



Wednesday, June 29, 2022

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

Re: ALS Workorder: 2206267
Project Name: Wilson IC 03-142HN BH
Project Number:

Dear Mr. Trehus:

Two water samples were received from Great Western Operating Company, LLC, on 6/10/2022. 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. O'Brien
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.



2206267

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 remaining 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 2206267-2 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.

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Sample Number(s) Cross-Reference Table

OrderNum: 2206267

Client Name: PDC Energy

Client Project Name: Wilson IC 03-142HN BH

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
03-142HN A	2206267-1		WATER	10-Jun-22	12:45
03-142HN B	2206267-2		WATER	10-Jun-22	12:45



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 20268

WORKORDER # **2206267**

PROJECT NAME	PROJECT No.	SAMPLER	DATE	PAGE	of					
Wilson IL 03-142HN		BH								
COMPANY NAME	PDC	EDD FORMAT								
SEND REPORT TO	Max Trehus	PURCHASE ORDER								
ADDRESS	Jennifer Hakkarinen	BILL TO COMPANY								
CITY / STATE / ZIP	Jessica Johansen	INVOICE ATTN TO								
PHONE	max.trehus@pdc.com	ADDRESS								
FAX	Jennifer.Hakkarinen@pdc.com	CITY / STATE / ZIP								
E-MAIL	Jessica.Johansen@pdc.com	PHONE								
		FAX								
		E-MAIL								
Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres. QC	TURNAROUND	DATE	By Lab or	Return to Client
	03-142HN A	W	6/10/22	12:45	3	-	Disolved Basic			
	03-142HN A				3	-				
	03-142HN A				3	-				
	03-142HN A				3	-				
	03-142HN A				1	-				
	03-142HN B				1	-				
	03-142HN A				1	1				

*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: Facility ID: 452172

RELINQUISHED BY	SIGNATURE	PRINTED NAME	DATE	TIME
RECEIVED BY	<i>[Signature]</i>	Max Trehus	6/10	15:00
RELINQUISHED BY	<i>[Signature]</i>	Christina	6/10/22	15:00
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

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

16.10



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CONDITION OF SAMPLE UPON RECEIPT FORM

Client: PDC ENERGY Workorder No: 2206267
 Project Manager: KMO Initials: CXT Date: 6/10/2022

				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, Sample Handling Guidelines)					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
Cooler #: <u>1</u>						
Temperature (°C): <u>16.1</u>						
# of custody seals on cooler: <u>0</u>						
External µR/hr reading: <u>NA</u>						
Background µR/hr reading: <u>11</u>						
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <u>NA</u>						

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

Samples collected same day as received

Sample 1 bottle 5 contains headspace

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

If applicable, was the client contacted? YES / NO / NA Contact: Margaret G. Brown Date/Time: 6/11/22

Project Manager Signature / Date: _____

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SAMPLE SUMMARY REPORT

Client: PDC Energy
Project: Wilson IC 03-142HN BH
Sample ID: 03-142HN A
Legal Location:
Collection Date: 6/10/2022 12:45

Date: 29-Jun-22
Work Order: 2206267
Lab ID: 2206267-1
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Alkalinity as Calcium Carbonate			SM2320B		Prep Date: 6/14/2022	PrepBy: KRL
BICARBONATE AS CaCO3	420		20	MG/L	1	6/14/2022
CARBONATE AS CaCO3	ND		20	MG/L	1	6/14/2022
TOTAL ALKALINITY AS CaCO3	420		20	MG/L	1	6/14/2022
Diesel Range Organics			SW8015M		Prep Date: 6/14/2022	PrepBy: JRS
Diesel Range Organics	17		1	MG/L	1	6/18/2022 01:09
Surr: O-TERPHENYL	106		69-120	%REC	1	6/18/2022 01:09
Dissolved Gasses			RSK175		Prep Date: 6/15/2022	PrepBy: JRS
METHANE	23000		20	UG/L	10	6/16/2022 14:21
ETHANE	10000		40	UG/L	10	6/16/2022 14:21
PROPANE	4500		60	UG/L	10	6/16/2022 14:21
Gasoline Range Organics			SW8015		Prep Date: 6/21/2022	PrepBy: JRS
GASOLINE RANGE ORGANICS	3		0.1	MG/L	1	6/21/2022 22:28
Surr: 2,3,4-TRIFLUOROTOLUENE	102		80-120	%REC	1	6/21/2022 22:28
GC/MS Volatiles			SW8260_25		Prep Date: 6/23/2022	PrepBy: TWK
BENZENE	270		25	UG/L	25	6/23/2022 22:51
TOLUENE	27		25	UG/L	25	6/23/2022 22:51
ETHYLBENZENE	ND		25	UG/L	25	6/23/2022 22:51
M+P-XYLENE	40		25	UG/L	25	6/23/2022 22:51
O-XYLENE	30		25	UG/L	25	6/23/2022 22:51
TOTAL XYLENES	71		1	UG/L	1	6/23/2022 22:51
Surr: 4-BROMOFLUOROBENZENE	103		80-120	%REC	25	6/23/2022 22:51
Surr: DIBROMOFLUOROMETHANE	101		80-120	%REC	25	6/23/2022 22:51
Surr: TOLUENE-D8	99		80-120	%REC	25	6/23/2022 22:51
Ion Chromatography			EPA300.0		Prep Date: 6/13/2022	PrepBy: AOW
CHLORIDE	2400		100	MG/L	500	6/14/2022 11:04
SULFATE	590		200	MG/L	200	6/14/2022 09:21
Total Recoverable Metals by 200.7			EPA200.7		Prep Date: 6/16/2022	PrepBy: ETC
CALCIUM	1200		100	MG/L	10	6/22/2022 13:28
POTASSIUM	140		100	MG/L	10	6/22/2022 13:28
MAGNESIUM	ND		100	MG/L	10	6/22/2022 13:28
SODIUM	430		100	MG/L	10	6/22/2022 13:28
Total Dissolved Solids			SM2540C		Prep Date: 6/13/2022	PrepBy: KRL
TOTAL DISSOLVED SOLIDS	6800		200	MG/L	1	6/14/2022

Client: PDC Energy
Project: Wilson IC 03-142HN BH
Sample ID: 03-142HN B
Legal Location:
Collection Date: 6/10/2022 12:45

Date: 29-Jun-22
Work Order: 2206267
Lab ID: 2206267-2
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dissolved Metals by 200.7			EPA200.7		Prep Date: 6/16/2022	PrepBy: ETC
CALCIUM	1100		100	MG/L	10	6/22/2022 13:29
POTASSIUM	150		100	MG/L	10	6/22/2022 13:29
MAGNESIUM	ND		100	MG/L	10	6/22/2022 13:29
SODIUM	420		100	MG/L	10	6/22/2022 13:29

Client: PDC Energy
Project: Wilson IC 03-142HN BH
Sample ID: 03-142HN B
Legal Location:
Collection Date: 6/10/2022 12:45

Date: 29-Jun-22
Work Order: 2206267
Lab ID: 2206267-2
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

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Date: 6/29/2022 9:08:0

Client: PDC Energy

QC BATCH REPORT

Work Order: 2206267

Project: Wilson IC 03-142HN BH

Batch ID: HC220614-82-1

Instrument ID: FUELS-1

Method: SW8015M

LCS Sample ID: **HC220614-82** Units: **MG/L** Analysis Date: **6/17/2022 17:21**

Client ID: Run ID: **HC220620-81A** Prep Date: **6/14/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	8.7	1.07	8.33		104	53-120				20	
Surr: O-TERPHENYL	1.49		1.67		89	69-120					

LCSD Sample ID: **HC220614-82** Units: **MG/L** Analysis Date: **6/17/2022 17:42**

Client ID: Run ID: **HC220620-81A** Prep Date: **6/14/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	8.78	1.07	8.33		105	53-120		8.7	1	20	
Surr: O-TERPHENYL	1.51		1.67		91	69-120			1		

MB Sample ID: **HC220614-82** Units: **MG/L** Analysis Date: **6/17/2022 16:38**

Client ID: Run ID: **HC220620-81A** Prep Date: **6/14/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	ND	1.1									
Surr: O-TERPHENYL	1.49				89	69-120					

The following samples were analyzed in this batch:

2206267-1

Client: PDC Energy
 Work Order: 2206267
 Project: Wilson IC 03-142HN BH

QC BATCH REPORT

Batch ID: **HC220615-61-1** Instrument ID: **MEE-1** Method: **RSK175**

LCS		Sample ID: HC220615-61			Units: UG/L		Analysis Date: 6/15/2022 16:25				
Client ID:		Run ID: HC220615-91A			Prep Date: 6/15/2022		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	155	2	142		109	76-125				25	
ETHANE	291	4	267		109	70-120				25	
PROPANE	426	6	391		109	72-120				25	

LCSD		Sample ID: HC220615-61			Units: UG/L		Analysis Date: 6/15/2022 17:04				
Client ID:		Run ID: HC220615-91A			Prep Date: 6/15/2022		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	155	2	142		109	76-125		155	0	25	
ETHANE	292	4	267		109	70-120		291	0	25	
PROPANE	423	6	391		108	72-120		426	1	25	

MB		Sample ID: HC220615-61			Units: UG/L		Analysis Date: 6/15/2022 16:29				
Client ID:		Run ID: HC220615-91A			Prep Date: 6/15/2022		DF: 1				
Analyte	Result	ReportLimit	Qual								
METHANE	ND	2									
ETHANE	ND	4									
PROPANE	ND	6									

The following samples were analyzed in this batch:

Client: PDC Energy
 Work Order: 2206267
 Project: Wilson IC 03-142HN BH

QC BATCH REPORT

Batch ID: **HC220621-61-1** Instrument ID: **FUELS-1** Method: **SW8015**

LCS		Sample ID: HC220621-61			Units: MG/L		Analysis Date: 6/21/2022 18:18				
Client ID:		Run ID: HC220621-61A			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
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: HC220621-61			Units: MG/L		Analysis Date: 6/21/2022 18:34				
Client ID:		Run ID: HC220621-61A			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
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:

Client: PDC Energy
 Work Order: 2206267
 Project: Wilson IC 03-142HN 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:

Client: PDC Energy
 Work Order: 2206267
 Project: Wilson IC 03-142HN 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:

Client: PDC Energy
 Work Order: 2206267
 Project: Wilson IC 03-142HN 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	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					
Surr: DIBROMOFLUOROMETHANE	25.2		25		101	80-120					
Surr: TOLUENE-D8	24.9		25		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:

Client: PDC Energy
 Work Order: 2206267
 Project: Wilson IC 03-142HN BH

QC BATCH REPORT

Batch ID: **AK220614-2-1** Instrument ID: **NONE** Method: **SM2320B**

DUP Sample ID: **2206267-1** Units: **MG/L** Analysis Date: **6/14/2022**
 Client ID: **03-142HN A** Run ID: **AK220614-1A1** Prep Date: **6/14/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
BICARBONATE AS CaCO3	430	20						420	2	15	
CARBONATE AS CaCO3	ND	20						20		15	
TOTAL ALKALINITY AS CaCO3	430	20						420	2	15	

LCS Sample ID: **AK220614-2** Units: **MG/L** Analysis Date: **6/14/2022**
 Client ID: Run ID: **AK220614-1A1** Prep Date: **6/14/2022** 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	101	5	100		101	85-115				15	

MB Sample ID: **AK220614-2** Units: **MG/L** Analysis Date: **6/14/2022**
 Client ID: Run ID: **AK220614-1A1** Prep Date: **6/14/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	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:

Client: PDC Energy
 Work Order: 2206267
 Project: Wilson IC 03-142HN BH

QC BATCH REPORT

Batch ID: IC220613-1-1 Instrument ID: IC3 Method: EPA300.0

LCS		Sample ID: IC220613-1			Units: MG/L		Analysis Date: 6/13/2022 14:01				
Client ID:		Run ID: IC220613-1A1			Prep Date: 6/13/2022		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	50.2	1	50		100	90-110				15	

LCSD		Sample ID: IC220613-1			Units: MG/L		Analysis Date: 6/13/2022 15:14				
Client ID:		Run ID: IC220613-1A1			Prep Date: 6/13/2022		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CHLORIDE	10	0.2	10		100	90-110		10.1	1	15	
SULFATE	50.1	1	50		100	90-110		50.2	0	15	

MB		Sample ID: IC220613-1			Units: MG/L		Analysis Date: 6/13/2022 14:07					
Client ID:		Run ID: IC220613-1A1			Prep Date: 6/13/2022		DF: 1					
Analyte	Result	ReportLimit										Qual
CHLORIDE	ND	0.2										
SULFATE	ND	1										

The following samples were analyzed in this batch:

Client: PDC Energy
 Work Order: 2206267
 Project: Wilson IC 03-142HN BH

QC BATCH REPORT

Batch ID: **TD220613-1-1** Instrument ID: **Balance** Method: **SM2540C**

DUP		Sample ID: 2206267-1		Units: MG/L			Analysis Date: 6/14/2022				
Client ID: 03-142HN A		Run ID: TD220614-1A1			Prep Date: 6/13/2022		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	7090	200						6800	5	14	

LCS		Sample ID: TD220613-1		Units: MG/L			Analysis Date: 6/14/2022				
Client ID:		Run ID: TD220614-1A1			Prep Date: 6/13/2022		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	385	20	400		96	85-115				14	

LCSD		Sample ID: TD220613-1		Units: MG/L			Analysis Date: 6/14/2022				
Client ID:		Run ID: TD220614-1A1			Prep Date: 6/13/2022		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	385	20	400		96	85-115		385	0	14	

MB		Sample ID: TD220613-1		Units: MG/L			Analysis Date: 6/14/2022				
Client ID:		Run ID: TD220614-1A1			Prep Date: 6/13/2022		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	ND	20									

The following samples were analyzed in this batch: