



Tuesday, December 29, 2020

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

Re: ALS Workorder: 2012336
Project Name: Postle IC 09-379HC
Project Number:

Dear Mr. Trehus:

Two water samples were received from Great Western Operating Company, LLC, on 12/16/2020. 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

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
Alaska (AK)	17-003
Arizona (AZ)	AZ0742
California (CA)	2926
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
PJ-LA (DoD ELAP/ISO 170250)	95377
Maryland (MD)	285
Missouri (MO)	175
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



2012336

GC/MS Volatiles:

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

All surrogate recoveries were within acceptance criteria with the following exception:

Surrogate	Sample	Direction
Dibromofluoromethane	-1	Low

The low surrogate recovery is due to the high pH of the sample. No further action was taken.

All remaining 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 2012336-2 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: 2012336

Client Name: Great Western Operating Company, LLC

Client Project Name: Postle IC 09-379HC

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
09-379HC A through E, G	2012336-1		WATER	15-Dec-20	9:15
09-379HC F	2012336-2		WATER	15-Dec-20	9:15



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 #
2012336

PROJECT NAME	Posh LLC 09-379HC	
PROJECT No.		
COMPANY NAME	GWDG	
SEND REPORT TO	Max Trehus	
ADDRESS		
CITY / STATE / ZIP		
PHONE		
FAX		
E-MAIL	mtrhus@gwp.com	
TURNAROUND TIME	SAMPLER	
SITE ID		
EDD FORMAT		
PURCHASE ORDER	PARAMETER/METHOD REQUEST FOR ANALYSIS	
BILL TO COMPANY	A Dissolved Gases	
INVOICE ATTN TO	B BTEX	
ADDRESS	C DRD	
CITY / STATE / ZIP	D G RD	
PHONE	E Anions, ALK, TDS	
FAX	F DS Metals	
E-MAIL	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	09-379HC A	W	12/15/20	9:15	3	-		X										
1	09-379HC B				3	HCL			X									
1	09-379HC C				3	HCL				X								
1	09-379HC D				3	HCL					X							
2	09-379HC E				1	-						X						
1	09-379HC F				1	-							X					
1	09-379HC G	↓	↓	↓	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

Form 2029

REPORT LEVEL / QC REQUIRED: 5.9%

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

RELINQUISHED BY: [Signature]
 RECEIVED BY: Kymmy Ayuda
 DATE: 12-16-20
 TIME: 11:53

RELINQUISHED BY: [Signature]
 RECEIVED BY: Rose Argant
 DATE: 12-16-20
 TIME: 11:53

RELINQUISHED BY:
 RECEIVED BY:

RELINQUISHED BY:
 RECEIVED BY:

RELINQUISHED BY:
 RECEIVED BY:

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



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CONDITION OF SAMPLE UPON RECEIPT FORM

Client Name/ID: **Great Western**

Workorder No: **20123336**

Project Manager: **KMO**

Initials: **RGA**

Date: **12/16/2020**

1. Are airbills / shipping documents present and/or removable?	<input checked="" type="checkbox"/> Drop Off	<input type="checkbox"/> YES	<input type="checkbox"/> NO
2. Are custody seals on shipping containers intact?	<input checked="" type="checkbox"/> NONE	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
3. Are custody seals on sample containers intact?	<input checked="" type="checkbox"/> NONE	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
4. Is there a COC (chain-of-custody) present?		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO*
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO*
6. Are short-hold samples present?		<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
7. Are all samples within holding times for the requested analyses?		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO*
8. Were all sample containers received intact? (not broken or leaking)		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO*
9. Is there sufficient sample for the requested analyses?		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO*
10. Are samples in proper containers for requested analyses? (form 250, Sample Handling Guidelines)		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO*
11. Are all aqueous samples preserved correctly, if required?	<input type="checkbox"/> N/A	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO*
12. Were unpreserved samples pH checked, if required?	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> YES	<input type="checkbox"/> NO
13. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm in diameter?	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
14. Were the samples shipped on ice?		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
15. Were cooler temperatures measured at 0.1 - 6.0°C?	IR gun used: <input type="checkbox"/> #3 <input checked="" type="checkbox"/> #5 <input type="checkbox"/> Rad Only	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO

Cooler #: **1**

Temperature (°C): **5.9**

of custody seals on cooler: **0**

External mR/hr reading: **-**

Background mR/hr reading: **10**

Were external mR/hr readings ≤ two times background and within DOT acceptance criteria? (If no, see Form 008)

N/A YES NO

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

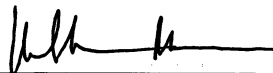
11) Sample 2012336-1-14 had a pH of 14, 0.5 mL of HNO3 was added, no change in pH was observed

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

If applicable, was the client contacted? YES N/A Contact Name

Date:

Project Manager Signature / Date:

 **12/17/20**

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SAMPLE SUMMARY REPORT

Client: Great Western Operating Company, LLC
Project: Postle IC 09-379HC
Sample ID: 09-379HC A through E, G
Legal Location:
Collection Date: 12/15/2020 09:15

Date: 29-Dec-20
Work Order: 2012336
Lab ID: 2012336-1
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Alkalinity as Calcium Carbonate						
BICARBONATE AS CaCO3	ND		500	MG/L	1	12/22/2020
CARBONATE AS CaCO3	1300		500	MG/L	1	12/22/2020
TOTAL ALKALINITY AS CaCO3	7300		500	MG/L	1	12/22/2020
Diesel Range Organics						
Diesel Range Organics	6.5		1	MG/L	1	12/23/2020 22:18
Surr: O-TERPHENYL	105		69-120	%REC	1	12/23/2020 22:18
Dissolved Gasses						
METHANE	430		1	UG/L	1	12/21/2020 10:38
ETHANE	180		2	UG/L	1	12/21/2020 10:38
PROPANE	82		1	UG/L	1	12/21/2020 10:38
Gasoline Range Organics						
GASOLINE RANGE ORGANICS	7.8		5	MG/L	50	12/22/2020 13:10
Surr: 2,3,4-TRIFLUOROTOLUENE	110		80-120	%REC	50	12/22/2020 13:10
GC/MS Volatiles						
BENZENE	68		5	UG/L	5	12/18/2020 18:40
TOLUENE	170		5	UG/L	5	12/18/2020 18:40
ETHYLBENZENE	45		5	UG/L	5	12/18/2020 18:40
M+P-XYLENE	180		5	UG/L	5	12/18/2020 18:40
O-XYLENE	110		5	UG/L	5	12/18/2020 18:40
TOTAL XYLENES	290		1	UG/L	1	12/18/2020 18:40
Surr: 4-BROMOFLUOROBENZENE	99		80-120	%REC	5	12/18/2020 18:40
Surr: DIBROMOFLUOROMETHANE	58	*	80-120	%REC	5	12/18/2020 18:40
Surr: TOLUENE-D8	97		80-120	%REC	5	12/18/2020 18:40
Ion Chromatography						
CHLORIDE	5500		100	MG/L	500	12/18/2020 20:16
SULFATE	350		200	MG/L	200	12/18/2020 20:02
Total Recoverable Metals by 200.7						
CALCIUM	160		10	MG/L	10	12/23/2020 12:04
POTASSIUM	5000		100	MG/L	100	12/23/2020 12:28
MAGNESIUM	ND		10	MG/L	10	12/23/2020 12:04
SODIUM	2900		100	MG/L	100	12/23/2020 12:28
Total Dissolved Solids						
TOTAL DISSOLVED SOLIDS	11000		1000	MG/L	1	12/21/2020

Client: Great Western Operating Company, LLC

Date: 29-Dec-20

Project: Postle IC 09-379HC

Work Order: 2012336

Sample ID: 09-379HC F

Lab ID: 2012336-2

Legal Location:

