



Thursday, January 24, 2019

Dave Peterson
Diamond Operating, Inc.
6666 Gunpark Dr. #200
Boulder, CO 80301

Re: ALS Workorder: 1901138
Project Name: Lois Gillette
Project Number:

Dear Mr. Peterson:

One water sample was received from Diamond Operating, Inc., on 1/11/2019. The sample was scheduled for the following analyses:

Inorganics

Metals

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
Lance R. Steere
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



1901138

Metals:

The sample was analyzed following SW-846, 3rd Edition procedures. Analysis by Trace ICP followed method 6010D and the current revision of SOP 834.

All acceptance criteria were met.

Inorganics:

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

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
TDS	160.1	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: 1901138

Client Name: Diamond Operating, Inc.

Client Project Name: Lois Gillette

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Lois Oilette	1901138-1		WATER	11-Jan-19	10:30



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: Diamond Operating Inc Workorder No: 1901138

Project Manager: _____ Initials: TD Date: 1/11/19

1. Are airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
2. Are custody seals on shipping containers intact?	NONE	YES	NO
3. Are custody seals on sample containers intact?	NONE	YES	NO
4. Is there a COC (chain-of-custody) present?		YES	NO
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)		YES	NO
6. Are short-hold samples present?		YES	NO
7. Are all samples within holding times for the requested analyses?		YES	NO
8. Were all sample containers received intact? (not broken or leaking)		YES	NO
9. Is there sufficient sample for the requested analyses?		YES	NO
10. Are all samples in the proper containers for the requested analyses?		YES	NO
11. Are all aqueous samples preserved correctly, if required? (excluding volatiles)	N/A	YES	NO
12. Are all aqueous non-preserved samples pH 4-9?	N/A	YES	NO
13. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)	N/A	YES	NO
14. Were the samples shipped on ice?		YES	NO
15. Were cooler temperatures measured at 0.1-6.0°C?	IR gun used*: #1 <u>#3</u> #4	RAD ONLY	YES
Cooler #: <u>1</u>			
Temperature (°C): <u>33.4</u>			
No. of custody seals on cooler: <u>N/A</u>			
External µR/hr reading: <u>N/A</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008)			

Additional Information: Please provide details here for any NO responses to gray-shaded boxes above, or any other issues noted:

Bottles have no labels
Only 1 sample, so ID unambiguous.

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

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

Project Manager Signature / Date: [Signature] 1/15/19

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SAMPLE SUMMARY REPORT

Client: Diamond Operating, Inc.
Project: Lois Gillette
Sample ID: Lois Oillette
Legal Location:
Collection Date: 1/11/2019 10:30

Date: 22-Jan-19
Work Order: 1901138
Lab ID: 1901138-1
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ICP Metals			SW6010		Prep Date: 1/21/2019	PrepBy: JML
CALCIUM	250		10	MG/L	10	1/21/2019 15:37
POTASSIUM	2100		10	MG/L	10	1/21/2019 15:37
MAGNESIUM	310		10	MG/L	10	1/21/2019 15:37
SODIUM	25000		500	MG/L	500	1/21/2019 15:46
Ion Chromatography			EPA300.0		Prep Date: 1/15/2019	PrepBy: HMA
CHLORIDE	48000		1000	MG/L	5000	1/16/2019 02:24
SULFATE	7700		500	MG/L	500	1/16/2019 02:11
Total Dissolved Solids			EPA160.1		Prep Date: 1/15/2019	PrepBy: AEJ
TOTAL DISSOLVED SOLIDS	81000		2000	MG/L	1	1/16/2019

Client: Diamond Operating, Inc.
Project: Lois Gillette
Sample ID: Lois Oilette
Legal Location:
Collection Date: 1/11/2019 10:30

Date: 22-Jan-19
Work Order: 1901138
Lab ID: 1901138-1
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: 1/22/2019 10:04

Client: Diamond Operating, Inc.
 Work Order: 1901138
 Project: Lois Gillette

QC BATCH REPORT

Batch ID: IP190121-5-1 Instrument ID ICPTrace2 Method: SW6010

LCS Sample ID: IP190121-5 Units: MG/L Analysis Date: 1/21/2019 15:34
 Client ID: Run ID: IT190121-1A4 Prep Date: 1/21/2019 DF: 1

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CALCIUM	38.3	1	40		96	80-120				20	
MAGNESIUM	39.1	1	40		98	80-120				20	
POTASSIUM	37.1	1	40		93	80-120				20	
SODIUM	37.3	1	40		93	80-120				20	

LCSD Sample ID: IP190121-5 Units: MG/L Analysis Date: 1/21/2019 15:36
 Client ID: Run ID: IT190121-1A4 Prep Date: 1/21/2019 DF: 1

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CALCIUM	38.4	1	40		96	80-120		38.3	0	20	
MAGNESIUM	39.2	1	40		98	80-120		39.1	0	20	
POTASSIUM	37.1	1	40		93	80-120		37.1	0	20	
SODIUM	37.3	1	40		93	80-120		37.3	0	20	

MB Sample ID: IP190121-5 Units: MG/L Analysis Date: 1/21/2019 15:33
 Client ID: Run ID: IT190121-1A4 Prep Date: 1/21/2019 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:

1901138-1

Client: Diamond Operating, Inc.
 Work Order: 1901138
 Project: Lois Gillette

QC BATCH REPORT

Batch ID: IC190115-2-1 Instrument ID IC3 Method: EPA300.0

LCS		Sample ID: IC190115-2			Units: MG/L		Analysis Date: 1/15/2019 19:49				
Client ID:		Run ID: IC190115-1A1			Prep Date: 1/15/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CHLORIDE	10.6	0.2	10		106	90-110				15	
SULFATE	52.8	1	50		106	90-110				15	

LCSD		Sample ID: IC190115-2			Units: MG/L		Analysis Date: 1/15/2019 22:17				
Client ID:		Run ID: IC190115-1A1			Prep Date: 1/15/2019		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CHLORIDE	10.6	0.2	10		106	90-110		10.6	0	15	
SULFATE	52.8	1	50		106	90-110		52.8	0	15	

MB		Sample ID: IC190115-2			Units: MG/L		Analysis Date: 1/15/2019 20:01					
Client ID:		Run ID: IC190115-1A1			Prep Date: 1/15/2019		DF: 1					
Analyte	Result	ReportLimit										Qual
CHLORIDE	ND	0.2										
SULFATE	ND	1										

The following samples were analyzed in this batch:

1901138-1

Client: Diamond Operating, Inc.
 Work Order: 1901138
 Project: Lois Gillette

QC BATCH REPORT

Batch ID: **TD190115-1-2** Instrument ID **Balance** Method: **EPA160.1**

LCS Sample ID: **TD190115-1** Units: **MG/L** Analysis Date: **1/16/2019**
 Client ID: Run ID: **TD190116-1A1** Prep Date: **1/15/2019** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	390	20	400		98	85-115				5	

MB Sample ID: **TD190115-1** Units: **MG/L** Analysis Date: **1/16/2019**
 Client ID: Run ID: **TD190116-1A1** Prep Date: **1/15/2019** DF: **1**

Analyte	Result	ReportLimit	Qual
TOTAL DISSOLVED SOLIDS	ND	20	

The following samples were analyzed in this batch:

1901138-1