



Ft. Collins, Colorado

LIMS Version: 6.911

Page 1 of 1

Saturday, September 28, 2019

Karen Waters-Husted
CH2M HILL Plateau Remediation Company
825 Jadwin Avenue
Richland, WA 99352

Re: ALS Workorder: 1909381
Project Name: SURV, September 2019
Project Number: S19-009

Dear Ms. Waters-Husted:

One water sample was received from CH2M HILL Plateau Remediation Company, on 9/18/2019. The sample was scheduled for the following analysis:

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 method 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

We certify that this data package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.

SAMPLE ISSUE RESOLUTION (SIR) REPORT		SIR Number: SIR19-0867 Rev. Number: 0 Date Initiated: 09/30/2019
<u>SAMPLE EVENT INFORMATION</u>		
SAF NUM(S):	S19-009	
LABORATORY:	ALS	
<u>SAMPLING INFORMATION</u>		
NUMBER OF SAMPLES:	1	
SAMPLE NUMBERS:	B3R713A	
SAMPLE MATRIX:	WATER	
SDG NUM(S):	ALS1909381	
<u>ISSUE BACKGROUND</u>		
CLASS:	General Laboratory Direction	
TYPE:	Clarification of Direction	
DESCRIPTION:	Sample B3R713A was received at ALS for GRO analysis out of hold.	
<u>RESOLUTION</u>		
PROPOSED RESOLUTION:	Please proceed with GRO analysis within 2X hold.	
	Note: the sample was diverted from GEL to ALS for analysis out of hold, see SIR19-0846.	
FINAL RESOLUTION:		
SUBMITTED BY:		
CUTSFORTH, EC		09/30/2019
ACCEPTED BY:		
O'BRIEN, KATIE		09/30/2019

SAMPLE ISSUE RESOLUTION (SIR) REPORT		SIR Number: SIR19-0869 Rev. Number: 0 Date Initiated: 09/30/2019
<u>SAMPLE EVENT INFORMATION</u>		
SAF NUM(S):	S19-009	
LABORATORY:	ALS	
<u>SAMPLING INFORMATION</u>		
NUMBER OF SAMPLES:	1	
SAMPLE NUMBERS:	B3R713A	
SAMPLE MATRIX:	WATER	
SDG NUM(S):	ALS1909381	
<u>ISSUE BACKGROUND</u>		
CLASS:	Field Sampling Issue	
TYPE:	Insufficient Sample Volume Collected	
DESCRIPTION:	One of the three vials submitted for analysis has headspace > 6 mm.	
<u>RESOLUTION</u>		
PROPOSED RESOLUTION:	ALS proposes that we use the vials without headspace for the final analysis.	
FINAL RESOLUTION:	Accept proposed resolution.	
SUBMITTED BY:		
O'BRIEN, KATIE	_____	09/30/2019 _____
ACCEPTED BY:		
CUTSFORTH, EC	_____	09/30/2019 _____

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1909381

Client Name: CH2M HILL Plateau Remediation Company

Client Project Name: SURV, September 2019

Client Project Number: S19-009

Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B3R713A	1909381-1		WATER	27-Aug-19	10:48

1909381



PO Box 200712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.566.8171
F 843.766.1178

GEL Work Order Number: 488839 GEL Project Manager: Heather Shaffer

gel.com
Page 1 of 1

Chain of Custody and Analytical Request

Project #: CPRC0S19009
PO Number: 300071 - 7H
Project/Site Name: CHPRC SAF S19-009
Client Name: GEL Laboratories LLC
Address: 2040 Savage Road Charleston, SC 29414
Collected By: Client Send Results To: team.shaffer@gel.com COC#:

DUE DATE: 25-SEP-2019

Sample ID	Date Collected (mm-dd-yy)	Time Collected (hhmm)	Sample Matrix	Field Lab QC	QC Analyses Requested	Subcontract Laboratory	#Cont.
B3R713 A	27-AUG-19	10:48	WATER		Subcontract for GRO	ALS-Fort Collins	

Chain of Custody Signatures

Relinquished By: (Signed)	Date	Time	Received By: (Signed)	Date	Time
	9/17/19	5:00		9/18/19	10:25

> For sample shipping and delivery details, see Sample Receipt & Review form (SRR.)



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: GEL / CHRC

Workorder No: 1909381

Project Manager: FMS

Initials: TEM Date: 9/20/19

1. Are airbills / shipping documents present and/or removable?		DROP OFF	<u>YES</u>	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>	<u>NO *</u>			
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)		<u>N/A</u>	YES	NO *			
12. Are all aqueous non-preserved samples pH 4-9?		<u>N/A</u>	YES	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>4.2</u>					
No. of custody seals on cooler:		<u>0</u>					
External µR/hr reading:		<u>13</u>					
Background µR/hr reading:		<u>13</u>					
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <u>YES</u> / 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.

13.) sample 1 bottle 3 has notable headspace

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

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

Project Manager Signature / Date: [Signature] 9/20/19



Total Volatile Petroleum Hydrocarbons (Gasoline) Case Narrative

CH2M HILL Plateau Remediation Company

SURV, September 2019 – S19-009

Work Order Number: 1909381

1. The sample was prepared and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water sample was prepared by heating and purging 5ml using purge and trap procedures based on Method 5030C. The calibration curve was also prepared using the heated purge.
2. 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.
3. All initial and continuing calibration criteria were met.
4. All method blank criteria were met.
5. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs were within the acceptance criteria.
6. A matrix spike and matrix spike duplicate were not performed because of insufficient sample. A laboratory control sample and laboratory control sample duplicate were performed instead.
7. The sample was analyzed beyond the holding time requirements, because it was received by ALS after the holding time had lapsed.
8. All surrogate recoveries were within acceptance criteria.
9. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in the current revision of SOP 939.



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.

Mindy Norton
Mindy Norton
Organics Primary Data Reviewer

9/27/19
Date

Kath M. W.
Organics Final Data Reviewer

9/28/19
Date

ALS
Data Qualifier Flags
Organics

- U or ND:** This flag indicates that the compound was analyzed for but not detected.
- J:** This flag indicates an estimated value. This flag is used as follows : (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); (3) when the retention time data indicate the presence of a compound that meets the GC identification criteria, and the result is less than the RL but greater than the MDL; and (4) the reported value is estimated.
- B:** This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.
- E:** This flag identifies compounds whose concentration exceeds the upper level of the calibration range.
- A:** This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.
- X:** This flag indicates that the analyte was diluted below an accurate quantitation level.
- *:** This flag indicates that a spike recovery is equal to or outside the control criteria used.
- +:** This flag indicates that the relative percent difference (RPD) equals or exceeds the control criteria.

ALS
Data Qualifier Flags
Fuels

- G:** This flag indicates that a pattern resembling gasoline was detected in this sample.
- D:** This flag indicates that a pattern resembling diesel was detected in this sample.
- M:** This flag indicates that a pattern resembling motor oil was detected in this sample.
- C:** This flag indicates that a pattern resembling crude oil was detected in this sample.
- 4:** This flag indicates that a pattern resembling JP-4 was detected in this sample.
- 5:** This flag indicates that a pattern resembling JP-5 was detected in this sample.
- H:** This flag indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
- L:** This flag 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

Multiple flags may be used to indicate the presence of more than one product or component.

Gasoline Range Organics

Method SW8015D

Method Blank

Lab Name: ALS -- Fort Collins

Work Order Number: 1909381

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: SURV, September 2019 S19-009

Lab ID: HC190924-61MB

Sample Matrix: WATER

Prep Batch: HC190924-61

Sample Aliquot: 5 ml

% Moisture: N/A

QCBatchID: HC190924-61-1

Final Volume: 5 ml

Date Collected: N/A

Run ID: HC190924-6A

Result Units: MG/L

Date Extracted: 24-Sep-19

Cleanup: NONE

Clean DF: 1

Date Analyzed: 24-Sep-19

Basis: N/A

File Name: 23448.dat

CASNO	Target Analyte	DF	Result	Result Qualifier	Reporting Limit	MDL
8006-61-9	GASOLINE RANGE ORGANICS	1	0.025	U	0.1	0.025

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
193533-92-5	2,3,4-TRIFLUOROTOLUENE	0.0976		0.1	98	74 - 129

Data Package ID: HCG1909381-1

Gasoline Range Organics

Method SW8015D

Sample Results

Lab Name: ALS -- Fort Collins

Work Order Number: 1909381

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: SURV, September 2019 S19-009

Field ID:	B3R713A
Lab ID:	1909381-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 27-Aug-19

Date Extracted: 24-Sep-19

Date Analyzed: 24-Sep-19

Prep Method: SW5030 Rev C

Prep Batch: HC190924-61

QC Batch ID: HC190924-61-1

Run ID: HC190924-6A

Cleanup: NONE

Basis: As Received

File Name: 23453.dat

Analyst: Lainey M. Lloyd

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

Analysis ReqCode: WTPH_GASOLIN

CASNO	Target Analyte	Dilution Factor	Result	Result Qualifier	Reporting Limit	MDL
8006-61-9	GASOLINE RANGE ORGANICS	1	0.025	U	0.1	0.025

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
193533-92-5	2,3,4-TRIFLUOROTOLUENE	0.0976		0.1	98	74 - 129

Data Package ID: *HCG1909381-1*

Gasoline Range Organics

Method SW8015D

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS -- Fort Collins

Work Order Number: 1909381

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: SURV, September 2019 S19-009

Lab ID: HC190924-61LCS	Sample Matrix: WATER % Moisture: N/A Date Collected: N/A Date Extracted: 09/24/2019 Date Analyzed: 09/24/2019 Prep Method: SW5030C	Prep Batch: HC190924-61 QCBatchID: HC190924-61-1 Run ID: HC190924-6A Cleanup: NONE Basis: N/A File Name: 23447.dat	Sample Aliquot: 5 ml Final Volume: 5 ml Result Units: MG/L Clean DF: 1
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CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
8006-61-9	GASOLINE RANGE ORGANICS	0.5	0.504	0.1		101	79 - 118%

Lab ID: HC190924-61LCSD	Sample Matrix: WATER % Moisture: N/A Date Collected: N/A Date Extracted: 09/24/2019 Date Analyzed: 09/24/2019 Prep Method: SW5030C	Prep Batch: HC190924-61 QCBatchID: HC190924-61-1 Run ID: HC190924-6A Cleanup: NONE Basis: N/A File Name: 23461.dat	Sample Aliquot: 5 ml Final Volume: 5 ml Result Units: MG/L Clean DF: 1
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CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
8006-61-9	GASOLINE RANGE ORGANICS	0.5	0.515	0.1		103	20	2

Surrogate Recovery LCS/LCSD

CASNO	Target Analyte	Spike Added	LCS % Rec.	LCS Flag	LCSD % Rec.	LCSD Flag	Control Limits
193533-92-	2,3,4-TRIFLUOROTOLUENE	0.1	99		98		74 - 129

Data Package ID: HCG1909381-1

Date Printed: Friday, September 27, 2019

ALS -- Fort Collins

Page 1 of 1

LIMS Version: 6.912

Prep Batch ID: HC190924-61

Start Date: 09/24/19	End Date: 09/24/19	Concentration Method: NONE	Batch Created By: lml
Start Time: 12:00	End Time: 14:00	Extract Method: SW5030C	Date Created: 09/24/19
Prep Analyst: Lainey M. Lloyd		Initial Volume Units: ml	Time Created: 11:49
Comments:		Final Volume Units: ml	Validated By: lml
			Date Validated: 09/25/19
			Time Validated: 8:53

QC Batch ID: HC190924-61-1

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
HC190924-61	DLS	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1909381
HC190924-61	MB	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1909381
HC190924-61	LCS	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1909381
HC190924-61	LCSD	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1909381
1909381-1	SMP	B3R713A	WATER	8/27/2019	5	5	NONE	1	1909381
1909399-1	SMP	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1909399
1909430-1	SMP	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1909430
1909457-1	SMP	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1909457

QC Types

CAR	Carrier reference sample		DLS	Detection Limit Standard
DUP	Laboratory Duplicate		LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicat		LODV	Limit of Detection Verification
LOQV	Limit of Quantitation Verification		MB	Method Blank
MS	Laboratory Matrix Spike		MSD	Laboratory Matrix Spike Duplicate
REP	Sample replicate		RVS	Reporting Level Verification Standar
SMP	Field Sample		SYS	Sample Yield Spike