



Tuesday, November 05, 2019

Ross Talboom
EOG Resources
600 17th Street, Suite 1000N
Denver, CO 80202

Re: ALS Workorder: 1910491
Project Name: Simba 1-06 SWD Spill
Project Number:

Dear Mr. Talboom:

One soil sample were received from EOG Resources, on 10/21/2019. The sample was scheduled for the following analyses:

GC/MS Volatiles

Inorganics

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



1910491

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.

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.

Inorganics:

The samples were analyzed following USDA Handbook 60 Chapter 6 procedures for the current revision of the following SOP and method:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Electrical conductivity	USDA60	810 Draft
Sodium Adsorption Ratio	USDA60	810 Draft
Paste pH	USDA60	810 Draft

All acceptance criteria were met.

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1910491

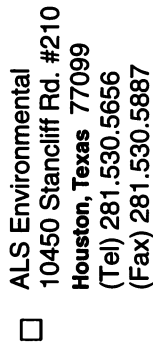
Client Name: EOG Resources

Client Project Name: Simba 1-06 SWD Spill

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Simba 1-06 SWD Line Leak - Sa	1910491-1		SOIL	17-Oct-19	11:25
Simba 1-06 SWD Line Leak - Sa	1910491-2		SatExtract	17-Oct-19	11:25



Chain of Custody Form

Page 1 of 1

☐ **ALS Environmental**
3352 128th Avenue
Holland, Michigan 49424
(Tel) 616.399.6070
(Fax) 616.399.6185

Customer Information				Project Information				ALS Project Manager:				ALS Work Order #:				Parameter/Method Request for Analysis			
Purchase Order		Project Name	Simba 1-06 SWD Spill	A	TPH														
Work Order		Project Number		B	BTEX														
Company Name	EOG Resources, Inc.	Bill To Company	EOG Resources, Inc.	C	EC														
Send Report To	Ross Talboom	Invoice Attn.	Ross Talboom	D	pH														
Address	600 17th St. 1000N	Address	600 17th St. 1000N	E	SAR														
				F															
City/State/Zip	Denver, CO 80210	City/State/Zip	Denver, CO 80210	G															
Phone	303-565-9941	Phone	303-565-9941	H															
Fax		Fax		I															
e-Mail Address	ross_talboom@eogresources.com			J															
No.	Sample Description	Date	Time	Matrix	Pres. Key Numbers	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold		
1	Simba 1-06 SWD Line Leak - Sample #3	10/17/2019	11:25am	Soil/Sand		2	X	X	X	X	X								
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Sampler(s): Please Print & Sign				Shipment Method:				Turnaround Time in Business Days (BD):				Results Due Date:			
Mark D. Smith				Drop off				<input type="checkbox"/> 10 BD <input type="checkbox"/> 5 BD <input type="checkbox"/> 3 BD <input type="checkbox"/> Other				<input type="checkbox"/> 2 BD <input type="checkbox"/> 1 BD			
Relinquished by:		Date:	Time:	Received by:		Date:	Time:	Notes:							
Mark D. Smith		10/21/2019	3:00 PM	Claire Gable		10/21/2019	3:00pm	Claire Gable will drop cooler off at lab							
Relinquished by:		Date:	Time:	Received by (Laboratory):		Date:	Time:	ALS Cooler ID		Cooler Temp		QC Package: (Check Box Below)			
Claire Gable		10/21/2019	4:30pm	C. Gable		10-21-19	1620					<input type="checkbox"/> Level II: Standard QC <input type="checkbox"/> Level III: Raw Data			
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):								<input type="checkbox"/> TRRP LRC <input type="checkbox"/> TRRP Level IV			
												<input type="checkbox"/> Level IV: SW846 Methods/CLP like <input type="checkbox"/> Other:			

Preservative Key:		1-HCl	2-HNO ₃	3-H ₂ SO ₄	4-NaOH	5-Na ₂ S ₂ O ₃	6-NaHSO ₄	7-Other	8-None/4°C	Note: Any changes must be made in writing once samples	
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Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS.

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ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: EOG

Workorder No: 12091

Project Manager: KMO

Initials: TEM

Date: 10/22/19

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 samples in proper containers for requested analyses? (form 250, Sample Handling Guidelines)		<u>YES</u>	NO *
11. Are all aqueous samples preserved correctly, if required? (excluding volatiles)	<u>N/A</u>	YES	NO *
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)	<u>N/A</u>	YES	NO
13. Were the samples shipped on ice?		<u>YES</u>	NO
14. Were cooler temperatures measured at 0.1-6.0°C?	IR gun used*: #3 <u>#5</u>	RAD ONLY	<u>YES</u>
Cooler #: <u>1</u>			
Temperature (°C): <u>5.3</u>			
# of custody seals on cooler: <u>0</u>			
External mR/hr reading: <u>1</u>			
Background mR/hr reading: <u>12</u>			
Were external mR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO <u>NA</u> (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.

Were unpreserved bottles pH checked? YES / NA

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] 10/22/19

Client: EOG Resources
Project: Simba 1-06 SWD Spill
Sample ID: Simba 1-06 SWD Line Leak - Sample #3
Legal Location:
Collection Date: 10/17/2019 11:25

Date: 05-Nov-19
Work Order: 1910491
Lab ID: 1910491-1
Matrix: SOIL
Percent Moisture: 1.1

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Diesel Range Organics			SW8015M		Prep Date: 10/29/2019	PrepBy: LML
Diesel Range Organics	6.1	M	4	MG/KG	1	10/31/2019 12:56
Surr: O-TERPHENYL	83		49-114	%REC	1	10/31/2019 12:56
Gasoline Range Organics			SW8015		Prep Date: 10/29/2019	PrepBy: CCL
GASOLINE RANGE ORGANICS	ND		0.39	MG/KG	1	10/29/2019 12:22
Surr: 2,3,4-TRIFLUOROTOLUENE	96		76-126	%REC	1	10/29/2019 12:22
GC/MS Volatiles			SW8260		Prep Date: 10/23/2019	PrepBy: JXK
BENZENE	ND		5	UG/KG	1	10/23/2019 15:14
TOLUENE	ND		5	UG/KG	1	10/23/2019 15:14
ETHYLBENZENE	ND		5	UG/KG	1	10/23/2019 15:14
M+P-XYLENE	ND		5	UG/KG	1	10/23/2019 15:14
O-XYLENE	ND		5	UG/KG	1	10/23/2019 15:14
TOTAL XYLENES	ND		5	UG/KG	1	10/23/2019 15:14
Surr: DIBROMOFLUOROMETHANE	108		61-134	%REC	1	10/23/2019 15:14
Surr: TOLUENE-D8	95		57-135	%REC	1	10/23/2019 15:14
Surr: 4-BROMOFLUOROBENZENE	98		52-151	%REC	1	10/23/2019 15:14
Sodium Adsorption Ratio			USDA60		Prep Date: 10/28/2019	PrepBy: LMC
PASTE PH	7.8		0.1	pH	1	10/28/2019

Client: EOG Resources

Date: 05-Nov-19

Project: Simba 1-06 SWD Spill

Work Order: 1910491

Sample ID: Simba 1-06 SWD Line Leak - Sample #3

Lab ID: 1910491-2

Legal Location:

Matrix: SATEXTRACT

Collection Date: 10/17/2019 11:25

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ICP Metals						
		USDA60			Prep Date: 10/23/2019	PrepBy: JML
CALCIUM	25		1	MG/L	1	10/24/2019 14:42
MAGNESIUM	3.2		1	MG/L	1	10/24/2019 14:42
SODIUM	31		1	MG/L	1	10/24/2019 14:42
Sodium Adsorption Ratio						
		USDA60			Prep Date: 10/28/2019	PrepBy: LMC
ELECTRICAL CONDUCTIVITY @ SATURATION	3400		1	umhos/cm	1	10/28/2019
SODIUM ADSORPTION RATIO	1.6		0.17	NU	1	10/24/2019 14:42

Client: EOG Resources
Project: Simba 1-06 SWD Spill
Sample ID: Simba 1-06 SWD Line Leak - Sample #3
Legal Location:
Collection Date: 10/17/2019 11:25

Date: 05-Nov-19
Work Order: 1910491
Lab ID: 1910491-2
Matrix: SATEXTRACT
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	M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
U or ND - Result is less than the sample specific MDC.	L - LCS Recovery below lower control limit.
Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.	H - LCS Recovery above upper control limit.
Y2 - Chemical Yield outside default limits.	P - LCS, Matrix Spike Recovery within control limits.
W - DER is greater than Warning Limit of 1.42	N - Matrix Spike Recovery outside control limits
* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.	NC - Not Calculated for duplicate results less than 5 times MDC
# - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.	B - Analyte concentration greater than MDC.
G - Sample density differs by more than 15% of LCS density.	B3 - Analyte concentration greater than MDC but less than Requested MDC.
D - DER is greater than Control Limit	
M - Requested MDC not met.	

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: 11/5/2019 10:04

Client: EOG Resources

QC BATCH REPORT

Work Order: 1910491

Project: Simba 1-06 SWD Spill

Batch ID: HC191029-61-1

Instrument ID FUELS-1

Method: SW8015

LCS	Sample ID: HC191029-61				Units: MG/KG		Analysis Date: 10/29/2019 10:04				
Client ID:		Run ID: HC191029-6A				Prep Date: 10/29/2019			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	2.33	0.5	2.5		93	79-118				20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.499		0.5		100	76-126					

LCSD	Sample ID: HC191029-61			Units: MG/KG			Analysis Date: 10/29/2019 14:01				
Client ID:	Run ID: HC191029-6A			Prep Date: 10/29/2019			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	2.26	0.5	2.5		90	79-118		2.33	3	20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.499		0.5		100	76-126			0		

MB	Sample ID: HC191029-61	Units: MG/KG	Analysis Date: 10/29/2019 10:23
Client ID:	Run ID: HC191029-6A	Prep Date: 10/29/2019	DF: 1
Analyte	Result	ReportLimit	Qual
GASOLINE RANGE ORGANICS	ND	0.5	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.51	102 76-126	

The following samples were analyzed in this batch:

1910491-1

Client: EOG Resources
Work Order: 1910491
Project: Simba 1-06 SWD Spill

QC BATCH REPORT

Batch ID: **HC191029-81-1** Instrument ID **FUELS-1** Method: **SW8015M**

LCS		Sample ID: HC191029-81			Units: MG/KG			Analysis Date: 10/30/2019 20:05			
Client ID:		Run ID: HC191030-8A			Prep Date: 10/29/2019			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	64.6	4	62.5		103	81-129				20	
Surr: O-TERPHENYL	10.7		12.5		85	49-114					

MB		Sample ID: HC191029-81			Units: MG/KG			Analysis Date: 10/30/2019 19:44			
Client ID:		Run ID: HC191030-8A			Prep Date: 10/29/2019			DF: 1			
Analyte	Result	ReportLimit									Qual
Diesel Range Organics	ND	4									
Surr: O-TERPHENYL	10.6				85	49-114					

The following samples were analyzed in this batch:

1910491-1

Client: EOG Resources
 Work Order: 1910491
 Project: Simba 1-06 SWD Spill

QC BATCH REPORT

Batch ID: **VL191023-2-1** Instrument ID: **HPV2** Method: **SW8260**

LCS		Sample ID: VL191023-2			Units: UG/KG		Analysis Date: 10/23/2019 12:02				
Client ID:		Run ID: VL191023-2A				Prep Date: 10/23/2019			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BENZENE	45.5	5	40		114	73-126				30	
TOLUENE	38.5	5	40		96	71-127				30	
ETHYLBENZENE	37.9	5	40		95	74-127				30	
M+P-XYLENE	76.4	5	80		96	79-126				30	
O-XYLENE	36.7	5	40		92	77-125				30	
Surr: DIBROMOFLUOROMETHANE	52.7		50		105	61-134					
Surr: TOLUENE-D8	49.5		50		99	57-135					
Surr: 4-BROMOFLUOROBENZENE	48.7		50		97	52-151					

LCSD		Sample ID: VL191023-2			Units: UG/KG		Analysis Date: 10/23/2019 12:25				
Client ID:		Run ID: VL191023-2A			Prep Date: 10/23/2019			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
BENZENE	46.9	5	40		117	73-126		45.5	3	30	
TOLUENE	39.2	5	40		98	71-127		38.5	2	30	
ETHYLBENZENE	39.1	5	40		98	74-127		37.9	3	30	
M+P-XYLENE	77.4	5	80		97	79-126		76.4	1	30	
O-XYLENE	39	5	40		98	77-125		36.7	6	30	
Surr: DIBROMOFLUOROMETHANE	52		50		104	61-134			1		
Surr: TOLUENE-D8	48.7		50		97	57-135			2		
Surr: 4-BROMOFLUOROBENZENE	49.6		50		99	52-151			2		

MB		Sample ID: VL191023-2		Units: UG/KG		Analysis Date: 10/23/2019 13:12	
Client ID:		Run ID: VL191023-2A		Prep Date: 10/23/2019		DF: 1	
Analyte		Result	ReportLimit			Qual	
BENZENE		ND	5				
TOLUENE		ND	5				
ETHYLBENZENE		ND	5				
M+P-XYLENE		ND	5				
O-XYLENE		ND	5				
TOTAL XYLENES		ND	5				
Surr: DIBROMOFLUOROMETHANE		53.2		106	61-134		
Surr: TOLUENE-D8		48.4		97	57-135		
Surr: 4-BROMOFLUOROBENZENE		48.4		97	52-151		

The following samples were analyzed in this batch:

1910491-1