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February 09, 2023

Max Trehus
PDC Energy
4000 Burlington Ave.
Evans, CO 80620

Work Order: **HS23011308**

Laboratory Results for: **B-Farm LD 18-034HC**

Dear Max Trehus ,

ALS Environmental received 2 sample(s) on Jan 26, 2023 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: B-Farm LD 18-034HC
Work Order: HS23011308

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS23011308-01	18-034HC A	Water		23-Jan-2023 16:20	26-Jan-2023 10:15	<input type="checkbox"/>
HS23011308-02	18-034HC B	Water		23-Jan-2023 16:20	26-Jan-2023 10:15	<input type="checkbox"/>

Client: PDC Energy
Project: B-Farm LD 18-034HC
Work Order: HS23011308

CASE NARRATIVE

Work Order Comments

- Login Notes: 18-034HC A total metals pH at receipt 11. Preserved with 0.5ml of HNO3 upon receipt, pH after preservation remained at 11.

GC Semivolatiles by Method RSK-175**Batch ID: R427455**

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

GC Semivolatiles by Method SW8015M**Batch ID: 189054****Sample ID: 18-034HC A (HS23011308-01)**

- The surrogate recoveries could not be determined due to dilution below the calibration range.

GC Volatiles by Method SW8015**Batch ID: R426992**

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

GCMS Volatiles by Method SW8260**Batch ID: R427218****Sample ID: 18-034HC A (HS23011308-01)**

- Lowest practical dilution due to foamy matrix and/or high concentration of non-target analyte(s).

Metals by Method E200.8**Batch ID: 189461****Sample ID: 18-034HC A (HS23011308-01)**

- Sample ran at a 2X dilution due to high concentration of Potassium.

Sample ID: HS23011519-01MS

- MS and MSD are for an unrelated sample

Batch ID: 189495**Sample ID: 18-034HC B (HS23011308-02)**

- Sample ran at a 5X dilution due to high concentration of Potassium.

Sample ID: HS23011370-02MS

- MS and MSD are for an unrelated sample

WetChemistry by Method SM2320B**Batch ID: R427404**

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

Client: PDC Energy
Project: B-Farm LD 18-034HC
Work Order: HS23011308

CASE NARRATIVE

WetChemistry by Method E300

Batch ID: R427301

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

WetChemistry by Method M2540C

Batch ID: R426945

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

Client: PDC Energy
 Project: B-Farm LD 18-034HC
 Sample ID: 18-034HC A
 Collection Date: 23-Jan-2023 16:20

ANALYTICAL REPORT

WorkOrder:HS23011308
 Lab ID:HS23011308-01
 Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP			
Benzene	U		100	500	ug/L	500	03-Feb-2023 02:43
Ethylbenzene	U		150	500	ug/L	500	03-Feb-2023 02:43
m,p-Xylene	U		250	1000	ug/L	500	03-Feb-2023 02:43
o-Xylene	U		150	500	ug/L	500	03-Feb-2023 02:43
Toluene	U		100	500	ug/L	500	03-Feb-2023 02:43
Xylenes, Total	U		150	500	ug/L	500	03-Feb-2023 02:43
Surr: 1,2-Dichloroethane-d4	97.5			70-126	%REC	500	03-Feb-2023 02:43
Surr: 4-Bromofluorobenzene	91.9			77-113	%REC	500	03-Feb-2023 02:43
Surr: Dibromofluoromethane	92.3			77-123	%REC	500	03-Feb-2023 02:43
Surr: Toluene-d8	108			82-127	%REC	500	03-Feb-2023 02:43
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: FT			
Gasoline Range Organics	22,100		5.00	25.0	mg/L	500	31-Jan-2023 14:37
Surr: 4-Bromofluorobenzene	112			70-123	%REC	500	31-Jan-2023 14:37
DISSOLVED GASES BY RSK-175		Method:RSK-175		Analyst: PPM			
Ethane	6.60		0.144	1.00	ug/L	1	06-Feb-2023 11:26
Methane	356		2.68	12.5	ug/L	25	06-Feb-2023 11:55
Propane	5.73		1.00	1.00	ug/L	1	06-Feb-2023 11:26
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3511 / 30-Jan-2023		Analyst: PPM	
TPH (Diesel Range)	25		2.0	5.1	mg/L	100	01-Feb-2023 10:26
Surr: 2-Fluorobiphenyl	0	JS		60-135	%REC	100	01-Feb-2023 10:26
TOTAL METALS BY E200.8, REV 5.4, 1994		Method:E200.8		Prep:E200.8 / 08-Feb-2023		Analyst: JC	
Calcium	10.1		0.0900	2.50	mg/L	5	08-Feb-2023 15:48
Magnesium	0.0375	J	0.0156	1.00	mg/L	2	08-Feb-2023 16:14
Potassium	1,670		1.65	25.0	mg/L	50	08-Feb-2023 16:18
Sodium	570		0.105	1.00	mg/L	5	08-Feb-2023 15:48
ANIONS BY E300.0, REV 2.1, 1993		Method:E300		Analyst: TH			
Chloride	964		10.0	25.0	mg/L	50	03-Feb-2023 14:37
Sulfate	443		10.0	25.0	mg/L	50	03-Feb-2023 14:37
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		Method:M2540C		Analyst: DC			
Total Dissolved Solids (Residue, Filterable)	17,900		5.00	10.0	mg/L	1	30-Jan-2023 10:30
ALKALINITY BY SM 2320B-2011		Method:SM2320B		Analyst: JAC			
Alkalinity, Bicarbonate (As CaCO3)	U		50.0	50.0	mg/L	10	06-Feb-2023 13:52
Alkalinity, Carbonate (As CaCO3)	1,440		50.0	50.0	mg/L	10	06-Feb-2023 13:52
Alkalinity, Total (As CaCO3)	14,700		50.0	50.0	mg/L	10	06-Feb-2023 13:52

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

Client: PDC Energy
Project: B-Farm LD 18-034HC
Sample ID: 18-034HC B
Collection Date: 23-Jan-2023 16:20

ANALYTICAL REPORT

WorkOrder:HS23011308
Lab ID:HS23011308-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
DISSOLVED METALS BY E200.8, REV 5.4, Method:E200.8 (dissolved) 1994					Prep:E200.8 / 08-Feb-2023		Analyst: JC
Calcium	60.0		0.360	10.0	mg/L	20	09-Feb-2023 14:42
Magnesium	U		0.0390	2.50	mg/L	5	09-Feb-2023 15:08
Potassium	4,950		6.60	100	mg/L	200	09-Feb-2023 15:03
Sodium	1,800		0.420	4.00	mg/L	20	09-Feb-2023 14:42

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

Weight / Prep Log

Client: PDC Energy
Project: B-Farm LD 18-034HC
WorkOrder: HS23011308

Batch ID: 189054	Start Date: 30 Jan 2023 12:00	End Date: 31 Jan 2023 12:00
Method: SW3511	Prep Code: 3511_DRO	

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23011308-01		32.33 (mL)	2 (mL)	0.06186	40 mL Amber

Batch ID: 189090	Start Date: 30 Jan 2023 18:30	End Date: 30 Jan 2023 19:00
Method: SAMPLE FILTRATION - 0.45 MICRON FILTER	Prep Code: FILTRATION	

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23011308-02		100 (mL)	100 (mL)	1	250 mL plastic, Neat

Batch ID: 189461	Start Date: 08 Feb 2023 08:30	End Date: 08 Feb 2023 12:30
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	
HS23011308-01		10 (mL)	10 (mL)	1	250 mL plastic, HNO3 to pH <2

Batch ID: 189495	Start Date: 08 Feb 2023 13:30	End Date: 08 Feb 2023 17:30
Method: DISSOLVED METALS DIGESTION BY E200.8,REV 5.4,1994	Prep Code: 200.8_DISSPR	

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23011308-02		10 (mL)	10 (mL)	1	250 mL plastic, Neat

Client: PDC Energy
Project: B-Farm LD 18-034HC
WorkOrder: HS23011308

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 189054 (0)		Test Name : TPH DRO/ORO BY SW8015C			Matrix: Water	
HS23011308-01	18-034HC A	23 Jan 2023 16:20		30 Jan 2023 08:52	01 Feb 2023 10:26	100
Batch ID: 189461 (0)		Test Name : TOTAL METALS BY E200.8, REV 5.4, 1994			Matrix: Water	
HS23011308-01	18-034HC A	23 Jan 2023 16:20		08 Feb 2023 08:30	08 Feb 2023 16:18	50
HS23011308-01	18-034HC A	23 Jan 2023 16:20		08 Feb 2023 08:30	08 Feb 2023 16:14	2
HS23011308-01	18-034HC A	23 Jan 2023 16:20		08 Feb 2023 08:30	08 Feb 2023 15:48	5
Batch ID: 189495 (0)		Test Name : DISSOLVED METALS BY E200.8, REV 5.4, 1994			Matrix: Water	
HS23011308-02	18-034HC B	23 Jan 2023 16:20		08 Feb 2023 13:30	09 Feb 2023 15:08	5
HS23011308-02	18-034HC B	23 Jan 2023 16:20		08 Feb 2023 13:30	09 Feb 2023 15:03	200
HS23011308-02	18-034HC B	23 Jan 2023 16:20		08 Feb 2023 13:30	09 Feb 2023 14:42	20
Batch ID: R426945 (0)		Test Name : TOTAL DISSOLVED SOLIDS BY SM2540C-2011			Matrix: Water	
HS23011308-01	18-034HC A	23 Jan 2023 16:20			30 Jan 2023 10:30	1
Batch ID: R426992 (0)		Test Name : GASOLINE RANGE ORGANICS BY SW8015C			Matrix: Water	
HS23011308-01	18-034HC A	23 Jan 2023 16:20			31 Jan 2023 14:37	500
Batch ID: R427218 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS23011308-01	18-034HC A	23 Jan 2023 16:20			03 Feb 2023 02:43	500
Batch ID: R427301 (0)		Test Name : ANIONS BY E300.0, REV 2.1, 1993			Matrix: Water	
HS23011308-01	18-034HC A	23 Jan 2023 16:20			03 Feb 2023 14:37	50
Batch ID: R427404 (0)		Test Name : ALKALINITY BY SM 2320B-2011			Matrix: Water	
HS23011308-01	18-034HC A	23 Jan 2023 16:20			06 Feb 2023 13:52	10
Batch ID: R427455 (0)		Test Name : DISSOLVED GASES BY RSK-175			Matrix: Water	
HS23011308-01	18-034HC A	23 Jan 2023 16:20			06 Feb 2023 11:55	25
HS23011308-01	18-034HC A	23 Jan 2023 16:20			06 Feb 2023 11:26	1

Client: PDC Energy
Project: B-Farm LD 18-034HC
WorkOrder: HS23011308

QC BATCH REPORT

Batch ID: 189054 (0)		Instrument: FID-16		Method: TPH DRO/ORO BY SW8015C						
MBLK	Sample ID: MBLK-189054	Units: mg/L		Analysis Date: 31-Jan-2023 12:21						
Client ID:	Run ID: FID-16_427140		SeqNo: 7103813		PrepDate: 30-Jan-2023		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	U	0.050								
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.05034</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>83.9</i>	<i>60 - 135</i>				
LCS	Sample ID: LCS-189054	Units: mg/L		Analysis Date: 31-Jan-2023 12:51						
Client ID:	Run ID: FID-16_427140		SeqNo: 7103814		PrepDate: 30-Jan-2023		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6747	0.050	0.6	0	112	70 - 130				
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.06061</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>101</i>	<i>60 - 135</i>				
LCSD	Sample ID: LCSD-189054	Units: mg/L		Analysis Date: 31-Jan-2023 13:20						
Client ID:	Run ID: FID-16_427140		SeqNo: 7103815		PrepDate: 30-Jan-2023		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.7049	0.050	0.6	0	117	70 - 130	0.6747	4.38	20	
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.0592</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>98.7</i>	<i>60 - 135</i>	<i>0.06061</i>	<i>2.35</i>	<i>20</i>	
The following samples were analyzed in this batch: HS23011308-01										

Client: PDC Energy
 Project: B-Farm LD 18-034HC
 WorkOrder: HS23011308

QC BATCH REPORT

Batch ID: R427455 (0)		Instrument: FID-4		Method: DISSOLVED GASES BY RSK-175					
MBLK	Sample ID: MBLK-230206	Units: ug/L		Analysis Date: 06-Feb-2023 10:28					
Client ID:	Run ID: FID-4_427455	SeqNo: 7111767		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	U	1.00							
Methane	U	0.500							
Propane	U	1.00							

LCS	Sample ID: LCS-230206	Units: ug/L		Analysis Date: 06-Feb-2023 10:42					
Client ID:	Run ID: FID-4_427455	SeqNo: 7111768		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	19.88	1.00	18.04	0	110	75 - 125			
Methane	9.13	0.500	9.647	0	94.6	75 - 125			
Propane	32.08	1.00	26.46	0	121	75 - 125			

LCSD	Sample ID: LCSD-230206	Units: ug/L		Analysis Date: 06-Feb-2023 10:57					
Client ID:	Run ID: FID-4_427455	SeqNo: 7111769		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	19.51	1.00	18.04	0	108	75 - 125	19.88	1.88	30
Methane	8.903	0.500	9.647	0	92.3	75 - 125	9.13	2.53	30
Propane	32.05	1.00	26.46	0	121	75 - 125	32.08	0.0869	30

The following samples were analyzed in this batch: HS23011308-01

Client: PDC Energy
 Project: B-Farm LD 18-034HC
 WorkOrder: HS23011308

QC BATCH REPORT

Batch ID: R426992 (0)		Instrument: FID-20		Method: GASOLINE RANGE ORGANICS BY SW8015C						
MBLK	Sample ID: MBLK-230131	Units: mg/L		Analysis Date: 31-Jan-2023 10:18						
Client ID:	Run ID: FID-20_426992		SeqNo: 7099823		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	U	0.0500								
Surr: 4-Bromofluorobenzene	0.09492	0.00500	0.1	0	94.9	70 - 121				
LCS	Sample ID: LCS-230131	Units: mg/L		Analysis Date: 31-Jan-2023 09:37						
Client ID:	Run ID: FID-20_426992		SeqNo: 7099821		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.07	0.0500	1	0	107	76 - 124				
Surr: 4-Bromofluorobenzene	0.0833	0.00500	0.1	0	83.3	52 - 138				
LCSD	Sample ID: LCSD-230131	Units: mg/L		Analysis Date: 31-Jan-2023 09:50						
Client ID:	Run ID: FID-20_426992		SeqNo: 7099822		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.19	0.0500	1	0	119	76 - 124	1.07	10.7	20	
Surr: 4-Bromofluorobenzene	0.08796	0.00500	0.1	0	88.0	52 - 138	0.0833	5.44	20	

The following samples were analyzed in this batch: HS23011308-01

Client: PDC Energy
Project: B-Farm LD 18-034HC
WorkOrder: HS23011308

QC BATCH REPORT

Batch ID: 189461 (0)		Instrument: ICPMS06		Method: TOTAL METALS BY E200.8, REV 5.4, 1994						
MBLK	Sample ID: MBLK-189461	Units: ug/L		Analysis Date: 08-Feb-2023 15:37						
Client ID:	Run ID: ICPMS06_427569	SeqNo: 7114745		PrepDate: 08-Feb-2023		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	U	500								
Magnesium	12.75	500								J
Potassium	U	500								
Sodium	U	200								

LCS	Sample ID: LCS-189461	Units: ug/L		Analysis Date: 08-Feb-2023 15:39						
Client ID:	Run ID: ICPMS06_427569	SeqNo: 7114746		PrepDate: 08-Feb-2023		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	5115	500	5000	0	102	85 - 115				
Magnesium	5304	500	5000	0	106	85 - 115				
Potassium	5221	500	5000	0	104	85 - 115				
Sodium	5176	200	5000	0	104	85 - 115				

MS	Sample ID: HS23011519-01MS	Units: ug/L		Analysis Date: 08-Feb-2023 15:43						
Client ID:	Run ID: ICPMS06_427569	SeqNo: 7114748		PrepDate: 08-Feb-2023		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	127600	500	5000	120900	134	70 - 130				SO
Magnesium	15150	500	5000	9827	106	70 - 130				
Potassium	25770	500	5000	20300	110	70 - 130				O
Sodium	116600	200	5000	109100	151	70 - 130				SO

MSD	Sample ID: HS23011519-01MSD	Units: ug/L		Analysis Date: 08-Feb-2023 15:44						
Client ID:	Run ID: ICPMS06_427569	SeqNo: 7114749		PrepDate: 08-Feb-2023		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	123100	500	5000	120900	44.1	70 - 130	127600	3.57	20	SO
Magnesium	14470	500	5000	9827	92.9	70 - 130	15150	4.56	20	
Potassium	24830	500	5000	20300	90.6	70 - 130	25770	3.75	20	O
Sodium	111200	200	5000	109100	43.4	70 - 130	116600	4.73	20	SO

The following samples were analyzed in this batch: HS23011308-01

Client: PDC Energy
Project: B-Farm LD 18-034HC
WorkOrder: HS23011308

QC BATCH REPORT

Batch ID: 189495 (0)		Instrument: ICPMS06		Method: DISSOLVED METALS BY E200.8, REV 5.4, 1994 (DISSOLVED)					
MBLK	Sample ID: MBLK-F1-189495	Units: ug/L		Analysis Date: 09-Feb-2023 14:00					
Client ID:	Run ID: ICPMS06_427673	SeqNo: 7116737		PrepDate: 08-Feb-2023		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	U	500							
Magnesium	14.37	500							J
Potassium	U	500							
Sodium	U	200							

MBLK	Sample ID: MBLK-189495	Units: ug/L		Analysis Date: 09-Feb-2023 13:58					
Client ID:	Run ID: ICPMS06_427673	SeqNo: 7116736		PrepDate: 08-Feb-2023		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	U	500							
Magnesium	U	500							
Potassium	U	500							
Sodium	U	200							

LCS	Sample ID: LCS-189495	Units: ug/L		Analysis Date: 09-Feb-2023 14:02					
Client ID:	Run ID: ICPMS06_427673	SeqNo: 7116738		PrepDate: 08-Feb-2023		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	5161	500	5000	0	103	85 - 115			
Magnesium	5455	500	5000	0	109	85 - 115			
Potassium	5214	500	5000	0	104	85 - 115			
Sodium	5436	200	5000	0	109	85 - 115			

MS	Sample ID: HS23011370-02MS	Units: ug/L		Analysis Date: 09-Feb-2023 14:36					
Client ID:	Run ID: ICPMS06_427673	SeqNo: 7116743		PrepDate: 08-Feb-2023		DF: 20			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	142300	10000	5000	120100	443	85 - 115			SO
Potassium	2890000	10000	5000	2527000	7260	85 - 115			SO
Sodium	1237000	4000	5000	1084000	3060	85 - 115			SO

Client: PDC Energy
Project: B-Farm LD 18-034HC
WorkOrder: HS23011308

QC BATCH REPORT

Batch ID: 189495 (0)		Instrument: ICPMS06		Method: DISSOLVED METALS BY E200.8, REV 5.4, 1994 (DISSOLVED)						
MS	Sample ID: HS23011370-02MS	Units: ug/L			Analysis Date: 09-Feb-2023 14:50					
Client ID:	Run ID: ICPMS06_427673	SeqNo: 7116753		PrepDate: 08-Feb-2023		DF: 5				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit Qual		
Magnesium	5446	2500	5000	29.75	108	85 - 115				
MSD	Sample ID: HS23011370-02MSD	Units: ug/L			Analysis Date: 09-Feb-2023 14:38					
Client ID:	Run ID: ICPMS06_427673	SeqNo: 7116744		PrepDate: 08-Feb-2023		DF: 20				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit Qual		
Calcium	141500	10000	5000	120100	428	85 - 115		142300	0.539	20
Potassium	2894000	10000	5000	2527000	7340	85 - 115		2890000	0.146	20
Sodium	1216000	4000	5000	1084000	2640	85 - 115		1237000	1.74	20
MSD	Sample ID: HS23011370-02MSD	Units: ug/L			Analysis Date: 09-Feb-2023 14:52					
Client ID:	Run ID: ICPMS06_427673	SeqNo: 7116754		PrepDate: 08-Feb-2023		DF: 5				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit Qual		
Magnesium	5459	2500	5000	29.75	109	85 - 115		5446	0.241	20
The following samples were analyzed in this batch:		HS23011308-02								

Client: PDC Energy
 Project: B-Farm LD 18-034HC
 WorkOrder: HS23011308

QC BATCH REPORT

Batch ID: R427218 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK	Sample ID: VBLKW-230202	Units: ug/L		Analysis Date: 02-Feb-2023 21:43					
Client ID:	Run ID: VOA7_427218	SeqNo: 7105938		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	U	1.0							
Ethylbenzene	U	1.0							
m,p-Xylene	U	2.0							
o-Xylene	U	1.0							
Toluene	U	1.0							
Xylenes, Total	U	1.0							
Surr: 1,2-Dichloroethane-d4	47.18	1.0	50	0	94.4	70 - 123			
Surr: 4-Bromofluorobenzene	45.84	1.0	50	0	91.7	77 - 113			
Surr: Dibromofluoromethane	46.2	1.0	50	0	92.4	73 - 126			
Surr: Toluene-d8	53.57	1.0	50	0	107	81 - 120			

LCS	Sample ID: VLCSW-230202	Units: ug/L		Analysis Date: 02-Feb-2023 21:00					
Client ID:	Run ID: VOA7_427218	SeqNo: 7105937		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	18.27	1.0	20	0	91.4	74 - 120			
Ethylbenzene	21.14	1.0	20	0	106	77 - 117			
m,p-Xylene	41.82	2.0	40	0	105	77 - 122			
o-Xylene	20.98	1.0	20	0	105	75 - 119			
Toluene	20.26	1.0	20	0	101	77 - 118			
Xylenes, Total	62.8	1.0	60	0	105	75 - 122			
Surr: 1,2-Dichloroethane-d4	48.13	1.0	50	0	96.3	70 - 123			
Surr: 4-Bromofluorobenzene	46.89	1.0	50	0	93.8	77 - 113			
Surr: Dibromofluoromethane	46.09	1.0	50	0	92.2	73 - 126			
Surr: Toluene-d8	53.72	1.0	50	0	107	81 - 120			

Client: PDC Energy
 Project: B-Farm LD 18-034HC
 WorkOrder: HS23011308

QC BATCH REPORT

Batch ID: R427218 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C					
MS		Sample ID: HS23011620-01MS		Units: ug/L		Analysis Date: 03-Feb-2023 05:19			
Client ID:		Run ID: VOA7_427218		SeqNo: 7105959		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	18.7	1.0	20	0	93.5	70 - 127			
Ethylbenzene	21.42	1.0	20	0	107	70 - 124			
m,p-Xylene	42.15	2.0	40	0	105	70 - 130			
o-Xylene	20.65	1.0	20	0	103	70 - 124			
Toluene	20.71	1.0	20	0	104	70 - 123			
Xylenes, Total	62.79	1.0	60	0	105	70 - 130			
Surr: 1,2-Dichloroethane-d4	47.9	1.0	50	0	95.8	70 - 126			
Surr: 4-Bromofluorobenzene	47.4	1.0	50	0	94.8	77 - 113			
Surr: Dibromofluoromethane	46.25	1.0	50	0	92.5	77 - 123			
Surr: Toluene-d8	53.21	1.0	50	0	106	82 - 127			

MSD		Sample ID: HS23011620-01MSD		Units: ug/L		Analysis Date: 03-Feb-2023 05:41			
Client ID:		Run ID: VOA7_427218		SeqNo: 7105960		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	17.33	1.0	20	0	86.6	70 - 127	18.7	7.63	20
Ethylbenzene	20.63	1.0	20	0	103	70 - 124	21.42	3.77	20
m,p-Xylene	40.52	2.0	40	0	101	70 - 130	42.15	3.93	20
o-Xylene	20.07	1.0	20	0	100	70 - 124	20.65	2.81	20
Toluene	19.81	1.0	20	0	99.0	70 - 123	20.71	4.44	20
Xylenes, Total	60.6	1.0	60	0	101	70 - 130	62.79	3.56	20
Surr: 1,2-Dichloroethane-d4	47.55	1.0	50	0	95.1	70 - 126	47.9	0.722	20
Surr: 4-Bromofluorobenzene	46.43	1.0	50	0	92.9	77 - 113	47.4	2.07	20
Surr: Dibromofluoromethane	45.92	1.0	50	0	91.8	77 - 123	46.25	0.708	20
Surr: Toluene-d8	53.28	1.0	50	0	107	82 - 127	53.21	0.132	20

The following samples were analyzed in this batch: HS23011308-01

Client: PDC Energy
Project: B-Farm LD 18-034HC
WorkOrder: HS23011308

QC BATCH REPORT

Batch ID: R426945 (0)		Instrument: Balance1		Method: TOTAL DISSOLVED SOLIDS BY SM2540C-2011						
MBLK	Sample ID: WBLK-01302023	Units: mg/L		Analysis Date: 30-Jan-2023 10:30						
Client ID:	Run ID: Balance1_426945	SeqNo: 7098733		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)		U	10.0							
LCS	Sample ID: LCS-01302023	Units: mg/L		Analysis Date: 30-Jan-2023 10:30						
Client ID:	Run ID: Balance1_426945	SeqNo: 7098732		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)		1136	10.0	1000	0	114	85 - 115			
DUP	Sample ID: HS23011208-10DUP	Units: mg/L		Analysis Date: 30-Jan-2023 10:30						
Client ID:	Run ID: Balance1_426945	SeqNo: 7098723		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)		16	10.0				16	0	5	
DUP	Sample ID: HS23011208-02DUP	Units: mg/L		Analysis Date: 30-Jan-2023 10:30						
Client ID:	Run ID: Balance1_426945	SeqNo: 7098714		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)		U	10.0				-2	0	5	
The following samples were analyzed in this batch:		HS23011308-01								

Client: PDC Energy
Project: B-Farm LD 18-034HC
WorkOrder: HS23011308

QC BATCH REPORT

Batch ID: R427301 (0)		Instrument: ICS-Integrion		Method: ANIONS BY E300.0, REV 2.1, 1993					
MBLK	Sample ID: MBLK	Units: mg/L		Analysis Date: 03-Feb-2023 11:32					
Client ID:	Run ID: ICS-Integrion_427301		SeqNo: 7107841		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	U	0.500							
Sulfate	U	0.500							

LCS	Sample ID: LCS	Units: mg/L		Analysis Date: 03-Feb-2023 11:43					
Client ID:	Run ID: ICS-Integrion_427301		SeqNo: 7107842		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	20.31	0.500	20	0	102	90 - 110			
Sulfate	20.96	0.500	20	0	105	90 - 110			

MS	Sample ID: HS23011613-01MS	Units: mg/L		Analysis Date: 03-Feb-2023 12:53					
Client ID:	Run ID: ICS-Integrion_427301		SeqNo: 7107851		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	9.933	0.500	10	0.116	98.2	80 - 120			
Sulfate	10.36	0.500	10	0	104	80 - 120			

MS	Sample ID: HS23011270-02MS	Units: mg/L		Analysis Date: 03-Feb-2023 13:16					
Client ID:	Run ID: ICS-Integrion_427301		SeqNo: 7107855		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	16.83	0.500	10	6.778	100	80 - 120			
Sulfate	16.75	0.500	10	6.245	105	80 - 120			

MSD	Sample ID: HS23011613-01MSD	Units: mg/L		Analysis Date: 03-Feb-2023 12:59					
Client ID:	Run ID: ICS-Integrion_427301		SeqNo: 7107852		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	9.894	0.500	10	0.116	97.8	80 - 120	9.933	0.393	20
Sulfate	10.35	0.500	10	0	104	80 - 120	10.36	0.083	20

Client: PDC Energy
Project: B-Farm LD 18-034HC
WorkOrder: HS23011308

QC BATCH REPORT

Batch ID: R427301 (0)		Instrument: ICS-Integrion		Method: ANIONS BY E300.0, REV 2.1, 1993						
MSD		Sample ID: HS23011270-02MSD		Units: mg/L		Analysis Date: 03-Feb-2023 13:22				
Client ID:		Run ID: ICS-Integrion_427301		SeqNo: 7107856		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	16.63	0.500	10	6.778	98.5	80 - 120	16.83	1.19	20	
Sulfate	16.5	0.500	10	6.245	103	80 - 120	16.75	1.46	20	

The following samples were analyzed in this batch: HS23011308-01

Client: PDC Energy
 Project: B-Farm LD 18-034HC
 WorkOrder: HS23011308

QC BATCH REPORT

Batch ID: R427404 (0)		Instrument: ManTech01		Method: ALKALINITY BY SM 2320B-2011					
MBLK	Sample ID: WBLKW1-020623	Units: mg/L		Analysis Date: 06-Feb-2023 12:58					
Client ID:	Run ID: ManTech01_427404	SeqNo: 7110371		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)	U	5.00							
Alkalinity, Carbonate (As CaCO3)	U	5.00							
Alkalinity, Total (As CaCO3)	U	5.00							

LCS	Sample ID: LCS1-020623	Units: mg/L		Analysis Date: 06-Feb-2023 13:07					
Client ID:	Run ID: ManTech01_427404	SeqNo: 7110372		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)	1014	5.00	1000	0	101	85 - 115			
Alkalinity, Total (As CaCO3)	1024	5.00	1000	0	102	85 - 115			

LCSD	Sample ID: LCSD1-020623	Units: mg/L		Analysis Date: 06-Feb-2023 13:16					
Client ID:	Run ID: ManTech01_427404	SeqNo: 7110373		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)	1019	5.00	1000	0	102	85 - 115	1014	0.45	20
Alkalinity, Total (As CaCO3)	1029	5.00	1000	0	103	85 - 115	1024	0.504	20

DUP	Sample ID: HS23011208-09DUP	Units: mg/L		Analysis Date: 06-Feb-2023 13:33					
Client ID:	Run ID: ManTech01_427404	SeqNo: 7110376		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)	164.6	5.00					163.6	0.646	20
Alkalinity, Carbonate (As CaCO3)	U	5.00					0	0	20
Alkalinity, Total (As CaCO3)	164.6	5.00					163.6	0.646	20

The following samples were analyzed in this batch: HS23011308-01

Client: PDC Energy
Project: B-Farm LD 18-034HC
WorkOrder: HS23011308

**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
Date	
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	624-2023	31-Dec-2023
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: HS23011308

Date/Time Received: 26-Jan-2023 10:15

Client Name: PDC Energy 80620

Received by: Corey Grandits

Completed By: /S/ Corey Grandits

27-Jan-2023 09:35

Reviewed by: /S/ Tyler Monroe

30-Jan-2023 14:41

eSignature

Date/Time

eSignature

Date/Time

Matrices: WCarrier 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):

3.0UC/2.5C

IR31

Cooler(s)/Kit(s):

Lg Blue

Date/Time sample(s) sent to storage:

1/27/2023

Water - VOA vials have zero headspace?

Yes ☒No ☐No VOA vials submitted ☐

Water - pH acceptable upon receipt?

Yes ☐No ☒N/A ☐

pH adjusted?

Yes ☒No ☐N/A ☐

pH adjusted by:

Si Ma

Login Notes: 18-034HC A total metals pH at receipt 11. Preserved with 0.5ml of HNO3 upon receipt, pH after preservation remained at 11.

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

Corrective Action:



Chain of Custody Form

Page ____ of ____

HS23011308

PDC Energy
B-Farm LD 18-034HCTotal
Price
\$10
\$99
\$22

ALS Project Manager:

Parameter/Method Request for Analysis

Customer Information			Project Information				Parameter/Method Request for Analysis											
Purchase Order		Project Name	B-Farm LD 18-034HC		A	Dissolved Gases (Methane, Ethane, Propane)												
Work Order		Project Number			B	BTEX 8260												
Company Name	PDC Energy	Bill To Company	PDC Energy		C	DRO 8015												
Send Report To	Max Trehus	Invoice Attn.	Max Trehus		D	GRO 8015												
Address	4000 Burlington Ave	Address	1775 Sherman St #3000		E	Anions (Cl, SO ₄), Alk (T, CO ₂ , HCO ₃), TDS												
City/State/Zip	Evans, CO 80620	City/State/Zip	Denver, CO 80203		F	Dissolved Ca, Mg, K, Na - need to lab filter												
Phone	720-762-3569	Phone	303-860-5800		G	Total Ca, Mg, K, Na												
Fax		Fax			H													
e-Mail Address	max.trehus@pdce.com jenifer.hakkarinen@pdce.com jessica.johannsen@pdce.com	e-Mail Address			I													
J																		
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold	
1	18-034HC A	1/23/2023	16:20	W	8	3	X											
2	18-034HC A			W	1	3		X										
3	18-034HC A			W	1	3			X									
4	18-034HC A			W	1	3				X								
5	18-034HC A			W	8	1					X							
6	18-034HC B			W	8	1						X						
7	18-034HC A			W	2	1							X					
8																		
9																		
10																		
Sampler(s): Please Print & Sign		Shipment Method:		Required Turnaround Time:				Results Due Date:										
Max Trehus				<input checked="" type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour														
Relinquished by:		Date:	Time:	Received by:		Notes:												
[Signature]		1/25/23	10:15	[Signature]		Facility ID: 452920 LH ALVE 1871												
Relinquished by:		Date:	Time:	Received by (Laboratory):		QC Package: (Check Box Below)												
[Signature]		1/26/23	1500	[Signature]		<input checked="" type="checkbox"/> Level II: Standard QC <input type="checkbox"/> TRRP-Checklist												
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):		<input type="checkbox"/> Level III: Std QC + Raw Data <input type="checkbox"/> TRRP Level IV												
						<input type="checkbox"/> Level IV: SW846 CLP-Like												
Preservative Key: 1-HCL 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4 degrees C 9-5035		Other: _____																

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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LG Blue

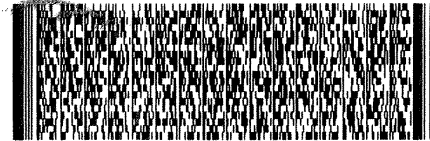
JAN 26 2023
JAN 26 2023

ORIGIN ID:GXVA (970) 305-1648
AMY KEPHART
ALS
965 E 11TH ST
LOVELAND, CO 80537
UNITED STATES US

SHIP DATE: 25 JAN 23
ACTWGT: 47.40 LB
CAD: 0487862/CAFE3618
DIMS: 24x14x12 IN
BILL THIRD PARTY

TO **SAMPLE RECEIVING**
ALS
10450 STANCLIFF RD LG Blue
SUITE 210
HOUSTON TX 77099

REF: PDC



TRK# 6182 5243 5360
0201

THU - 26 JAN 10:30A
PRIORITY OVERNIGHT

XA SGRA

77099
TX-US **IAH**

