



Monday, August 19, 2019

Ty Woodworth
Great Western Oil and Gas
2005 Howard Smith Ave East
Windsor, CO 80550

Re: ALS Workorder: 1908114
Project Name: B-FARM LD 18-391 HNX BH
Project Number:

Dear Mr. Woodworth:

Two water samples were received from Great Western Oil and Gas, on 8/6/2019. 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.

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

Sincerely,

ALS Environmental
Katie M. O'Brien
Project Manager

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
AIHA	214884
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
PJ-LA (DoD ELAP/ISO 170250)	95377
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280



1908114

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 ICPMS followed method 200.8 and the current revision of SOP 827.

Sample 1908114-2 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: 1908114

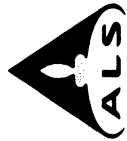
Client Name: Great Western Oil and Gas

Client Project Name: B-FARM LD 18-391 HNX BH

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
18-391 HNX A through E, and G	1908114-1		WATER	05-Aug-19	10:00
18-391 HNX F	1908114-2		WATER	05-Aug-19	10:00



ALS Environmental

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

Chain-of-Custody

Turnaround time for samples received after 2 p.m. will be calculated beginning from the next business day.
Turnaround time for samples received Saturday will be calculated beginning from the next business day.

ALS WORKORDER #	(908114)
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PROJECT NAME	BFAEM DR 18-391 HUX DA	TURNAROUND TIME	
PROJECT No.		SAMPLER	
COMPANY NAME	GWOG	SITE ID	
SEND REPORT TO	TY WOODWORTH	EDD FORMAT	
ADDRESS		PURCHASE ORDER	
CITY / STATE / ZIP		BILL TO COMPANY	
PHONE		INVOICE ATTN TO	
FAX		ADDRESS	
E-MAIL	twwoodworth@gwog.com	CITY / STATE / ZIP	
	gwogco.com	PHONE	
		FAX	
		E-MAIL	

PARAMETER/METHOD REQUEST FOR ANALYSIS

A	DESSOLVER GASSES
B	PTEX
C	TRC
D	GREC
E	ANION'S ALKS, TRS
F	PS METALS
G	TR METALS
H	
I	
J	

LAB ID	FIELD ID	MATRIX	SAMPLE DATE	SAMPLE TIME	# OF BOTTLES	PRESERVATIVE	QC	A	B	C	D	E	F	G	H	I	J	SEE NOTES SECTION
①	18-391 HUX A	W	8/5	10:00	3	—		X										
	18-391 HUX B	W	8/5		3	HCL			X									
	18-391 HUX C	W	8/5		3	HCL				X								
	18-391 HUX D	W	8/5		3	HCL					X							
	18-391 HUX E	W	8/5		1	—						X						
②	18-391 HUX F	W	8/5		1	—							X					
③	18-391 HUX G	W	8/5		1	HNO3								X				

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

RELINQUISHED BY	PRINTED NAME	DATE	TIME
RECEIVED BY	MAX TREHUS	8/6/19	8:02
RELINQUISHED BY	Emily Lyons	08-06-19	0807
RECEIVED BY			
RELINQUISHED BY			
RECEIVED BY			

Form 202-9 SIGNATURE

REPORT LEVEL / QC REQUIRED

Summary (Standard QC)	
LEVEL II (Standard QC)	
LEVEL III (Std QC + forms)	
LEVEL IV (Std QC + forms + raw)	

2.3

6 of 18

PRESERVATION KEY 1-HCl 2-HNO3 3-H2SO4 4-NeOH 5-NeOH/ZnAcetate 6-NaHSO4 7-4°C 8-Other



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CONDITION OF SAMPLE UPON RECEIPT FORM