Matrix: WATER

Collection Date: 12/15/2020 09:15

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dissolved Metals by 200.7			EPA200.7		Prep Date: 12/22/2020	PrepBy: TXS
CALCIUM	160		10	MG/L	10	12/23/2020 12:05
POTASSIUM	4900		100	MG/L	100	12/23/2020 12:29
MAGNESIUM	ND		10	MG/L	10	12/23/2020 12:05
SODIUM	2800		100	MG/L	100	12/23/2020 12:29

Client: Great Western Operating Company, LLC
Project: Postle IC 09-379HC
Sample ID: 09-379HC F
Legal Location:
Collection Date: 12/15/2020 09:15

Date: 29-Dec-20
Work Order: 2012336
Lab ID: 2012336-2
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: 12/29/2020 2:42:

Client: Great Western Operating Company, LLC
 Work Order: 2012336
 Project: Postle IC 09-379HC

QC BATCH REPORT

Batch ID: **HC201221-91-1** Instrument ID: **MEE-1** Method: **RSK175**

LCS Sample ID: **HC201221-91** Units: **UG/L** Analysis Date: **12/21/2020 07:37**

Client ID: Run ID: **HC201221-91D** Prep Date: **12/21/2020** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	142	1	142		100	76-125				25	
ETHANE	250	2	267		94	70-120				25	
PROPANE	369	1	391		94	72-120				25	

LCSD Sample ID: **HC201221-91** Units: **UG/L** Analysis Date: **12/21/2020 09:20**

Client ID: Run ID: **HC201221-91D** Prep Date: **12/21/2020** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	142	1	142		100	76-125		142	0	25	
ETHANE	253	2	267		95	70-120		250	1	25	
PROPANE	315	1	391		80	72-120		369	16	25	

MB Sample ID: **HC201221-91** Units: **UG/L** Analysis Date: **12/21/2020 08:00**

Client ID: Run ID: **HC201221-91D** Prep Date: **12/21/2020** 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 Operating Company, LLC
 Work Order: 2012336
 Project: Postle IC 09-379HC

QC BATCH REPORT

Batch ID: **HC201222-61-1** Instrument ID: **FUELS-1** Method: **SW8015**

LCS		Sample ID: HC201222-61			Units: MG/L		Analysis Date: 12/22/2020 07:54				
Client ID:		Run ID: HC201222-61A			Prep Date: 12/22/2020		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	0.52	0.1	0.5		104	80-120				20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.105		0.1		105	80-120					

LCSD		Sample ID: HC201222-61			Units: MG/L		Analysis Date: 12/22/2020 12:23				
Client ID:		Run ID: HC201222-61A			Prep Date: 12/22/2020		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	0.469	0.1	0.5		94	80-120		0.52	10	20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.11		0.1		110	80-120			5		

MB		Sample ID: HC201222-61			Units: MG/L		Analysis Date: 12/22/2020 08:18				
Client ID:		Run ID: HC201222-61A			Prep Date: 12/22/2020		DF: 1				
Analyte	Result	ReportLimit	Qual								
GASOLINE RANGE ORGANICS	ND	0.1									
Surr: 2,3,4-TRIFLUOROTOLUENE	0.102		102	80-120							

The following samples were analyzed in this batch:

Client: Great Western Operating Company, LLC
 Work Order: 2012336
 Project: Postle IC 09-379HC

QC BATCH REPORT

Batch ID: **HC201223-82-1** Instrument ID: **FUELS-1** Method: **SW8015M**

LCS		Sample ID: HC201223-82			Units: MG/L		Analysis Date: 12/23/2020 21:36				
Client ID:		Run ID: HC201223-81A			Prep Date: 12/23/2020		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	7.16	1.07	8.33		86	53-120				20	
Surr: O-TERPHENYL	1.68		1.67		101	69-120					

LCSD		Sample ID: HC201223-82			Units: MG/L		Analysis Date: 12/23/2020 21:57				
Client ID:		Run ID: HC201223-81A			Prep Date: 12/23/2020		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	7.2	1.07	8.33		86	53-120		7.16	1	20	
Surr: O-TERPHENYL	1.73		1.67		104	69-120			3		

MB		Sample ID: HC201223-82			Units: MG/L		Analysis Date: 12/23/2020 21:15				
Client ID:		Run ID: HC201223-81A			Prep Date: 12/23/2020		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	1.64				98	69-120					

