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August 09, 2023

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

Work Order: **HS23071600**

Laboratory Results for: **Spur 04N**

Dear Jenifer Hakkarinen,

ALS Environmental received 1 sample(s) on Jul 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: DAYNA.FISHER

Tyler Monroe

Client: PDC Energy  
Project: Spur 04N  
Work Order: HS23071600

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS23071600-01	Spur 04N	Water		25-Jul-2023 12:00	26-Jul-2023 09:45	<input type="checkbox"/>

**Client:** PDC Energy  
**Project:** Spur 04N  
**Work Order:** HS23071600

**CASE NARRATIVE**

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**GC Semivolatiles by Method RSK-175****Batch ID: R443318**

- 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: 198271****Sample ID: Spur 04N (HS23071600-01)**

- 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: R443031**

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

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**GCMS Volatiles by Method SW8260****Batch ID: R442570****Sample ID: Spur 04N (HS23071600-01)**

- Lowest possible dilution due to matrix interference and high concentrations of non target analytes.

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**Metals by Method E200.8****Batch ID: 198657****Sample ID: HS23071809-21MS, HS23071809-22MS**

- MS and MSD are for an unrelated sample

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**WetChemistry by Method E300****Batch ID: R443305**

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

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**WetChemistry by Method SM2320B****Batch ID: R443268**

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

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**WetChemistry by Method M2540C****Batch ID: R442663**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
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Client: PDC Energy  
 Project: Spur 04N  
 Sample ID: Spur 04N  
 Collection Date: 25-Jul-2023 12:00

**ANALYTICAL REPORT**

WorkOrder:HS23071600  
 Lab ID:HS23071600-01  
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LOW LEVEL VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: FT		
Benzene	ND		500	ug/L	500	27-Jul-2023 23:13
Ethylbenzene	ND		500	ug/L	500	27-Jul-2023 23:13
m,p-Xylene	ND		1000	ug/L	500	27-Jul-2023 23:13
o-Xylene	ND		500	ug/L	500	27-Jul-2023 23:13
Toluene	ND		500	ug/L	500	27-Jul-2023 23:13
Xylenes, Total	ND		500	ug/L	500	27-Jul-2023 23:13
Surr: 1,2-Dichloroethane-d4	112		70-126	%REC	500	27-Jul-2023 23:13
Surr: 4-Bromofluorobenzene	92.6		77-113	%REC	500	27-Jul-2023 23:13
Surr: Dibromofluoromethane	104		77-123	%REC	500	27-Jul-2023 23:13
Surr: Toluene-d8	102		82-127	%REC	500	27-Jul-2023 23:13
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: PJM		
Gasoline Range Organics	200		25.0	mg/L	500	02-Aug-2023 15:43
Surr: 4-Bromofluorobenzene	80.1		70-123	%REC	500	02-Aug-2023 15:43
<b>DISSOLVED GASES BY RSK-175</b>		<b>Method:RSK-175</b>		Analyst: SAM		
Ethane	23.4		1.00	ug/L	1	05-Aug-2023 12:30
Methane	24.2		0.500	ug/L	1	05-Aug-2023 12:30
Propane	38.2		1.00	ug/L	1	05-Aug-2023 12:30
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3511 / 28-Jul-2023 Analyst: SAM		
TPH (Diesel Range)	1,100		52	mg/L	1000	28-Jul-2023 08:49
Surr: 2-Fluorobiphenyl	0	JS	60-135	%REC	1000	28-Jul-2023 08:49
<b>TOTAL METALS BY E200.8, REV 5.4, 1994</b>		<b>Method:E200.8</b>		Prep:E200.8 / 07-Aug-2023 Analyst: JC		
Calcium	1,880		25.0	mg/L	50	09-Aug-2023 14:44
Magnesium	2.50		1.00	mg/L	2	09-Aug-2023 14:42
Potassium	167		2.50	mg/L	5	08-Aug-2023 20:26
Sodium	228		0.400	mg/L	2	09-Aug-2023 14:42
<b>ANIONS BY E300.0, REV 2.1, 1993</b>		<b>Method:E300</b>		Analyst: TH		
Chloride	1,690		50.0	mg/L	100	06-Aug-2023 18:10
Sulfate	441		2.50	mg/L	5	06-Aug-2023 18:04
<b>TOTAL DISSOLVED SOLIDS BY SM2540C -2011</b>		<b>Method:M2540C</b>		Analyst: DC		
Total Dissolved Solids (Residue, Filterable)	22,400		10.0	mg/L	1	27-Jul-2023 13:30
<b>ALKALINITY BY SM 2320B-2011</b>		<b>Method:SM2320B</b>		Analyst: JAC		
Alkalinity, Bicarbonate (As CaCO3)	109		5.00	mg/L	1	04-Aug-2023 17:52
Alkalinity, Carbonate (As CaCO3)	58.6		5.00	mg/L	1	04-Aug-2023 17:52
Alkalinity, Total (As CaCO3)	167		5.00	mg/L	1	04-Aug-2023 17:52

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

Weight / Prep Log

Client: PDC Energy  
Project: Spur 04N  
WorkOrder: HS23071600

Batch ID: 198271	Start Date: 28 Jul 2023 07:30	End Date: 28 Jul 2023 07:30
Method: SW3511	Prep Code: 3511_DRO	

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23071600-01		32 (mL)	2 (mL)	0.0625	40 mL Amber

Batch ID: 198657	Start Date: 07 Aug 2023 13:30	End Date: 07 Aug 2023 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	
HS23071600-01		10 (mL)	10 (mL)	1	250 mL plastic, HNO3 to pH <2

**Client:** PDC Energy  
**Project:** Spur 04N  
**WorkOrder:** HS23071600

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
<b>Batch ID:</b> 198271 ( 0 )		<b>Test Name :</b> TPH DRO/ORO BY SW8015C			<b>Matrix:</b> Water	
HS23071600-01	Spur 04N	25 Jul 2023 12:00		28 Jul 2023 07:30	28 Jul 2023 08:49	1000
<b>Batch ID:</b> 198657 ( 0 )		<b>Test Name :</b> TOTAL METALS BY E200.8, REV 5.4, 1994			<b>Matrix:</b> Water	
HS23071600-01	Spur 04N	25 Jul 2023 12:00		07 Aug 2023 13:30	09 Aug 2023 14:44	50
HS23071600-01	Spur 04N	25 Jul 2023 12:00		07 Aug 2023 13:30	09 Aug 2023 14:42	2
HS23071600-01	Spur 04N	25 Jul 2023 12:00		07 Aug 2023 13:30	08 Aug 2023 20:26	5
<b>Batch ID:</b> R442570 ( 0 )		<b>Test Name :</b> LOW LEVEL VOLATILES BY SW8260C			<b>Matrix:</b> Water	
HS23071600-01	Spur 04N	25 Jul 2023 12:00			27 Jul 2023 23:13	500
<b>Batch ID:</b> R442663 ( 0 )		<b>Test Name :</b> TOTAL DISSOLVED SOLIDS BY SM2540C-2011			<b>Matrix:</b> Water	
HS23071600-01	Spur 04N	25 Jul 2023 12:00			27 Jul 2023 13:30	1
<b>Batch ID:</b> R443031 ( 0 )		<b>Test Name :</b> GASOLINE RANGE ORGANICS BY SW8015C			<b>Matrix:</b> Water	
HS23071600-01	Spur 04N	25 Jul 2023 12:00			02 Aug 2023 15:43	500
<b>Batch ID:</b> R443268 ( 0 )		<b>Test Name :</b> ALKALINITY BY SM 2320B-2011			<b>Matrix:</b> Water	
HS23071600-01	Spur 04N	25 Jul 2023 12:00			04 Aug 2023 17:52	1
<b>Batch ID:</b> R443305 ( 0 )		<b>Test Name :</b> ANIONS BY E300.0, REV 2.1, 1993			<b>Matrix:</b> Water	
HS23071600-01	Spur 04N	25 Jul 2023 12:00			06 Aug 2023 18:10	100
HS23071600-01	Spur 04N	25 Jul 2023 12:00			06 Aug 2023 18:04	5
<b>Batch ID:</b> R443318 ( 0 )		<b>Test Name :</b> DISSOLVED GASES BY RSK-175			<b>Matrix:</b> Water	
HS23071600-01	Spur 04N	25 Jul 2023 12:00			05 Aug 2023 12:30	1

**Client:** PDC Energy  
**Project:** Spur 04N  
**WorkOrder:** HS23071600

**QC BATCH REPORT**

Batch ID: 198271 ( 0 )		Instrument: FID-16		Method: TPH DRO/ORO BY SW8015C						
<b>MBLK</b>	Sample ID: <b>MBLK-198271</b>	Units: <b>mg/L</b>		Analysis Date: <b>02-Aug-2023 02:06</b>						
Client ID:	Run ID: <b>FID-16_442984</b>		SeqNo: <b>7466982</b>		PrepDate: <b>28-Jul-2023</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	ND	0.050								
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.04521</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>75.3</i>	<i>60 - 135</i>				
<b>LCS</b>	Sample ID: <b>LCS-198271</b>	Units: <b>mg/L</b>		Analysis Date: <b>02-Aug-2023 02:36</b>						
Client ID:	Run ID: <b>FID-16_442984</b>		SeqNo: <b>7466983</b>		PrepDate: <b>28-Jul-2023</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6532	0.050	0.6	0	109	70 - 130				
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.06498</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>108</i>	<i>60 - 135</i>				
<b>LCSD</b>	Sample ID: <b>LCSD-198271</b>	Units: <b>mg/L</b>		Analysis Date: <b>02-Aug-2023 03:05</b>						
Client ID:	Run ID: <b>FID-16_442984</b>		SeqNo: <b>7466984</b>		PrepDate: <b>28-Jul-2023</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6705	0.050	0.6	0	112	70 - 130	0.6532	2.61	20	
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.0691</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>115</i>	<i>60 - 135</i>	<i>0.06498</i>	<i>6.14</i>	<i>20</i>	

The following samples were analyzed in this batch: HS23071600-01

Client: PDC Energy  
 Project: Spur 04N  
 WorkOrder: HS23071600

## QC BATCH REPORT

Batch ID: R443318 ( 0 )		Instrument: FID-4		Method: DISSOLVED GASES BY RSK-175					
<b>MBLK</b>	Sample ID: <b>MBLK-230805</b>	Units: <b>ug/L</b>		Analysis Date: <b>05-Aug-2023 10:58</b>					
Client ID:	Run ID: <b>FID-4_443318</b>	SeqNo: <b>7475617</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	ND	1.00							
Methane	ND	0.500							
Propane	ND	1.00							

  

<b>LCS</b>	Sample ID: <b>LCS-230805</b>	Units: <b>ug/L</b>		Analysis Date: <b>05-Aug-2023 11:22</b>					
Client ID:	Run ID: <b>FID-4_443318</b>	SeqNo: <b>7475618</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	18.81	1.00	18.04	0	104	75 - 125			
Methane	8.073	0.500	9.647	0	83.7	75 - 125			
Propane	31.83	1.00	26.46	0	120	75 - 125			

  

<b>LCSD</b>	Sample ID: <b>LCSD-230805</b>	Units: <b>ug/L</b>		Analysis Date: <b>05-Aug-2023 11:46</b>					
Client ID:	Run ID: <b>FID-4_443318</b>	SeqNo: <b>7475619</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	18.97	1.00	18.04	0	105	75 - 125	18.81	0.876	30
Methane	7.882	0.500	9.647	0	81.7	75 - 125	8.073	2.39	30
Propane	31.61	1.00	26.46	0	119	75 - 125	31.83	0.696	30

The following samples were analyzed in this batch: HS23071600-01



Client: PDC Energy  
 Project: Spur 04N  
 WorkOrder: HS23071600

## QC BATCH REPORT

Batch ID: R443031 ( 0 )		Instrument: FID-20		Method: GASOLINE RANGE ORGANICS BY SW8015C					
<b>MBLK</b>	Sample ID: <b>MBLK-230802</b>	Units: <b>mg/L</b>		Analysis Date: <b>02-Aug-2023 14:21</b>					
Client ID:	Run ID: <b>FID-20_443031</b>	SeqNo: <b>7468530</b>		PrepDate:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Gasoline Range Organics	ND	0.0500							
Surr: 4-Bromofluorobenzene	0.07379	0.00500	0.1	0	73.8	70 - 121			

  

<b>LCS</b>	Sample ID: <b>LCS-230802</b>	Units: <b>mg/L</b>		Analysis Date: <b>02-Aug-2023 13:54</b>					
Client ID:	Run ID: <b>FID-20_443031</b>	SeqNo: <b>7468528</b>		PrepDate:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Gasoline Range Organics	1.197	0.0500	1	0	120	76 - 124			
Surr: 4-Bromofluorobenzene	0.1011	0.00500	0.1	0	101	52 - 138			

  

<b>LCSD</b>	Sample ID: <b>LCSD-230802</b>	Units: <b>mg/L</b>		Analysis Date: <b>02-Aug-2023 14:07</b>					
Client ID:	Run ID: <b>FID-20_443031</b>	SeqNo: <b>7468529</b>		PrepDate:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Gasoline Range Organics	1.2	0.0500	1	0	120	76 - 124	1.197	0.217	20
Surr: 4-Bromofluorobenzene	0.1034	0.00500	0.1	0	103	52 - 138	0.1011	2.25	20

The following samples were analyzed in this batch: HS23071600-01

**Client:** PDC Energy  
**Project:** Spur 04N  
**WorkOrder:** HS23071600

**QC BATCH REPORT**

Batch ID: 198657 ( 0 )		Instrument: ICPMS06		Method: TOTAL METALS BY E200.8, REV 5.4, 1994					
<b>MBLK</b>	Sample ID: <b>MBLK-198657</b>	Units: <b>ug/L</b>		Analysis Date: <b>08-Aug-2023 20:10</b>					
Client ID:	Run ID: <b>ICPMS06_443339</b>	SeqNo: <b>7479235</b>		PrepDate: <b>07-Aug-2023</b>		DF: <b>1</b>			
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							

<b>LCS</b>	Sample ID: <b>LCS-198657</b>	Units: <b>ug/L</b>		Analysis Date: <b>08-Aug-2023 20:12</b>					
Client ID:	Run ID: <b>ICPMS06_443339</b>	SeqNo: <b>7479236</b>		PrepDate: <b>07-Aug-2023</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Calcium	5049	500	5000	0	101	85 - 115			
Magnesium	4980	500	5000	0	99.6	85 - 115			
Potassium	4910	500	5000	0	98.2	85 - 115			
Sodium	5052	200	5000	0	101	85 - 115			

<b>MS</b>	Sample ID: <b>HS23071809-22MS</b>	Units: <b>ug/L</b>		Analysis Date: <b>08-Aug-2023 20:16</b>					
Client ID:	Run ID: <b>ICPMS06_443339</b>	SeqNo: <b>7479238</b>		PrepDate: <b>07-Aug-2023</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Calcium	12530	500	5000	7698	96.7	70 - 130			
Magnesium	5145	500	5000	615	90.6	70 - 130			
Potassium	13200	500	5000	8495	94.2	70 - 130			
Sodium	153100	200	5000	147700	106	70 - 130			O

<b>MS</b>	Sample ID: <b>HS23071809-21MS</b>	Units: <b>ug/L</b>		Analysis Date: <b>08-Aug-2023 19:09</b>					
Client ID:	Run ID: <b>ICPMS06_443339</b>	SeqNo: <b>7479215</b>		PrepDate: <b>07-Aug-2023</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Calcium	165500	500	5000	166700	-25.2	70 - 130			SO
Magnesium	14950	500	5000	9787	103	70 - 130			
Potassium	13440	500	5000	8429	100	70 - 130			
Sodium	369300	200	5000	369500	-4.07	70 - 130			SEO

**Client:** PDC Energy  
**Project:** Spur 04N  
**WorkOrder:** HS23071600

**QC BATCH REPORT**

Batch ID: 198657 ( 0 )		Instrument: ICPMS06		Method: TOTAL METALS BY E200.8, REV 5.4, 1994						
<b>MSD</b>	Sample ID: HS23071809-22MSD	Units: ug/L		Analysis Date: 08-Aug-2023 20:18						
Client ID:	Run ID: ICPMS06_443339	SeqNo: 7479239		PrepDate: 07-Aug-2023		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	12760	500	5000	7698	101	70 - 130	12530	1.78	20	
Magnesium	5248	500	5000	615	92.7	70 - 130	5145	1.99	20	
Potassium	13520	500	5000	8495	101	70 - 130	13200	2.37	20	
Sodium	155400	200	5000	147700	154	70 - 130	153100	1.53	20	SO
<b>MSD</b>	Sample ID: HS23071809-21MSD	Units: ug/L		Analysis Date: 08-Aug-2023 19:11						
Client ID:	Run ID: ICPMS06_443339	SeqNo: 7479216		PrepDate: 07-Aug-2023		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	166400	500	5000	166700	-6.15	70 - 130	165500	0.574	20	SO
Magnesium	15020	500	5000	9787	105	70 - 130	14950	0.46	20	
Potassium	13360	500	5000	8429	98.6	70 - 130	13440	0.59	20	
Sodium	370600	200	5000	369500	21.8	70 - 130	369300	0.35	20	SEO
The following samples were analyzed in this batch: HS23071600-01										

Client: PDC Energy  
 Project: Spur 04N  
 WorkOrder: HS23071600

## QC BATCH REPORT

Batch ID: R442570 ( 0 )		Instrument: VOA10		Method: LOW LEVEL VOLATILES BY SW8260C					
<b>MBLK</b>	Sample ID: MBLKW-230727	Units: ug/L		Analysis Date: 27-Jul-2023 21:28					
Client ID:	Run ID: VOA10_442570	SeqNo: 7457281		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	3.0							
Surr: 1,2-Dichloroethane-d4	53.88	1.0	50	0	108	70 - 123			
Surr: 4-Bromofluorobenzene	45.94	1.0	50	0	91.9	77 - 113			
Surr: Dibromofluoromethane	52.09	1.0	50	0	104	73 - 126			
Surr: Toluene-d8	50.62	1.0	50	0	101	81 - 120			

  

<b>LCS</b>	Sample ID: VLCSW-230727	Units: ug/L		Analysis Date: 27-Jul-2023 20:46					
Client ID:	Run ID: VOA10_442570	SeqNo: 7457280		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	19.81	1.0	20	0	99.1	74 - 120			
Ethylbenzene	20.47	1.0	20	0	102	77 - 117			
m,p-Xylene	41.16	2.0	40	0	103	77 - 122			
o-Xylene	19.93	1.0	20	0	99.6	75 - 119			
Toluene	21.97	1.0	20	0	110	77 - 118			
Xylenes, Total	61.09	3.0	60	0	102	75 - 122			
Surr: 1,2-Dichloroethane-d4	56.7	1.0	50	0	113	70 - 123			
Surr: 4-Bromofluorobenzene	46.41	1.0	50	0	92.8	77 - 113			
Surr: Dibromofluoromethane	52.67	1.0	50	0	105	73 - 126			
Surr: Toluene-d8	52.15	1.0	50	0	104	81 - 120			

Client: PDC Energy  
 Project: Spur 04N  
 WorkOrder: HS23071600

## QC BATCH REPORT

Batch ID: R442570 ( 0 )		Instrument: VOA10		Method: LOW LEVEL VOLATILES BY SW8260C					
<b>MS</b>		Sample ID: HS23071531-03MS		Units: ug/L		Analysis Date: 27-Jul-2023 22:31			
Client ID:		Run ID: VOA10_442570		SeqNo: 7457284		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	16.58	1.0	20	0	82.9	70 - 127			
Ethylbenzene	16.56	1.0	20	0	82.8	70 - 124			
m,p-Xylene	32.73	2.0	40	0	81.8	70 - 130			
o-Xylene	15.94	1.0	20	0	79.7	70 - 124			
Toluene	17.8	1.0	20	0	89.0	70 - 123			
Xylenes, Total	48.67	3.0	60	0	81.1	70 - 130			
Surr: 1,2-Dichloroethane-d4	54.55	1.0	50	0	109	70 - 126			
Surr: 4-Bromofluorobenzene	47.4	1.0	50	0	94.8	77 - 113			
Surr: Dibromofluoromethane	52.33	1.0	50	0	105	77 - 123			
Surr: Toluene-d8	52.16	1.0	50	0	104	82 - 127			

  

<b>MSD</b>		Sample ID: HS23071531-03MSD		Units: ug/L		Analysis Date: 27-Jul-2023 22:52			
Client ID:		Run ID: VOA10_442570		SeqNo: 7457285		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	16.22	1.0	20	0	81.1	70 - 127	16.58	2.19	20
Ethylbenzene	16.63	1.0	20	0	83.2	70 - 124	16.56	0.439	20
m,p-Xylene	33.18	2.0	40	0	83.0	70 - 130	32.73	1.37	20
o-Xylene	15.36	1.0	20	0	76.8	70 - 124	15.94	3.65	20
Toluene	17.59	1.0	20	0	88.0	70 - 123	17.8	1.18	20
Xylenes, Total	48.55	3.0	60	0	80.9	70 - 130	48.67	0.248	20
Surr: 1,2-Dichloroethane-d4	54.87	1.0	50	0	110	70 - 126	54.55	0.591	20
Surr: 4-Bromofluorobenzene	47.44	1.0	50	0	94.9	77 - 113	47.4	0.0977	20
Surr: Dibromofluoromethane	51.4	1.0	50	0	103	77 - 123	52.33	1.8	20
Surr: Toluene-d8	52.02	1.0	50	0	104	82 - 127	52.16	0.268	20

The following samples were analyzed in this batch: HS23071600-01

**Client:** PDC Energy  
**Project:** Spur 04N  
**WorkOrder:** HS23071600

**QC BATCH REPORT**

Batch ID: R442663 ( 0 )		Instrument: Balance1		Method: TOTAL DISSOLVED SOLIDS BY SM2540C-2011						
MBLK	Sample ID: WMBLK-07272023	Units: mg/L		Analysis Date: 27-Jul-2023 13:30						
Client ID:	Run ID: Balance1_442663	SeqNo: 7459175		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-07272023	Units: mg/L		Analysis Date: 27-Jul-2023 13:30						
Client ID:	Run ID: Balance1_442663	SeqNo: 7459174		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)		1086	10.0	1000	0	109	85 - 115			
DUP	Sample ID: HS23071525-06DUP	Units: mg/L		Analysis Date: 27-Jul-2023 13:30						
Client ID:	Run ID: Balance1_442663	SeqNo: 7459169		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)		1400	10.0				1404	0.285	20	
DUP	Sample ID: HS23071382-04DUP	Units: mg/L		Analysis Date: 27-Jul-2023 13:30						
Client ID:	Run ID: Balance1_442663	SeqNo: 7459159		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)		1016	10.0				1020	0.393	20	
The following samples were analyzed in this batch: HS23071600-01										

**Client:** PDC Energy  
**Project:** Spur 04N  
**WorkOrder:** HS23071600

**QC BATCH REPORT**

Batch ID: R443268 ( 0 )		Instrument: ManTech01		Method: ALKALINITY BY SM 2320B-2011					
<b>MBLK</b>	Sample ID: MBLK-R443268	Units: mg/L		Analysis Date: 04-Aug-2023 17:52					
Client ID:	Run ID: ManTech01_443268	SeqNo: 7474318		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							

  

<b>LCS</b>	Sample ID: LCS-R443268	Units: mg/L		Analysis Date: 04-Aug-2023 17:52					
Client ID:	Run ID: ManTech01_443268	SeqNo: 7474317		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)	1009	5.00	1000	0	101	85 - 115			
Alkalinity, Total (As CaCO3)	1009	5.00	1000	0	101	85 - 115			

  

<b>LCSD</b>	Sample ID: LCSD-R443268	Units: mg/L		Analysis Date: 04-Aug-2023 17:52					
Client ID:	Run ID: ManTech01_443268	SeqNo: 7474316		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)	1002	5.00	1000	0	100	85 - 115	1009	0.696	20
Alkalinity, Total (As CaCO3)	1031	5.00	1000	0	103	85 - 115	1009	2.1	20

  

<b>DUP</b>	Sample ID: HS23071588-01DUP	Units: mg/L		Analysis Date: 04-Aug-2023 17:52					
Client ID:	Run ID: ManTech01_443268	SeqNo: 7474319		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)	492.4	5.00					495.2	0.569	20
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20
Alkalinity, Total (As CaCO3)	492.4	5.00					495.2	0.569	20

The following samples were analyzed in this batch: HS23071600-01

**Client:** PDC Energy  
**Project:** Spur 04N  
**WorkOrder:** HS23071600

**QC BATCH REPORT**

Batch ID: R443305 ( 0 )		Instrument: ICS-Integrion		Method: ANIONS BY E300.0, REV 2.1, 1993						
<b>MBLK</b>	Sample ID: MBLK	Units: mg/L		Analysis Date: 06-Aug-2023 16:13						
Client ID:	Run ID: ICS-Integrion_443305		SeqNo: 7475425		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								

  

<b>LCS</b>	Sample ID: LCS	Units: mg/L		Analysis Date: 06-Aug-2023 16:31						
Client ID:	Run ID: ICS-Integrion_443305		SeqNo: 7475426		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.18	0.500	20	0	101	90 - 110				
Sulfate	22	0.500	20	0	110	90 - 110				

  

<b>MS</b>	Sample ID: HS23071809-21MS	Units: mg/L		Analysis Date: 06-Aug-2023 16:42						
Client ID:	Run ID: ICS-Integrion_443305		SeqNo: 7475428		PrepDate:		DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	701.5	5.00	100	618.5	83.0	80 - 120				O
Sulfate	344.1	5.00	100	246.2	97.9	80 - 120				

  

<b>MSD</b>	Sample ID: HS23071809-21MSD	Units: mg/L		Analysis Date: 06-Aug-2023 16:48						
Client ID:	Run ID: ICS-Integrion_443305		SeqNo: 7475429		PrepDate:		DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	704.7	5.00	100	618.5	86.2	80 - 120	701.5	0.461	20	O
Sulfate	346.6	5.00	100	246.2	100	80 - 120	344.1	0.721	20	

The following samples were analyzed in this batch: HS23071600-01



**Client:** PDC Energy  
**Project:** Spur 04N  
**WorkOrder:** HS23071600

**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>
mg/L	Milligrams per Liter

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**CERTIFICATIONS,ACCREDITATIONS & LICENSES**

Agency	Number	Expire Date
Arkansas	88-00356	27-Mar-2024
California	2919; 2024	30-Apr-2024
Dept of Defense	L23-358	31-May-2025
Florida	E87611-38	30-Jun-2024
Illinois	2000322023-11	30-Jun-2024
Kansas	E-10352 2023-2024	31-Jul-2024
Louisiana	03087-2023	30-Jun-2024
Maryland	343; 2023-2024	30-Jun-2024
North Carolina	624-2023	31-Dec-2023
North Dakota	R-193 2023-2024	30-Apr-2024
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-23-31	30-Apr-2024
Utah	TX026932023-14	31-Jul-2024

## Sample Receipt Checklist

Work Order ID: HS23071600

Date/Time Received: **26-Jul-2023 09:45**

Client Name: PDC Energy 80203

Received by: **Paresh M. Giga**

<b>Completed By:</b> <u>/S/ Paresh M. Giga</u>	26-Jul-2023 13:42	<b>Reviewed by:</b> <u>/S/ Tyler Monroe</u>	02-Aug-2023 11:17
eSignature	Date/Time	eSignature	Date/Time

Matrices: **Water**Carrier name: **FedEx First Overnight**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	1 Page(s)
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	COC IDs:none
Samplers name present on COC?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	3.8C/3.7C U/c IR31		
Cooler(s)/Kit(s):	51079		
Date/Time sample(s) sent to storage:	7/26/23 13:55		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input checked="" 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: All vials have headspace >6mm.  
Proceed per client note

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

**ALS Environmental**965 E 11th St  
Loveland, CO 80537  
PH: 970-305-1648**Chain-of-Custody**

WORKORDER #

<b>SAMPLER</b> Jeff Braden		<b>DATE</b>		<b>PAGE</b> 1 of 1												
<b>PROJECT NAME</b> Spur 04N	<b>FACILITY ID</b> 123-50999	<b>TURNAROUND</b>		<b>DISPOSAL</b> By Lab or Return to Client												
<b>PROJECT No.</b> 09C2073467	<b>EDD FORMAT</b> COGCC EDD, LTE	<div>Propane Dissolved Methane, Ethane, Propane BTX &amp; TPH GRO TPH DRO Alkalinity, Carbonate, Bicarbonate, Total Total Cations - see comments Total Anions - see comments Total Dissolved Solids</div>														
<b>PDC E</b> Bradenhead Sampling	<b>PURCHASE ORDER</b> N/A															
<b>COMPANY NAME</b> PDC Energy	<b>BILL TO COMPANY</b> PDC Energy															
<b>SEND REPORT TO</b> Jenifer Hakkarinen	<b>INVOICE ATTN TO</b> Jenifer Hakkarinen															
<b>ADDRESS</b> 1775 Sherman ST, Suite 3000	<b>ADDRESS</b> 1775 Sherman Street, Suite 3000															
<b>CITY / STATE / ZIP</b> Denver, CO 80203	<b>CITY / STATE / ZIP</b> Denver, Colorado															
<b>PHONE</b> 303-860-5815	<b>PHONE</b> 303.860.5815															
<b>FAX</b>	<b>FAX</b>															
<b>E-MAIL</b> jenifer.hakkarinen@pdce.com jessica.johannsen@pdce.com jbraden@ensolum.com	<b>E-MAIL</b> jenifer.hakkarinen@pdce.com															
<b>Lab ID</b>	<b>Field ID</b>			<b>Matrix</b>	<b>Sample Date</b>	<b>Sample Time</b>	<b># Bottles</b>	<b>Pres.</b>	<b>QC</b>	<b>RSK 175</b>	<b>SW8260_25</b>	<b>SW8015M</b>	<b>SM2320B</b>	<b>EPA200.7/208</b>	<b>EPA 300.0</b>	<b>SM2540C</b>
	Spur 04N	W	7/25/23	1200	11	1,2	II	X	X	X	X	X	X	X		

**HS23071600**  
PDC Energy  
Spur 04N

\*Time Zone: MST

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.

<b>Comments:</b>	<b>Cations/Anions:</b>	<b>QC PACKAGE (check below)</b>	<b>RELINQUISHED BY</b>	<b>SIGNATURE</b>	<b>PRINTED NAME</b>	<b>DATE</b>	<b>TIME</b>
Calcium, Chloride, Magnesium, Potassium, Sodium, Sulfate Samples analyzed per COGCC Bradenhead Sampling Program  * headspace in all VOA's please proceed with analytical  5019 380 431 etc - 0.10		<input checked="" type="checkbox"/> LEVEL II (Standard QC)	RELINQUISHED BY		Jeff Braden	7/25/23	1410
		<input type="checkbox"/> LEVEL III (Std QC + forms)	RECEIVED BY		Amy Kephart	7/25/23	1410
		<input type="checkbox"/> LEVEL IV (Std QC + forms + raw data)	RELINQUISHED BY		Amy Kephart	7/25/23	1400
		<input type="checkbox"/>	RECEIVED BY		P. G. ...	7/26/23	09:45
<b>Preservative Key:</b> 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035			RELINQUISHED BY				
			RECEIVED BY				

TRK# 6182 5244 3163  
0201

WED - 26 JUL 8:00A  
FIRST OVERNIGHT

**X1 SGRA**

77099  
TX-US IAH

Post # 167077-494 MTN EXP 08/22

