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December 22, 2022

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

Work Order: **HS22120518**

Laboratory Results for: **Bost 38C-8-L**

Dear Max Trehus ,

ALS Environmental received 2 sample(s) on Dec 08, 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:** Bost 38C-8-L  
**Work Order:** HS22120518

**SAMPLE SUMMARY**

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Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22120518-01	38C-8-LA	Water		06-Dec-2022 14:40	08-Dec-2022 09:10	<input type="checkbox"/>
HS22120518-02	38C-8-LB	Water		06-Dec-2022 14:40	08-Dec-2022 09:10	<input type="checkbox"/>

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**Work Order:** HS22120518

**CASE NARRATIVE**

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**GC Semivolatiles by Method RSK-175**

**Batch ID: R424044**

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

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**GC Semivolatiles by Method SW8015M**

**Batch ID: 187300**

**Sample ID: 38C-8-LA (HS22120518-01)**

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

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**GC Volatiles by Method SW8015**

**Batch ID: R423904**

**Sample ID: 38C-8-LA (HS22120518-01)**

- Dilution required due to foamy matrix. Surrogate failed outside control limits due to matrix interference. This was confirmed by reanalysis.

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**GCMS Volatiles by Method SW8260**

**Batch ID: R423672**

**Sample ID: 38C-8-LA (HS22120518-01)**

- Dilution required due to matrix interference.

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**Metals by Method E200.8**

**Batch ID: 187498**

**Sample ID: 38C-8-LB (HS22120518-02)**

- Sample ran at 5x due to sample matrix.

**Sample ID: HS22120366-01MS**

- MS and MSD are for an unrelated sample

**Batch ID: 187544**

**Sample ID: HS22120721-01MS**

- MS and MSD are for an unrelated sample

**Sample ID: HS22120837-02MS**

- MS and MSD are for an unrelated sample

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**WetChemistry by Method SM2320B**

**Batch ID: R424474**

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

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**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**Work Order:** HS22120518

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**CASE NARRATIVE**

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**WetChemistry by Method E300**

**Batch ID: R424435**

**Sample ID: HS22120617-15MSD**

- MSD is for an unrelated sample

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**WetChemistry by Method M2540C**

**Batch ID: R424028**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
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Client: PDC Energy  
 Project: Bost 38C-8-L  
 Sample ID: 38C-8-LA  
 Collection Date: 06-Dec-2022 14:40

**ANALYTICAL REPORT**  
 WorkOrder:HS22120518  
 Lab ID:HS22120518-01  
 Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LOW LEVEL VOLATILES BY SW8260C</b>		Method:SW8260		Analyst: FT			
Benzene	17	J	10	50	ug/L	50	10-Dec-2022 13:00
Ethylbenzene	20	J	15	50	ug/L	50	10-Dec-2022 13:00
m,p-Xylene	150		25	100	ug/L	50	10-Dec-2022 13:00
o-Xylene	53		15	50	ug/L	50	10-Dec-2022 13:00
Toluene	61		10	50	ug/L	50	10-Dec-2022 13:00
Xylenes, Total	200		15	50	ug/L	50	10-Dec-2022 13:00
Surr: 1,2-Dichloroethane-d4	93.5			70-126	%REC	50	10-Dec-2022 13:00
Surr: 4-Bromofluorobenzene	104			77-113	%REC	50	10-Dec-2022 13:00
Surr: Dibromofluoromethane	87.7			77-123	%REC	50	10-Dec-2022 13:00
Surr: Toluene-d8	94.7			82-127	%REC	50	10-Dec-2022 13:00
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		Method:SW8015		Analyst: FT			
Gasoline Range Organics	U		5.00	25.0	mg/L	500	13-Dec-2022 15:37
Surr: 4-Bromofluorobenzene	462	S		70-123	%REC	500	13-Dec-2022 15:37
<b>DISSOLVED GASES BY RSK-175</b>		Method:RSK-175		Analyst: SAM			
Ethane	34.8		0.144	1.00	ug/L	1	14-Dec-2022 14:46
Methane	90.7		0.535	2.50	ug/L	5	14-Dec-2022 15:31
Propane	24.6		1.00	1.00	ug/L	1	14-Dec-2022 14:46
<b>TPH DRO/ORO BY SW8015C</b>		Method:SW8015M		Prep:SW3511 / 13-Dec-2022		Analyst: PPM	
DRO (>C10 - C28)	1,000		20	50	mg/L	1000	16-Dec-2022 05:17
Surr: 2-Fluorobiphenyl	0	JS		60-135	%REC	1000	16-Dec-2022 05:17
<b>TOTAL METALS BY E200.8, REV 5.4, 1994</b>		Method:E200.8		Prep:E200.8 / 19-Dec-2022		Analyst: JC	
Calcium	289		0.0900	2.50	mg/L	5	19-Dec-2022 20:34
Magnesium	0.0696	J	0.00780	0.500	mg/L	1	20-Dec-2022 12:31
Potassium	407		0.165	2.50	mg/L	5	19-Dec-2022 20:34
Sodium	527		0.105	1.00	mg/L	5	19-Dec-2022 20:34
<b>ANIONS BY E300.0, REV 2.1, 1993</b>		Method:E300		Analyst: TH			
Chloride	750		10.0	25.0	mg/L	50	20-Dec-2022 11:19
Sulfate	117		1.00	2.50	mg/L	5	20-Dec-2022 11:14
<b>TOTAL DISSOLVED SOLIDS BY SM2540C-2011</b>		Method:M2540C		Analyst: CWG			
Total Dissolved Solids (Residue, Filterable)	11,500		5.00	10.0	mg/L	1	13-Dec-2022 17:00
<b>ALKALINITY BY SM 2320B-2011</b>		Method:SM2320B		Analyst: JAC			
Alkalinity, Bicarbonate (As CaCO3)	U		50.0	50.0	mg/L	10	20-Dec-2022 23:13
Alkalinity, Carbonate (As CaCO3)	1,010		50.0	50.0	mg/L	10	20-Dec-2022 23:13
Alkalinity, Total (As CaCO3)	1,150		50.0	50.0	mg/L	10	20-Dec-2022 23:13

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

Client: PDC Energy  
Project: Bost 38C-8-L  
Sample ID: 38C-8-LB  
Collection Date: 06-Dec-2022 14:40

**ANALYTICAL REPORT**  
WorkOrder:HS22120518  
Lab ID:HS22120518-02  
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>DISSOLVED METALS BY E200.8, REV 5.4, 1994</b>					Prep:E200.8 / 16-Dec-2022		Analyst: JHD
Method:E200.8 (dissolved)							
Calcium	259		0.180	5.00	mg/L	10	16-Dec-2022 22:35
Magnesium	0.0474	J	0.0390	2.50	mg/L	5	19-Dec-2022 13:27
Potassium	363		0.330	5.00	mg/L	10	16-Dec-2022 22:35
Sodium	482		0.210	2.00	mg/L	10	16-Dec-2022 22:35

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

## Weight / Prep Log

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**Batch ID:** 187248      **Start Date:** 12 Dec 2022 09:00      **End Date:** 12 Dec 2022 18:00  
**Method:** SAMPLE FILTRATION - 0.45 MICRON FILTER      **Prep Code:** FILTRATION

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22120518-02		100 (mL)	100 (mL)	1	120 ml Plastic, Neat

**Batch ID:** 187300      **Start Date:** 13 Dec 2022 08:09      **End Date:** 13 Dec 2022 13:00  
**Method:** SW3511      **Prep Code:** 3511\_DRO

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22120518-01		33.15 (mL)	2 (mL)	0.06033	40 mL Amber

**Batch ID:** 187498      **Start Date:** 16 Dec 2022 10:00      **End Date:** 16 Dec 2022 14:00  
**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	
HS22120518-02		10 (mL)	10 (mL)	1	120 ml Plastic, Neat

**Batch ID:** 187544      **Start Date:** 19 Dec 2022 13:00      **End Date:** 19 Dec 2022 17:00  
**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	
HS22120518-01		10 (mL)	10 (mL)	1	250 mL plastic, HNO3 to pH <2

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
<b>Batch ID:</b> 187300 ( 0 )		<b>Test Name :</b> TPH DRO/ORO BY SW8015C			<b>Matrix:</b> Water	
HS22120518-01	38C-8-LA	06 Dec 2022 14:40		13 Dec 2022 08:09	16 Dec 2022 05:17	1000
<b>Batch ID:</b> 187498 ( 0 )		<b>Test Name :</b> DISSOLVED METALS BY E200.8, REV 5.4, 1994			<b>Matrix:</b> Water	
HS22120518-02	38C-8-LB	06 Dec 2022 14:40		16 Dec 2022 10:00	19 Dec 2022 13:27	5
HS22120518-02	38C-8-LB	06 Dec 2022 14:40		16 Dec 2022 10:00	16 Dec 2022 22:35	10
<b>Batch ID:</b> 187544 ( 0 )		<b>Test Name :</b> TOTAL METALS BY E200.8, REV 5.4, 1994			<b>Matrix:</b> Water	
HS22120518-01	38C-8-LA	06 Dec 2022 14:40		19 Dec 2022 13:00	20 Dec 2022 12:31	1
HS22120518-01	38C-8-LA	06 Dec 2022 14:40		19 Dec 2022 13:00	19 Dec 2022 20:34	5
<b>Batch ID:</b> R423672 ( 0 )		<b>Test Name :</b> LOW LEVEL VOLATILES BY SW8260C			<b>Matrix:</b> Water	
HS22120518-01	38C-8-LA	06 Dec 2022 14:40			10 Dec 2022 13:00	50
<b>Batch ID:</b> R423904 ( 0 )		<b>Test Name :</b> GASOLINE RANGE ORGANICS BY SW8015C			<b>Matrix:</b> Water	
HS22120518-01	38C-8-LA	06 Dec 2022 14:40			13 Dec 2022 15:37	500
<b>Batch ID:</b> R424028 ( 0 )		<b>Test Name :</b> TOTAL DISSOLVED SOLIDS BY SM2540C-2011			<b>Matrix:</b> Water	
HS22120518-01	38C-8-LA	06 Dec 2022 14:40			13 Dec 2022 17:00	1
<b>Batch ID:</b> R424044 ( 0 )		<b>Test Name :</b> DISSOLVED GASES BY RSK-175			<b>Matrix:</b> Water	
HS22120518-01	38C-8-LA	06 Dec 2022 14:40			14 Dec 2022 15:31	5
HS22120518-01	38C-8-LA	06 Dec 2022 14:40			14 Dec 2022 14:46	1
<b>Batch ID:</b> R424435 ( 0 )		<b>Test Name :</b> ANIONS BY E300.0, REV 2.1, 1993			<b>Matrix:</b> Water	
HS22120518-01	38C-8-LA	06 Dec 2022 14:40			20 Dec 2022 11:19	50
HS22120518-01	38C-8-LA	06 Dec 2022 14:40			20 Dec 2022 11:14	5
<b>Batch ID:</b> R424474 ( 0 )		<b>Test Name :</b> ALKALINITY BY SM 2320B-2011			<b>Matrix:</b> Water	
HS22120518-01	38C-8-LA	06 Dec 2022 14:40			20 Dec 2022 23:13	10

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QC BATCH REPORT**

**Batch ID:** 187300 ( 0 )      **Instrument:** FID-16      **Method:** TPH DRO/ORO BY SW8015C

MBLK		Sample ID: MBLK-187300			Units: mg/L		Analysis Date: 16-Dec-2022 08:13			
Client ID:		Run ID: FID-16_424411			SeqNo: 7042068		PrepDate: 13-Dec-2022		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (>C10 - C28)	U	0.050								
<i>Surr: 2-Fluorobiphenyl</i>	0.03914	0.0050	0.06	0	65.2	60 - 135				

LCS		Sample ID: LCS-187300			Units: mg/L		Analysis Date: 16-Dec-2022 08:42			
Client ID:		Run ID: FID-16_424411			SeqNo: 7042069		PrepDate: 13-Dec-2022		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (>C10 - C28)	0.5465	0.050	0.6	0	91.1	70 - 130				
<i>Surr: 2-Fluorobiphenyl</i>	0.06162	0.0050	0.06	0	103	60 - 135				

LCSD		Sample ID: LCSD-187300			Units: mg/L		Analysis Date: 16-Dec-2022 09:11			
Client ID:		Run ID: FID-16_424411			SeqNo: 7042070		PrepDate: 13-Dec-2022		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (>C10 - C28)	0.5636	0.050	0.6	0	93.9	70 - 130	0.5465	3.08	20	
<i>Surr: 2-Fluorobiphenyl</i>	0.06202	0.0050	0.06	0	103	60 - 135	0.06162	0.647	20	

The following samples were analyzed in this batch: HS22120518-01

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QC BATCH REPORT**

**Batch ID:** R424044 ( 0 )      **Instrument:** FID-4      **Method:** DISSOLVED GASES BY RSK-175

<b>MBLK</b>		Sample ID: <b>MBLK-221214</b>		Units: <b>ug/L</b>		Analysis Date: <b>14-Dec-2022 10:19</b>				
Client ID:		Run ID: <b>FID-4_424044</b>		SeqNo: <b>7033239</b>		PrepDate:		DF: <b>1</b>		
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								

<b>LCS</b>		Sample ID: <b>LCS-221214</b>		Units: <b>ug/L</b>		Analysis Date: <b>14-Dec-2022 10:35</b>				
Client ID:		Run ID: <b>FID-4_424044</b>		SeqNo: <b>7033240</b>		PrepDate:		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	17.39	1.00	18.04	0	96.4	75 - 125				
Methane	8.472	0.500	9.647	0	87.8	75 - 125				
Propane	27.69	1.00	26.46	0	105	75 - 125				

<b>LCSD</b>		Sample ID: <b>LCSD-221214</b>		Units: <b>ug/L</b>		Analysis Date: <b>14-Dec-2022 10:53</b>				
Client ID:		Run ID: <b>FID-4_424044</b>		SeqNo: <b>7033241</b>		PrepDate:		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	18.33	1.00	18.04	0	102	75 - 125	17.39	5.25	30	
Methane	8.823	0.500	9.647	0	91.5	75 - 125	8.472	4.06	30	
Propane	27.35	1.00	26.46	0	103	75 - 125	27.69	1.24	30	

The following samples were analyzed in this batch: HS22120518-01

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QC BATCH REPORT**

<b>Batch ID:</b> R423904 ( 0 )	<b>Instrument:</b> FID-20	<b>Method:</b> GASOLINE RANGE ORGANICS BY SW8015C
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<b>MBLK</b>	Sample ID: <b>MBLK-221213</b>	Units: <b>mg/L</b>	Analysis Date: <b>13-Dec-2022 11:47</b>							
Client ID:	Run ID: <b>FID-20_423904</b>	SeqNo: <b>7030500</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Gasoline Range Organics	U	0.0500								
<i>Surr: 4-Bromofluorobenzene</i>	<i>0.09405</i>	<i>0.00500</i>	<i>0.1</i>	<i>0</i>	<i>94.0</i>	<i>70 - 121</i>				

<b>LCS</b>	Sample ID: <b>LCS-221213</b>	Units: <b>mg/L</b>	Analysis Date: <b>13-Dec-2022 11:19</b>							
Client ID:	Run ID: <b>FID-20_423904</b>	SeqNo: <b>7030498</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Gasoline Range Organics	0.8341	0.0500	1	0	83.4	76 - 124				
<i>Surr: 4-Bromofluorobenzene</i>	<i>0.1033</i>	<i>0.00500</i>	<i>0.1</i>	<i>0</i>	<i>103</i>	<i>52 - 138</i>				

<b>LCSD</b>	Sample ID: <b>LCSD-221213</b>	Units: <b>mg/L</b>	Analysis Date: <b>13-Dec-2022 11:33</b>							
Client ID:	Run ID: <b>FID-20_423904</b>	SeqNo: <b>7030499</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Gasoline Range Organics	0.8629	0.0500	1	0	86.3	76 - 124	0.8341	3.39	20	
<i>Surr: 4-Bromofluorobenzene</i>	<i>0.1058</i>	<i>0.00500</i>	<i>0.1</i>	<i>0</i>	<i>106</i>	<i>52 - 138</i>	<i>0.1033</i>	<i>2.4</i>	<i>20</i>	

The following samples were analyzed in this batch: HS22120518-01

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QC BATCH REPORT**

<b>Batch ID:</b> 187498 ( 0 )	<b>Instrument:</b> ICPMS07	<b>Method:</b> DISSOLVED METALS BY E200.8, REV 5.4, 1994 (DISSOLVED)								
<b>MBLK</b>	Sample ID: <b>MBLKF2-187498</b>	Units: <b>ug/L</b>	Analysis Date: <b>16-Dec-2022 21:48</b>							
Client ID:	Run ID: <b>ICPMS07_424168</b>	SeqNo: <b>7037410</b>	PrepDate: <b>16-Dec-2022</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Calcium	U	500								
Magnesium	10.81	500								J
Potassium	U	500								
Sodium	U	200								

<b>MBLK</b>	Sample ID: <b>MBLKF3-187498</b>	Units: <b>ug/L</b>	Analysis Date: <b>16-Dec-2022 21:49</b>							
Client ID:	Run ID: <b>ICPMS07_424168</b>	SeqNo: <b>7037411</b>	PrepDate: <b>16-Dec-2022</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Calcium	36.83	500								J
Magnesium	18.42	500								J
Potassium	U	500								
Sodium	U	200								

<b>MBLK</b>	Sample ID: <b>MBLKF1-187498</b>	Units: <b>ug/L</b>	Analysis Date: <b>16-Dec-2022 21:46</b>							
Client ID:	Run ID: <b>ICPMS07_424168</b>	SeqNo: <b>7037409</b>	PrepDate: <b>16-Dec-2022</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Calcium	U	500								
Magnesium	12.8	500								J
Potassium	U	500								
Sodium	U	200								

<b>MBLK</b>	Sample ID: <b>MBLK-187498</b>	Units: <b>ug/L</b>	Analysis Date: <b>16-Dec-2022 21:44</b>							
Client ID:	Run ID: <b>ICPMS07_424168</b>	SeqNo: <b>7037408</b>	PrepDate: <b>16-Dec-2022</b> DF: <b>1</b>							
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								

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QC BATCH REPORT**

**Batch ID:** 187498 ( 0 )      **Instrument:** ICPMS07      **Method:** DISSOLVED METALS BY E200.8, REV 5.4, 1994 (DISSOLVED)

<b>LCS</b>		Sample ID: <b>LCS-187498</b>	Units: <b>ug/L</b>		Analysis Date: <b>16-Dec-2022 21:51</b>					
Client ID:		Run ID: <b>ICPMS07_424168</b>	SeqNo: <b>7037412</b>		PrepDate: <b>16-Dec-2022</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	4840	500	5000	0	96.8	85 - 115				
Magnesium	4960	500	5000	0	99.2	85 - 115				
Potassium	4902	500	5000	0	98.0	85 - 115				
Sodium	4774	200	5000	0	95.5	85 - 115				

<b>MS</b>		Sample ID: <b>HS22120366-01MS</b>	Units: <b>ug/L</b>		Analysis Date: <b>16-Dec-2022 22:04</b>					
Client ID:		Run ID: <b>ICPMS07_424168</b>	SeqNo: <b>7037416</b>		PrepDate: <b>16-Dec-2022</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	88260	500	5000	76730	231	85 - 115				SO
Magnesium	38390	500	5000	31130	145	85 - 115				SO
Potassium	7559	500	5000	2434	102	85 - 115				
Sodium	408000	200	5000	373300	693	85 - 115				SEO

<b>MS</b>		Sample ID: <b>HS22120313-01MS</b>	Units: <b>ug/L</b>		Analysis Date: <b>16-Dec-2022 21:59</b>					
Client ID:		Run ID: <b>ICPMS07_424168</b>	SeqNo: <b>7037438</b>		PrepDate: <b>16-Dec-2022</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	72440	500	5000	68660	75.6	85 - 115				SO
Magnesium	13950	500	5000	9225	94.4	85 - 115				
Potassium	9549	500	5000	4816	94.7	85 - 115				
Sodium	85600	200	5000	80870	94.7	85 - 115				O

<b>MSD</b>		Sample ID: <b>HS22120366-01MSD</b>	Units: <b>ug/L</b>		Analysis Date: <b>16-Dec-2022 22:06</b>					
Client ID:		Run ID: <b>ICPMS07_424168</b>	SeqNo: <b>7037417</b>		PrepDate: <b>16-Dec-2022</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	83870	500	5000	76730	143	85 - 115	88260	5.1	20	SO
Magnesium	36450	500	5000	31130	106	85 - 115	38390	5.2	20	O
Potassium	7245	500	5000	2434	96.2	85 - 115	7559	4.24	20	
Sodium	391700	200	5000	373300	366	85 - 115	408000	4.09	20	SEO

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QC BATCH REPORT**

<b>Batch ID:</b> 187498 ( 0 )		<b>Instrument:</b> ICPMS07		<b>Method:</b> DISSOLVED METALS BY E200.8, REV 5.4, 1994 (DISSOLVED)						
<b>MSD</b>	Sample ID: <b>HS22120313-01MSD</b>	Units: <b>ug/L</b>			Analysis Date: <b>16-Dec-2022 22:01</b>					
Client ID:	Run ID: <b>ICPMS07_424168</b>	SeqNo: <b>7037439</b>		PrepDate: <b>16-Dec-2022</b>		DF: <b>1</b>				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	70870	500	5000	68660	44.1	85 - 115	72440	2.2	20	SO
Magnesium	13620	500	5000	9225	87.9	85 - 115	13950	2.37	20	
Potassium	9349	500	5000	4816	90.6	85 - 115	9549	2.12	20	
Sodium	82120	200	5000	80870	25.0	85 - 115	85600	4.16	20	SO

The following samples were analyzed in this batch: HS22120518-02

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QC BATCH REPORT**

Batch ID: 187544 ( 0 )		Instrument: ICPMS06		Method: TOTAL METALS BY E200.8, REV 5.4, 1994						
<b>MBLK</b>	Sample ID: <b>MBLK-187544</b>	Units: <b>ug/L</b>		Analysis Date: <b>19-Dec-2022 20:06</b>						
Client ID:	Run ID: <b>ICPMS06_424292</b>	SeqNo: <b>7040505</b>		PrepDate: <b>19-Dec-2022</b>		DF: <b>1</b>				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	58.7	500								J
Magnesium	11.45	500								J
Potassium	U	500								
Sodium	63.84	200								J
<b>LCS</b>	Sample ID: <b>LCS-187544</b>	Units: <b>ug/L</b>		Analysis Date: <b>19-Dec-2022 20:08</b>						
Client ID:	Run ID: <b>ICPMS06_424292</b>	SeqNo: <b>7040506</b>		PrepDate: <b>19-Dec-2022</b>		DF: <b>1</b>				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	5466	500	5000	0	109	85 - 115				
Magnesium	5646	500	5000	0	113	85 - 115				
Potassium	5403	500	5000	0	108	85 - 115				
Sodium	5526	200	5000	0	111	85 - 115				
<b>MS</b>	Sample ID: <b>HS22120837-02MS</b>	Units: <b>ug/L</b>		Analysis Date: <b>19-Dec-2022 20:18</b>						
Client ID:	Run ID: <b>ICPMS06_424292</b>	SeqNo: <b>7040511</b>		PrepDate: <b>19-Dec-2022</b>		DF: <b>1</b>				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	130800	500	5000	127100	73.9	70 - 130				O
Magnesium	34110	500	5000	29370	94.8	70 - 130				O
Potassium	10280	500	5000	5020	105	70 - 130				
Sodium	44010	200	5000	39730	85.5	70 - 130				O
<b>MS</b>	Sample ID: <b>HS22120721-01MS</b>	Units: <b>ug/L</b>		Analysis Date: <b>19-Dec-2022 20:12</b>						
Client ID:	Run ID: <b>ICPMS06_424292</b>	SeqNo: <b>7040508</b>		PrepDate: <b>19-Dec-2022</b>		DF: <b>1</b>				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	62120	500	5000	57180	98.9	70 - 130				O
Magnesium	10880	500	5000	5589	106	70 - 130				
Potassium	34200	500	5000	29650	91.1	70 - 130				O
Sodium	130900	200	5000	128300	52.0	70 - 130				SO

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QC BATCH REPORT**

**Batch ID:** 187544 ( 0 )      **Instrument:** ICPMS06      **Method:** TOTAL METALS BY E200.8, REV 5.4, 1994

<b>MSD</b>		Sample ID: <b>HS22120837-02MSD</b>		Units: <b>ug/L</b>		Analysis Date: <b>19-Dec-2022 20:20</b>				
Client ID:		Run ID: <b>ICPMS06_424292</b>		SeqNo: <b>7040512</b>		PrepDate: <b>19-Dec-2022</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	141400	500	5000	127100	287	70 - 130	130800	7.81	20	SO
Magnesium	36290	500	5000	29370	138	70 - 130	34110	6.19	20	SO
Potassium	10780	500	5000	5020	115	70 - 130	10280	4.73	20	
Sodium	47310	200	5000	39730	152	70 - 130	44010	7.23	20	SO

<b>MSD</b>		Sample ID: <b>HS22120721-01MSD</b>		Units: <b>ug/L</b>		Analysis Date: <b>19-Dec-2022 20:14</b>				
Client ID:		Run ID: <b>ICPMS06_424292</b>		SeqNo: <b>7040509</b>		PrepDate: <b>19-Dec-2022</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	63390	500	5000	57180	124	70 - 130	62120	2.02	20	O
Magnesium	11250	500	5000	5589	113	70 - 130	10880	3.29	20	
Potassium	35260	500	5000	29650	112	70 - 130	34200	3.04	20	O
Sodium	134500	200	5000	128300	125	70 - 130	130900	2.74	20	O

The following samples were analyzed in this batch: HS22120518-01

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QC BATCH REPORT**

<b>Batch ID:</b> R423672 ( 0 )	<b>Instrument:</b> VOA10	<b>Method:</b> LOW LEVEL VOLATILES BY SW8260C
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<b>MBLK</b>		Sample ID: <b>VBLKW-221210</b>		Units: <b>ug/L</b>		Analysis Date: <b>10-Dec-2022 05:49</b>			
Client ID:		Run ID: <b>VOA10_423672</b>		SeqNo: <b>7025132</b>		PrepDate:		DF: <b>1</b>	
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							
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>53.13</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>106</i>	<i>70 - 123</i>			
<i>Surr: 4-Bromofluorobenzene</i>	<i>51.04</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>102</i>	<i>77 - 113</i>			
<i>Surr: Dibromofluoromethane</i>	<i>51.52</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>103</i>	<i>73 - 126</i>			
<i>Surr: Toluene-d8</i>	<i>47.87</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>95.7</i>	<i>81 - 120</i>			

<b>LCS</b>		Sample ID: <b>VLCSW-221210</b>		Units: <b>ug/L</b>		Analysis Date: <b>10-Dec-2022 05:08</b>			
Client ID:		Run ID: <b>VOA10_423672</b>		SeqNo: <b>7025131</b>		PrepDate:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	21.7	1.0	20	0	109	74 - 120			
Ethylbenzene	20.4	1.0	20	0	102	77 - 117			
m,p-Xylene	40.23	2.0	40	0	101	77 - 122			
o-Xylene	20.12	1.0	20	0	101	75 - 119			
Toluene	18.73	1.0	20	0	93.6	77 - 118			
Xylenes, Total	60.35	1.0	60	0	101	75 - 122			
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>53.72</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>107</i>	<i>70 - 123</i>			
<i>Surr: 4-Bromofluorobenzene</i>	<i>53.08</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>106</i>	<i>77 - 113</i>			
<i>Surr: Dibromofluoromethane</i>	<i>48.95</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>97.9</i>	<i>73 - 126</i>			
<i>Surr: Toluene-d8</i>	<i>50.55</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>81 - 120</i>			

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QC BATCH REPORT**

**Batch ID:** R423672 ( 0 )      **Instrument:** VOA10      **Method:** LOW LEVEL VOLATILES BY SW8260C

<b>MS</b>		Sample ID: <b>HS22120528-04MS</b>			Units: <b>ug/L</b>		Analysis Date: <b>10-Dec-2022 07:11</b>			
Client ID:		Run ID: <b>VOA10_423672</b>			SeqNo: <b>7025136</b>		PrepDate:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.87	1.0	20	0	104	70 - 127				
Ethylbenzene	22.74	1.0	20	0	114	70 - 124				
m,p-Xylene	44.67	2.0	40	0	112	70 - 130				
o-Xylene	21.88	1.0	20	0	109	70 - 124				
Toluene	20.83	1.0	20	0	104	70 - 123				
Xylenes, Total	66.55	1.0	60	0	111	70 - 130				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>51.05</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>102</i>	<i>70 - 126</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>55.52</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>111</i>	<i>77 - 113</i>				
<i>Surr: Dibromofluoromethane</i>	<i>48.62</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>97.2</i>	<i>77 - 123</i>				
<i>Surr: Toluene-d8</i>	<i>54.11</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>108</i>	<i>82 - 127</i>				

<b>MSD</b>		Sample ID: <b>HS22120528-04MSD</b>			Units: <b>ug/L</b>		Analysis Date: <b>10-Dec-2022 07:32</b>			
Client ID:		Run ID: <b>VOA10_423672</b>			SeqNo: <b>7025137</b>		PrepDate:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.1	1.0	20	0	101	70 - 127	20.87	3.76	20	
Ethylbenzene	20.03	1.0	20	0	100	70 - 124	22.74	12.7	20	
m,p-Xylene	38.37	2.0	40	0	95.9	70 - 130	44.67	15.2	20	
o-Xylene	18.86	1.0	20	0	94.3	70 - 124	21.88	14.8	20	
Toluene	18.43	1.0	20	0	92.1	70 - 123	20.83	12.3	20	
Xylenes, Total	57.23	1.0	60	0	95.4	70 - 130	66.55	15.1	20	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>52.14</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>104</i>	<i>70 - 126</i>	<i>51.05</i>	<i>2.12</i>	<i>20</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>49.62</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>99.2</i>	<i>77 - 113</i>	<i>55.52</i>	<i>11.2</i>	<i>20</i>	
<i>Surr: Dibromofluoromethane</i>	<i>47.42</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>94.8</i>	<i>77 - 123</i>	<i>48.62</i>	<i>2.5</i>	<i>20</i>	
<i>Surr: Toluene-d8</i>	<i>50.27</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>82 - 127</i>	<i>54.11</i>	<i>7.36</i>	<i>20</i>	

The following samples were analyzed in this batch: HS22120518-01

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QC BATCH REPORT**

**Batch ID:** R424028 ( 0 )      **Instrument:** Balance1      **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

<b>MBLK</b>	Sample ID: <b>WBLK-121322</b>	Units: <b>mg/L</b>			Analysis Date: <b>13-Dec-2022 17:00</b>				
Client ID:	Run ID: <b>Balance1_424028</b>	SeqNo: <b>7032891</b>		PrepDate:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Total Dissolved Solids (Residue, Filterable)      U      10.0

<b>LCS</b>	Sample ID: <b>WLCS-121322</b>	Units: <b>mg/L</b>			Analysis Date: <b>13-Dec-2022 17:00</b>				
Client ID:	Run ID: <b>Balance1_424028</b>	SeqNo: <b>7032892</b>		PrepDate:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Total Dissolved Solids (Residue, Filterable)      1066      10.0      1000      0      107      85 - 115

<b>DUP</b>	Sample ID: <b>HS22120648-06DUP</b>	Units: <b>mg/L</b>			Analysis Date: <b>13-Dec-2022 17:00</b>				
Client ID:	Run ID: <b>Balance1_424028</b>	SeqNo: <b>7032890</b>		PrepDate:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Total Dissolved Solids (Residue, Filterable)      2150      10.0                          2140      0.466      5

<b>DUP</b>	Sample ID: <b>HS22120421-01DUP</b>	Units: <b>mg/L</b>			Analysis Date: <b>13-Dec-2022 17:00</b>				
Client ID:	Run ID: <b>Balance1_424028</b>	SeqNo: <b>7032877</b>		PrepDate:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Total Dissolved Solids (Residue, Filterable)      2180      10.0                          2160      0.922      5

The following samples were analyzed in this batch: HS22120518-01

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QC BATCH REPORT**

Batch ID: R424435 ( 0 )		Instrument: ICS-Integrion			Method: ANIONS BY E300.0, REV 2.1, 1993					
<b>MBLK</b>	Sample ID: <b>MBLK</b>	Units: <b>mg/L</b>			Analysis Date: <b>20-Dec-2022 08:23</b>					
Client ID:		Run ID: <b>ICS-Integrion_424435</b>			SeqNo: <b>7042625</b>		PrepDate:		DF: <b>1</b>	
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								
<b>LCS</b>	Sample ID: <b>LCS</b>	Units: <b>mg/L</b>			Analysis Date: <b>20-Dec-2022 08:29</b>					
Client ID:		Run ID: <b>ICS-Integrion_424435</b>			SeqNo: <b>7042626</b>		PrepDate:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.54	0.500	20	0	97.7	90 - 110				
Sulfate	20.08	0.500	20	0	100	90 - 110				
<b>MS</b>	Sample ID: <b>HS22121099-01MS</b>	Units: <b>mg/L</b>			Analysis Date: <b>20-Dec-2022 08:39</b>					
Client ID:		Run ID: <b>ICS-Integrion_424435</b>			SeqNo: <b>7042628</b>		PrepDate:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	11.11	0.500	10	1.599	95.2	80 - 120				
Sulfate	17.3	0.500	10	7.561	97.4	80 - 120				
<b>MS</b>	Sample ID: <b>HS22120617-15MS</b>	Units: <b>mg/L</b>			Analysis Date: <b>20-Dec-2022 09:54</b>					
Client ID:		Run ID: <b>ICS-Integrion_424435</b>			SeqNo: <b>7042640</b>		PrepDate:		DF: <b>10</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	551.7	5.00	100	470.7	81.0	80 - 120				O
Sulfate	108.9	5.00	100	7.498	101	80 - 120				
<b>MSD</b>	Sample ID: <b>HS22121099-01MSD</b>	Units: <b>mg/L</b>			Analysis Date: <b>20-Dec-2022 08:45</b>					
Client ID:		Run ID: <b>ICS-Integrion_424435</b>			SeqNo: <b>7042629</b>		PrepDate:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	11.2	0.500	10	1.599	96.0	80 - 120	11.11	0.771	20	
Sulfate	17.46	0.500	10	7.561	98.9	80 - 120	17.3	0.912	20	

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QC BATCH REPORT**

**Batch ID:** R424435 ( 0 )      **Instrument:** ICS-Integrion      **Method:** ANIONS BY E300.0, REV 2.1, 1993

MSD		Sample ID: HS22120617-15MSD		Units: mg/L		Analysis Date: 20-Dec-2022 09:59				
Client ID:		Run ID: ICS-Integrion_424435		SeqNo: 7042641		PrepDate:		DF: 10		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	541.5	5.00	100	470.7	70.8	80 - 120	551.7	1.87	20	SO
Sulfate	107	5.00	100	7.498	99.5	80 - 120	108.9	1.72	20	

The following samples were analyzed in this batch: HS22120518-01

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QC BATCH REPORT**

<b>Batch ID:</b> R424474 ( 0 )	<b>Instrument:</b> ManTech01	<b>Method:</b> ALKALINITY BY SM 2320B-2011
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<b>MBLK</b>	Sample ID: <b>WBLKW1-122022</b>	Units: <b>mg/L</b>	Analysis Date: <b>20-Dec-2022 21:18</b>							
Client ID:	Run ID: <b>ManTech01_424474</b>	SeqNo: <b>7043741</b>	PrepDate: DF: <b>1</b>							
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, Hydroxide (As CaCO3)	U	5.00								
Alkalinity, Total (As CaCO3)	U	5.00								

<b>LCS</b>	Sample ID: <b>LCS1-122022</b>	Units: <b>mg/L</b>	Analysis Date: <b>20-Dec-2022 21:26</b>							
Client ID:	Run ID: <b>ManTech01_424474</b>	SeqNo: <b>7043742</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1001	5.00	1000	0	100	85 - 115				
Alkalinity, Total (As CaCO3)	1029	5.00	1000	0	103	85 - 115				

<b>LCSD</b>	Sample ID: <b>LCSD1-122022</b>	Units: <b>mg/L</b>	Analysis Date: <b>20-Dec-2022 21:35</b>							
Client ID:	Run ID: <b>ManTech01_424474</b>	SeqNo: <b>7043743</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Carbonate (As CaCO3)	1024	5.00	1000	0	102	85 - 115	1001	2.22	20	
Alkalinity, Total (As CaCO3)	1048	5.00	1000	0	105	85 - 115	1029	1.83	20	

<b>DUP</b>	Sample ID: <b>HS22120648-06DUP</b>	Units: <b>mg/L</b>	Analysis Date: <b>20-Dec-2022 21:52</b>							
Client ID:	Run ID: <b>ManTech01_424474</b>	SeqNo: <b>7043745</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	748.8	5.00					777.6	3.78	20	
Alkalinity, Carbonate (As CaCO3)	U	5.00					0	0	20	
Alkalinity, Hydroxide (As CaCO3)	U	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	748.8	5.00					777.6	3.78	20	

The following samples were analyzed in this batch: HS22120518-01

**Client:** PDC Energy  
**Project:** Bost 38C-8-L  
**WorkOrder:** HS22120518

**QUALIFIERS,  
ACRONYMS, UNITS**

<b>Qualifier</b>	<b>Description</b>
*	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

<b>Acronym</b>	<b>Description</b>
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

<b>Unit Reported</b>	<b>Description</b>
Date	
mg/L	Milligrams per Liter

**CERTIFICATIONS,ACCREDITATIONS & LICENSES**

<b>Agency</b>	<b>Number</b>	<b>Expire Date</b>
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: HS22120518

Date/Time Received: 08-Dec-2022 09:10

Client Name: PDC Energy 80620

Received by: Malcolm Burleson

Completed By: /S/ Nilesch D. Ranchod 08-Dec-2022 17:31 Reviewed by: /S/ Tyler Monroe 09-Dec-2022 13:40  
 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): 4.3uc/3.8c IR31

Cooler(s)/Kit(s): 49540

Date/Time sample(s) sent to storage: 12/08/2022 20:00

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:

Login Notes: 1L Amb Rec No ID/Date/ Time Logged per Chain

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:



# Chain of Custody Form

Page \_\_\_\_\_ of \_\_\_\_\_

HS22120518

PDC Energy  
Bost 38C-8-L



ALS Project Manager: \_\_\_\_\_

Customer Information		Project Information		Request for Analysis											
Purchase Order		Project Name	Bost 38C-8-L	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,SO4), Alk (T, CO3, HCO3), 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	<a href="mailto:max.trehus@pdce.com">max.trehus@pdce.com</a> <a href="mailto:Jennifer.Hakkarinen@pdce.com">Jennifer.Hakkarinen@pdce.com</a> <a href="mailto:jessica.iohannsen@pdce.com">jessica.iohannsen@pdce.com</a>	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	38C-8-L A	12/6/22	14:10	W	8	3	X										
2	38C-8-L A			W	1	3		X									
3	38C-8-L A			W	1	3			X								
4	38C-8-L A			W	1	3				X							
5	38C-8-L A			W	8	1					X						
6	38C-8-L B			W	8	1						X					
7	38C-8-L A			W	2	1							X				
8																	
9																	
10																	

Sampler(s): Please Print & Sign Max Trehus     
 Shipment Method: FedEx     
 Required Turnaround Time:  STD 10 Wk Days   
 5 Wk Days   
 2 Wk Days   
 24 Hour   
 Other \_\_\_\_\_     
 Results Due Date: \_\_\_\_\_

Relinquished by: <u>[Signature]</u>	Date: <u>12/7</u>	Time: <u>14:17</u>	Received by: <u>[Signature]</u>	Notes: <u>Facility ID: 478985</u>
Relinquished by: <u>[Signature]</u>	Date: <u>12/7/22</u>	Time: <u>16:30</u>	Received by (Laboratory): <u>[Signature]</u>	QC Package: (Check Box Below)
Logged by (Laboratory): _____	Date: _____	Time: _____	Checked by (Laboratory): _____	<input checked="" type="checkbox"/> Level II: Standard QC      TRRP-Checklist <input type="checkbox"/> Level III: Std QC + Raw Data      TRRP Level IV <input type="checkbox"/> Level IV: SW846 CLP-Like Other: _____

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental. Copyright 2013 by ALS Environmental

49504 DEC 08 2022

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

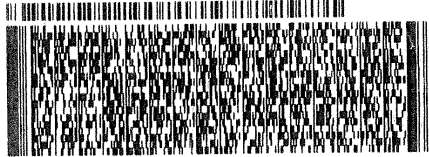
SHIP DATE: 07DEC22  
ACTWGT: 43.00 LB  
CAD: 0487862/CAFE3618  
DIMS: 23x14x13 IN  
BILL SENDER

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

49504

REC'D/ACT/4226

INV: PO: REF: DEPT:



TRK# 0201 6182 5243 3920

THU - 08 DEC 10:30A  
PRIORITY OVERNIGHT

**XA SGRA**

77099  
TX-US IAH

