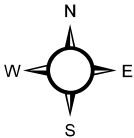
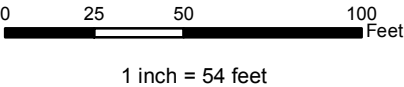




Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- Spill Origin
- Soil Sample Location
- Spill Path Area



PROJECT NO:	013-3287	EMERALD 17 SPILL RESPONSE CHEVRON USA, INC RIO BLANCO COUNTY, COLORADO NWSW S25 T2N R103W		Entrada Consulting Group 240 Mesa Avenue Grand Junction, CO 81501 (970) 270-2986 www.entradainc.com	FIGURE
DRAWN BY:	SBS				1
DATE:	12/16/2014				

Table 1
Emerald 17 Spill
Soil Data Summary

SAMPLE SUMMARY							
Location Description	Chevron Emerald 17 Spill						
Sample Type	Soil						

LABORATORY DATA SUMMARY							
Sample ID	EM17-SS1	EM17-SS1	EM17-SS2	EM17-SS2	EM17-BG1	COGCC TABLE 910-1 CONCENTRATION LEVELS	UNITS
Depth	0-6"	0-6"	0-6"	0-6"	0-6"		
Sample Date	11/18/2014	10/26/2017	11/18/2014	10/26/2017	11/18/2014		
Analytical Parameters							
TPH							
TPH Gasoline Range Organics	<2.8	NT	<2.8	NT	NT	500	mg/kg
TPH Diesel Range Organics	27	NT	46	NT	NT		
BTEX							
Benzene	<0.033	NT	<0.034	NT	NT	0.17	mg/kg
Toluene	<0.033	NT	<0.034	NT	NT	85	mg/kg
Ethylbenzene	<0.033	NT	<0.034	NT	NT	100	mg/kg
Total Xylene	<0.100	NT	<0.100	NT	NT	175	mg/kg
Metals							
Arsenic	5.5	NT	5.8	NT	6.3	0.39	mg/kg
Barium	110	NT	150	NT	270	15,000	mg/kg
Cadmium	<0.35	NT	<0.44	NT	<0.39	70	mg/kg
Chromium	10	NT	12	NT	12	NA	mg/kg
Copper	14	NT	17	NT	18	3,100	mg/kg
Lead	19	NT	23	NT	30	400	mg/kg
Mercury	0.030	NT	0.025	NT	0.027	23	mg/kg
Nickel	16	NT	18	NT	19	1,600	mg/kg
Selenium	1.4	NT	1.6	NT	1.7	390	mg/kg
Silver	<0.35	NT	<0.44	NT	<0.39	390	mg/kg
Zinc	77	NT	91	NT	95	23,000	mg/kg
SAR Metals Analysis							
Calcium	410	220	540	830	690	NA	mg/L
Magnesium	130	35	270	24	34	NA	mg/L
Sodium	5200	32	3100	9.3	45	NA	mg/L
Sodium Adsorption Ratio	57.0	0.53	27.0	0.09	0.45	<12	ratio
Polynuclear Aromatic Hydrocarbons							
Acenaphthene	<0.0073	NT	<0.0074	NT	NT	1,000	mg/kg
Anthracene	<0.0073	NT	<0.0074	NT	NT	1,000	mg/kg
Benzo(a)anthracene	<0.0073	NT	<0.0074	NT	NT	0.22	mg/kg
Benzo(a)pyrene	<0.0073	NT	<0.0074	NT	NT	0.022	mg/kg
Benzo(b)fluoranthene	<0.0073	NT	<0.0074	NT	NT	0.22	mg/kg
Benzo(k)fluoranthene	<0.0073	NT	<0.0074	NT	NT	2.2	mg/kg
Chrysene	<0.0073	NT	<0.0074	NT	NT	22	mg/kg
Dibenzo(a,h)anthracene	<0.0073	NT	<0.0074	NT	NT	0.022	mg/kg
Fluoranthene	<0.0073	NT	<0.0074	NT	NT	1,000	mg/kg
Fluorene	<0.0073	NT	<0.0074	NT	NT	1,000	mg/kg
Indeno(1,2,3-cd)pyrene	<0.0073	NT	<0.0074	NT	NT	0.22	mg/kg
Napthalene	<0.0073	NT	<0.0074	NT	NT	23	mg/kg
Pyrene	<0.0073	NT	<0.0074	NT	NT	1,000	mg/kg
General Chemistry							
Chromium, Hexavalent	<0.55	NT	<0.56	NT	<0.55	23	mg/kg
Chromium, Trivalent	10	NT	12	NT	12	120,000	mg/kg
Specific Conductivity	27.0	1.4	22.0	4.8	4.3	<4 or 2 x the background	mmhos/cm
pH	8.2	NT	8.0	NT	7.8	6-9	su

mg/kg - milligrams per kilogram
mg/L - milligrams per liter
J - indicates an estimated value
mmhos/cm - millimhos per centimeter
mv - millivolts
su - standard units
NA - not applicable
NT - parameter was not tested

Over COGCC Table 910-1 concentration levels but under BACKGROUND level.
Over COGCC Table 910-1 concentration levels and not within BACKGROUND level.
Over COGCC Table 910-1 concentration levels



02-Dec-2014

Tim Dobransky
Olsson Associates
760 Horizon Drive
Suite 102
Grand Junction, CO 81506

Re: **Chevron Emerald 17 Spill 11.18.14**

Work Order: **14111079**

Dear Tim,

ALS Environmental received 3 samples on 20-Nov-2014 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 26.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Ann Preston".

Electronically approved by: Ann Preston

Ann Preston
Project Manager



Certificate No: MN 532786

Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Olsson Associates
Project: Chevron Emerald 17 Spill 11.18.14
Work Order: 14111079

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
14111079-01	EM17-SS1	Soil		11/18/2014 13:05	11/20/2014 09:30	<input type="checkbox"/>
14111079-02	EM17-SS2	Soil		11/18/2014 13:10	11/20/2014 09:30	<input type="checkbox"/>
14111079-03	EM17-BG1	Soil		11/18/2014 13:15	11/20/2014 09:30	<input type="checkbox"/>

Client: Olsson Associates
Project: Chevron Emerald 17 Spill 11.18.14
Work Order: 14111079

Case Narrative

Batch 65292LCS recoveries for Benzo(a)pyrene, Benzo(b)fluoranthene, and Benzo(k)fluoranthene were above the upper control limit. All samples in this quality control batch were non-detect. No data requires qualification for Benzo(a)pyrene, Benzo(b)fluoranthene, and Benzo(k)fluoranthene. The MS/MSD data for PAHs is not related to this project's samples. No data requires qualification.

Batch 65301MS/MSD data for Metals is not related to this project's samples. No data requires qualification.

Batch 65406 MS/MSD data for Hexavalent Chromium is not related to this project's samples. No data requires qualification.

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius
none	
s.u.	Standard Units

ALS Group USA, Corp

Date: 02-Dec-14

Client: Olsson Associates

Project: Chevron Emerald 17 Spill 11.18.14

Sample ID: EM17-SS1

Collection Date: 11/18/2014 01:05 PM

Work Order: 14111079

Lab ID: 14111079-01

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	27		SW8015M		Prep: SW3541 / 11/21/14	Analyst: IT
Surr: 4-Terphenyl-d14	62.6		4.6	mg/Kg-dry	1	11/21/2014 07:06 PM
			39-133	%REC	1	11/21/2014 07:06 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	ND		SW8015		Prep: SW5035 / 11/21/14	Analyst: IT
Surr: Toluene-d8	112		2.8	mg/Kg-dry	1	11/22/2014 09:38 AM
			50-150	%REC	1	11/22/2014 09:38 AM
MERCURY BY CVAA						
Mercury	0.030		SW7471		Prep: SW7471 / 11/24/14	Analyst: LR
			0.014	mg/Kg-dry	1	11/24/2014 10:49 PM
METALS ANALYSIS BY ICP						
Arsenic	5.5		SW846 6010C		Prep: SW3050B / 11/21/14	Analyst: JEC
Barium	110		0.35	mg/Kg-dry	1	11/21/2014 05:16 PM
Cadmium	ND		0.35	mg/Kg-dry	1	11/21/2014 05:16 PM
Chromium	10		0.35	mg/Kg-dry	1	11/21/2014 05:16 PM
Copper	14		0.35	mg/Kg-dry	1	11/21/2014 05:16 PM
Lead	19		0.35	mg/Kg-dry	1	11/21/2014 05:16 PM
Nickel	16		0.35	mg/Kg-dry	1	11/21/2014 05:16 PM
Selenium	1.4		0.71	mg/Kg-dry	1	11/21/2014 05:16 PM
Silver	ND		0.35	mg/Kg-dry	1	11/21/2014 05:16 PM
Zinc	77		0.71	mg/Kg-dry	1	11/21/2014 05:16 PM
SOLUBLE CATIONS FOR SAR						
			SW846 6010C		Prep: USDA Method 20B / 11/22/14	Analyst: JEC
Calcium	410		5.0	mg/L	10	11/23/2014 04:16 PM
Magnesium	130		2.0	mg/L	10	11/23/2014 04:16 PM
Sodium	5,200		20	mg/L	100	11/24/2014 10:24 AM
SODIUM ADSORPTION RATIO						
			USDA H60 METHOD		Prep: USDA Method 20B / 11/22/14	Analyst: JEC
Sodium Adsorption Ratio	57		0.010	none	1	11/24/2014
SEMI-VOLATILE ORGANIC COMPOUNDS						
			SW846 8270D		Prep: SW3541 / 11/21/14	Analyst: RS
Acenaphthene	ND		7.3	µg/Kg-dry	1	11/22/2014 08:07 AM
Anthracene	ND		7.3	µg/Kg-dry	1	11/22/2014 08:07 AM
Benzo(a)anthracene	ND		7.3	µg/Kg-dry	1	11/22/2014 08:07 AM
Benzo(a)pyrene	ND		7.3	µg/Kg-dry	1	11/22/2014 08:07 AM
Benzo(b)fluoranthene	ND		7.3	µg/Kg-dry	1	11/22/2014 08:07 AM
Benzo(k)fluoranthene	ND		7.3	µg/Kg-dry	1	11/22/2014 08:07 AM
Chrysene	ND		7.3	µg/Kg-dry	1	11/22/2014 08:07 AM
Dibenzo(a,h)anthracene	ND		7.3	µg/Kg-dry	1	11/22/2014 08:07 AM
Fluoranthene	ND		7.3	µg/Kg-dry	1	11/22/2014 08:07 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 02-Dec-14

Client: Olsson Associates

Project: Chevron Emerald 17 Spill 11.18.14

Sample ID: EM17-SS1

Collection Date: 11/18/2014 01:05 PM

Work Order: 14111079

Lab ID: 14111079-01

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		7.3	µg/Kg-dry	1	11/22/2014 08:07 AM
Indeno(1,2,3-cd)pyrene	ND		7.3	µg/Kg-dry	1	11/22/2014 08:07 AM
Naphthalene	ND		7.3	µg/Kg-dry	1	11/22/2014 08:07 AM
Pyrene	ND		7.3	µg/Kg-dry	1	11/22/2014 08:07 AM
Surr: 2-Fluorobiphenyl	72.7		12-100	%REC	1	11/22/2014 08:07 AM
Surr: 4-Terphenyl-d14	93.0		25-137	%REC	1	11/22/2014 08:07 AM
Surr: Nitrobenzene-d5	73.4		37-107	%REC	1	11/22/2014 08:07 AM
VOLATILE ORGANIC COMPOUNDS			SW8260B	Prep: SW5035 / 11/21/14 Analyst: JDW		
Benzene	ND		33	µg/Kg-dry	1	11/23/2014 06:01 PM
Ethylbenzene	ND		33	µg/Kg-dry	1	11/23/2014 06:01 PM
m,p-Xylene	ND		67	µg/Kg-dry	1	11/23/2014 06:01 PM
o-Xylene	ND		33	µg/Kg-dry	1	11/23/2014 06:01 PM
Toluene	ND		33	µg/Kg-dry	1	11/23/2014 06:01 PM
Xylenes, Total	ND		100	µg/Kg-dry	1	11/23/2014 06:01 PM
Surr: 1,2-Dichloroethane-d4	101		70-130	%REC	1	11/23/2014 06:01 PM
Surr: 4-Bromofluorobenzene	93.8		70-130	%REC	1	11/23/2014 06:01 PM
Surr: Dibromofluoromethane	96.1		70-130	%REC	1	11/23/2014 06:01 PM
Surr: Toluene-d8	96.5		70-130	%REC	1	11/23/2014 06:01 PM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 METHOD	Prep: USDA Method 20B / 11/22/14 Analyst: JB		
Electrical Conductivity @ Saturation	27		0.050	mmhos/cm @25	10	11/24/2014 12:00 PM
CHROMIUM, TRIVALENT			CALCULATION	Analyst: MB		
Chromium, Trivalent	10		0.55	mg/Kg-dry	1	11/25/2014 11:00 AM
CHROMIUM, HEXAVALENT			SW7196A	Prep: SW3060A / 11/21/14 Analyst: MB		
Chromium, Hexavalent	ND		0.55	mg/Kg-dry	1	11/24/2014 03:00 PM
MOISTURE			A2540 G	Analyst: EVb		
Moisture	9.8		0.050	% of sample	1	11/21/2014 12:01 PM
PH			SW9045D	Prep: EXTRACT / 11/21/14 Analyst: AXL		
pH	8.2			s.u.	1	11/21/2014 01:00 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 02-Dec-14