Client: GWOG

Workorder No: 1908114

Project Manager: LO

Initials: ng

Date: 8.6.19

1. Are airbills / shipping documents present and/or removable?		<u>DROP OFF</u>	YES	NO			
2. Are custody seals on shipping containers intact?		<u>NONE</u>	YES	NO *			
3. Are custody seals on sample containers intact?		<u>NONE</u>	YES	NO *			
4. Is there a COC (chain-of-custody) present?			<u>YES</u>	NO *			
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)			<u>YES</u>	NO *			
6. Are short-hold samples present?			YES	<u>NO</u>			
7. Are all samples within holding times for the requested analyses?			<u>YES</u>	NO *			
8. Were all sample containers received intact? (not broken or leaking)			<u>YES</u>	NO *			
9. Is there sufficient sample for the requested analyses?			<u>YES</u>	NO *			
10. Are all samples in the proper containers for the requested analyses?			<u>YES</u>	NO *			
11. Are all aqueous samples preserved correctly, if required? (excluding volatiles)		N/A	YES	<u>NO</u>			
12. Are all aqueous non-preserved samples pH 4-9?		N/A	<u>YES</u>	NO *			
13. 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)		N/A	YES	<u>NO</u>			
14. Were the samples shipped on ice?			<u>YES</u>	NO			
15. Were cooler temperatures measured at 0.1-6.0°C?	IR gun used*:	#1	<u>#3</u>	#4	RAD ONLY	<u>YES</u>	NO
Cooler #: <u>1</u>							
Temperature (°C): <u>0.9</u> <u>2.3</u>							
No. of custody seals on cooler: <u>NIA</u>							
External µR/hr reading: <u>NIA</u>							
Background µR/hr reading: <u>12</u>							
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)							

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

Both unpreserved samples (sample 1 bottle 1 and sample 2) have a pH of 11
All VOCs contain headspace

All client bottle ID's vs ALS lab ID's double-checked by: ng

If applicable, was the client contacted? YES / NO / NA Contact: _____ Date/Time: _____

Project Manager Signature / Date: [Signature] 8/6/19

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SAMPLE SUMMARY REPORT

Client: Great Western Oil and Gas
 Project: B-FARM LD 18-391 HNX BH
 Sample ID: 18-391 HNX A through E, and G
 Legal Location:
 Collection Date: 8/5/2019 10:00

Date: 19-Aug-19
 Work Order: 1908114
 Lab ID: 1908114-1
 Matrix: WATER
 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Alkalinity as Calcium Carbonate			SM2320B		Prep Date: 8/7/2019	PrepBy: KJS
BICARBONATE AS CaCO3	ND		20	MG/L	1	8/7/2019
CARBONATE AS CaCO3	290		20	MG/L	1	8/7/2019
TOTAL ALKALINITY AS CaCO3	450		20	MG/L	1	8/7/2019
Diesel Range Organics			SW8015M		Prep Date: 8/8/2019	PrepBy: LML
Diesel Range Organics	25	LD	0.51	MG/L	1	8/12/2019 18:29
Surr: O-TERPHENYL	94		63-126	%REC	1	8/12/2019 18:29
Dissolved Gasses			RSK175		Prep Date: 8/13/2019	PrepBy: LML
METHANE	130		1	UG/L	1	8/13/2019 12:11
ETHANE	39		2	UG/L	1	8/13/2019 12:11
PROPANE	22		1	UG/L	1	8/13/2019 12:11
Gasoline Range Organics			SW8015		Prep Date: 8/8/2019	PrepBy: LML
GASOLINE RANGE ORGANICS	3.8	G	0.5	MG/L	5	8/8/2019 19:43
Surr: 2,3,4-TRIFLUOROTOLUENE	97		74-129	%REC	5	8/8/2019 19:43
GC/MS Volatiles			SW8260_25		Prep Date: 8/7/2019	PrepBy: CCL
BENZENE	89		25	UG/L	25	8/7/2019 11:57
TOLUENE	210		25	UG/L	25	8/7/2019 11:57
ETHYLBENZENE	45		25	UG/L	25	8/7/2019 11:57
M+P-XYLENE	190		25	UG/L	25	8/7/2019 11:57
O-XYLENE	110		25	UG/L	25	8/7/2019 11:57
TOTAL XYLENES	300		1	UG/L	1	8/7/2019 11:57
Surr: 4-BROMOFLUOROBENZENE	96		85-115	%REC	25	8/7/2019 11:57
Surr: DIBROMOFLUOROMETHANE	91		84-118	%REC	25	8/7/2019 11:57
Surr: TOLUENE-D8	94		85-115	%REC	25	8/7/2019 11:57
Ion Chromatography			EPA300.0		Prep Date: 8/8/2019	PrepBy: LML
CHLORIDE	630		10	MG/L	50	8/8/2019 14:10
SULFATE	130		10	MG/L	10	8/8/2019 13:58
Total Recoverable Metals by 200.8			EPA200.8		Prep Date: 8/13/2019	PrepBy: JML
CALCIUM	210000		1000	UG/L	10	8/14/2019 20:33
POTASSIUM	250000		1000	UG/L	10	8/14/2019 20:33
MAGNESIUM	ND		100	UG/L	10	8/14/2019 20:33
SODIUM	340000		1000	UG/L	10	8/14/2019 20:33
Total Dissolved Solids			SM2540C		Prep Date: 8/6/2019	PrepBy: KJS
TOTAL DISSOLVED SOLIDS	2300		80	MG/L	1	8/8/2019

Client: Great Western Oil and Gas
Project: B-FARM LD 18-391 HNX BH
Sample ID: 18-391 HNX F
Legal Location:
Collection Date: 8/5/2019 10:00

Date: 19-Aug-19
Work Order: 1908114
Lab ID: 1908114-2
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dissolved Metals by 200.8			EPA200.8		Prep Date: 8/13/2019	PrepBy: JML
CALCIUM	210000		1000	UG/L	10	8/14/2019 20:36
POTASSIUM	240000		1000	UG/L	10	8/14/2019 20:36
MAGNESIUM	ND		100	UG/L	10	8/14/2019 20:36
SODIUM	340000		1000	UG/L	10	8/14/2019 20:36

Client: Great Western Oil and Gas
Project: B-FARM LD 18-391 HNX BH
Sample ID: 18-391 HNX F
Legal Location:
Collection Date: 8/5/2019 10:00

Date: 19-Aug-19
Work Order: 1908114
Lab ID: 1908114-2
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: 8/19/2019 9:33:

Client: Great Western Oil and Gas
 Work Order: 1908114
 Project: B-FARM LD 18-391 HNX BH

QC BATCH REPORT

Batch ID: **HC190808-61-1** Instrument ID **FUELS-1** Method: **SW8015**

LCS Sample ID: **HC190808-61** Units: **MG/L** Analysis Date: **8/8/2019 14:41**
 Client ID: Run ID: **HC190808-6A** Prep Date: **8/8/2019** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	0.471	0.1	0.5		94	79-118				20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.1		0.1		100	74-129					

LCSD Sample ID: **HC190808-61** Units: **MG/L** Analysis Date: **8/8/2019 20:04**
 Client ID: Run ID: **HC190808-6A** Prep Date: **8/8/2019** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	0.467	0.1	0.5		93	79-118		0.471	1	20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.0998		0.1		100	74-129			1		

MB Sample ID: **HC190808-61** Units: **MG/L** Analysis Date: **8/8/2019 15:02**
 Client ID: Run ID: **HC190808-6A** Prep Date: **8/8/2019** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	ND	0.1									
Surr: 2,3,4-TRIFLUOROTOLUENE	0.0981				98	74-129					

The following samples were analyzed in this batch:

Client: Great Western Oil and Gas
 Work Order: 1908114
 Project: B-FARM LD 18-391 HNX BH

QC BATCH REPORT

Batch ID: **HC190808-81-1** Instrument ID **FUELS-1** Method: **SW8015M**

LCS		Sample ID: HC190808-81			Units: MG/L		Analysis Date: 8/12/2019 16:20				
Client ID:		Run ID: HC190812-8A			Prep Date: 8/8/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	7.68	0.533	8.33		92	36-150				20	
Surr: O-TERPHENYL	1.56		1.67		94	63-126					

LCSD		Sample ID: HC190808-81			Units: MG/L		Analysis Date: 8/12/2019 16:41				
Client ID:		Run ID: HC190812-8A			Prep Date: 8/8/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	7.53	0.533	8.33		90	36-150		7.68	2	20	
Surr: O-TERPHENYL	1.61		1.67		97	63-126			3		

MB		Sample ID: HC190808-81			Units: MG/L		Analysis Date: 8/12/2019 15:58					
Client ID:		Run ID: HC190812-8A			Prep Date: 8/8/2019		DF: 1					
Analyte	Result	ReportLimit										Qual
Diesel Range Organics	ND	0.53										
Surr: O-TERPHENYL	1.58		95	63-126								

The following samples were analyzed in this batch:

Client: Great Western Oil and Gas
 Work Order: 1908114
 Project: B-FARM LD 18-391 HNX BH

QC BATCH REPORT

Batch ID: **HC190813-91-1** Instrument ID **MEE-1** Method: **RSK175**

LCS Sample ID: **HC190813-91** Units: **UG/L** Analysis Date: **8/13/2019 10:22**
 Client ID: Run ID: **HC190813-9A** Prep Date: **8/13/2019** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	154	1	142		108	80-120				25	
ETHANE	275	2	267		103	80-120				25	
PROPANE	391	1	391		100	80-120				25	

LCSD Sample ID: **HC190813-91** Units: **UG/L** Analysis Date: **8/13/2019 12:02**
 Client ID: Run ID: **HC190813-9A** Prep Date: **8/13/2019** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	140	1	142		98	80-120		154	9	25	
ETHANE	249	2	267		93	80-120		275	10	25	
PROPANE	356	1	391		91	80-120		391	9	25	

MB Sample ID: **HC190813-91** Units: **UG/L** Analysis Date: **8/13/2019 10:25**
 Client ID: Run ID: **HC190813-9A** Prep Date: **8/13/2019** DF: **1**

Analyte	Result	ReportLimit	Qual
METHANE	ND	1	
ETHANE	ND	2	
PROPANE	ND	1	

The following samples were analyzed in this batch:

Client: Great Western Oil and Gas
 Work Order: 1908114
 Project: B-FARM LD 18-391 HNX BH

QC BATCH REPORT

Batch ID: **IP190813-1-4** Instrument ID **ICPMS2** Method: **EPA200.8**

LCS		Sample ID: IM190813-1			Units: UG/L		Analysis Date: 8/14/2019 19:49				
Client ID:		Run ID: IM190814-10A8			Prep Date: 8/13/2019		DF: 10				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CALCIUM	9850	1000	10000		99	85-115				20	
MAGNESIUM	9320	100	10000		93	85-115				20	
POTASSIUM	4660	1000	5000		93	85-115				20	
SODIUM	9290	1000	10000		93	85-115				20	

MB		Sample ID: FP190806-1			Units: UG/L		Analysis Date: 8/14/2019 19:43					
Client ID:		Run ID: IM190814-10A8			Prep Date: 8/13/2019		DF: 10					
Analyte	Result	ReportLimit										Qual
CALCIUM	ND	1000										
MAGNESIUM	ND	100										
POTASSIUM	ND	1000										
SODIUM	ND	1000										

MB		Sample ID: IP190813-1			Units: UG/L		Analysis Date: 8/14/2019 19:46					
Client ID:		Run ID: IM190814-10A8			Prep Date: 8/13/2019		DF: 10					
Analyte	Result	ReportLimit										Qual
CALCIUM	ND	1000										
MAGNESIUM	ND	100										
POTASSIUM	ND	1000										
SODIUM	ND	1000										

The following samples were analyzed in this batch: 1908114-1 1908114-2

Client: Great Western Oil and Gas
 Work Order: 1908114
 Project: B-FARM LD 18-391 HNX BH

QC BATCH REPORT

Batch ID: VL190807-4-2 Instrument ID: HPV4 Method: SW8260_25

LCS		Sample ID: VL190807-4			Units: %REC		Analysis Date: 8/7/2019 09:07				
Client ID:		Run ID: VL190807-4A			Prep Date: 8/7/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	24.1		25		96	85-115					
Surr: DIBROMOFLUOROMETHANE	23.4		25		93	84-118					
Surr: TOLUENE-D8	23.6		25		94	85-115					
BENZENE	9.62	1	10		96	83-117				20	
TOLUENE	9.36	1	10		94	82-113				20	
ETHYLBENZENE	9.4	1	10		94	81-113				20	
M+P-XYLENE	19.5	1	20		98	82-115				20	
O-XYLENE	9.6	1	10		96	81-115				20	

LCSD		Sample ID: VL190807-4			Units: %REC		Analysis Date: 8/7/2019 09:27				
Client ID:		Run ID: VL190807-4A			Prep Date: 8/7/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	23.9		25		95	85-115			1		
Surr: DIBROMOFLUOROMETHANE	23.3		25		93	84-118			0		
Surr: TOLUENE-D8	23.6		25		94	85-115			0		
BENZENE	9.51	1	10		95	83-117		9.62	1	20	
TOLUENE	9.15	1	10		92	82-113		9.36	2	20	
ETHYLBENZENE	9.22	1	10		92	81-113		9.4	2	20	
M+P-XYLENE	19.2	1	20		96	82-115		19.5	1	20	
O-XYLENE	9.43	1	10		94	81-115		9.6	2	20	

MB		Sample ID: VL190807-4			Units: %REC		Analysis Date: 8/7/2019 11:15				
Client ID:		Run ID: VL190807-4A			Prep Date: 8/7/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	25.1				100	85-115					
Surr: DIBROMOFLUOROMETHANE	22.6				90	84-118					
Surr: TOLUENE-D8	23.8				95	85-115					
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:

1908114-1

Client: Great Western Oil and Gas
Work Order: 1908114
Project: B-FARM LD 18-391 HNX BH

QC BATCH REPORT

Batch ID: **AK190807-1-1** Instrument ID **NONE** Method: **SM2320B**

LCS		Sample ID: AK190807-1			Units: MG/L		Analysis Date: 8/7/2019				
Client ID:		Run ID: AK190807-1a1			Prep Date: 8/7/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	107	5	100		107	85-115				15	

MB		Sample ID: AK190807-1			Units: MG/L		Analysis Date: 8/7/2019				
Client ID:		Run ID: AK190807-1a1			Prep Date: 8/7/2019		DF: 1				
Analyte	Result	ReportLimit									
BICARBONATE AS CaCO3	ND	5									
CARBONATE AS CaCO3	ND	5									
TOTAL ALKALINITY AS CaCO3	ND	5									

The following samples were analyzed in this batch:

1908114-1

Client: Great Western Oil and Gas
 Work Order: 1908114
 Project: B-FARM LD 18-391 HNX BH

QC BATCH REPORT

Batch ID: **IC190808-2-1** Instrument ID **IC3** Method: **EPA300.0**

LCS		Sample ID: IC190808-2			Units: MG/L		Analysis Date: 8/8/2019 17:39				
Client ID:		Run ID: IC190808-1A1			Prep Date: 8/8/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CHLORIDE	10	0.2	10		100	90-110				15	
SULFATE	50.4	1	50		101	90-110				15	

LCSD		Sample ID: IC190808-2			Units: MG/L		Analysis Date: 8/8/2019 20:08				
Client ID:		Run ID: IC190808-1A1			Prep Date: 8/8/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CHLORIDE	9.84	0.2	10		98	90-110		10	2	15	
SULFATE	48.7	1	50		97	90-110		50.4	3	15	

MB		Sample ID: IC190808-2			Units: MG/L		Analysis Date: 8/8/2019 17:52					
Client ID:		Run ID: IC190808-1A1			Prep Date: 8/8/2019		DF: 1					
Analyte	Result	ReportLimit										Qual
CHLORIDE	ND	0.2										
SULFATE	ND	1										

The following samples were analyzed in this batch:

Client: Great Western Oil and Gas
Work Order: 1908114
Project: B-FARM LD 18-391 HNX BH

QC BATCH REPORT

Batch ID: **TD190806-1-1** Instrument ID **Balance** Method: **SM2540C**

LCS Sample ID: **TD190806-1** Units: **MG/L** Analysis Date: **8/8/2019**
 Client ID: Run ID: **TD190806-1a1** Prep Date: **8/6/2019** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	413	20	400		103	85-115				30	

MB Sample ID: **TD190806-1** Units: **MG/L** Analysis Date: **8/8/2019**
 Client ID: Run ID: **TD190806-1a1** Prep Date: **8/6/2019** DF: **1**

Analyte	Result	ReportLimit	Qual
TOTAL DISSOLVED SOLIDS	ND	20	

The following samples were analyzed in this batch:

1908114-1
