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November 21, 2022

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

Work Order: **HS22101645**

Laboratory Results for: **Josephine 19N-204**

Dear Jenifer Hakkarinen,

ALS Environmental received 1 sample(s) on Oct 28, 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: DAYNA.FISHER

Tyler Monroe

Client: PDC Energy
Project: Josephine 19N-204
Work Order: HS22101645

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22101645-01	Josephine 19N-204	Water		27-Oct-2022 11:20	28-Oct-2022 09:35	<input type="checkbox"/>

Client: PDC Energy
Project: Josephine 19N-204
Work Order: HS22101645

CASE NARRATIVE

GC Semivolatiles by Method RSK-175**Batch ID: R421352**

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

GC Semivolatiles by Method SW8015M**Batch ID: 185498****Sample ID: Josephine 19N-204 (HS22101645-01)**

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

GC Volatiles by Method SW8015**Batch ID: R420717****Sample ID: Josephine 19N-204 (HS22101645-01)**

- One or more surrogate recoveries were above the upper control limits. The sample results may be biased high. This was confirmed by reanalysis.

GCMS Volatiles by Method SW8260**Batch ID: R421282****Sample ID: Josephine 19N-204 (HS22101645-01)**

- Lowest practical dilution due to foamy matrix.

Sample ID: HS22110039-01MS

- MS and MSD are for an unrelated sample

Metals by Method E200.8**Batch ID: 186039****Sample ID: HS22110301-01MS**

- MS and MSD are for an unrelated sample (Sodium)

Sample ID: HS22110308-04MSD

- MSD is for an unrelated sample (Calcium)

WetChemistry by Method E300**Batch ID: R422227**

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

WetChemistry by Method SM2320B**Batch ID: R421449**

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

Client: PDC Energy
Project: Josephine 19N-204
Work Order: HS22101645

CASE NARRATIVE

WetChemistry by Method M2540C

Batch ID: R420965

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

Client: PDC Energy
 Project: Josephine 19N-204
 Sample ID: Josephine 19N-204
 Collection Date: 27-Oct-2022 11:20

ANALYTICAL REPORT

WorkOrder:HS22101645
 Lab ID:HS22101645-01
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	3,500		50	ug/L	50	07-Nov-2022 16:06
Ethylbenzene	220		50	ug/L	50	07-Nov-2022 16:06
m,p-Xylene	1,700		100	ug/L	50	07-Nov-2022 16:06
o-Xylene	510		50	ug/L	50	07-Nov-2022 16:06
Toluene	5,300		50	ug/L	50	07-Nov-2022 16:06
Xylenes, Total	2,200		50	ug/L	50	07-Nov-2022 16:06
Surr: 1,2-Dichloroethane-d4	101		70-126	%REC	50	07-Nov-2022 16:06
Surr: 4-Bromofluorobenzene	99.0		77-113	%REC	50	07-Nov-2022 16:06
Surr: Dibromofluoromethane	103		77-123	%REC	50	07-Nov-2022 16:06
Surr: Toluene-d8	95.7		82-127	%REC	50	07-Nov-2022 16:06
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: FT		
Gasoline Range Organics	55.7		2.50	mg/L	50	01-Nov-2022 15:37
Surr: 4-Bromofluorobenzene	179	S	70-123	%REC	50	01-Nov-2022 15:37
DISSOLVED GASES BY RSK-175		Method:RSK-175		Analyst: PPM		
Ethane	2,640		200	ug/L	200	07-Nov-2022 13:21
Methane	3,670		100	ug/L	200	07-Nov-2022 13:21
Propane	2,300		200	ug/L	200	07-Nov-2022 13:21
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3511 / 31-Oct-2022		Analyst: PPM
DRO (>C10 - C28)	37		0.50	mg/L	10	08-Nov-2022 08:20
Surr: 2-Fluorobiphenyl	768	S	60-135	%REC	10	08-Nov-2022 08:20
TOTAL METALS BY E200.8, REV 5.4, 1994		Method:E200.8		Prep:E200.8 / 10-Nov-2022		Analyst: JHD
Calcium	16.3		5.00	mg/L	1	10-Nov-2022 21:02
Magnesium	ND		5.00	mg/L	1	10-Nov-2022 21:02
Potassium	2,570		25.0	mg/L	5	10-Nov-2022 20:29
Sodium	2,360		10.0	mg/L	5	10-Nov-2022 20:29
ANIONS BY E300.0, REV 2.1, 1993		Method:E300		Analyst: TH		
Chloride	319		5.00	mg/L	10	18-Nov-2022 16:31
Sulfate	1,820		250	mg/L	500	18-Nov-2022 16:36
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		Method:M2540C		Analyst: CWG		
Total Dissolved Solids (Residue, Filterable)	12,500		10.0	mg/L	1	02-Nov-2022 22:20
ALKALINITY BY SM 2320B-2011		Method:SM2320B		Analyst: JAC		
Alkalinity, Bicarbonate (As CaCO3)	ND		50.0	mg/L	10	09-Nov-2022 01:05
Alkalinity, Carbonate (As CaCO3)	2,040		50.0	mg/L	10	09-Nov-2022 01:05
Alkalinity, Total (As CaCO3)	7,650		50.0	mg/L	10	09-Nov-2022 01:05

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

Weight / Prep Log

Client: PDC Energy
Project: Josephine 19N-204
WorkOrder: HS22101645

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

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22101645-01		32.69 (mL)	2 (mL)	0.06118	40 mL Amber

Batch ID: 186039	Start Date: 10 Nov 2022 10:00	End Date: 10 Nov 2022 14:00
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	
HS22101645-01		1 (mL)	10 (mL)	10	250 mL plastic, HNO3 to pH <2

Client: PDC Energy
Project: Josephine 19N-204
WorkOrder: HS22101645

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 185498 (0)		Test Name : TPH DRO/ORO BY SW8015C			Matrix: Water	
HS22101645-01	Josephine 19N-204	27 Oct 2022 11:20		31 Oct 2022 09:53	08 Nov 2022 08:20	10
Batch ID: 186039 (0)		Test Name : TOTAL METALS BY E200.8, REV 5.4, 1994			Matrix: Water	
HS22101645-01	Josephine 19N-204	27 Oct 2022 11:20		10 Nov 2022 10:00	10 Nov 2022 21:02	1
HS22101645-01	Josephine 19N-204	27 Oct 2022 11:20		10 Nov 2022 10:00	10 Nov 2022 20:29	5
Batch ID: R420717 (0)		Test Name : GASOLINE RANGE ORGANICS BY SW8015C			Matrix: Water	
HS22101645-01	Josephine 19N-204	27 Oct 2022 11:20			01 Nov 2022 15:37	50
Batch ID: R420965 (0)		Test Name : TOTAL DISSOLVED SOLIDS BY SM2540C-2011			Matrix: Water	
HS22101645-01	Josephine 19N-204	27 Oct 2022 11:20			02 Nov 2022 22:20	1
Batch ID: R421282 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22101645-01	Josephine 19N-204	27 Oct 2022 11:20			07 Nov 2022 16:06	50
Batch ID: R421352 (0)		Test Name : DISSOLVED GASES BY RSK-175			Matrix: Water	
HS22101645-01	Josephine 19N-204	27 Oct 2022 11:20			07 Nov 2022 13:21	200
Batch ID: R421449 (0)		Test Name : ALKALINITY BY SM 2320B-2011			Matrix: Water	
HS22101645-01	Josephine 19N-204	27 Oct 2022 11:20			09 Nov 2022 01:05	10
Batch ID: R422227 (0)		Test Name : ANIONS BY E300.0, REV 2.1, 1993			Matrix: Water	
HS22101645-01	Josephine 19N-204	27 Oct 2022 11:20			18 Nov 2022 16:36	500
HS22101645-01	Josephine 19N-204	27 Oct 2022 11:20			18 Nov 2022 16:31	10

Client: PDC Energy
Project: Josephine 19N-204
WorkOrder: HS22101645

QC BATCH REPORT

Batch ID: 185498 (0)		Instrument: FID-16		Method: TPH DRO/ORO BY SW8015C					
MBLK	Sample ID: MBLK-185498	Units: mg/L		Analysis Date: 07-Nov-2022 13:17					
Client ID:	Run ID: FID-16_421293		SeqNo: 6968129		PrepDate: 31-Oct-2022		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
DRO (>C10 - C28)	ND	0.050							
Surr: 2-Fluorobiphenyl	0.04935	0.0050	0.06	0	82.3	60 - 135			
LCS	Sample ID: LCS-185498	Units: mg/L		Analysis Date: 07-Nov-2022 13:47					
Client ID:	Run ID: FID-16_421293		SeqNo: 6968130		PrepDate: 31-Oct-2022		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
DRO (>C10 - C28)	0.5713	0.050	0.6	0	95.2	70 - 130			
Surr: 2-Fluorobiphenyl	0.06694	0.0050	0.06	0	112	60 - 135			
LCSD	Sample ID: LCSD-185498	Units: mg/L		Analysis Date: 07-Nov-2022 14:16					
Client ID:	Run ID: FID-16_421293		SeqNo: 6968131		PrepDate: 31-Oct-2022		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
DRO (>C10 - C28)	0.5094	0.050	0.6	0	84.9	70 - 130	0.5713	11.5	20
Surr: 2-Fluorobiphenyl	0.06654	0.0050	0.06	0	111	60 - 135	0.06694	0.595	20
The following samples were analyzed in this batch: HS22101645-01									

Client: PDC Energy
 Project: Josephine 19N-204
 WorkOrder: HS22101645

QC BATCH REPORT

Batch ID: R421352 (0)		Instrument: FID-4		Method: DISSOLVED GASES BY RSK-175					
MBLK	Sample ID: MBLK-221107	Units: ug/L		Analysis Date: 07-Nov-2022 11:34					
Client ID:	Run ID: FID-4_421352	SeqNo: 6969312		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	ND	1.00							
Methane	ND	0.500							
Propane	ND	1.00							

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

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

The following samples were analyzed in this batch: HS22101645-01

Client: PDC Energy
 Project: Josephine 19N-204
 WorkOrder: HS22101645

QC BATCH REPORT

Batch ID: R420717 (0)		Instrument: FID-20		Method: GASOLINE RANGE ORGANICS BY SW8015C						
MBLK	Sample ID: MBLK-221101	Units: mg/L		Analysis Date: 01-Nov-2022 10:41						
Client ID:	Run ID: FID-20_420717		SeqNo: 6953467		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	ND	0.0500								
Surr: 4-Bromofluorobenzene	0.1127	0.00500	0.1	0	113	70 - 121				
LCS	Sample ID: LCS-221101	Units: mg/L		Analysis Date: 01-Nov-2022 10:10						
Client ID:	Run ID: FID-20_420717		SeqNo: 6953466		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.9667	0.0500	1	0	96.7	76 - 124				
Surr: 4-Bromofluorobenzene	0.0962	0.00500	0.1	0	96.2	52 - 138				
LCSD	Sample ID: LCSD-221101	Units: mg/L		Analysis Date: 01-Nov-2022 10:25						
Client ID:	Run ID: FID-20_420717		SeqNo: 6953466		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8654	0.0500	1	0	86.5	76 - 124	0.9667	11.1	20	
Surr: 4-Bromofluorobenzene	0.08468	0.00500	0.1	0	84.7	52 - 138	0.0962	12.7	20	

The following samples were analyzed in this batch: HS22101645-01

Client: PDC Energy
Project: Josephine 19N-204
WorkOrder: HS22101645

QC BATCH REPORT

Batch ID: 186039 (0)		Instrument: ICPMS07		Method: TOTAL METALS BY E200.8, REV 5.4, 1994					
MBLK	Sample ID: MBLK-186039	Units: ug/L		Analysis Date: 10-Nov-2022 20:10					
Client ID:	Run ID: ICPMS07_421549	SeqNo: 6975591		PrepDate: 10-Nov-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	ND	500							
Magnesium	ND	500							
Potassium	ND	500							
Sodium	ND	200							

LCS	Sample ID: LCS-186039	Units: ug/L		Analysis Date: 10-Nov-2022 20:12					
Client ID:	Run ID: ICPMS07_421549	SeqNo: 6975592		PrepDate: 10-Nov-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	5042	500	5000	0	101	85 - 115			
Magnesium	5253	500	5000	0	105	85 - 115			
Potassium	5247	500	5000	0	105	85 - 115			
Sodium	5058	200	5000	0	101	85 - 115			

MS	Sample ID: HS22110308-04MS	Units: ug/L		Analysis Date: 11-Nov-2022 13:40					
Client ID:	Run ID: ICPMS07_421658	SeqNo: 6977491		PrepDate: 10-Nov-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	143800	500	5000	137600	124	70 - 130			O
Magnesium	12690	500	5000	7592	102	70 - 130			
Potassium	12850	500	5000	7724	102	70 - 130			
Sodium	18440	200	5000	13030	108	70 - 130			

MS	Sample ID: HS22110301-01MS	Units: ug/L		Analysis Date: 10-Nov-2022 20:15					
Client ID:	Run ID: ICPMS07_421549	SeqNo: 6975594		PrepDate: 10-Nov-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	33540	500	5000	27340	124	70 - 130			O
Magnesium	15190	500	5000	9793	108	70 - 130			
Potassium	11890	500	5000	6510	108	70 - 130			
Sodium	209300	200	5000	199200	202	70 - 130			SEO

Client: PDC Energy
Project: Josephine 19N-204
WorkOrder: HS22101645

QC BATCH REPORT

Batch ID: 186039 (0)		Instrument: ICPMS07		Method: TOTAL METALS BY E200.8, REV 5.4, 1994						
MSD	Sample ID: HS22110308-04MSD	Units: ug/L		Analysis Date: 11-Nov-2022 13:42						
Client ID:	Run ID: ICPMS07_421658	SeqNo: 6977492		PrepDate: 10-Nov-2022		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	139400	500	5000	137600	36.7	70 - 130	143800	3.08	20	SO
Magnesium	12330	500	5000	7592	94.8	70 - 130	12690	2.86	20	
Potassium	12420	500	5000	7724	94.0	70 - 130	12850	3.36	20	
Sodium	17850	200	5000	13030	96.4	70 - 130	18440	3.26	20	

MSD	Sample ID: HS22110301-01MSD	Units: ug/L		Analysis Date: 10-Nov-2022 21:00						
Client ID:	Run ID: ICPMS07_421549	SeqNo: 6975630		PrepDate: 10-Nov-2022		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	32650	500	5000	27340	106	70 - 130	33540	2.66	20	O
Magnesium	14860	500	5000	9793	101	70 - 130	15190	2.21	20	
Potassium	11450	500	5000	6510	98.9	70 - 130	11890	3.73	20	
Sodium	203000	200	5000	199200	75.0	70 - 130	209300	3.07	20	EO

The following samples were analyzed in this batch: HS22101645-01

Client: PDC Energy
 Project: Josephine 19N-204
 WorkOrder: HS22101645

QC BATCH REPORT

Batch ID: R421282 (0)		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK	Sample ID: VBLKW-221107	Units: ug/L		Analysis Date: 07-Nov-2022 11:15					
Client ID:	Run ID: VOA4_421282	SeqNo: 6967904		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	ND	1.0							
Ethylbenzene	ND	1.0							
m,p-Xylene	ND	2.0							
o-Xylene	ND	1.0							
Toluene	ND	1.0							
Xylenes, Total	ND	1.0							
Surr: 1,2-Dichloroethane-d4	52.57	1.0	50	0	105	70 - 123			
Surr: 4-Bromofluorobenzene	47.62	1.0	50	0	95.2	77 - 113			
Surr: Dibromofluoromethane	54.77	1.0	50	0	110	73 - 126			
Surr: Toluene-d8	48.61	1.0	50	0	97.2	81 - 120			

LCS	Sample ID: VLCSW-221107	Units: ug/L		Analysis Date: 07-Nov-2022 10:33					
Client ID:	Run ID: VOA4_421282	SeqNo: 6968931		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	23.91	1.0	20	0	120	74 - 120			
Ethylbenzene	22.24	1.0	20	0	111	77 - 117			
m,p-Xylene	40.53	2.0	40	0	101	77 - 122			
o-Xylene	22.2	1.0	20	0	111	75 - 119			
Toluene	21.9	1.0	20	0	110	77 - 118			
Xylenes, Total	62.73	1.0	60	0	105	75 - 122			
Surr: 1,2-Dichloroethane-d4	52.39	1.0	50	0	105	70 - 123			
Surr: 4-Bromofluorobenzene	50.34	1.0	50	0	101	77 - 113			
Surr: Dibromofluoromethane	54.61	1.0	50	0	109	73 - 126			
Surr: Toluene-d8	48.73	1.0	50	0	97.5	81 - 120			

Client: PDC Energy
 Project: Josephine 19N-204
 WorkOrder: HS22101645

QC BATCH REPORT

Batch ID: R421282 (0)		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C						
MS		Sample ID: HS22110039-01MS		Units: ug/L		Analysis Date: 07-Nov-2022 17:10				
Client ID:		Run ID: VOA4_421282		SeqNo: 6968932		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	28.03	1.0	20	0	140	70 - 127				S
Ethylbenzene	24.16	1.0	20	0	121	70 - 124				
m,p-Xylene	44.14	2.0	40	0	110	70 - 130				
o-Xylene	23.49	1.0	20	0	117	70 - 124				
Toluene	26.15	1.0	20	0	131	70 - 123				S
Xylenes, Total	67.63	1.0	60	0	113	70 - 130				
Surr: 1,2-Dichloroethane-d4	47.31	1.0	50	0	94.6	70 - 126				
Surr: 4-Bromofluorobenzene	48.36	1.0	50	0	96.7	77 - 113				
Surr: Dibromofluoromethane	50.46	1.0	50	0	101	77 - 123				
Surr: Toluene-d8	48.42	1.0	50	0	96.8	82 - 127				

MSD		Sample ID: HS22110039-01MSD		Units: ug/L		Analysis Date: 07-Nov-2022 17:31				
Client ID:		Run ID: VOA4_421282		SeqNo: 6968933		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	29.2	1.0	20	0	146	70 - 127	28.03	4.11	20	S
Ethylbenzene	25.67	1.0	20	0	128	70 - 124	24.16	6.05	20	S
m,p-Xylene	47.21	2.0	40	0	118	70 - 130	44.14	6.71	20	
o-Xylene	25.8	1.0	20	0	129	70 - 124	23.49	9.38	20	S
Toluene	27.13	1.0	20	0	136	70 - 123	26.15	3.67	20	S
Xylenes, Total	73.01	1.0	60	0	122	70 - 130	67.63	7.65	20	
Surr: 1,2-Dichloroethane-d4	46.11	1.0	50	0	92.2	70 - 126	47.31	2.56	20	
Surr: 4-Bromofluorobenzene	49.18	1.0	50	0	98.4	77 - 113	48.36	1.67	20	
Surr: Dibromofluoromethane	49.85	1.0	50	0	99.7	77 - 123	50.46	1.23	20	
Surr: Toluene-d8	47.89	1.0	50	0	95.8	82 - 127	48.42	1.08	20	

The following samples were analyzed in this batch: HS22101645-01

Client: PDC Energy
 Project: Josephine 19N-204
 WorkOrder: HS22101645

QC BATCH REPORT

Batch ID: R420965 (0)		Instrument: Balance1		Method: TOTAL DISSOLVED SOLIDS BY SM2540C-2011						
MBLK	Sample ID: WBLK-110222	Units: mg/L		Analysis Date: 02-Nov-2022 22:20						
Client ID:	Run ID: Balance1_420965	SeqNo: 6959998		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-110222	Units: mg/L		Analysis Date: 02-Nov-2022 22:20						
Client ID:	Run ID: Balance1_420965	SeqNo: 6959999		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: HS22110117-01DUP	Units: mg/L		Analysis Date: 02-Nov-2022 22:20						
Client ID:	Run ID: Balance1_420965	SeqNo: 6959997		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)		1552	10.0				1550	0.129	5	
DUP	Sample ID: HS22101682-02DUP	Units: mg/L		Analysis Date: 02-Nov-2022 22:20						
Client ID:	Run ID: Balance1_420965	SeqNo: 6959980		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)		4596	10.0				4600	0.087	5	
The following samples were analyzed in this batch:		HS22101645-01								

Client: PDC Energy
Project: Josephine 19N-204
WorkOrder: HS22101645

QC BATCH REPORT

Batch ID: R421449 (0)		Instrument: ManTech01		Method: ALKALINITY BY SM 2320B-2011					
MBLK	Sample ID: WBLKW2-110822	Units: mg/L		Analysis Date: 09-Nov-2022 00:01					
Client ID:	Run ID: ManTech01_421449	SeqNo: 6971895		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, Hydroxide (As CaCO3)	ND	5.00							
Alkalinity, Total (As CaCO3)	ND	5.00							

LCS	Sample ID: LCS1-110822	Units: mg/L		Analysis Date: 08-Nov-2022 23:31					
Client ID:	Run ID: ManTech01_421449	SeqNo: 6971891		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)	1016	5.00	1000	0	102	85 - 115			
Alkalinity, Total (As CaCO3)	1033	5.00	1000	0	103	85 - 115			

LCSD	Sample ID: LCSD1-110822	Units: mg/L		Analysis Date: 08-Nov-2022 23:40					
Client ID:	Run ID: ManTech01_421449	SeqNo: 6971892		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)	1021	5.00	1000	0	102	85 - 115	1016	0.562	20
Alkalinity, Total (As CaCO3)	1023	5.00	1000	0	102	85 - 115	1033	0.933	20

DUP	Sample ID: HS22110148-02DUP	Units: mg/L		Analysis Date: 09-Nov-2022 00:15					
Client ID:	Run ID: ManTech01_421449	SeqNo: 6971897		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)	78.92	5.00					79.38	0.581	20
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0.89	0	20
Alkalinity, Hydroxide (As CaCO3)	ND	5.00					0	0	20
Alkalinity, Total (As CaCO3)	80.42	5.00					80.27	0.187	20

The following samples were analyzed in this batch: HS22101645-01

Client: PDC Energy
Project: Josephine 19N-204
WorkOrder: HS22101645

QC BATCH REPORT

Batch ID: R422227 (0)		Instrument: ICS-Integrion		Method: ANIONS BY E300.0, REV 2.1, 1993					
MBLK	Sample ID: MBLK	Units: mg/L		Analysis Date: 18-Nov-2022 14:56					
Client ID:	Run ID: ICS-Integrion_422227		SeqNo: 6991387		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	ND	0.500							
Sulfate	ND	0.500							

LCS	Sample ID: LCS	Units: mg/L		Analysis Date: 18-Nov-2022 15:01					
Client ID:	Run ID: ICS-Integrion_422227		SeqNo: 6991388		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	19.45	0.500	20	0	97.3	90 - 110			
Sulfate	19.97	0.500	20	0	99.9	90 - 110			

MS	Sample ID: HS22111116-05MS	Units: mg/L		Analysis Date: 18-Nov-2022 15:12					
Client ID:	Run ID: ICS-Integrion_422227		SeqNo: 6991390		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	27.08	0.500	10	17.37	97.1	80 - 120			
Sulfate	34.97	0.500	10	25.35	96.2	80 - 120			

MSD	Sample ID: HS22111116-05MSD	Units: mg/L		Analysis Date: 18-Nov-2022 15:17					
Client ID:	Run ID: ICS-Integrion_422227		SeqNo: 6991391		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	27.14	0.500	10	17.37	97.7	80 - 120	27.08	0.225	20
Sulfate	34.96	0.500	10	25.35	96.2	80 - 120	34.97	0.0212	20

The following samples were analyzed in this batch: HS22101645-01

Client: PDC Energy
Project: Josephine 19N-204
WorkOrder: HS22101645

**QUALIFIERS,
ACRONYMS, UNITS**

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

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

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

Sample Receipt Checklist

Work Order ID: HS22101645

Date/Time Received: **28-Oct-2022 09:35**

Client Name: PDC Energy 80203

Received by: **Paresh M. Giga**

Completed By: <u>/S/ Paresh M. Giga</u>	29-Oct-2022 10:12	Reviewed by:	
eSignature	Date/Time	eSignature	Date/Time

Matrices: **Water**Carrier name: **FedEx Priority 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):

2.1C/1.9C U/c IR31

Cooler(s)/Kit(s):

Blue

Date/Time sample(s) sent to storage:

10/28/22 19:00

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: Limited volumes for GRO & RSK (2 & 1 vials).

Metals pH >2 (14).

Preserved with 0.5ml HNO3 (Lot 320070308)

10/29/22 @ 06:20am. Final pH (14)

Client Contacted:

Date Contacted:

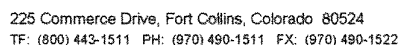
Person Contacted:

Contacted By:

Regarding:

Comments:

Corrective Action:



WORKORDER
#





Form 202r8

PDC Energy
Josephine 19N-204

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

For metals or anions, please detail analytes below.

Comments: Calcium, Chloride, Magnesium, Potassium, Sodium, Sulfate <i>Blue 2.10</i> Samples analyzed per <i>451</i> COGCC Bradenhead Sampling Program <i>EIF-2.20</i>	Cations/Anions:		QC PACKAGE (check below)	
				LEVEL II (Standard QC)
				LEVEL III (Std QC + forms)
				LEVEL IV (Std QC + forms + raw data)
Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035				

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY		Jeff Braden	10/27/22	1425
RECEIVED BY		Amy Kephart	10/27/22	1427
RELINQUISHED BY		Amy Kephart	10/27/22	1530
RECEIVED BY		P. K. G. A.	10/23/22	09:31
RELINQUISHED BY				
RECEIVED BY				

Bme

OCT 28 2022

ORIGIN ID: FTCA (970) 490-1511
SAMPLE CONTROL
ALS HOUSTON
225 COMMERCE DRIVE
FORT COLLINS, CO 80524
UNITED STATES US

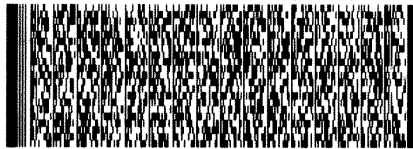
SHIP DATE: 27OCT22
ACTWGT: 2.85 LB
CAD: 07302 / CAFE3616
DIMS: 17X15X5 IN
BILL THIRD PARTY

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

Bme

(201) 630-6666

REF: 6710-ENV-FC-LB-00



FedEx
Express



J222072032/801 W

TRK# 5066 7517 6688
0201

**FRI - 28 OCT 10:30A
PRIORITY OVERNIGHT**

XA SGRA

**77099
TX-US IAH**

Part # 167077-434 MFW EXP 08/22