Client: Olsson Associates

Project: Chevron Emerald 17 Spill 11.18.14

Sample ID: EM17-SS2

Collection Date: 11/18/2014 01:10 PM

Work Order: 14111079

Lab ID: 14111079-02

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	46		SW8015M		Prep: SW3541 / 11/21/14	Analyst: IT
Surr: 4-Terphenyl-d14	69.0		4.6	mg/Kg-dry	1	11/21/2014 11:42 PM
			39-133	%REC	1	11/21/2014 11:42 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	ND		SW8015		Prep: SW5035 / 11/21/14	Analyst: IT
Surr: Toluene-d8	117		2.8	mg/Kg-dry	1	11/22/2014 10:04 AM
			50-150	%REC	1	11/22/2014 10:04 AM
MERCURY BY CVAA						
Mercury	0.025		SW7471		Prep: SW7471 / 11/24/14	Analyst: LR
			0.017	mg/Kg-dry	1	11/24/2014 10:52 PM
METALS ANALYSIS BY ICP						
Arsenic	5.8		SW846 6010C		Prep: SW3050B / 11/21/14	Analyst: JEC
Barium	150		0.44	mg/Kg-dry	1	11/21/2014 05:22 PM
Cadmium	ND		0.44	mg/Kg-dry	1	11/21/2014 05:22 PM
Chromium	12		0.44	mg/Kg-dry	1	11/21/2014 05:22 PM
Copper	17		0.44	mg/Kg-dry	1	11/21/2014 05:22 PM
Lead	23		0.44	mg/Kg-dry	1	11/21/2014 05:22 PM
Nickel	18		0.44	mg/Kg-dry	1	11/21/2014 05:22 PM
Selenium	1.6		0.88	mg/Kg-dry	1	11/21/2014 05:22 PM
Silver	ND		0.44	mg/Kg-dry	1	11/21/2014 05:22 PM
Zinc	91		0.88	mg/Kg-dry	1	11/21/2014 05:22 PM
SOLUBLE CATIONS FOR SAR						
			SW846 6010C		Prep: USDA Method 20B / 11/22/14	Analyst: JEC
Calcium	540		5.0	mg/L	10	11/23/2014 04:22 PM
Magnesium	270		2.0	mg/L	10	11/23/2014 04:22 PM
Sodium	3,100		2.0	mg/L	10	11/23/2014 04:22 PM
SODIUM ADSORPTION RATIO						
			USDA H60 METHOD		Prep: USDA Method 20B / 11/22/14	Analyst: JEC
Sodium Adsorption Ratio	27		0.010	none	1	11/24/2014
SEMI-VOLATILE ORGANIC COMPOUNDS						
			SW846 8270D		Prep: SW3541 / 11/21/14	Analyst: RS
Acenaphthene	ND		7.4	µg/Kg-dry	1	11/22/2014 08:30 AM
Anthracene	ND		7.4	µg/Kg-dry	1	11/22/2014 08:30 AM
Benzo(a)anthracene	ND		7.4	µg/Kg-dry	1	11/22/2014 08:30 AM
Benzo(a)pyrene	ND		7.4	µg/Kg-dry	1	11/22/2014 08:30 AM
Benzo(b)fluoranthene	ND		7.4	µg/Kg-dry	1	11/22/2014 08:30 AM
Benzo(k)fluoranthene	ND		7.4	µg/Kg-dry	1	11/22/2014 08:30 AM
Chrysene	ND		7.4	µg/Kg-dry	1	11/22/2014 08:30 AM
Dibenzo(a,h)anthracene	ND		7.4	µg/Kg-dry	1	11/22/2014 08:30 AM
Fluoranthene	ND		7.4	µg/Kg-dry	1	11/22/2014 08:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 02-Dec-14

Client: Olsson Associates
Project: Chevron Emerald 17 Spill 11.18.14
Sample ID: EM17-SS2
Collection Date: 11/18/2014 01:10 PM

Work Order: 14111079
Lab ID: 14111079-02
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		7.4	µg/Kg-dry	1	11/22/2014 08:30 AM
Indeno(1,2,3-cd)pyrene	ND		7.4	µg/Kg-dry	1	11/22/2014 08:30 AM
Naphthalene	ND		7.4	µg/Kg-dry	1	11/22/2014 08:30 AM
Pyrene	ND		7.4	µg/Kg-dry	1	11/22/2014 08:30 AM
Surr: 2-Fluorobiphenyl	67.3		12-100	%REC	1	11/22/2014 08:30 AM
Surr: 4-Terphenyl-d14	92.2		25-137	%REC	1	11/22/2014 08:30 AM
Surr: Nitrobenzene-d5	65.9		37-107	%REC	1	11/22/2014 08:30 AM
VOLATILE ORGANIC COMPOUNDS			SW8260B	Prep: SW5035 / 11/21/14 Analyst: AK		
Benzene	ND		34	µg/Kg-dry	1	11/26/2014 01:19 AM
Ethylbenzene	ND		34	µg/Kg-dry	1	11/26/2014 01:19 AM
m,p-Xylene	ND		68	µg/Kg-dry	1	11/26/2014 01:19 AM
o-Xylene	ND		34	µg/Kg-dry	1	11/26/2014 01:19 AM
Toluene	ND		34	µg/Kg-dry	1	11/26/2014 01:19 AM
Xylenes, Total	ND		100	µg/Kg-dry	1	11/26/2014 01:19 AM
Surr: 1,2-Dichloroethane-d4	100		70-130	%REC	1	11/26/2014 01:19 AM
Surr: 4-Bromofluorobenzene	98.0		70-130	%REC	1	11/26/2014 01:19 AM
Surr: Dibromofluoromethane	99.7		70-130	%REC	1	11/26/2014 01:19 AM
Surr: Toluene-d8	95.6		70-130	%REC	1	11/26/2014 01:19 AM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 METHOD	Prep: USDA Method 20B / 11/22/14 Analyst: JB		
Electrical Conductivity @ Saturation	22		0.050	mmhos/cm @25	10	11/24/2014 12:00 PM
CHROMIUM, TRIVALENT			CALCULATION	Analyst: MB		
Chromium, Trivalent	12		0.56	mg/Kg-dry	1	11/25/2014 11:00 AM
CHROMIUM, HEXAVALENT			SW7196A	Prep: SW3060A / 11/21/14 Analyst: MB		
Chromium, Hexavalent	ND		0.56	mg/Kg-dry	1	11/24/2014 03:00 PM
MOISTURE			A2540 G	Analyst: EVB		
Moisture	11		0.050	% of sample	1	11/21/2014 12:01 PM
PH			SW9045D	Prep: EXTRACT / 11/21/14 Analyst: AXL		
pH	8.0			s.u.	1	11/21/2014 01:00 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 02-Dec-14

Client: Olsson Associates
Project: Chevron Emerald 17 Spill 11.18.14
Sample ID: EM17-BG1
Collection Date: 11/18/2014 01:15 PM

Work Order: 14111079
Lab ID: 14111079-03
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA						
Mercury	0.027		SW7471 0.016	mg/Kg-dry	Prep: SW7471 / 12/1/14 1	Analyst: LR 12/1/2014 04:41 PM
METALS ANALYSIS BY ICP						
Arsenic	6.3		SW846 6010C 0.39	mg/Kg-dry	Prep: SW3050B / 11/21/14 1	Analyst: JEC 11/21/2014 05:27 PM
Barium	270		0.39	mg/Kg-dry	1	11/21/2014 05:27 PM
Cadmium	ND		0.39	mg/Kg-dry	1	11/21/2014 05:27 PM
Chromium	12		0.39	mg/Kg-dry	1	11/21/2014 05:27 PM
Copper	18		0.39	mg/Kg-dry	1	11/21/2014 05:27 PM
Lead	30		0.39	mg/Kg-dry	1	11/21/2014 05:27 PM
Nickel	19		0.39	mg/Kg-dry	1	11/21/2014 05:27 PM
Selenium	1.7		0.78	mg/Kg-dry	1	11/21/2014 05:27 PM
Silver	ND		0.39	mg/Kg-dry	1	11/21/2014 05:27 PM
Zinc	95		0.78	mg/Kg-dry	1	11/21/2014 05:27 PM
SOLUBLE CATIONS FOR SAR						
Calcium	690		SW846 6010C 5.0	mg/L	Prep: USDA Method 20B / 11/22/14 10	Analyst: JEC 11/23/2014 04:28 PM
Magnesium	34		2.0	mg/L	10	11/23/2014 04:28 PM
Sodium	45		2.0	mg/L	10	11/23/2014 04:28 PM
SODIUM ADSORPTION RATIO						
Sodium Adsorption Ratio	0.45		USDA H60 METHOD 0.010	none	Prep: USDA Method 20B / 11/22/14 1	Analyst: JEC 11/24/2014
ELECTRICAL CONDUCTIVITY (SAR)						
Electrical Conductivity @ Saturation	4.3		USDA H60 METHOD 0.050	mmhos/cm @25	Prep: USDA Method 20B / 11/22/14 10	Analyst: JB 11/24/2014 12:00 PM
CHROMIUM, TRIVALENT						
Chromium, Trivalent	12		CALCULATION 0.55	mg/Kg-dry	1	Analyst: MB 11/25/2014 11:00 AM
CHROMIUM, HEXAVALENT						
Chromium, Hexavalent	ND		SW7196A 0.55	mg/Kg-dry	Prep: SW3060A / 11/21/14 1	Analyst: MB 11/24/2014 03:00 PM
MOISTURE						
Moisture	9.7		A2540 G 0.050	% of sample	1	Analyst: EVB 11/21/2014 10:30 AM
PH						
pH	7.8		SW9045D	s.u.	Prep: EXTRACT / 11/21/14 1	Analyst: AXL 11/21/2014 01:00 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Olsson Associates

QC BATCH REPORT

Work Order: 14111079

Project: Chevron Emerald 17 Spill 11.18.14

Batch ID: 65293

Instrument ID GC8

Method: SW8015M

MBLK		Sample ID: DBLKS1-65293-65293				Units: mg/Kg		Analysis Date: 11/21/2014 04:48 PM		
Client ID:		Run ID: GC8_141121A				SeqNo: 3049731		Prep Date: 11/21/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	5.0								
Surr: 4-Terphenyl-d14	1.27	0	2	0	63.5	39-133		0		

LCS		Sample ID: DLCSS1-65293-65293				Units: mg/Kg		Analysis Date: 11/21/2014 05:16 PM		
Client ID:		Run ID: GC8_141121A				SeqNo: 3049733		Prep Date: 11/21/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	194.9	5.0	200	0	97.4	61-109		0		
Surr: 4-Terphenyl-d14	1.343	0	2	0	67.2	39-133		0		

MS		Sample ID: 14111079-01A MS				Units: mg/Kg		Analysis Date: 11/21/2014 06:11 PM		
Client ID: EM17-SS1		Run ID: GC8_141121A				SeqNo: 3049738		Prep Date: 11/21/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	337.2	8.2	326.6	24.23	95.8	48-110		0		
Surr: 4-Terphenyl-d14	2.302	0	3.266	0	70.5	39-133		0		

MSD		Sample ID: 14111079-01A MSD				Units: mg/Kg		Analysis Date: 11/21/2014 06:38 PM		
Client ID: EM17-SS1		Run ID: GC8_141121A				SeqNo: 3049740		Prep Date: 11/21/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	315.3	8.0	319.7	24.23	91.1	48-110	337.2	6.7	30	
Surr: 4-Terphenyl-d14	2.271	0	3.197	0	71.1	39-133	2.302	1.35	30	

The following samples were analyzed in this batch: 14111079-01A 14111079-02A

Client: Olsson Associates
 Work Order: 14111079
 Project: Chevron Emerald 17 Spill 11.18.14

QC BATCH REPORT

Batch ID: **65316** Instrument ID **GC9** Method: **SW8015**

MBLK		Sample ID: MBLK-65316-65316				Units: µg/Kg		Analysis Date: 11/21/2014 02:53 PM		
Client ID:		Run ID: GC9_141121A				SeqNo: 3049816		Prep Date: 11/21/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	2,500								
<i>Surr: Toluene-d8</i>	5354	0	5000	0	107	50-150	0			

LCS		Sample ID: LCS-65316-65316				Units: µg/Kg		Analysis Date: 11/21/2014 02:28 PM		
Client ID:		Run ID: GC9_141121A				SeqNo: 3049814		Prep Date: 11/21/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	410100	2,500	500000	0	82	70-130	0			
<i>Surr: Toluene-d8</i>	4784	0	5000	0	95.7	50-150	0			

MS		Sample ID: 14111037-01A MS				Units: µg/Kg		Analysis Date: 11/21/2014 08:51 PM		
Client ID:		Run ID: GC9_141121A				SeqNo: 3049824		Prep Date: 11/21/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	577200	2,500	500000	0	115	70-130	0			
<i>Surr: Toluene-d8</i>	5146	0	5000	0	103	50-150	0			

MSD		Sample ID: 14111037-01A MSD				Units: µg/Kg		Analysis Date: 11/21/2014 09:17 PM		
Client ID:		Run ID: GC9_141121A				SeqNo: 3049825		Prep Date: 11/21/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	549400	2,500	500000	0	110	70-130	577200	4.94	30	
<i>Surr: Toluene-d8</i>	5023	0	5000	0	100	50-150	5146	2.43	30	

The following samples were analyzed in this batch:

14111079-01A	14111079-02A
--------------	--------------

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
Work Order: 14111079
Project: Chevron Emerald 17 Spill 11.18.14

QC BATCH REPORT

Batch ID: **65375** Instrument ID **HG1** Method: **SW7471**

MBLK		Sample ID: MBLK-65375-65375				Units: mg/Kg		Analysis Date: 11/24/2014 03:45 PM			
Client ID:		Run ID: HG1_141124A			SeqNo: 3051508		Prep Date: 11/24/2014		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury ND 0.020

LCS		Sample ID: LCS-65375-65375					Units:mg/Kg		Analysis Date: 11/24/2014 03:47 PM		
Client ID:			Run ID: HG1_141124A			SeqNo:3051510		Prep Date: 11/24/2014		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury 0.1663 0.020 0.1665 0 99.9 80-120 0

MS		Sample ID: 14111026-16BMS					Units: mg/Kg		Analysis Date: 11/24/2014 04:04 PM		
Client ID:			Run ID: HG1_141124A			SeqNo: 3051519		Prep Date: 11/24/2014		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury 0.1134 0.013 0.105 0.001031 107 75-125 0

MSD				Sample ID: 14111026-16BMSD				Units:mg/Kg			Analysis Date: 11/24/2014 04:07 PM			
Client ID:				Run ID: HG1_141124A				SeqNo:3051520		Prep Date: 11/24/2014		DF: 1		
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.111 0.013 0.1043 0.001031 105 75-125 0.1134 2.09 35

The following samples were analyzed in this batch:

14111079-01A 14111079-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
Work Order: 14111079
Project: Chevron Emerald 17 Spill 11.18.14

QC BATCH REPORT

Batch ID: **65518** Instrument ID **HG1** Method: **SW7471**

MBLK		Sample ID: MBLK-65518-65518				Units: mg/Kg		Analysis Date: 12/1/2014 04:37 PM		
Client ID:		Run ID: HG1_141201A				SeqNo: 3056503		Prep Date: 12/1/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury ND 0.020

LCS		Sample ID: LCS-65518-65518				Units: mg/Kg		Analysis Date: 12/1/2014 04:39 PM		
Client ID:		Run ID: HG1_141201A				SeqNo: 3056504		Prep Date: 12/1/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1726 0.020 0.1665 0 104 80-120 0

MS		Sample ID: 14111222-01BMS				Units: mg/Kg		Analysis Date: 12/1/2014 05:19 PM		
Client ID:		Run ID: HG1_141201A				SeqNo: 3056529		Prep Date: 12/1/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1097 0.012 0.1024 -0.001103 108 75-125 0

MSD		Sample ID: 14111222-01BMSD				Units: mg/Kg		Analysis Date: 12/1/2014 05:21 PM		
Client ID:		Run ID: HG1_141201A				SeqNo: 3056530		Prep Date: 12/1/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1067 0.012 0.1001 -0.001103 108 75-125 0.1097 2.84 35

The following samples were analyzed in this batch:

14111079-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
Work Order: 14111079
Project: Chevron Emerald 17 Spill 11.18.14

QC BATCH REPORT

Batch ID: **65282** Instrument ID **SAR** Method: **USDA H60 Method**

DUP		Sample ID: 14111079-03BDUP				Units: none		Analysis Date: 11/24/2014		
Client ID: EM17-BG1		Run ID: SAR_141124A				SeqNo: 3050178		Prep Date: 11/22/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	0.4465	0.010	0	0	0		0.4513	1.05	50	

The following samples were analyzed in this batch:

14111079-01B	14111079-02B	14111079-03B
--------------	--------------	--------------

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
Work Order: 14111079
Project: Chevron Emerald 17 Spill 11.18.14

QC BATCH REPORT

Batch ID: **65301** Instrument ID **ICP2** Method: **SW846 6010C**

MS				Sample ID: 14111081-03AMS			Units:mg/Kg		Analysis Date: 11/21/2014 12:29 PM		
Client ID:			Run ID: ICP2_141121A			SeqNo: 3047041		Prep Date: 11/21/2014		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	15.25	0.38	7.692	6.517	113	75-125	0				
Barium	186.1	0.38	7.692	160.5	333	75-125	0			SO	
Cadmium	7.141	0.77	7.692	0.01754	92.6	75-125	0				
Chromium	22.76	0.38	7.692	12.22	137	75-125	0			S	
Copper	25.42	0.77	7.692	17.86	98.2	75-125	0				
Lead	29.19	0.38	7.692	21.74	96.9	75-125	0				
Nickel	25.58	0.38	7.692	18.71	89.4	75-125	0				
Selenium	10.23	0.77	7.692	1.962	108	75-125	0				
Silver	8.545	0.38	7.692	0.04847	110	75-125	0				
Zinc	106.9	0.77	7.692	97.59	120	75-125	0			O	

MSD				Sample ID: 14111081-03AMSD			Units:mg/Kg		Analysis Date: 11/21/2014 12:35 PM		
Client ID:			Run ID: ICP2_141121A			SeqNo: 3047042		Prep Date: 11/21/2014		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	14.77	0.39	7.74	6.517	107	75-125	15.25	3.16	20		
Barium	181.2	0.39	7.74	160.5	268	75-125	186.1	2.66	20	SO	
Cadmium	7.194	0.77	7.74	0.01754	92.7	75-125	7.141	0.731	20		
Chromium	23.41	0.39	7.74	12.22	144	75-125	22.76	2.82	20	S	
Copper	25.03	0.77	7.74	17.86	92.6	75-125	25.42	1.53	20		
Lead	28.95	0.39	7.74	21.74	93.2	75-125	29.19	0.816	20		
Nickel	25.4	0.39	7.74	18.71	86.5	75-125	25.58	0.704	20		
Selenium	9.787	0.77	7.74	1.962	101	75-125	10.23	4.45	20		
Silver	8.555	0.39	7.74	0.04847	110	75-125	8.545	0.117	20		
Zinc	104.8	0.77	7.74	97.59	93.5	75-125	106.9	1.91	20	O	

The following samples were analyzed in this batch:

14111079-01A	14111079-02A	14111079-03A
--------------	--------------	--------------

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
Work Order: 14111079
Project: Chevron Emerald 17 Spill 11.18.14

QC BATCH REPORT

Batch ID: **65292** Instrument ID **SVMS5** Method: **SW846 8270D**

MBLK		Sample ID: SBLKS1-65292-65292				Units: µg/Kg		Analysis Date: 11/21/2014 06:38 PM		
Client ID:		Run ID: SVMS5_141121A				SeqNo: 3050936		Prep Date: 11/21/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	6.7								
Anthracene	ND	6.7								
Benzo(a)anthracene	ND	6.7								
Benzo(a)pyrene	ND	6.7								
Benzo(b)fluoranthene	ND	6.7								
Benzo(k)fluoranthene	ND	6.7								
Chrysene	ND	6.7								
Dibenzo(a,h)anthracene	ND	6.7								
Fluoranthene	ND	6.7								
Fluorene	ND	6.7								
Indeno(1,2,3-cd)pyrene	ND	6.7								
Naphthalene	ND	6.7								
Pyrene	ND	6.7								
Surr: 2-Fluorobiphenyl	1241	0	1667	0	74.4	12-100	0			
Surr: 4-Terphenyl-d14	1608	0	1667	0	96.5	25-137	0			
Surr: Nitrobenzene-d5	1284	0	1667	0	77	37-107	0			

LCS		Sample ID: SLCSS1-65292-65292				Units: µg/Kg		Analysis Date: 11/21/2014 07:02 PM		
Client ID:		Run ID: SVMS5_141121A				SeqNo: 3050941		Prep Date: 11/21/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	607	6.7	666.7	0	91	45-110	0			
Anthracene	691.3	6.7	666.7	0	104	55-105	0			
Benzo(a)anthracene	688	6.7	666.7	0	103	50-110	0			
Benzo(a)pyrene	791.3	6.7	666.7	0	119	50-110	0			S
Benzo(b)fluoranthene	861	6.7	666.7	0	129	45-115	0			S
Benzo(k)fluoranthene	819.3	6.7	666.7	0	123	45-115	0			S
Chrysene	704.7	6.7	666.7	0	106	55-110	0			
Dibenzo(a,h)anthracene	806.7	6.7	666.7	0	121	40-125	0			
Fluoranthene	702	6.7	666.7	0	105	55-115	0			
Fluorene	634	6.7	666.7	0	95.1	50-110	0			
Indeno(1,2,3-cd)pyrene	799.7	6.7	666.7	0	120	40-120	0			
Naphthalene	619	6.7	666.7	0	92.8	40-105	0			
Pyrene	757.7	6.7	666.7	0	114	45-125	0			
Surr: 2-Fluorobiphenyl	1439	0	1667	0	86.4	12-100	0			
Surr: 4-Terphenyl-d14	1758	0	1667	0	105	25-137	0			
Surr: Nitrobenzene-d5	1539	0	1667	0	92.3	37-107	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
 Work Order: 14111079
 Project: Chevron Emerald 17 Spill 11.18.14

QC BATCH REPORT

Batch ID: **65292** Instrument ID **SVMS5** Method: **SW846 8270D**

MS				Sample ID: 14111083-03B MS				Units: µg/Kg		Analysis Date: 11/21/2014 07:25 PM	
Client ID:			Run ID: SVMS5_141121A			SeqNo: 3050947		Prep Date: 11/21/2014		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1071	13	1251	0	85.6	45-110	0				
Anthracene	1237	13	1251	0	98.9	55-105	0				
Benzo(a)anthracene	1277	13	1251	9.508	101	50-110	0				
Benzo(a)pyrene	1459	13	1251	0	117	50-110	0			S	
Benzo(b)fluoranthene	1581	13	1251	0	126	45-115	0			S	
Benzo(k)fluoranthene	1509	13	1251	0	121	45-115	0			S	
Chrysene	1287	13	1251	4.262	103	55-110	0				
Dibenzo(a,h)anthracene	1463	13	1251	0	117	40-125	0				
Fluoranthene	1277	13	1251	7.868	101	55-115	0				
Fluorene	1108	13	1251	0	88.6	50-110	0				
Indeno(1,2,3-cd)pyrene	1459	13	1251	0	117	40-120	0				
Naphthalene	1067	13	1251	0	85.3	40-105	0				
Pyrene	1385	13	1251	8.196	110	45-125	0				
Surr: 2-Fluorobiphenyl	2481	0	3128	0	79.3	12-100	0				
Surr: 4-Terphenyl-d14	3201	0	3128	0	102	25-137	0				
Surr: Nitrobenzene-d5	2659	0	3128	0	85	37-107	0				

MSD				Sample ID: 14111083-03B MSD				Units: µg/Kg		Analysis Date: 11/21/2014 07:49 PM	
Client ID:			Run ID: SVMS5_141121A			SeqNo:3050948		Prep Date: 11/21/2014		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1153	13	1291	0	89.3	45-110	1071	7.38	30		
Anthracene	1307	13	1291	0	101	55-105	1237	5.5	30		
Benzo(a)anthracene	1322	13	1291	9.508	102	50-110	1277	3.44	30		
Benzo(a)pyrene	1527	13	1291	0	118	50-110	1459	4.55	30	S	
Benzo(b)fluoranthene	1662	13	1291	0	129	45-115	1581	4.98	30	S	
Benzo(k)fluoranthene	1560	13	1291	0	121	45-115	1509	3.31	30	S	
Chrysene	1358	13	1291	4.262	105	55-110	1287	5.31	30		
Dibenzo(a,h)anthracene	1541	13	1291	0	119	40-125	1463	5.21	30		
Fluoranthene	1322	13	1291	7.868	102	55-115	1277	3.44	30		
Fluorene	1189	13	1291	0	92.1	50-110	1108	6.97	30		
Indeno(1,2,3-cd)pyrene	1522	13	1291	0	118	40-120	1459	4.25	30		
Naphthalene	1116	13	1291	0	86.4	40-105	1067	4.44	30		
Pyrene	1465	13	1291	8.196	113	45-125	1385	5.64	30		
Surr: 2-Fluorobiphenyl	2669	0	3226	0	82.7	12-100	2481	7.32	40		
Surr: 4-Terphenyl-d14	3373	0	3226	0	105	25-137	3201	5.23	40		
Surr: Nitrobenzene-d5	2831	0	3226	0	87.7	37-107	2659	6.27	40		

The following samples were analyzed in this batch:

14111079-01A 14111079-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
 Work Order: 14111079
 Project: Chevron Emerald 17 Spill 11.18.14

QC BATCH REPORT

Batch ID: **65315** Instrument ID **VMS6** Method: **SW8260B**

MBLK				Sample ID: MBLK-65315-65315				Units: µg/Kg			Analysis Date: 11/21/2014 09:51 PM			
Client ID:				Run ID: VMS6_141121A				SeqNo: 3048937			Prep Date: 11/21/2014		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				
Benzene	ND	30												
Ethylbenzene	ND	30												
m,p-Xylene	ND	60												
o-Xylene	ND	30												
Toluene	ND	30												
Xylenes, Total	ND	90												
Surr: 1,2-Dichloroethane-d4	1028	0	1000	0	103	70-130		0						
Surr: 4-Bromofluorobenzene	976.5	0	1000	0	97.6	70-130		0						
Surr: Dibromofluoromethane	957.5	0	1000	0	95.8	70-130		0						
Surr: Toluene-d8	990.5	0	1000	0	99	70-130		0						

LCS				Sample ID: LCS-65315-65315				Units: µg/Kg			Analysis Date: 11/21/2014 08:33 PM		
Client ID:			Run ID: VMS6_141121A			SeqNo: 3048935		Prep Date: 11/21/2014		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Benzene	1163	30	1000	0	116	75-125	0						
Ethylbenzene	1204	30	1000	0	120	75-125	0						
m,p-Xylene	2349	60	2000	0	117	80-125	0						
o-Xylene	1178	30	1000	0	118	75-125	0						
Toluene	1126	30	1000	0	113	70-125	0						
Xylenes, Total	3526	90	3000	0	118	75-125	0						
Surr: 1,2-Dichloroethane-d4	1006	0	1000	0	101	70-130	0						
Surr: 4-Bromofluorobenzene	1004	0	1000	0	100	70-130	0						
Surr: Dibromofluoromethane	1020	0	1000	0	102	70-130	0						
Surr: Toluene-d8	985.5	0	1000	0	98.6	70-130	0						

The following samples were analyzed in this batch:

14111079-01A 14111079-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
Work Order: 14111079
Project: Chevron Emerald 17 Spill 11.18.14

QC BATCH REPORT

Batch ID: **65282** Instrument ID **WETCHEM** Method: **USDA H60 Method**

DUP		Sample ID: 14111079-03B DUP				Units: mmhos/cm @25°C		Analysis Date: 11/24/2014 12:00 PM		
Client ID: EM17-BG1		Run ID: WETCHEM_141124C				SeqNo: 3050442		Prep Date: 11/22/2014		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	4.22	0.050	0	0	0		4.28	1.41	50	

The following samples were analyzed in this batch:

14111079-01B	14111079-02B	14111079-03B
--------------	--------------	--------------

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
Work Order: 14111079
Project: Chevron Emerald 17 Spill 11.18.14

QC BATCH REPORT

Batch ID: **65335** Instrument ID **WETCHEM** Method: **SW9045D**

LCS				Sample ID: LCS-65335-65335				Units:s.u.			Analysis Date: 11/21/2014 01:00 PM			
Client ID:				Run ID: WETCHEM_141121J				SeqNo:3047812			Prep Date: 11/21/2014		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
pH		3.98	0	4	0	99.5	90-110	0						

DUP					Sample ID: 14111035-01B DUP					Units:s.u.			Analysis Date: 11/21/2014 01:00 PM		
Client ID:				Run ID: WETCHEM_141121J				SeqNo: 3047815			Prep Date: 11/21/2014			DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				
pH		9.22	0	0	0	0	0-0	9.18	0.435	20					

DUP				Sample ID: 14111079-03A DUP				Units:s.u.			Analysis Date: 11/21/2014 01:00 PM			
Client ID: EM17-BG1				Run ID: WETCHEM_141121J				SeqNo: 3047827			Prep Date: 11/21/2014		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
pH		7.83	0	0	0	0	0-0	7.85	0.255	20				

The following samples were analyzed in this batch:

14111079-01A	14111079-02A	14111079-03A
--------------	--------------	--------------

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
 Work Order: 14111079
 Project: Chevron Emerald 17 Spill 11.18.14

QC BATCH REPORT

Batch ID: **65406** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-65406-65406				Units: mg/Kg		Analysis Date: 11/24/2014 03:00 PM		
Client ID:		Run ID: WETCHEM_141124K				SeqNo: 3051417		Prep Date: 11/21/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent ND 0.50

LCS		Sample ID: LCS-65406-65406				Units: mg/Kg		Analysis Date: 11/24/2014 03:00 PM		
Client ID:		Run ID: WETCHEM_141124K				SeqNo: 3051416		Prep Date: 11/21/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1.924 0.50 2 0 96.2 80-120 0

MS		Sample ID: 14111035-01B MS				Units: mg/Kg		Analysis Date: 11/24/2014 03:00 PM		
Client ID:		Run ID: WETCHEM_141124K				SeqNo: 3051402		Prep Date: 11/21/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1.346 0.49 1.969 0.01594 67.6 75-125 0 S

MS		Sample ID: 14111035-01B MSI				Units: mg/Kg		Analysis Date: 11/24/2014 03:00 PM		
Client ID:		Run ID: WETCHEM_141124K				SeqNo: 3051404		Prep Date: 11/21/2014		DF: 100
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1346 50 1301 0.01594 103 75-125 0

MSD		Sample ID: 14111035-01B MSD				Units: mg/Kg		Analysis Date: 11/24/2014 03:00 PM		
Client ID:		Run ID: WETCHEM_141124K				SeqNo: 3051403		Prep Date: 11/21/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 0.311 0.49 1.969 0.01594 15 75-125 1.346 0 20 JS

The following samples were analyzed in this batch:

14111079-01A 14111079-02A 14111079-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
Work Order: 14111079
Project: Chevron Emerald 17 Spill 11.18.14

QC BATCH REPORT

Batch ID: **R153101** Instrument ID **MOIST** Method: **A2540 G**

MBLK				Sample ID: WBLKS-R153101				Units: % of sample			Analysis Date: 11/21/2014 10:30 AM			
Client ID:				Run ID: MOIST_141121A				SeqNo: 3050367			Prep Date:		DF: 1	
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture ND 0.050

LCS		Sample ID: LCS-R153101					Units: % of sample		Analysis Date: 11/21/2014 10:30 AM		
Client ID:			Run ID: MOIST_141121A			SeqNo: 3050364		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 1411896-01A DUP				Units: % of sample		Analysis Date: 11/21/2014 10:30 AM		
Client ID:		Run ID: MOIST_141121A		SeqNo: 3050349		Prep Date:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 6.36 0.050 0 0 0 0-0 6.44 1.25 20

DUP		Sample ID: 1411928-02A DUP				Units: % of sample		Analysis Date: 11/21/2014 10:30 AM		
Client ID:		Run ID: MOIST_141121A		SeqNo: 3050354		Prep Date:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 10.66 0.050 0 0 0 0-0 10.75 0.841 20

The following samples were analyzed in this batch:

14111079-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
Work Order: 14111079
Project: Chevron Emerald 17 Spill 11.18.14

QC BATCH REPORT

Batch ID: **R153109** Instrument ID **MOIST** Method: **A2540 G**

MBLK				Sample ID: WBLKS-R153109				Units: % of sample			Analysis Date: 11/21/2014 12:01 PM			
Client ID:				Run ID: MOIST_141121B				SeqNo: 3053068			Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Moisture ND 0.050

LCS		Sample ID: LCS-R153109					Units: % of sample		Analysis Date: 11/21/2014 12:01 PM		
Client ID:			Run ID: MOIST_141121B			SeqNo: 3053067		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP				Sample ID: 14111026-01B DUP				Units: % of sample			Analysis Date: 11/21/2014 12:01 PM			
Client ID:				Run ID: MOIST_141121B				SeqNo: 3053046		Prep Date:		DF: 1		
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 7.7 0.050 0 0 0 0-0 7.98 3.57 20

DUP				Sample ID: 14111026-11B DUP				Units: % of sample			Analysis Date: 11/21/2014 12:01 PM		
Client ID:				Run ID: MOIST_141121B				SeqNo: 3053057		Prep Date:		DF: 1	
Analyte				Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 8.64 0.050 0 0 0 0-0 9.12 5.41 20

The following samples were analyzed in this batch:

14111079-01A 14111079-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Chain of Custody Form

Page 1 of 1

COC ID: 123456

- | | | |
|--|--|--|
| <input type="checkbox"/> Cincinnati, OH
+1 513 733 5336 | <input checked="" type="checkbox"/> Holland, MI
+1 616 399 6070 | <input type="checkbox"/> Salt Lake City, UT
+1 801 266 7700 |
| <input type="checkbox"/> Everett, WA
+1 425 356 2600 | <input type="checkbox"/> Houston, TX
+1 281 530 5656 | <input type="checkbox"/> Spring City, PA
+1 610 948 4903 |
| <input type="checkbox"/> Fort Collins, CO
+1 970 490 1311 | <input type="checkbox"/> Middletown, PA
+1 717 944 3541 | <input type="checkbox"/> York, PA
+1 717 505 5280 |

ALS Project Manager:

Work Order #: 1411079

Customer Information		Project Information		Parameter/Method Request for Analysis															
Purchase Order		Project Name	Chevron Emerald 17 Spill	A TPH (GRO & DRO)															
Work Order		Project Number	013.3287.100.100004	B BTEX															
Company Name	Olsson Associates	Bill To Company	Olsson Associates	C PAH (See Attached List) CO Table 910															
Send Report To	Tim Dobransky	Invoice Attn	Tim Dobransky	D Electrical Conductivity															
Address	760 Horizon Drive, Ste. 102	Address	760 Horizon Drive, Ste. 102	E Sodium Adsorption Ratio															
City/State/Zip	Grand Junction, CO 81506	City/State/Zip	Grand Junction, CO 81506	F pH															
Phone	970.283.7800	Phone	970.283.7800	G Metals (See Attached List) CO Table 910															
Fax	970.283.7456	Fax	970.283.7456	H Arsenic Only															
e-Mail Address	tdobransky@olssonmilling.com	e-Mail Address		I															
				J															
No.	Sample Description	Date	Time	Matrix	Prec.	# Baffles	A	B	C	D	E	F	G	H	I	J	Field		
1	EM17-SS1	11/18/14	1305	Soil	8	2	X	X	X	X	X	X	X						
2	EM17-SS2	11/18/14	1310	Soil	8	2	X	X	X	X	X	X	X						
3	EM17-BG1	11/18/14	1315	Soil	8	2				X	X	X	X						
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			
21																			
22																			
23																			
24																			
25																			
26																			
27																			
28																			
29																			
30																			
31																			
32																			
33																			
34																			
35																			
36																			
37																			
38																			
39																			
40																			
41																			
42																			
43																			
44																			
45																			
46																			
47																			
48																			
49																			
50																			
51																			
52																			
53																			
54																			
55																			
56																			
57																			
58																			
59																			
60																			
61																			
62																			
63																			
64																			
65																			
66																			
67																			
68																			
69																			
70																			
71																			
72																			
73																			
74																			
75																			
76																			
77																			
78																			
79																			
80																			
81																			
82																			
83																			
84																			
85																			
86																			
87																			
88																			
89																			
90																			
91																			
92																			
93																			
94																			
95																			
96																			
97																			
98																			
99																			
100																			

Sampler(s): Please Print & Sign Tim Dobransky		Shipment Method: FedEx		Required Turnaround Time: <input checked="" type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour				Results Due Date:	
Relinquished by: 		Date: 11/19/14	Time: 2:10	Received by: 		Notes: Chevron Pricing Applies - Per Bruce Schlatter			
Relinquished by: 		Date: 11-19-14	Time: 1600	Received by (Laboratory): FE		Cooler Temp: 2.8°		QC Package: (Check Box Below)	
Logged by (Laboratory): KE		Date: 11/20/14	Time: 1520	Checked by (Laboratory): 				<input checked="" type="checkbox"/> Level II: Standard QC <input type="checkbox"/> Level III: Std QC + Raw Data <input type="checkbox"/> Level IV: SW846 CLP-Like <input type="checkbox"/> Other:	
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other (See Lab Notes) 8-5035									

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

Copyright 2011 by ALS Group

Sample Receipt Checklist

Client Name: **OLSSON**

Date/Time Received: **20-Nov-14 09:30**

Work Order: **14111079**

Received by: **KRW**

Checklist completed by <u>Keith Wurenga</u>	20-Nov-14	Reviewed by: <u>Ann Preston</u>	21-Nov-14
eSignature	Date	eSignature	Date

Matrices: **Soil**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>2.8 C</u>		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	<u>11/20/2014 3:27:04 PM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

From: (616) 399-8070
 Rick Martinez
 ALS Environmental
 127 E. 1st Street
 PARACHUTE, CO 81835

Origin ID: RILA



Ship Date: 19NOV14
 Act/Mgt: 34.0 LB
 CAD: 22948404NET3550

Dim: 14 X 28 X 15 IN

SHIP TO: (616) 399-6878
 sample receiving
 ALS Laboratory Group
 3352 128TH AVE

BILL BENDER

Delivery Address Bar Code



Ref # 111014-1
 Invoice #
 PO # Parachute
 Dept #

HOLLAND, MI 49424

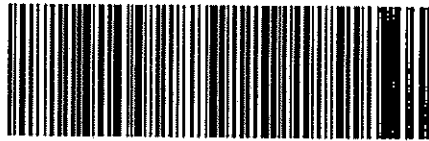
1 of 3

THU - 20 NOV 10:30A
 PRIORITY OVERNIGHT

TRK# 7719 2482 2250

MASTER

49424
 MI-US
 GRR

XX HLMA

0221US1006A03

After printing this label:

1. Use the "Print" button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.





17-Nov-2017

Tim Dobransky
Olsson Associates
760 Horizon Drive
Suite 102
Grand Junction, CO 81506

Re: **Emerald 17 Lateral Resampling**

Work Order: **17102052**

Dear Tim,

ALS Environmental received 2 samples on 31-Oct-2017 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 8.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Olsson Associates
Project: Emerald 17 Lateral Resampling
Work Order: 17102052

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
17102052-01	EM17-SS1	Soil		10/26/2017 11:15	10/31/2017 09:30	<input type="checkbox"/>
17102052-02	EM17-SS2	Soil		10/26/2017 11:20	10/31/2017 09:30	<input type="checkbox"/>

Client: Olsson Associates
Project: Emerald 17 Lateral Resampling
WorkOrder: 17102052

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius
none	

ALS Group, USA**Date:** 17-Nov-17

Client: Olsson Associates
Project: Emerald 17 Lateral Resampling
Sample ID: EM17-SS1
Collection Date: 10/26/2017 11:15 AM

Work Order: 17102052
Lab ID: 17102052-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/6/17		Analyst: RH
Exchangeable Sodium Percentage	U		0.010	0.010	none	1	11/6/2017
Sodium Adsorption Ratio	0.53		0.010	0.010	none	1	11/6/2017
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/6/17		Analyst: JF
Calcium	220		0.86	5.0	mg/L	10	11/6/2017 14:56
Magnesium	35		0.068	2.0	mg/L	10	11/6/2017 14:56
Sodium	32		0.34	2.0	mg/L	10	11/6/2017 14:56
ELECTRICAL CONDUCTIVITY (SAR)							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/6/17		Analyst: JB
Electrical Conductivity @ Saturation	1.4		0.011	0.10	mmhos/cm @25°	20	11/6/2017 15:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA**Date:** 17-Nov-17

Client: Olsson Associates
Project: Emerald 17 Lateral Resampling
Sample ID: EM17-SS2
Collection Date: 10/26/2017 11:20 AM

Work Order: 17102052
Lab ID: 17102052-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/6/17		Analyst: RH
Exchangeable Sodium Percentage	U		0.010	0.010	none	1	11/6/2017
Sodium Adsorption Ratio	0.087		0.010	0.010	none	1	11/6/2017
SOLUBLE CATIONS FOR SAR							
			Method: SW6020A		Prep: USDA Method 20B / 11/6/17		Analyst: JF
Calcium	830		0.86	5.0	mg/L	10	11/6/2017 14:58
Magnesium	24		0.068	2.0	mg/L	10	11/6/2017 14:58
Sodium	9.3		0.34	2.0	mg/L	10	11/6/2017 14:58
ELECTRICAL CONDUCTIVITY (SAR)							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 11/6/17		Analyst: JB
Electrical Conductivity @ Saturation	4.8		0.011	0.10	mmhos/cm @25°	20	11/6/2017 15:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 17-Nov-17

Client: Olsson Associates
Work Order: 17102052
Project: Emerald 17 Lateral Resampling

QC BATCH REPORT

Batch ID: **110104** Instrument ID **SAR** Method: **USDA H60 Metho**

DUP	Sample ID: 17102053-05ADUP					Units: none	Analysis Date: 11/6/2017			
Client ID:	Run ID: SAR_171106A				SeqNo: 4744897		Prep Date: 11/6/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Exchangeable Sodium Percentage	U	0.010	0	0	0		-0.5899	0	50	
Sodium Adsorption Ratio	0.478	0.010	0	0	0		0.4567	4.56	50	

The following samples were analyzed in this batch:

17102052-01A 17102052-02A

Batch ID: **110104** Instrument ID **ICPMS3** Method: **SW6020A**

DUP	Sample ID: 17102053-05ADUP					Units: mg/L	Analysis Date: 11/6/2017 03:11 PM			
Client ID:	Run ID: ICPMS3_171106A				SeqNo: 4744026		Prep Date: 11/6/2017		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	135.1	5.0	0	0	0	0-0	117	14.3		
Magnesium	20.7	2.0	0	0	0	0-0	17.64	15.9		
Sodium	22.58	2.0	0	0	0	0-0	20.05	11.9		

The following samples were analyzed in this batch:

17102052-01A 17102052-02A

Batch ID: **110104** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP	Sample ID: 17102053-05A DUP					Units: mmhos/cm @25°	Analysis Date: 11/6/2017 03:10 PM			
Client ID:	Run ID: WETCHEM_171106G				SeqNo: 4743258		Prep Date: 11/6/2017		DF: 20	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	0.922	0.10	0	0	0		0.894	3.08	50	

The following samples were analyzed in this batch:

17102052-01A 17102052-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Chain of Custody Form

Page 1 of 1

COC ID: 123456

☐ Cincinnati, OH
+1 513 733 5336

☐ Everett, WA
+1 425 356 2600

☐ Fort Collins, CO
+1 970 490 1511

☒ Holland, MI
+1 616 399 6070

☐ Houston, TX
+1 281 530 5656

☐ Middletown, PA
+1 717 944 5541

☐ Salt Lake City, UT
+1 801 266 7700

☐ Spring City, PA
+1 610 948 4903

☐ York, PA
+1 717 505 5280

Customer Information			Project Information				Parameter/Method Request for Analysis											
Purchase Order			Project Name	Emerald 17 Lateral Resampling			A TPH (GRO & DRO)											
Work Order			Project Number	013.3287.400.400004			B BTEX											
Company Name	Olson Associates		Bill To Company	Olson Associates			C PAH (See Attached List) CO Table 910											
Send Report To	Tim Dobransky		Invoice Attn.	Tim Dobransky			D Electrical Conductivity											
Address	760 Horizon Drive, Ste. 102		Address	760 Horizon Drive, Ste. 102			E Sodium Adsorption Ratio											
City/State/Zip	Grand Junction, CO 81506		City/State/Zip	Grand Junction, CO 81506			F pH											
Phone	970.263.7800		Phone	970.263.7800			G Metals (See Attached List) CO Table 910											
Fax	970.263.7466		Fax	970.263.7466			H Arsenic Only											
e-Mail Address	tdobransky@olsonassociates.com		e-Mail Address	tdobransky@olsonassociates.com			I											
							J											
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold	
1	EM17-SS1	10/26/17	1115	Soil	8	1				X	X							
2	EM17-SS2	10/26/17	1120	Soil	8	1				X	X							
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Sampler(s): Please Print & Sign Tim Dobransky		Shipment Method: FedEx		Required Turnaround Time: <input checked="" type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour				Results Due Date:	
Relinquished by: 		Date: 10/30/17	Time: 1200	Received by: 		Notes: Chevron Pricing Applies - Per Bruce Schiatter			
Relinquished by: 		Date: 10-30-17	Time: 1830	Received by (Laboratory): 		Cooler Temp. 4.2°C			
Logged by (Laboratory): KE		Date: 10/31/17	Time: 1520	Checked by (Laboratory): 		QC Package: (Check Box Below)			
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035						<input checked="" type="checkbox"/> Level II: Standard QC <input type="checkbox"/> Level III: Std QC + Raw Data <input type="checkbox"/> Level IV: SW846 CLP-Like Other:			

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

Copyright 2011 by ALS Group

Sample Receipt Checklist

Client Name: **OLSSON**

Date/Time Received: **31-Oct-17 09:30**

Work Order: **17102052**

Received by: **KRW**

Checklist completed by Keith Wurenga
eSignature

31-Oct-17
Date

Reviewed by: Chad Whelton
eSignature

02-Nov-17
Date

Matrices: **Soil**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>4.2/4.2 C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>10/31/2017 3:21:31 PM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction: