



Wednesday, June 29, 2022

Max Trehus  
Great Western Operating Company, LLC  
4093 Specialty Place, Unit B  
Longmont, CO 80504

Re: ALS Workorder: 2206321  
Project Name: Wilson IC 03-379HN BH  
Project Number:

Dear Mr. Trehus:

Two water samples were received from Great Western Operating Company, LLC, on 6/14/2022. The samples were scheduled for the following analyses:

Dissolved Gasses

GC/MS Volatiles

Inorganics

Metals

Total Extractable Petroleum Hydrocarbons (Diesel)

Total Volatile Petroleum Hydrocarbons (Gasoline)


The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental  
Katie M. OBrien  
Project Manager

	<h1>Accreditations</h1>	Effective June 7, 2022
		ALS   Environmental – Fort Collins

**Accreditations:** ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
Arizona	AZ0828
California (CA)	2926
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
Oklahoma	1301
Louisiana	197538
Maryland (MD)	285
PJLA (DoD ELAP/ISO 170250)	95377
PJLA (DOE-AP/ISO 17025)	95377
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO010992018-1
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	TN02976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280
Virginia	460305

**40 CFR Part 136:** All analyses for Clean Water Act samples are analyzed using the 40 CFR Part 136 specified method and include all the QC requirements.



## 2206321

### **GC/MS Volatiles:**

The sample was analyzed using GC/MS following the current revision of SOP 525 based on SW-846 Method 8260C.

All acceptance criteria were met.

### **Dissolved Gasses:**

The sample was prepared and analyzed according to method RSK-175 procedures and the current revision of SOP 449.

All acceptance criteria were met.

### **GRO:**

The sample was analyzed following the current revision of SOP 425 generally based on SW-846 Methods 8000C and 8015D. TVPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C6 to C10.

All acceptance criteria were met.

### **DRO:**

The sample was analyzed following the current revision of SOP 406 generally based on SW-846 Methods 8000C and 8015D. TEPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C10 to C28.

All acceptance criteria were met.

### **Metals:**

The samples were analyzed following Methods for the Determination of Metals in Environmental Samples – Supplement 1 procedures. Analysis by Trace ICP followed method 200.7 and the current revision of SOP 834.

Sample 2206321-2 was to be analyzed for dissolved metals. The sample was filtered through a 0.45 micron filter and preserved with nitric acid to a pH less than two prior to analysis.

All acceptance criteria were met.

**Inorganics:**

The sample was analyzed following EMSL and Standard Method procedures for the current revisions of the following SOPs and methods:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Alkalinity	SM2320B	1106
Bicarbonate	SM2320B	1106
Carbonate	SM2320B	1106
TDS	SM2540C	1101
Chloride	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

All acceptance criteria were met.

# ALS -- Fort Collins

## Sample Number(s) Cross-Reference Table

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**OrderNum:** 2206321

**Client Name:** PDC Energy

**Client Project Name:** Wilson IC 03-379HN BH

**Client Project Number:**

**Client PO Number:**

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Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
03-379HN A	2206321-1		WATER	13-Jun-22	14:25
03-379HN B	2206321-2		WATER	13-Jun-22	14:25



# ALS Environmental

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

## Chain-of-Custody

Form 202r6

PROJECT NAME	Wilson IL 03-379HW BH	SAMPLER	Max Trehus	DATE		WORKORDER #	2208371
PROJECT No.		SITE ID		TURNAROUND		PAGE	of
COMPANY NAME	PDC	EDD FORMAT				DISPOSAL	
SEND REPORT TO	Max Trehus	PURCHASE ORDER				By Lab or	Return to Client
ADDRESS	Jennifer Makkari	BILL TO COMPANY					
CITY/STATE/ZIP	Jessica Johnson	INVOICE ATTN TO					
PHONE	Max trehus@pdc.com	ADDRESS					
FAX	Jennifer.Makkari@pdc.com	CITY/STATE/ZIP					
E-MAIL	Jessica.Johnson@pdc.com	PHONE					
		FAX					
		E-MAIL					
Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC
1	03-379HW A	W	6/13/22	14:25	3	-	
	03-379HW A				3	1	
	03-379HW A				3	1	
	03-379HW A				3	1	
	03-379HW A				1	-	
	03-379HW B				1	-	
2	03-379HW A				1	2	

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

For metals or anions, please detail analytes below.

Comments:	QC PACKAGE (check below)
Facility ID: 452179 0.70	<input type="checkbox"/> LEVEL II (Standard QC)
	<input type="checkbox"/> LEVEL III (Std QC + forms)
	<input type="checkbox"/> LEVEL IV (Std QC + forms + raw data)
	<input type="checkbox"/>
Preservative Key:	1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

RELINQUISHED BY	SIGNATURE	PRINTED NAME	DATE	TIME
RECEIVED BY	Max Trehus	Max Trehus	6/14/22	12:42
RELINQUISHED BY	Jessica Johnson	Jessica Johnson	6/14/22	13:00
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				



**ALS Environmental - Fort Collins**  
**CONDITION OF SAMPLE UPON RECEIPT FORM**

Client: PDC ENERGY Workorder No: 2206321  
 Project Manager: KMO Initials: KC Date: 6/14/22

				N/A	YES	NO
1. Are airbills / shipping documents present and/or removable?				X		
Tracking number:						
2. Are custody seals on shipping containers intact?				X		
3. Are custody seals on sample containers intact?				X		
4. Is there a COC (chain-of-custody) present?					X	
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)					X	
6. Are short-hold samples present?						X
7. Are all samples within holding times for the requested analyses?					X	
8. Were all sample containers received intact? (not broken or leaking)					X	
9. Is there sufficient sample for the requested analyses?					X	
10. Are samples in proper containers for requested analyses? (form 250, <i>Sample Handling Guidelines</i> )					X	
11. Are all aqueous samples preserved correctly, if required? (excluding volatiles)					X	
12. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)					X	
13. Were the samples shipped on ice?					X	
14. Were cooler temperatures measured at 0.1-6.0°C?		IR gun used*:	#6		RAD ONLY	X
Cooler #: <u>1</u> Temperature (°C): <u>0.7</u> # of custody seals on cooler: <u>0</u> External µR/hr reading: <u>NA</u> Background µR/hr reading: <u>10</u> Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES						

\* Please provide details here for NO responses to boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.

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Were unpreserved bottles pH checked? NA All client bottle ID's vs ALS lab ID's double-checked by: KC

If applicable, was the client contacted? YES / NO / NA Contact: Margaret G. O'Brien Date/Time: 6/15/22

Project Manager Signature / Date: Margaret G. O'Brien

## ALS -- Fort Collins

## SAMPLE SUMMARY REPORT

Client: PDC Energy  
 Project: Wilson IC 03-379HN BH  
 Sample ID: 03-379HN A  
 Legal Location:  
 Collection Date: 6/13/2022 14:25

Date: 29-Jun-22  
 Work Order: 2206321  
 Lab ID: 2206321-1  
 Matrix: WATER  
 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>Alkalinity as Calcium Carbonate</b>		<b>SM2320B</b>			Prep Date: <b>6/27/2022</b>	PrepBy: <b>AOW</b>
BICARBONATE AS CaCO3	190		20	MG/L	1	6/27/2022
CARBONATE AS CaCO3	110		20	MG/L	1	6/27/2022
TOTAL ALKALINITY AS CaCO3	300		20	MG/L	1	6/27/2022
<b>Diesel Range Organics</b>		<b>SW8015M</b>			Prep Date: <b>6/21/2022</b>	PrepBy: <b>JRS</b>
Diesel Range Organics	52		1.6	MG/L	1	6/24/2022 23:10
Surr: O-TERPHENYL	103		69-120	%REC	1	6/24/2022 23:10
<b>Dissolved Gasses</b>		<b>RSK175</b>			Prep Date: <b>6/21/2022</b>	PrepBy: <b>JRS</b>
METHANE	500		2	UG/L	1	6/24/2022 16:30
ETHANE	94		4	UG/L	1	6/24/2022 16:30
PROPANE	33		6	UG/L	1	6/24/2022 16:30
<b>Gasoline Range Organics</b>		<b>SW8015</b>			Prep Date: <b>6/21/2022</b>	PrepBy: <b>JRS</b>
GASOLINE RANGE ORGANICS	3.4		0.1	MG/L	1	6/21/2022 22:43
Surr: 2,3,4-TRIFLUOROTOLUENE	103		80-120	%REC	1	6/21/2022 22:43
<b>GC/MS Volatiles</b>		<b>SW8260_25</b>			Prep Date: <b>6/23/2022</b>	PrepBy: <b>TWK</b>
BENZENE	61		25	UG/L	25	6/23/2022 23:16
TOLUENE	190		25	UG/L	25	6/23/2022 23:16
ETHYLBENZENE	57		25	UG/L	25	6/23/2022 23:16
M+P-XYLENE	200		25	UG/L	25	6/23/2022 23:16
O-XYLENE	110		25	UG/L	25	6/23/2022 23:16
TOTAL XYLENES	310		1	UG/L	1	6/23/2022 23:16
Surr: 4-BROMOFLUOROBENZENE	104		80-120	%REC	25	6/23/2022 23:16
Surr: DIBROMOFLUOROMETHANE	101		80-120	%REC	25	6/23/2022 23:16
Surr: TOLUENE-D8	101		80-120	%REC	25	6/23/2022 23:16
<b>Ion Chromatography</b>		<b>EPA300.0</b>			Prep Date: <b>6/17/2022</b>	PrepBy: <b>AOW</b>
CHLORIDE	3200		50	MG/L	250	6/17/2022 14:16
SULFATE	860		100	MG/L	100	6/17/2022 12:24
<b>Total Recoverable Metals by 200.7</b>		<b>EPA200.7</b>			Prep Date: <b>6/16/2022</b>	PrepBy: <b>ETC</b>
CALCIUM	1900		100	MG/L	10	6/22/2022 13:30
POTASSIUM	190		100	MG/L	10	6/22/2022 13:30
MAGNESIUM	ND		100	MG/L	10	6/22/2022 13:30
SODIUM	480		100	MG/L	10	6/22/2022 13:30
<b>Total Dissolved Solids</b>		<b>SM2540C</b>			Prep Date: <b>6/17/2022</b>	PrepBy: <b>KRL</b>
TOTAL DISSOLVED SOLIDS	11000		200	MG/L	1	6/22/2022

**Client:** PDC Energy  
**Project:** Wilson IC 03-379HN BH  
**Sample ID:** 03-379HN B  
**Legal Location:**  
**Collection Date:** 6/13/2022 14:25

**Date:** 29-Jun-22  
**Work Order:** 2206321  
**Lab ID:** 2206321-2  
**Matrix:** WATER  
**Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>Dissolved Metals by 200.7</b>			<b>EPA200.7</b>		Prep Date: <b>6/16/2022</b>	PrepBy: <b>ETC</b>
<b>CALCIUM</b>	<b>1900</b>		<b>100</b>	<b>MG/L</b>	10	6/22/2022 13:31
<b>POTASSIUM</b>	<b>200</b>		<b>100</b>	<b>MG/L</b>	10	6/22/2022 13:31
<b>MAGNESIUM</b>	<b>ND</b>		<b>100</b>	<b>MG/L</b>	10	6/22/2022 13:31
<b>SODIUM</b>	<b>490</b>		<b>100</b>	<b>MG/L</b>	10	6/22/2022 13:31

**Client:** PDC Energy  
**Project:** Wilson IC 03-379HN BH  
**Sample ID:** 03-379HN B  
**Legal Location:**  
**Collection Date:** 6/13/2022 14:25

**Date:** 29-Jun-22  
**Work Order:** 2206321  
**Lab ID:** 2206321-2  
**Matrix:** WATER  
**Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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### Explanation of Qualifiers

#### Radiochemistry:

- "Report Limit" is the MDC  
 U or ND - Result is less than the sample specific MDC.  
 Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.  
 Y2 - Chemical Yield outside default limits.  
 W - DER is greater than Warning Limit of 1.42  
 \* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.  
 # - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.  
 G - Sample density differs by more than 15% of LCS density.  
 D - DER is greater than Control Limit  
 M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.  
 L - LCS Recovery below lower control limit.  
 H - LCS Recovery above upper control limit.  
 P - LCS, Matrix Spike Recovery within control limits.  
 N - Matrix Spike Recovery outside control limits  
 NC - Not Calculated for duplicate results less than 5 times MDC  
 B - Analyte concentration greater than MDC.  
 B3 - Analyte concentration greater than MDC but less than Requested MDC.

#### Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).  
 U or ND - Indicates that the compound was analyzed for but not detected.  
 E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.  
 M - Duplicate injection precision was not met.  
 N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.  
 Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.  
 \* - Duplicate analysis (relative percent difference) not within control limits.  
 S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

#### Organics:

U or ND - Indicates that the compound was analyzed for but not detected.  
 B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.  
 E - Analyte concentration exceeds the upper level of the calibration range.  
 J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).  
 A - A tentatively identified compound is a suspected aldol-condensation product.  
 X - The analyte was diluted below an accurate quantitation level.  
 \* - The spike recovery is equal to or outside the control criteria used.  
 + - The relative percent difference (RPD) equals or exceeds the control criteria.  
 G - A pattern resembling gasoline was detected in this sample.  
 D - A pattern resembling diesel was detected in this sample.  
 M - A pattern resembling motor oil was detected in this sample.  
 C - A pattern resembling crude oil was detected in this sample.  
 4 - A pattern resembling JP-4 was detected in this sample.  
 5 - A pattern resembling JP-5 was detected in this sample.  
 H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.  
 L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.  
 Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:  
 - gasoline  
 - JP-8  
 - diesel  
 - mineral spirits  
 - motor oil  
 - Stoddard solvent  
 - bunker C

## ALS -- Fort Collins

Date: 6/29/2022 12:19:

Client: PDC Energy

Work Order: 2206321

Project: Wilson IC 03-379HN BH

## QC BATCH REPORT

Batch ID: HC220621-61-1

Instrument ID: FUELS-1

Method: SW8015

LCS	Sample ID: <b>HC220621-61</b>				Units: <b>MG/L</b>		Analysis Date: <b>6/21/2022 18:18</b>				
Client ID:	Run ID: <b>HC220621-61A</b>				Prep Date: <b>6/21/2022</b>			DF: <b>1</b>			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	0.494	0.1	0.5		99	80-120				20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.104		0.1		104	80-120					

LCSD	Sample ID: <b>HC220621-61</b>				Units: <b>MG/L</b>		Analysis Date: <b>6/21/2022 18:34</b>				
Client ID:	Run ID: <b>HC220621-61A</b>				Prep Date: <b>6/21/2022</b>			DF: <b>1</b>			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	0.489	0.1	0.5		98	80-120		0.494	1	20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.104		0.1		104	80-120			0		

MB	Sample ID: HC220621-61	Units: MG/L	Analysis Date: 6/21/2022 18:49
Client ID:	Run ID: HC220621-61A	Prep Date: 6/21/2022	DF: 1
Analyte	Result	ReportLimit	Qual
GASOLINE RANGE ORGANICS	ND	0.1	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.103	103	80-120

The following samples were analyzed in this batch:

2206321-1

**Client:** PDC Energy  
**Work Order:** 2206321  
**Project:** Wilson IC 03-379HN BH

## QC BATCH REPORT

Batch ID: **HC220621-81-1** Instrument ID: **FUELS-1** Method: **SW8015M**

<b>LCS</b>		Sample ID: <b>HC220621-81</b>				Units: <b>MG/L</b>		Analysis Date: <b>6/27/2022 12:05</b>				
Client ID:		Run ID: <b>HC220628-81A</b>				Prep Date: <b>6/21/2022</b>			DF: <b>1</b>			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual	
Diesel Range Organics	9.42	1.07	8.33		113	53-120				20		
Surr: O-TERPHENYL	1.76		1.67		106	69-120						

<b>LCSD</b>		Sample ID: <b>HC220621-81</b>				Units: <b>MG/L</b>		Analysis Date: <b>6/27/2022 12:48</b>				
Client ID:		Run ID: <b>HC220628-81A</b>				Prep Date: <b>6/21/2022</b>			DF: <b>1</b>			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual	
Diesel Range Organics	9.44	1.07	8.33		113	53-120		9.42	0	20		
Surr: O-TERPHENYL	1.78		1.67		107	69-120			1			

MB		Sample ID: <b>HC220621-81</b>				Units: <b>MG/L</b>		Analysis Date: <b>6/24/2022 19:39</b>				
Client ID:		Run ID: <b>HC220628-81A</b>				Prep Date: <b>6/21/2022</b>			DF: <b>1</b>			
Analyte		Result	ReportLimit									Qual
Diesel Range Organics		ND	1.1									
Surr: O-TERPHENYL		1.64			98	69-120						

The following samples were analyzed in this batch:

2206321-1

Client: PDC Energy  
Work Order: 2206321  
Project: Wilson IC 03-379HN BH

## QC BATCH REPORT

Batch ID: **HC220621-91-2** Instrument ID: **MEE-1** Method: **RSK175**

LCS	Sample ID: HC220621-91				Units: UG/L		Analysis Date: 6/24/2022 15:19				
Client ID:	Run ID: HC220627-91A				Prep Date: 6/21/2022			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	137	2	142		96	76-125				25	
ETHANE	260	4	267		97	70-120				25	
PROPANE	380	6	391		97	72-120				25	

LCSD	Sample ID: <b>HC220621-91</b>				Units: <b>UG/L</b>		Analysis Date: <b>6/24/2022 16:13</b>				
Client ID:	Run ID: <b>HC220627-91A</b>				Prep Date: <b>6/21/2022</b>			DF: <b>1</b>			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	133	2	142		93	76-125		137	3	25	
ETHANE	251	4	267		94	70-120		260	3	25	
PROPANE	367	6	391		94	72-120		380	3	25	

MB		Sample ID: <b>HC220621-91</b>		Units: <b>UG/L</b>		Analysis Date: <b>6/24/2022 15:23</b>	
Client ID:		Run ID: <b>HC220627-91A</b>		Prep Date: <b>6/21/2022</b>		DF: <b>1</b>	
Analyte		Result	ReportLimit	Qual			
METHANE		ND	2				
ETHANE		ND	4				
PROPANE		ND	6				

The following samples were analyzed in this batch:

2206321-1

Client: PDC Energy  
Work Order: 2206321  
Project: Wilson IC 03-379HN BH

## QC BATCH REPORT

Batch ID: IP220616-1-1 Instrument ID: ICP5900 Method: EPA200.7

LCS Sample ID: IP220616-1 Units: MG/L Analysis Date: 6/22/2022 13:00

Client ID: Run ID: IT220622-1A2 Prep Date: 6/16/2022 DF: 1

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CALCIUM	39.6	1	40		99	85-115				20	
MAGNESIUM	38.4	1	40		96	85-115				20	
POTASSIUM	40.1	1	40		100	85-115				20	
SODIUM	40.5	1	40		101	85-115				20	

LCSD Sample ID: IP220616-1 Units: MG/L Analysis Date: 6/22/2022 13:01

Client ID: Run ID: IT220622-1A2 Prep Date: 6/16/2022 DF: 1

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CALCIUM	39.9	1	40		100	85-115		39.6	1	20	
MAGNESIUM	38.6	1	40		96	85-115		38.4	1	20	
POTASSIUM	40.6	1	40		102	85-115		40.1	1	20	
SODIUM	40.9	1	40		102	85-115		40.5	1	20	

MB Sample ID: IP220616-1 Units: MG/L Analysis Date: 6/22/2022 12:58

Client ID: Run ID: IT220622-1A2 Prep Date: 6/16/2022 DF: 1

Analyte	Result	ReportLimit	Qual
CALCIUM	ND	1	
MAGNESIUM	ND	1	
POTASSIUM	ND	1	
SODIUM	ND	1	

The following samples were analyzed in this batch:

2206321-1

Client: PDC Energy  
Work Order: 2206321  
Project: Wilson IC 03-379HN BH

## QC BATCH REPORT

Batch ID: **IP220616-1-2** Instrument ID: **ICP5900** Method: **EPA200.7**

**LCS** Sample ID: **IP220616-1** Units: **MG/L** Analysis Date: **6/22/2022 13:00**

Client ID: Run ID: **IT220622-1A2** Prep Date: **6/16/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CALCIUM	39.6	1	40		99	85-115				20	
MAGNESIUM	38.4	1	40		96	85-115				20	
POTASSIUM	40.1	1	40		100	85-115				20	
SODIUM	40.5	1	40		101	85-115				20	

**LCSD** Sample ID: **IP220616-1** Units: **MG/L** Analysis Date: **6/22/2022 13:01**

Client ID: Run ID: **IT220622-1A2** Prep Date: **6/16/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CALCIUM	39.9	1	40		100	85-115		39.6	1	20	
MAGNESIUM	38.6	1	40		96	85-115		38.4	1	20	
POTASSIUM	40.6	1	40		102	85-115		40.1	1	20	
SODIUM	40.9	1	40		102	85-115		40.5	1	20	

**MB** Sample ID: **FP220613-1** Units: **MG/L** Analysis Date: **6/22/2022 12:59**

Client ID: Run ID: **IT220622-1A2** Prep Date: **6/16/2022** DF: **1**

Analyte	Result	ReportLimit	Qual
CALCIUM	ND	1	
MAGNESIUM	ND	1	
POTASSIUM	ND	1	
SODIUM	ND	1	

The following samples were analyzed in this batch:

2206321-2

Client: PDC Energy  
Work Order: 2206321  
Project: Wilson IC 03-379HN BH

## QC BATCH REPORT

Batch ID: VL220623-3-2 Instrument ID: HPV3 Method: SW8260\_25

LCS	Sample ID: VL220623-3				Units: %REC		Analysis Date: 6/23/2022 13:52				
Client ID:		Run ID: VL220623-3A				Prep Date: 6/23/2022			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	25.9		25		104	80-120					
Surr: DIBROMOFLUOROMETHANE	25.1		25		100	80-120					
Surr: TOLUENE-D8	25		25		100	80-120					
BENZENE	9.91	1	10		99	80-120				20	
TOLUENE	9.48	1	10		95	80-120				20	
ETHYLBENZENE	8.85	1	10		89	80-120				20	
M+P-XYLENE	17.3	1	20		86	80-120				20	
O-XYLENE	8.85	1	10		88	80-120				20	

LCSD		Sample ID: VL220623-3				Units: %REC		Analysis Date: 6/23/2022 14:15			
Client ID:		Run ID: VL220623-3A				Prep Date: 6/23/2022			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	25.8		25		103	80-120			1		
Surr: DIBROMOFLUOROMETHANE	25.3		25		101	80-120			1		
Surr: TOLUENE-D8	25.4		25		102	80-120			2		
BENZENE	9.69	1	10		97	80-120		9.91	2	20	
TOLUENE	9.22	1	10		92	80-120		9.48	3	20	
ETHYLBENZENE	8.73	1	10		87	80-120		8.85	1	20	
M+P-XYLENE	17.3	1	20		87	80-120		17.3	0	20	
O-XYLENE	8.57	1	10		86	80-120		8.85	3	20	

MB		Sample ID: VL220623-3			Units: %REC		Analysis Date: 6/23/2022 15:26		
Client ID:		Run ID: VL220623-3A			Prep Date: 6/23/2022			DF: 1	
Analyte		Result	ReportLimit					Qual	
Surr: 4-BROMOFLUOROBENZENE		25.8			103	80-120			
Surr: DIBROMOFLUOROMETHANE		25.2			101	80-120			
Surr: TOLUENE-D8		24.9			100	80-120			
BENZENE		ND	1						
TOLUENE		ND	1						
ETHYLBENZENE		ND	1						
M+P-XYLENE		ND	1						
O-XYLENE		ND	1						
TOTAL XYLENES		ND	1						

The following samples were analyzed in this batch:

2206321-1

**Client:** PDC Energy  
**Work Order:** 2206321  
**Project:** Wilson IC 03-379HN BH

## QC BATCH REPORT

Batch ID: **AK220627-1-1** Instrument ID: **NONE** Method: **SM2320B**

LCS		Sample ID: AK220627-1				Units: MG/L		Analysis Date: 6/27/2022			
Client ID:		Run ID: AK220627-1A1				Prep Date: 6/27/2022		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	102	5	100		102	85-115				15	

MB		Sample ID: AK220627-1		Units: MG/L		Analysis Date: 6/27/2022	
Client ID:		Run ID: AK220627-1A1		Prep Date: 6/27/2022		DF: 1	
Analyte		Result	ReportLimit	Qual			
BICARBONATE AS CaCO3		ND	5				
CARBONATE AS CaCO3		ND	5				
TOTAL ALKALINITY AS CaCO3		ND	5				

The following samples were analyzed in this batch:

2206321-1

**Client:** PDC Energy  
**Work Order:** 2206321  
**Project:** Wilson IC 03-379HN BH

## QC BATCH REPORT

Batch ID: **IC220617-1-1** Instrument ID: **IC3** Method: **EPA300.0**

LCS	Sample ID: IC220617-1			Units: MG/L			Analysis Date: 6/17/2022 12:06				
Client ID:	Run ID: IC220617-1A1			Prep Date: 6/17/2022			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CHLORIDE	10.1	0.2	10		101	90-110				15	
SULFATE	50.4	1	50		101	90-110				15	

LCSD	Sample ID: IC220617-1				Units: MG/L		Analysis Date: 6/17/2022 13:25				
Client ID:	Run ID: IC220617-1A1				Prep Date: 6/17/2022			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CHLORIDE	10.1	0.2	10		101	90-110		10.1	0	15	
SULFATE	50.4	1	50		101	90-110		50.4	0	15	

MB		Sample ID: IC220617-1		Units: MG/L		Analysis Date: 6/17/2022 12:12	
Client ID:		Run ID: IC220617-1A1		Prep Date: 6/17/2022		DF: 1	
Analyte		Result	ReportLimit	Qual			
CHLORIDE		ND	0.2				
SULFATE		ND	1				

The following samples were analyzed in this batch:

2206321-1

**Client:** PDC Energy  
**Work Order:** 2206321  
**Project:** Wilson IC 03-379HN BH

## QC BATCH REPORT

Batch ID: **TD220617-1-1** Instrument ID: **Balance** Method: **SM2540C**

LCS		Sample ID: TD220617-1			Units: MG/L		Analysis Date: 6/22/2022				
Client ID:		Run ID: TD220622-1A1			Prep Date: 6/17/2022			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	406	20	400		101	85-115				14	

LCSD		Sample ID: TD220617-1			Units: MG/L		Analysis Date: 6/22/2022				
Client ID:		Run ID: TD220622-1A1			Prep Date: 6/17/2022			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	420	20	400		105	85-115		406	3	14	

MB		Sample ID: TD220617-1		Units: MG/L		Analysis Date: 6/22/2022	
Client ID:		Run ID: TD220622-1A1		Prep Date: 6/17/2022		DF: 1	
Analyte		Result	ReportLimit				
TOTAL DISSOLVED SOLIDS		ND	20				

The following samples were analyzed in this batch:

2206321-1