MS		Sample ID: 2012336-1			Units: MG/L		Analysis Date: 12/23/2020 22:39				
Client ID: 09-379HC A through E, G		Run ID: HC201223-81A			Prep Date: 12/23/2020		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	15.3	1.02	8	6.5	110	53-120				20	
Surr: O-TERPHENYL	1.71		1.6		107	69-120					

MSD		Sample ID: 2012336-1			Units: MG/L		Analysis Date: 12/23/2020 23:00				
Client ID: 09-379HC A through E, G		Run ID: HC201223-81A			Prep Date: 12/23/2020		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	16.5	1.01	7.88	6.5	126	53-120		15.3	7	20	*
Surr: O-TERPHENYL	1.77		1.58		112	69-120			3		

The following samples were analyzed in this batch:

Client: Great Western Operating Company, LLC
 Work Order: 2012336
 Project: Postle IC 09-379HC

QC BATCH REPORT

Batch ID: **IP201222-4-2** Instrument ID: **ICPTrace2** Method: **EPA200.7**

LCS		Sample ID: IP201222-4			Units: MG/L		Analysis Date: 12/23/2020 11:55				
Client ID:		Run ID: IT201223-1A2			Prep Date: 12/22/2020		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CALCIUM	36.8	1	40		92	85-115				20	
MAGNESIUM	36.8	1	40		92	85-115				20	
POTASSIUM	41.1	1	40		103	85-115				20	
SODIUM	38.6	1	40		96	85-115				20	

LCSD		Sample ID: IP201222-4			Units: MG/L		Analysis Date: 12/23/2020 11:56				
Client ID:		Run ID: IT201223-1A2			Prep Date: 12/22/2020		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CALCIUM	36.4	1	40		91	85-115		36.8	1	20	
MAGNESIUM	36.4	1	40		91	85-115		36.8	1	20	
POTASSIUM	40.8	1	40		102	85-115		41.1	1	20	
SODIUM	38.4	1	40		96	85-115		38.6	1	20	

MB		Sample ID: FP201218-4			Units: MG/L		Analysis Date: 12/23/2020 11:53				
Client ID:		Run ID: IT201223-1A2			Prep Date: 12/22/2020		DF: 1				
Analyte	Result	ReportLimit	Qual								
CALCIUM	ND	1									
MAGNESIUM	ND	1									
POTASSIUM	ND	1									
SODIUM	ND	1									

MB		Sample ID: IP201222-4			Units: MG/L		Analysis Date: 12/23/2020 11:54				
Client ID:		Run ID: IT201223-1A2			Prep Date: 12/22/2020		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: 2012336-1 2012336-2

Client: Great Western Operating Company, LLC

Work Order: 2012336

Project: Postle IC 09-379HC

QC BATCH REPORT

Batch ID: VL201218-3-2

Instrument ID: HPV3

Method: SW8260_25

LCS		Sample ID: VL201218-3			Units: %REC		Analysis Date: 12/18/2020 12:02				
Client ID:		Run ID: VL201218-3A			Prep Date: 12/18/2020		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	25.5		25		102	80-120					
Surr: DIBROMOFLUOROMETHANE	25		25		100	80-120					
Surr: TOLUENE-D8	24.9		25		100	80-120					
BENZENE	10.5	1	10		105	80-120				20	
TOLUENE	10.2	1	10		102	80-120				20	
ETHYLBENZENE	10.8	1	10		108	80-120				20	
M+P-XYLENE	21.1	1	20		106	80-120				20	
O-XYLENE	10.3	1	10		103	80-120				20	

LCSD		Sample ID: VL201218-3			Units: %REC		Analysis Date: 12/18/2020 12:23				
Client ID:		Run ID: VL201218-3A			Prep Date: 12/18/2020		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		25		100	80-120			2		
Surr: DIBROMOFLUOROMETHANE	25.5		25		102	80-120			2		
Surr: TOLUENE-D8	24.8		25		99	80-120			1		
BENZENE	10.5	1	10		105	80-120		10.5	0	20	
TOLUENE	9.82	1	10		98	80-120		10.2	3	20	
ETHYLBENZENE	10.6	1	10		106	80-120		10.8	2	20	
M+P-XYLENE	20	1	20		100	80-120		21.1	5	20	
O-XYLENE	10	1	10		100	80-120		10.3	3	20	

