reviewed by: /S/ Tyler Monroe	27-Oct-2022 12:22
eSignature	Date/Time	eSignature	Date/Time

Matrices: **W**

Carrier name: **FedEx**

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes No Not Present
- Chain of custody present? Yes No 1 Page(s)
- Chain of custody signed when relinquished and received? Yes No
- Samplers name present on COC? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s):	1.1UC/0.9C	IR31
Cooler(s)/Kit(s):	Sm Red	
Date/Time sample(s) sent to storage:	10/26/2022	
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:



ALS Environmental

225 Commerce Drive, Fort Collins, Colorado 80524
 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

Chain-of-Custody


Form 202r8

WORKORDER #	
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PROJECT NAME	Calvin 1	SAMPLER	Jeff Braden	DATE	10/25/22	PAGE	1	of	1
PROJECT No.	09A2073151	FACILITY ID	123-10687	TURNAROUND	Standard	DISPOSAL	By Lab	or	Return to Client
PDCE Bradenhead Sampling		EDD FORMAT	COGCC EDD, LTE						
COMPANY NAME	PDC Energy	PURCHASE ORDER	N/A						
SEND REPORT TO	Jenifer Hakkarinen	BILL TO COMPANY	PDC Energy						
ADDRESS	1775 Sherman Street, Suite 3000	INVOICE ATTN TO	Jenifer Hakkarinen						
CITY / STATE / ZIP	Denver, Colorado 80203	ADDRESS	1775 Sherman Street, Suite 3000						
PHONE	303.860.5815	CITY / STATE / ZIP	Denver, Colorado 80203						
FAX		PHONE	303.860.5815						
E-MAIL	jenifer.hakkarinen@pdce.com jessica.johannsen@pdce.com jbraden@ensolum.com	FAX							
E-MAIL	jenifer.hakkarinen@pdce.com	E-MAIL	jenifer.hakkarinen@pdce.com						

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC	RSK 175	SW8260_25	SW8015M	SM2320B	EPA200.7/200.8	EPA 300.0	SM2540C
	Calvin 1	W	10/25/22	1130	11	12	-	X	X	X	X	X	X	X

HS22101457
 PDC Energy
 Calvin 1

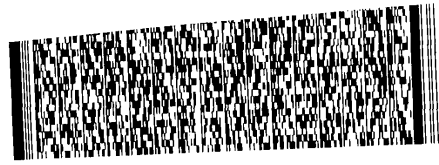


*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments:	Cations/Anions:	QC PACKAGE (check below)
Calcium, Chloride, Magnesium, Potassium, Sodium, Sulfate		<input type="checkbox"/> LEVEL II (Standard QC)
		<input type="checkbox"/> LEVEL III (Std QC + forms)
Samples analyzed per		<input type="checkbox"/> LEVEL IV (Std QC + forms + raw data)
COGCC Bradenhead Sampling Program		
Preservative Key:	1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035	

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	<i>Jeff Braden</i>	Jeff Braden	10/25/22	1500
RECEIVED BY	<i>Holly T. Janac</i>	Holly T. Janac	10/25/22	1503
RELINQUISHED BY	<i>Amy Kepner</i>	Amy Kepner	10/25/22	1545
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				



TRK# 5066 7517 6655
0201

WED - 26 OCT 10:30A
PRIORITY OVERNIGHT

XA SGRA

77099
TX-US IAH

PH: 1-800-438-3636



917
B03
10.30
A
10.25