MB		Sample ID: VL201218-3			Units: %REC		Analysis Date: 12/18/2020 14:56				
Client ID:		Run ID: VL201218-3A			Prep Date: 12/18/2020		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	24.6				98	80-120					
Surr: DIBROMOFLUOROMETHANE	25.9				104	80-120					
Surr: TOLUENE-D8	24.9				99	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:

2012336-1

Client: Great Western Operating Company, LLC
 Work Order: 2012336
 Project: Postle IC 09-379HC

QC BATCH REPORT

Batch ID: **AK201222-1-1** Instrument ID: **NONE** Method: **SM2320B**

LCS		Sample ID: AK201222-1			Units: MG/L		Analysis Date: 12/22/2020				
Client ID:		Run ID: AK201222-1a1			Prep Date: 12/22/2020		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	96.5	5	100		96	85-115				15	

LCSD		Sample ID: AK201222-1			Units: MG/L		Analysis Date: 12/22/2020				
Client ID:		Run ID: AK201222-1a1			Prep Date: 12/22/2020		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	96.7	5	100		97	85-115		96.5	0	15	

MB		Sample ID: AK201222-1			Units: MG/L		Analysis Date: 12/22/2020					
Client ID:		Run ID: AK201222-1a1			Prep Date: 12/22/2020		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:

Client: Great Western Operating Company, LLC
 Work Order: 2012336
 Project: Postle IC 09-379HC

QC BATCH REPORT

Batch ID: **IC201218-1-1** Instrument ID: **IC3** Method: **EPA300.0**

LCS		Sample ID: IC201218-1			Units: MG/L		Analysis Date: 12/18/2020 07:49				
Client ID:		Run ID: IC201218-1a1			Prep Date: 12/18/2020		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CHLORIDE	9.94	0.2	10		99	90-110				15	
SULFATE	49.8	1	50		100	90-110				15	

LCSD		Sample ID: IC201218-1			Units: MG/L		Analysis Date: 12/18/2020 10:28				
Client ID:		Run ID: IC201218-1a1			Prep Date: 12/18/2020		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CHLORIDE	9.92	0.2	10		99	90-110		9.94	0	15	
SULFATE	50.2	1	50		100	90-110		49.8	1	15	

MB		Sample ID: IC201218-1			Units: MG/L		Analysis Date: 12/18/2020 08:03					
Client ID:		Run ID: IC201218-1a1			Prep Date: 12/18/2020		DF: 1					
Analyte	Result	ReportLimit										Qual
CHLORIDE	ND	0.2										
SULFATE	ND	1										

The following samples were analyzed in this batch:

Client: Great Western Operating Company, LLC
 Work Order: 2012336
 Project: Postle IC 09-379HC

QC BATCH REPORT

Batch ID: **TD201217-1-1** Instrument ID: **Balance** Method: **SM2540C**

LCS		Sample ID: TD201217-1			Units: MG/L		Analysis Date: 12/21/2020				
Client ID:		Run ID: TD201221-1A1			Prep Date: 12/17/2020		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	374	20	400		93	85-115				14	

LCSD		Sample ID: TD201217-1			Units: MG/L		Analysis Date: 12/21/2020				
Client ID:		Run ID: TD201221-1A1			Prep Date: 12/17/2020		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	365	20	400		91	85-115		374	2	14	

MB		Sample ID: TD201217-1			Units: MG/L		Analysis Date: 12/21/2020				
Client ID:		Run ID: TD201221-1A1			Prep Date: 12/17/2020		DF: 1				
Analyte	Result	ReportLimit	Qual								
TOTAL DISSOLVED SOLIDS	ND	20									

The following samples were analyzed in this batch: