28-Jun-2018

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

Re: **MC Hagood A4 Spill** Work Order: **1806796**

Dear Tim,

ALS Environmental received 6 samples on 13-Jun-2018 through 14-Jun-2018 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland 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 31.

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

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Report of Laboratory Analysis

Certificate No: MN 998501

ALS Group, USA

Date: 28-Jun-18

Client: Olsson Associates
Project: MC Hagood A4 Spill
Work Order: **1806796**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1806796-01	MCHA4-SS1	Soil		6/11/2018 10:15	6/13/2018 09:30	☐
1806796-01	MCHA4-SS1	Soil		6/11/2018 10:15	6/14/2018 09:30	☐
1806796-02	MCHA4-BG1	Soil		6/11/2018 10:20	6/13/2018 09:30	☐
1806796-02	MCHA4-BG1	Soil		6/11/2018 10:20	6/14/2018 09:30	☐
1806796-03	MCHA4-SS2	Soil		6/11/2018 10:35	6/13/2018 09:30	☐
1806796-03	MCHA4-SS2	Soil		6/11/2018 10:35	6/14/2018 09:30	☐
1806796-04	MVCHA4-BG2	Soil		6/11/2018 10:40	6/14/2018 09:30	☐
1806796-05	MCHA4-SS3	Soil		6/11/2018 11:00	6/13/2018 09:30	☐
1806796-05	MCHA4-SS3	Soil		6/11/2018 11:00	6/14/2018 09:30	☐
1806796-06	MCHA4-SS4	Soil		6/11/2018 11:10	6/13/2018 09:30	☐
1806796-06	MCHA4-SS4	Soil		6/11/2018 11:10	6/14/2018 09:30	☐

ALS Group, USA

Date: 28-Jun-18

Client: Olsson Associates
Project: MC Hagood A4 Spill
Work Order: 1806796

Case Narrative

Batch 119790, Method ICP_6010_S, Sample 1806796-06A MS/MSD: The MS/MSD recovery was outside of the control limit for Barium; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required.

Batch 119790, Method ICP_6010_S, Sample 1806796-06A MS/MSD: The MS/MSD recoveries were below the lower control limits for Arsenic, Lead, Nickel, and Selenium. The corresponding results in the parent sample may be biased low.

Batch 119790, Method ICP_6010_S, Sample 1806796-06A MSD: The MSD recovery was below the lower control limit for Cadmium. However, the MS recovery and the RPD between the MS and MSD were within control limits. No qualification is required.

Batch 120038, Method CR6_7196_S, Sample 1806796-01A MS/MSD: The MS/MSD recovery was below the lower control limit for Hexavalent Chromium. The corresponding result in the parent sample may be biased low.

ALS Group, USA

Date: 28-Jun-18

Qualifier	Description
*	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.

Acronym	Description
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

Units Reported	Description
% of sample	Percent of Sample
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

Date: *28-Jun-18*

Client: Olsson Associates
Project: MC Hagood A4 Spill
Sample ID: MCHA4-SS1
Collection Date: 6/11/2018 10:15 AM

Work Order: 1806796
Lab ID: 1806796-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 6/14/18		Analyst: **MEB**
DRO (C10-C28)	**75**		**3.1**	**5.5**	**mg/Kg-dry**	1	6/17/2018 12:04
Surr: 4-Terphenyl-d14	*48.0*			*34-130*	*%REC*	1	6/17/2018 12:04
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 6/15/18		Analyst: **MEB**
GRO (C6-C10)	U		2.6	6.2	mg/Kg-dry	1	6/16/2018 22:40
Surr: Toluene-d8	*117*			*71-123*	*%REC*	1	6/16/2018 22:40
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 6/15/18		Analyst: **RSH**
Mercury	**0.042**		**0.0020**	**0.020**	**mg/Kg-dry**	1	6/18/2018 14:42
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 6/14/18		Analyst: **ABL**
Arsenic	**5.1**		**0.12**	**0.45**	**mg/Kg-dry**	1	6/15/2018 02:07
Barium	**160**		**0.18**	**0.45**	**mg/Kg-dry**	1	6/15/2018 02:07
Cadmium	**0.076**	J	**0.043**	**0.89**	**mg/Kg-dry**	1	6/15/2018 02:07
Chromium	**8.3**		**0.025**	**0.45**	**mg/Kg-dry**	1	6/15/2018 02:07
Copper	**13**		**0.20**	**0.89**	**mg/Kg-dry**	1	6/15/2018 02:07
Lead	**24**		**0.094**	**0.45**	**mg/Kg-dry**	1	6/15/2018 02:07
Nickel	**12**		**0.18**	**0.45**	**mg/Kg-dry**	1	6/15/2018 02:07
Selenium	**0.54**	J	**0.25**	**0.89**	**mg/Kg-dry**	1	6/15/2018 02:07
Silver	U		0.055	0.45	mg/Kg-dry	1	6/15/2018 02:07
Zinc	**63**		**0.071**	**0.89**	**mg/Kg-dry**	1	6/15/2018 02:07
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 6/18/18		Analyst: **JF**
Calcium	**4,700**		**8.6**	**50**	**mg/L**	100	6/19/2018 16:10
Magnesium	**1,300**		**0.068**	**2.0**	**mg/L**	10	6/18/2018 19:56
Sodium	**35,000**		**34**	**200**	**mg/L**	1000	6/20/2018 15:11
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 6/18/18		Analyst: **JF**
Sodium Adsorption Ratio	**120**		**0.010**	**0.010**	**none**	1	6/18/2018
SEMI-VOLATILE ORGANIC COMPOUNDS		Method: **SW846 8270D**			Prep: SW3546 / 6/14/18		Analyst: **RM**
Acenaphthene	U		0.0032	0.046	mg/Kg-dry	1	6/15/2018 22:58
Anthracene	U		0.0017	0.046	mg/Kg-dry	1	6/15/2018 22:58
Benzo(a)anthracene	U		0.0028	0.046	mg/Kg-dry	1	6/15/2018 22:58
Benzo(a)pyrene	U		0.0011	0.046	mg/Kg-dry	1	6/15/2018 22:58
Benzo(b)fluoranthene	U		0.0017	0.046	mg/Kg-dry	1	6/15/2018 22:58
Benzo(k)fluoranthene	U		0.0024	0.046	mg/Kg-dry	1	6/15/2018 22:58
Chrysene	U		0.0017	0.046	mg/Kg-dry	1	6/15/2018 22:58
Dibenzo(a,h)anthracene	U		0.0015	0.046	mg/Kg-dry	1	6/15/2018 22:58
Fluoranthene	U		0.0013	0.046	mg/Kg-dry	1	6/15/2018 22:58

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

Client: Olsson Associates
Project: MC Hagood A4 Spill
Sample ID: MCHA4-SS1
Collection Date: 6/11/2018 10:15 AM

Work Order: 1806796
Lab ID: 1806796-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0015	0.046	mg/Kg-dry	1	6/15/2018 22:58
Indeno(1,2,3-cd)pyrene	U		0.0014	0.046	mg/Kg-dry	1	6/15/2018 22:58
Naphthalene	U		0.0086	0.046	mg/Kg-dry	1	6/15/2018 22:58
Pyrene	U		0.0017	0.046	mg/Kg-dry	1	6/15/2018 22:58
Surr: 2-Fluorobiphenyl	*41.9*			*20-140*	*%REC*	1	6/15/2018 22:58
Surr: 4-Terphenyl-d14	*44.0*			*22-172*	*%REC*	1	6/15/2018 22:58
Surr: Nitrobenzene-d5	*48.8*			*28-140*	*%REC*	1	6/15/2018 22:58
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260C**		Prep: SW5035 / 6/15/18		Analyst: **WH**
Benzene	U		0.0064	0.037	mg/Kg-dry	1	6/16/2018 07:34
Ethylbenzene	U		0.0079	0.037	mg/Kg-dry	1	6/16/2018 07:34
m,p-Xylene	U		0.018	0.075	mg/Kg-dry	1	6/16/2018 07:34
o-Xylene	U		0.014	0.037	mg/Kg-dry	1	6/16/2018 07:34
Toluene	U		0.010	0.037	mg/Kg-dry	1	6/16/2018 07:34
Xylenes, Total	U		0.032	0.11	mg/Kg-dry	1	6/16/2018 07:34
Surr: 1,2-Dichloroethane-d4	*94.6*			*70-130*	*%REC*	1	6/16/2018 07:34
Surr: 4-Bromofluorobenzene	*101*			*70-130*	*%REC*	1	6/16/2018 07:34
Surr: Dibromofluoromethane	*92.8*			*70-130*	*%REC*	1	6/16/2018 07:34
Surr: Toluene-d8	*90.4*			*70-130*	*%REC*	1	6/16/2018 07:34
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 6/18/18		Analyst: **ED**
Electrical Conductivity @ Saturation	**160**		**0.011**	**0.10**	**mmhos/cm @25°**	20	6/18/2018 12:20
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JJG**
Chromium, Trivalent	**8.3**		**0.35**	**1.1**	**mg/Kg-dry**	1	6/21/2018 09:41
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 6/19/18		Analyst: **MB**
Chromium, Hexavalent	U		0.34	1.1	mg/Kg-dry	1	6/20/2018 16:00
MOISTURE		Method:	**SW3550C**				Analyst: **NW**
Moisture	**11**		**0.025**	**0.050**	**% of sample**	1	6/15/2018 17:00
PH		Method:	**SW9045D**		Prep: EXTRACT / 6/15/18		Analyst: **NW**
pH	**6.99**		**0.10**	**0.100**	**s.u.**	1	6/16/2018 16:00

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

ALS Group, USA

Date: *28-Jun-18*

Client: Olsson Associates
Project: MC Hagood A4 Spill
Sample ID: MCHA4-BG1
Collection Date: 6/11/2018 10:20 AM

Work Order: 1806796
Lab ID: 1806796-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 6/15/18		Analyst: **RSH**
Mercury	**0.068**		**0.0022**	**0.022**	**mg/Kg-dry**	1	6/18/2018 14:44
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 6/14/18		Analyst: **ABL**
Arsenic	**7.2**		**0.13**	**0.50**	**mg/Kg-dry**	1	6/15/2018 02:13
Barium	**92**		**0.20**	**0.50**	**mg/Kg-dry**	1	6/15/2018 02:13
Cadmium	**0.055**	J	**0.048**	**0.99**	**mg/Kg-dry**	1	6/15/2018 02:13
Chromium	**8.6**		**0.028**	**0.50**	**mg/Kg-dry**	1	6/15/2018 02:13
Copper	**13**		**0.22**	**0.99**	**mg/Kg-dry**	1	6/15/2018 02:13
Lead	**15**		**0.11**	**0.50**	**mg/Kg-dry**	1	6/15/2018 02:13
Nickel	**14**		**0.20**	**0.50**	**mg/Kg-dry**	1	6/15/2018 02:13
Selenium	**0.42**	J	**0.28**	**0.99**	**mg/Kg-dry**	1	6/15/2018 02:13
Silver	U		0.062	0.50	mg/Kg-dry	1	6/15/2018 02:13
Zinc	**67**		**0.079**	**0.99**	**mg/Kg-dry**	1	6/15/2018 02:13
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 6/18/18		Analyst: **JF**
Calcium	**61**		**0.86**	**5.0**	**mg/L**	10	6/18/2018 19:58
Magnesium	**8.9**		**0.068**	**2.0**	**mg/L**	10	6/18/2018 19:58
Sodium	**21**		**0.34**	**2.0**	**mg/L**	10	6/18/2018 19:58
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 6/18/18		Analyst: **JF**
Sodium Adsorption Ratio	**0.66**		**0.010**	**0.010**	**none**	1	6/18/2018
ELECTRICAL CONDUCTIVITY (SAR)		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 6/18/18		Analyst: **ED**
Electrical Conductivity @ Saturation	**0.53**		**0.011**	**0.10**	**mmhos/cm @25°**	20	6/18/2018 12:20
CHROMIUM, TRIVALENT		Method: **CALCULATION**					Analyst: **JJG**
Chromium, Trivalent	**8.6**		**0.38**	**1.2**	**mg/Kg-dry**	1	6/21/2018 09:41
CHROMIUM, HEXAVALENT		Method: **SW7196A**			Prep: SW3060A / 6/19/18		Analyst: **MB**
Chromium, Hexavalent	U		0.38	1.2	mg/Kg-dry	1	6/20/2018 16:00
MOISTURE		Method: **SW3550C**					Analyst: **NW**
Moisture	**18**		**0.025**	**0.050**	**% of sample**	1	6/15/2018 17:00
PH		Method: **SW9045D**			Prep: EXTRACT / 6/15/18		Analyst: **NW**
pH	**8.62**		**0.10**	**0.100**	**s.u.**	1	6/16/2018 16:00

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

ALS Group, USA

Date: *28-Jun-18*

Client: Olsson Associates
Project: MC Hagood A4 Spill
Sample ID: MCHA4-SS2
Collection Date: 6/11/2018 10:35 AM

Work Order: 1806796
Lab ID: 1806796-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 6/14/18		Analyst: **MEB**
DRO (C10-C28)	**22**		**3.5**	**6.1**	**mg/Kg-dry**	1	6/17/2018 01:02
Surr: 4-Terphenyl-d14	*75.6*			*34-130*	*%REC*	1	6/17/2018 01:02
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 6/15/18		Analyst: **MEB**
GRO (C6-C10)	U		3.0	7.2	mg/Kg-dry	1	6/16/2018 23:33
Surr: Toluene-d8	*117*			*71-123*	*%REC*	1	6/16/2018 23:33
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 6/15/18		Analyst: **RSH**
Mercury	**0.041**		**0.0023**	**0.023**	**mg/Kg-dry**	1	6/18/2018 14:47
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 6/14/18		Analyst: **ABL**
Arsenic	**6.8**		**0.12**	**0.46**	**mg/Kg-dry**	1	6/15/2018 02:19
Barium	**85**		**0.18**	**0.46**	**mg/Kg-dry**	1	6/15/2018 02:19
Cadmium	**0.22**	J	**0.044**	**0.92**	**mg/Kg-dry**	1	6/15/2018 02:19
Chromium	**15**		**0.026**	**0.46**	**mg/Kg-dry**	1	6/15/2018 02:19
Copper	**20**		**0.20**	**0.92**	**mg/Kg-dry**	1	6/15/2018 02:19
Lead	**18**		**0.097**	**0.46**	**mg/Kg-dry**	1	6/15/2018 02:19
Nickel	**18**		**0.18**	**0.46**	**mg/Kg-dry**	1	6/15/2018 02:19
Selenium	**0.97**		**0.26**	**0.92**	**mg/Kg-dry**	1	6/15/2018 02:19
Silver	U		0.057	0.46	mg/Kg-dry	1	6/15/2018 02:19
Zinc	**84**		**0.073**	**0.92**	**mg/Kg-dry**	1	6/15/2018 02:19
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 6/18/18		Analyst: **JF**
Calcium	**660**		**0.86**	**5.0**	**mg/L**	10	6/18/2018 20:00
Magnesium	**120**		**0.068**	**2.0**	**mg/L**	10	6/18/2018 20:00
Sodium	**4,000**		**3.4**	**20**	**mg/L**	100	6/19/2018 14:17
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 6/18/18		Analyst: **JF**
Sodium Adsorption Ratio	**36**		**0.010**	**0.010**	**none**	1	6/18/2018
SEMI-VOLATILE ORGANIC COMPOUNDS		Method: **SW846 8270D**			Prep: SW3546 / 6/14/18		Analyst: **RM**
Acenaphthene	U		0.0036	0.051	mg/Kg-dry	1	6/15/2018 23:27
Anthracene	U		0.0018	0.051	mg/Kg-dry	1	6/15/2018 23:27
Benzo(a)anthracene	U		0.0031	0.051	mg/Kg-dry	1	6/15/2018 23:27
Benzo(a)pyrene	U		0.0013	0.051	mg/Kg-dry	1	6/15/2018 23:27
Benzo(b)fluoranthene	U		0.0019	0.051	mg/Kg-dry	1	6/15/2018 23:27
Benzo(k)fluoranthene	U		0.0026	0.051	mg/Kg-dry	1	6/15/2018 23:27
Chrysene	U		0.0019	0.051	mg/Kg-dry	1	6/15/2018 23:27
Dibenzo(a,h)anthracene	U		0.0017	0.051	mg/Kg-dry	1	6/15/2018 23:27
Fluoranthene	U		0.0015	0.051	mg/Kg-dry	1	6/15/2018 23:27

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

Client: Olsson Associates
Project: MC Hagood A4 Spill
Sample ID: MCHA4-SS2
Collection Date: 6/11/2018 10:35 AM

Work Order: 1806796
Lab ID: 1806796-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0017	0.051	mg/Kg-dry	1	6/15/2018 23:27
Indeno(1,2,3-cd)pyrene	U		0.0016	0.051	mg/Kg-dry	1	6/15/2018 23:27
Naphthalene	U		0.0095	0.051	mg/Kg-dry	1	6/15/2018 23:27
Pyrene	U		0.0018	0.051	mg/Kg-dry	1	6/15/2018 23:27
Surr: 2-Fluorobiphenyl	*74.3*			*20-140*	*%REC*	1	6/15/2018 23:27
Surr: 4-Terphenyl-d14	*92.0*			*22-172*	*%REC*	1	6/15/2018 23:27
Surr: Nitrobenzene-d5	*74.5*			*28-140*	*%REC*	1	6/15/2018 23:27
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260C**		Prep: SW5035 / 6/15/18		Analyst: **WH**
Benzene	U		0.0074	0.043	mg/Kg-dry	1	6/16/2018 08:04
Ethylbenzene	U		0.0091	0.043	mg/Kg-dry	1	6/16/2018 08:04
m,p-Xylene	U		0.021	0.086	mg/Kg-dry	1	6/16/2018 08:04
o-Xylene	U		0.017	0.043	mg/Kg-dry	1	6/16/2018 08:04
Toluene	U		0.012	0.043	mg/Kg-dry	1	6/16/2018 08:04
Xylenes, Total	U		0.037	0.13	mg/Kg-dry	1	6/16/2018 08:04
Surr: 1,2-Dichloroethane-d4	*94.4*			*70-130*	*%REC*	1	6/16/2018 08:04
Surr: 4-Bromofluorobenzene	*87.0*			*70-130*	*%REC*	1	6/16/2018 08:04
Surr: Dibromofluoromethane	*102*			*70-130*	*%REC*	1	6/16/2018 08:04
Surr: Toluene-d8	*91.8*			*70-130*	*%REC*	1	6/16/2018 08:04
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 6/18/18		Analyst: **ED**
Electrical Conductivity @ Saturation	**26**		**0.011**	**0.10**	**mmhos/cm @25°**	20	6/18/2018 12:20
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JJG**
Chromium, Trivalent	**15**		**0.38**	**1.2**	**mg/Kg-dry**	1	6/21/2018 09:41
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 6/19/18		Analyst: **MB**
Chromium, Hexavalent	U		0.36	1.2	mg/Kg-dry	1	6/20/2018 16:00
MOISTURE		Method:	**SW3550C**				Analyst: **NW**
Moisture	**18**		**0.025**	**0.050**	**% of sample**	1	6/15/2018 17:00
PH		Method:	**SW9045D**		Prep: EXTRACT / 6/15/18		Analyst: **NW**
pH	**7.98**		**0.10**	**0.100**	**s.u.**	1	6/16/2018 16:00

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

ALS Group, USA

Date: *28-Jun-18*

Client: Olsson Associates
Project: MC Hagood A4 Spill
Sample ID: MVCHA4-BG2
Collection Date: 6/11/2018 10:40 AM

Work Order: 1806796
Lab ID: 1806796-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 6/14/18		Analyst: **ABL**
Arsenic	**5.4**		**0.11**	**0.44**	**mg/Kg-dry**	1	6/15/2018 02:25
MOISTURE		Method: **SW3550C**					Analyst: **NW**
Moisture	**13**		**0.025**	**0.050**	**% of sample**	1	6/15/2018 17:00

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

ALS Group, USA

Date: *28-Jun-18*

Client: Olsson Associates
Project: MC Hagood A4 Spill
Sample ID: MCHA4-SS3
Collection Date: 6/11/2018 11:00 AM

Work Order: 1806796
Lab ID: 1806796-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 6/14/18		Analyst: **MEB**
DRO (C10-C28)	**6.3**		**3.2**	**5.6**	**mg/Kg-dry**	1	6/17/2018 01:31
Surr: 4-Terphenyl-d14	*68.6*			*34-130*	*%REC*	1	6/17/2018 01:31
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 6/15/18		Analyst: **MEB**
GRO (C6-C10)	U		2.7	6.5	mg/Kg-dry	1	6/16/2018 23:59
Surr: Toluene-d8	*115*			*71-123*	*%REC*	1	6/16/2018 23:59
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 6/15/18		Analyst: **RSH**
Mercury	**0.032**		**0.0020**	**0.020**	**mg/Kg-dry**	1	6/18/2018 14:49
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 6/14/18		Analyst: **ABL**
Arsenic	**6.0**		**0.12**	**0.46**	**mg/Kg-dry**	1	6/15/2018 02:31
Barium	**120**		**0.19**	**0.46**	**mg/Kg-dry**	1	6/15/2018 02:31
Cadmium	**0.17**	J	**0.045**	**0.93**	**mg/Kg-dry**	1	6/15/2018 02:31
Chromium	**9.3**		**0.026**	**0.46**	**mg/Kg-dry**	1	6/15/2018 02:31
Copper	**14**		**0.20**	**0.93**	**mg/Kg-dry**	1	6/15/2018 02:31
Lead	**14**		**0.098**	**0.46**	**mg/Kg-dry**	1	6/15/2018 02:31
Nickel	**13**		**0.19**	**0.46**	**mg/Kg-dry**	1	6/15/2018 02:31
Selenium	**0.65**	J	**0.26**	**0.93**	**mg/Kg-dry**	1	6/15/2018 02:31
Silver	U		0.058	0.46	mg/Kg-dry	1	6/15/2018 02:31
Zinc	**64**		**0.074**	**0.93**	**mg/Kg-dry**	1	6/15/2018 02:31
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 6/18/18		Analyst: **JF**
Calcium	**860**		**0.86**	**5.0**	**mg/L**	10	6/18/2018 20:09
Magnesium	**200**		**0.068**	**2.0**	**mg/L**	10	6/18/2018 20:09
Sodium	**3,700**		**3.4**	**20**	**mg/L**	100	6/19/2018 14:19
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 6/18/18		Analyst: **JF**
Sodium Adsorption Ratio	**29**		**0.010**	**0.010**	**none**	1	6/18/2018
SEMI-VOLATILE ORGANIC COMPOUNDS		Method: **SW846 8270D**			Prep: SW3546 / 6/14/18		Analyst: **RM**
Acenaphthene	U		0.0033	0.046	mg/Kg-dry	1	6/15/2018 23:41
Anthracene	U		0.0017	0.046	mg/Kg-dry	1	6/15/2018 23:41
Benzo(a)anthracene	U		0.0029	0.046	mg/Kg-dry	1	6/15/2018 23:41
Benzo(a)pyrene	U		0.0012	0.046	mg/Kg-dry	1	6/15/2018 23:41
Benzo(b)fluoranthene	U		0.0018	0.046	mg/Kg-dry	1	6/15/2018 23:41
Benzo(k)fluoranthene	U		0.0024	0.046	mg/Kg-dry	1	6/15/2018 23:41
Chrysene	U		0.0018	0.046	mg/Kg-dry	1	6/15/2018 23:41
Dibenzo(a,h)anthracene	U		0.0015	0.046	mg/Kg-dry	1	6/15/2018 23:41
Fluoranthene	U		0.0013	0.046	mg/Kg-dry	1	6/15/2018 23:41

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

Client: Olsson Associates
Project: MC Hagood A4 Spill
Sample ID: MCHA4-SS3
Collection Date: 6/11/2018 11:00 AM

Work Order: 1806796
Lab ID: 1806796-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0015	0.046	mg/Kg-dry	1	6/15/2018 23:41
Indeno(1,2,3-cd)pyrene	U		0.0014	0.046	mg/Kg-dry	1	6/15/2018 23:41
Naphthalene	U		0.0087	0.046	mg/Kg-dry	1	6/15/2018 23:41
Pyrene	U		0.0017	0.046	mg/Kg-dry	1	6/15/2018 23:41
Surr: 2-Fluorobiphenyl	*70.6*			*20-140*	*%REC*	1	6/15/2018 23:41
Surr: 4-Terphenyl-d14	*83.0*			*22-172*	*%REC*	1	6/15/2018 23:41
Surr: Nitrobenzene-d5	*73.8*			*28-140*	*%REC*	1	6/15/2018 23:41
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260C**		Prep: SW5035 / 6/15/18		Analyst: **WH**
Benzene	U		0.0067	0.039	mg/Kg-dry	1	6/16/2018 08:19
Ethylbenzene	U		0.0082	0.039	mg/Kg-dry	1	6/16/2018 08:19
m,p-Xylene	U		0.019	0.078	mg/Kg-dry	1	6/16/2018 08:19
o-Xylene	U		0.015	0.039	mg/Kg-dry	1	6/16/2018 08:19
Toluene	U		0.011	0.039	mg/Kg-dry	1	6/16/2018 08:19
Xylenes, Total	U		0.034	0.12	mg/Kg-dry	1	6/16/2018 08:19
Surr: 1,2-Dichloroethane-d4	*94.2*			*70-130*	*%REC*	1	6/16/2018 08:19
Surr: 4-Bromofluorobenzene	*89.8*			*70-130*	*%REC*	1	6/16/2018 08:19
Surr: Dibromofluoromethane	*94.7*			*70-130*	*%REC*	1	6/16/2018 08:19
Surr: Toluene-d8	*97.8*			*70-130*	*%REC*	1	6/16/2018 08:19
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 6/18/18		Analyst: **ED**
Electrical Conductivity @ Saturation	**26**		**0.011**	**0.10**	**mmhos/cm @25°**	20	6/18/2018 12:20
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JJG**
Chromium, Trivalent	**9.3**		**0.35**	**1.1**	**mg/Kg-dry**	1	6/21/2018 09:41
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 6/19/18		Analyst: **MB**
Chromium, Hexavalent	U		0.35	1.1	mg/Kg-dry	1	6/20/2018 16:00
MOISTURE		Method:	**SW3550C**				Analyst: **NW**
Moisture	**13**		**0.025**	**0.050**	**% of sample**	1	6/15/2018 17:00
PH		Method:	**SW9045D**		Prep: EXTRACT / 6/15/18		Analyst: **NW**
pH	**7.09**		**0.10**	**0.100**	**s.u.**	1	6/16/2018 16:00

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

ALS Group, USA

Date: *28-Jun-18*

Client: Olsson Associates
Project: MC Hagood A4 Spill
Sample ID: MCHA4-SS4
Collection Date: 6/11/2018 11:10 AM

Work Order: 1806796
Lab ID: 1806796-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 6/14/18		Analyst: **MEB**
DRO (C10-C28)	**4.0**	J	**3.4**	**5.9**	**mg/Kg-dry**	1	6/17/2018 02:00
Surr: 4-Terphenyl-d14	*67.6*			*34-130*	*%REC*	1	6/17/2018 02:00
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 6/15/18		Analyst: **MEB**
GRO (C6-C10)	U		2.8	6.8	mg/Kg-dry	1	6/17/2018 12:25
Surr: Toluene-d8	*118*			*71-123*	*%REC*	1	6/17/2018 12:25
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 6/15/18		Analyst: **RSH**
Mercury	**0.030**		**0.0018**	**0.018**	**mg/Kg-dry**	1	6/18/2018 14:52
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 6/14/18		Analyst: **ABL**
Arsenic	**6.0**		**0.11**	**0.42**	**mg/Kg-dry**	1	6/15/2018 02:37
Barium	**95**		**0.17**	**0.42**	**mg/Kg-dry**	1	6/15/2018 02:37
Cadmium	**0.18**	J	**0.040**	**0.84**	**mg/Kg-dry**	1	6/15/2018 02:37
Chromium	**9.8**		**0.023**	**0.42**	**mg/Kg-dry**	1	6/15/2018 02:37
Copper	**16**		**0.18**	**0.84**	**mg/Kg-dry**	1	6/15/2018 02:37
Lead	**14**		**0.089**	**0.42**	**mg/Kg-dry**	1	6/15/2018 02:37
Nickel	**14**		**0.17**	**0.42**	**mg/Kg-dry**	1	6/15/2018 02:37
Selenium	**0.71**	J	**0.23**	**0.84**	**mg/Kg-dry**	1	6/15/2018 02:37
Silver	U		0.052	0.42	mg/Kg-dry	1	6/15/2018 02:37
Zinc	**69**		**0.067**	**0.84**	**mg/Kg-dry**	1	6/15/2018 02:37
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 6/18/18		Analyst: **JF**
Calcium	**520**		**0.86**	**5.0**	**mg/L**	10	6/18/2018 20:11
Magnesium	**100**		**0.068**	**2.0**	**mg/L**	10	6/18/2018 20:11
Sodium	**3,200**		**3.4**	**20**	**mg/L**	100	6/19/2018 14:21
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 6/18/18		Analyst: **JF**
Sodium Adsorption Ratio	**34**		**0.010**	**0.010**	**none**	1	6/18/2018
SEMI-VOLATILE ORGANIC COMPOUNDS		Method: **SW846 8270D**			Prep: SW3546 / 6/14/18		Analyst: **RM**
Acenaphthene	U		0.0035	0.049	mg/Kg-dry	1	6/15/2018 23:55
Anthracene	U		0.0018	0.049	mg/Kg-dry	1	6/15/2018 23:55
Benzo(a)anthracene	U		0.0030	0.049	mg/Kg-dry	1	6/15/2018 23:55
Benzo(a)pyrene	U		0.0012	0.049	mg/Kg-dry	1	6/15/2018 23:55
Benzo(b)fluoranthene	U		0.0019	0.049	mg/Kg-dry	1	6/15/2018 23:55
Benzo(k)fluoranthene	U		0.0025	0.049	mg/Kg-dry	1	6/15/2018 23:55
Chrysene	U		0.0019	0.049	mg/Kg-dry	1	6/15/2018 23:55
Dibenzo(a,h)anthracene	U		0.0016	0.049	mg/Kg-dry	1	6/15/2018 23:55
Fluoranthene	U		0.0014	0.049	mg/Kg-dry	1	6/15/2018 23:55

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

Client: Olsson Associates
Project: MC Hagood A4 Spill
Sample ID: MCHA4-SS4
Collection Date: 6/11/2018 11:10 AM

Work Order: 1806796
Lab ID: 1806796-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0016	0.049	mg/Kg-dry	1	6/15/2018 23:55
Indeno(1,2,3-cd)pyrene	U		0.0015	0.049	mg/Kg-dry	1	6/15/2018 23:55
Naphthalene	U		0.0092	0.049	mg/Kg-dry	1	6/15/2018 23:55
Pyrene	U		0.0018	0.049	mg/Kg-dry	1	6/15/2018 23:55
Surr: 2-Fluorobiphenyl	*70.9*			*20-140*	*%REC*	1	6/15/2018 23:55
Surr: 4-Terphenyl-d14	*86.0*			*22-172*	*%REC*	1	6/15/2018 23:55
Surr: Nitrobenzene-d5	*71.4*			*28-140*	*%REC*	1	6/15/2018 23:55
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260C**		Prep: SW5035 / 6/15/18		Analyst: **WH**
Benzene	U		0.0069	0.041	mg/Kg-dry	1	6/16/2018 08:34
Ethylbenzene	U		0.0086	0.041	mg/Kg-dry	1	6/16/2018 08:34
m,p-Xylene	U		0.019	0.081	mg/Kg-dry	1	6/16/2018 08:34
o-Xylene	U		0.016	0.041	mg/Kg-dry	1	6/16/2018 08:34
Toluene	U		0.011	0.041	mg/Kg-dry	1	6/16/2018 08:34
Xylenes, Total	U		0.035	0.12	mg/Kg-dry	1	6/16/2018 08:34
Surr: 1,2-Dichloroethane-d4	*113*			*70-130*	*%REC*	1	6/16/2018 08:34
Surr: 4-Bromofluorobenzene	*104*			*70-130*	*%REC*	1	6/16/2018 08:34
Surr: Dibromofluoromethane	*112*			*70-130*	*%REC*	1	6/16/2018 08:34
Surr: Toluene-d8	*98.7*			*70-130*	*%REC*	1	6/16/2018 08:34
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 6/18/18		Analyst: **ED**
Electrical Conductivity @ Saturation	**21**		**0.011**	**0.10**	**mmhos/cm @25°**	20	6/18/2018 12:20
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JJG**
Chromium, Trivalent	**9.8**		**0.36**	**1.2**	**mg/Kg-dry**	1	6/21/2018 09:41
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 6/19/18		Analyst: **MB**
Chromium, Hexavalent	U		0.36	1.2	mg/Kg-dry	1	6/20/2018 16:00
MOISTURE		Method:	**SW3550C**				Analyst: **NW**
Moisture	**15**		**0.025**	**0.050**	**% of sample**	1	6/15/2018 17:00
PH		Method:	**SW9045D**		Prep: EXTRACT / 6/15/18		Analyst: **NW**
pH	**7.72**		**0.10**	**0.100**	**s.u.**	1	6/16/2018 16:00

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

ALS Group, USA

Date: 28-Jun-18

Client: Olsson Associates

Work Order: 1806796

Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **119769** Instrument ID **GC8** Method: **SW8015C**

MBLK Sample ID: **DBLKS1-119769-119769** Units: **mg/Kg** Analysis Date: **6/15/2018 05:38 AM**

Client ID: Run ID: **GC8_180614A** SeqNo: **5093290** Prep Date: **6/14/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	U	5.0								
Surr: 4-Terphenyl-d14	*2.45*	0	*3.33*	0	*73.6*	*34-130*	0			

LCS Sample ID: **DLCSS1-119769-119769** Units: **mg/Kg** Analysis Date: **6/15/2018 06:07 AM**

Client ID: Run ID: **GC8_180614A** SeqNo: **5093291** Prep Date: **6/14/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	299.8	5.0	333	0	90	65-122	0			
Surr: 4-Terphenyl-d14	*2.567*	0	*3.33*	0	*77.1*	*34-130*	0			

MS Sample ID: **1806795-03A MS** Units: **mg/Kg** Analysis Date: **6/15/2018 07:05 AM**

Client ID: Run ID: **GC8_180614A** SeqNo: **5093293** Prep Date: **6/14/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	1194	4.9	327.8	624.9	174	65-122	0			S
Surr: 4-Terphenyl-d14	*3.346*	0	*3.278*	0	*102*	*34-130*	0			

MSD Sample ID: **1806795-03A MSD** Units: **mg/Kg** Analysis Date: **6/15/2018 07:34 AM**

Client ID: Run ID: **GC8_180614A** SeqNo: **5093294** Prep Date: **6/14/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	1051	5.0	332.6	624.9	128	65-122	1194	12.7	30	S
Surr: 4-Terphenyl-d14	*2.314*	0	*3.326*	0	*69.6*	*34-130*	3.346	*36.5*	*30*	*R*

The following samples were analyzed in this batch: 1806796-01A 1806796-02A 1806796-03A 1806796-05A 1806796-06A

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

Client: Olsson Associates
Work Order: 1806796
Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **119891** Instrument ID **GC10** Method: **SW8015D**

MBLK Sample ID: **MBLK-119891-119891** Units: **µg/Kg-dry** Analysis Date: **6/16/2018 05:00 PM**
Client ID: Run ID: **GC10_180616A** SeqNo: **5097148** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	5,000								
Surr: Toluene-d8	*5803*	0	*5000*	0	*116*	*71-123*	0			

LCS Sample ID: **LCS-119891-119891** Units: **µg/Kg-dry** Analysis Date: **6/16/2018 04:08 PM**
Client ID: Run ID: **GC10_180616A** SeqNo: **5097147** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	589800	5,000	500000	0	118	71-123	0			
Surr: Toluene-d8	*5764*	0	*5000*	0	*115*	*71-123*	0			

MS Sample ID: **1806802-04A MS** Units: **µg/Kg-dry** Analysis Date: **6/17/2018 03:28 AM**
Client ID: Run ID: **GC10_180616A** SeqNo: **5097191** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	757200	9,100	908500	0	83.3	71-123	0			
Surr: Toluene-d8	*9692*	0	*9085*	0	*107*	*71-123*	0			

MSD Sample ID: **1806802-04A MSD** Units: **µg/Kg-dry** Analysis Date: **6/17/2018 03:54 AM**
Client ID: Run ID: **GC10_180616A** SeqNo: **5097192** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	801500	9,100	908500	0	88.2	71-123	757200	5.68	30	
Surr: Toluene-d8	*9848*	0	*9085*	0	*108*	*71-123*	9692	*1.59*	*30*	

The following samples were analyzed in this batch:

1806796-01A	1806796-02A	1806796-03A
1806796-05A	1806796-06A	

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

Client: Olsson Associates
Work Order: 1806796
Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **119885** Instrument ID **HG1** Method: **SW7471B**

MBLK Sample ID: **MBLK-119885-119885** Units: **mg/Kg** Analysis Date: **6/18/2018 02:16 PM**
Client ID: Run ID: **HG1_180618A** SeqNo: **5097061** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.020								

LCS Sample ID: **LCS-119885-119885** Units: **mg/Kg** Analysis Date: **6/18/2018 02:18 PM**
Client ID: Run ID: **HG1_180618A** SeqNo: **5097062** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.165	0.020	0.1665	0	99.1	80-120	0			

MS Sample ID: **1806795-04AMS** Units: **mg/Kg** Analysis Date: **6/18/2018 02:37 PM**
Client ID: Run ID: **HG1_180618A** SeqNo: **5097080** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.2218	0.019	0.1611	0.07064	93.8	75-125	0			

MSD Sample ID: **1806795-04AMSD** Units: **mg/Kg** Analysis Date: **6/18/2018 02:40 PM**
Client ID: Run ID: **HG1_180618A** SeqNo: **5097081** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.2389	0.019	0.1591	0.07064	106	75-125	0.2218	7.42	35	

The following samples were analyzed in this batch:

1806796-01A	1806796-02A	1806796-03A
1806796-05A	1806796-06A	

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

Client: Olsson Associates
Work Order: 1806796
Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **119790** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-119790-119790** Units: **mg/Kg** Analysis Date: **6/15/2018 01:11 AM**
Client ID: Run ID: **ICP2_180614A** SeqNo: **5091956** Prep Date: **6/14/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.50								
Copper	U	0.50								
Lead	U	0.25								
Nickel	U	0.25								
Selenium	U	0.50								
Silver	U	0.25								
Zinc	0.1165	0.50								J

LCS Sample ID: **LCS-119790-119790** Units: **mg/Kg** Analysis Date: **6/15/2018 01:18 AM**
Client ID: Run ID: **ICP2_180614A** SeqNo: **5091957** Prep Date: **6/14/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	4.395	0.25	5	0	87.9	80-120	0			
Cadmium	4.199	0.50	5	0	84	80-120	0			
Copper	4.327	0.50	5	0	86.5	80-120	0			
Lead	4.295	0.25	5	0	85.9	80-120	0			
Nickel	4.305	0.25	5	0	86.1	80-120	0			
Silver	4.065	0.25	5	0	81.3	80-120	0			
Zinc	4.21	0.50	5	0	84.2	80-120	0			

MS Sample ID: **1806796-06AMS** Units: **mg/Kg** Analysis Date: **6/15/2018 02:43 AM**
Client ID: **MCHA4-SS4** Run ID: **ICP2_180614A** SeqNo: **5091971** Prep Date: **6/14/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.34	0.36	7.123	5.121	73.2	75-125	0			S
Barium	101.4	0.36	7.123	80.98	287	75-125	0			SO
Cadmium	5.499	0.71	7.123	0.1558	75	75-125	0			
Copper	19.26	0.71	7.123	13.39	82.4	75-125	0			
Lead	16.7	0.36	7.123	11.98	66.2	75-125	0			S
Nickel	16.31	0.36	7.123	11.81	63.2	75-125	0			S
Selenium	5.769	0.71	7.123	0.6046	72.5	75-125	0			S
Silver	5.798	0.36	7.123	-0.1344	83.3	75-125	0			
Zinc	65.56	0.71	7.123	58.38	101	75-125	0			O

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

Client: Olsson Associates
Work Order: 1806796
Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **119790** Instrument ID **ICP2** Method: **SW846 6010C**

MSD Sample ID: **1806796-06AMSD** Units: **mg/Kg** Analysis Date: **6/15/2018 02:49 AM**
Client ID: **MCHA4-SS4** Run ID: **ICP2_180614A** SeqNo: **5091972** Prep Date: **6/14/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.39	0.36	7.112	5.121	74.1	75-125	10.34	0.538	20	S
Barium	100.7	0.36	7.112	80.98	278	75-125	101.4	0.657	20	SO
Cadmium	5.469	0.71	7.112	0.1558	74.7	75-125	5.499	0.532	20	S
Copper	19.56	0.71	7.112	13.39	86.7	75-125	19.26	1.54	20	
Lead	16.67	0.36	7.112	11.98	65.9	75-125	16.7	0.157	20	S
Nickel	16.47	0.36	7.112	11.81	65.5	75-125	16.31	0.999	20	S
Selenium	5.669	0.71	7.112	0.6046	71.2	75-125	5.769	1.76	20	S
Silver	5.811	0.36	7.112	-0.1344	83.6	75-125	5.798	0.226	20	
Zinc	65.86	0.71	7.112	58.38	105	75-125	65.56	0.461	20	O

The following samples were analyzed in this batch:

1806796-01A	1806796-02A	1806796-03A
1806796-04A	1806796-05A	1806796-06A

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

Client: Olsson Associates
Work Order: 1806796
Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **119951** Instrument ID **ICPMS3** Method: **SW6020A**

DUP Sample ID: **1806795-04BDUP** Units: **mg/L** Analysis Date: **6/18/2018 07:53 PM**
Client ID: Run ID: **ICPMS3_180618A** SeqNo: **5097961** Prep Date: **6/18/2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	863.9	5.0	0	0	0	0-0	636.8	30.3		
Magnesium	281	2.0	0	0	0	0-0	200.5	33.4		

DUP Sample ID: **1806795-04BDUP** Units: **mg/L** Analysis Date: **6/19/2018 02:14 PM**
Client ID: Run ID: **ICPMS3_180619A** SeqNo: **5100650** Prep Date: **6/18/2018** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	2412	20	0	0	0	0-0	1754	31.6		

The following samples were analyzed in this batch:

1806796-01B	1806796-02B	1806796-03B
1806796-05B	1806796-06B	

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

Client: Olsson Associates
Work Order: 1806796
Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **119768** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK Sample ID: **SBLKS1-119768-119768** Units: **µg/Kg** Analysis Date: **6/15/2018 05:17 PM**
Client ID: Run ID: **SVMS6_180615A** SeqNo: **5096809** Prep Date: **6/14/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	42								
Anthracene	U	42								
Benzo(a)anthracene	U	42								
Benzo(a)pyrene	U	42								
Benzo(b)fluoranthene	U	42								
Benzo(k)fluoranthene	U	42								
Chrysene	U	42								
Dibenzo(a,h)anthracene	U	42								
Fluoranthene	U	42								
Fluorene	U	42								
Indeno(1,2,3-cd)pyrene	U	42								
Naphthalene	U	42								
Pyrene	U	42								
Surr: 2-Fluorobiphenyl	*2637*	0	*3333*	0	*79.1*	*20-140*	0			
Surr: 4-Terphenyl-d14	*3218*	0	*3333*	0	*96.6*	*22-172*	0			
Surr: Nitrobenzene-d5	*3538*	0	*3333*	0	*106*	*28-140*	0			

LCS Sample ID: **SLCSS1-119768-119768** Units: **µg/Kg** Analysis Date: **6/15/2018 05:31 PM**
Client ID: Run ID: **SVMS6_180615A** SeqNo: **5096811** Prep Date: **6/14/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1056	42	1333	0	79.2	40-140	0			
Anthracene	1099	42	1333	0	82.5	40-140	0			
Benzo(a)anthracene	1028	42	1333	0	77.1	40-140	0			
Benzo(a)pyrene	1054	42	1333	0	79.1	40-140	0			
Benzo(b)fluoranthene	932.3	42	1333	0	69.9	40-140	0			
Benzo(k)fluoranthene	1098	42	1333	0	82.3	40-140	0			
Chrysene	1098	42	1333	0	82.4	40-140	0			
Dibenzo(a,h)anthracene	1217	42	1333	0	91.3	40-140	0			
Fluoranthene	991.3	42	1333	0	74.4	40-140	0			
Fluorene	1054	42	1333	0	79.1	40-140	0			
Indeno(1,2,3-cd)pyrene	1228	42	1333	0	92.1	40-140	0			
Naphthalene	1140	42	1333	0	85.5	40-140	0			
Pyrene	1095	42	1333	0	82.1	40-140	0			
Surr: 2-Fluorobiphenyl	*2482*	0	*3333*	0	*74.5*	*20-140*	0			
Surr: 4-Terphenyl-d14	*2934*	0	*3333*	0	*88*	*22-172*	0			
Surr: Nitrobenzene-d5	*3405*	0	*3333*	0	*102*	*28-140*	0			

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

Client: Olsson Associates
Work Order: 1806796
Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **119768** Instrument ID **SVMS6** Method: **SW846 8270D**

MS Sample ID: **1806795-02A MS** Units: **µg/Kg** Analysis Date: **6/15/2018 05:45 PM**
Client ID: Run ID: **SVMS6_180615A** SeqNo: **5096812** Prep Date: **6/14/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	658.2	41	1315	0	50	40-140	0			
Anthracene	792	41	1315	0	60.2	40-140	0			
Benzo(a)anthracene	698.1	41	1315	0	53.1	40-140	0			
Benzo(a)pyrene	790.8	41	1315	0	60.1	40-140	0			
Benzo(b)fluoranthene	664.5	41	1315	0	50.5	40-140	0			
Benzo(k)fluoranthene	736.9	41	1315	0	56	40-140	0			
Chrysene	783.2	41	1315	0	59.5	40-140	0			
Dibenzo(a,h)anthracene	723.8	41	1315	0	55	40-140	0			
Fluoranthene	699.9	41	1315	0	53.2	40-140	0			
Fluorene	667.3	41	1315	0	50.7	40-140	0			
Indeno(1,2,3-cd)pyrene	779.8	41	1315	0	59.3	40-140	0			
Naphthalene	715.6	41	1315	0	54.4	40-140	0			
Pyrene	823.4	41	1315	0	62.6	40-140	0			
Surr: 2-Fluorobiphenyl	*1499*	0	*3289*	0	*45.6*	*20-140*	0			
Surr: 4-Terphenyl-d14	*1947*	0	*3289*	0	*59.2*	*22-172*	0			
Surr: Nitrobenzene-d5	*1900*	0	*3289*	0	*57.8*	*28-140*	0			

MSD Sample ID: **1806795-02A MSD** Units: **µg/Kg** Analysis Date: **6/15/2018 05:59 PM**
Client ID: Run ID: **SVMS6_180615A** SeqNo: **5096813** Prep Date: **6/14/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	708.2	41	1319	0	53.7	40-140	658.2	7.32	30	
Anthracene	846.5	41	1319	0	64.2	40-140	792	6.65	30	
Benzo(a)anthracene	834.9	41	1319	0	63.3	40-140	698.1	17.9	30	
Benzo(a)pyrene	704	41	1319	0	53.4	40-140	790.8	11.6	30	
Benzo(b)fluoranthene	751	41	1319	0	56.9	40-140	664.5	12.2	30	
Benzo(k)fluoranthene	676.8	41	1319	0	51.3	40-140	736.9	8.49	30	
Chrysene	1416	41	1319	0	107	40-140	783.2	57.5	30	R
Dibenzo(a,h)anthracene	681.9	41	1319	0	51.7	40-140	723.8	5.95	30	
Fluoranthene	789.6	41	1319	0	59.9	40-140	699.9	12	30	
Fluorene	746.7	41	1319	0	56.6	40-140	667.3	11.2	30	
Indeno(1,2,3-cd)pyrene	692.1	41	1319	0	52.5	40-140	779.8	11.9	30	
Naphthalene	681	41	1319	0	51.6	40-140	715.6	4.96	30	
Pyrene	724.5	41	1319	0	54.9	40-140	823.4	12.8	30	
Surr: 2-Fluorobiphenyl	*1424*	0	*3298*	0	*43.2*	*20-140*	1499	*5.14*	*0*	
Surr: 4-Terphenyl-d14	*1755*	0	*3298*	0	*53.2*	*22-172*	1947	*10.4*	*0*	
Surr: Nitrobenzene-d5	*1915*	0	*3298*	0	*58.1*	*28-140*	1900	*0.781*	*0*	

The following samples were analyzed in this batch:

1806796-01A	1806796-02A	1806796-03A
1806796-05A	1806796-06A	

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

Client: Olsson Associates
Work Order: 1806796
Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **119888** Instrument ID **VMS7** Method: **SW8260C**

MBLK Sample ID: **MBLK-119888-119888** Units: **µg/Kg-dry** Analysis Date: **6/15/2018 11:42 AM**
Client ID: Run ID: **VMS7_180615A** SeqNo: **5095932** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	30								
Ethylbenzene	U	30								
m,p-Xylene	U	60								
o-Xylene	U	30								
Toluene	U	30								
Xylenes, Total	U	90								
Surr: 1,2-Dichloroethane-d4	*978.5*	0	*1000*	0	*97.8*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*922.5*	0	*1000*	0	*92.2*	*70-130*	0			
Surr: Dibromofluoromethane	*981*	0	*1000*	0	*98.1*	*70-130*	0			
Surr: Toluene-d8	*1051*	0	*1000*	0	*105*	*70-130*	0			

LCS Sample ID: **LCS-119888-119888** Units: **µg/Kg-dry** Analysis Date: **6/15/2018 10:57 AM**
Client ID: Run ID: **VMS7_180615A** SeqNo: **5095931** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	995	30	1000	0	99.5	75-125	0			
Ethylbenzene	970	30	1000	0	97	75-125	0			
m,p-Xylene	2148	60	2000	0	107	80-125	0			
o-Xylene	1040	30	1000	0	104	75-125	0			
Toluene	1156	30	1000	0	116	70-125	0			
Xylenes, Total	3188	90	3000	0	106	75-125	0			
Surr: 1,2-Dichloroethane-d4	*981*	0	*1000*	0	*98.1*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*988.5*	0	*1000*	0	*98.8*	*70-130*	0			
Surr: Dibromofluoromethane	*990.5*	0	*1000*	0	*99*	*70-130*	0			
Surr: Toluene-d8	*1099*	0	*1000*	0	*110*	*70-130*	0			

MS Sample ID: **1806802-04A MS** Units: **µg/Kg-dry** Analysis Date: **6/15/2018 06:31 PM**
Client ID: Run ID: **VMS7_180615A** SeqNo: **5095979** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1577	55	1817	0	86.8	75-125	0			
Ethylbenzene	1736	55	1817	0	95.6	75-125	0			
m,p-Xylene	3212	110	3634	0	88.4	80-125	0			
o-Xylene	1735	55	1817	0	95.5	75-125	0			
Toluene	1789	55	1817	0	98.4	70-125	0			
Xylenes, Total	4947	160	5451	0	90.8	75-125	0			
Surr: 1,2-Dichloroethane-d4	*1751*	0	*1817*	0	*96.4*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1727*	0	*1817*	0	*95*	*70-130*	0			
Surr: Dibromofluoromethane	*1819*	0	*1817*	0	*100*	*70-130*	0			
Surr: Toluene-d8	*1644*	0	*1817*	0	*90.5*	*70-130*	0			

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

Client: Olsson Associates
Work Order: 1806796
Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **119888** Instrument ID **VMS7** Method: **SW8260C**

MSD Sample ID: **1806802-04A MSD** Units: **µg/Kg-dry** Analysis Date: **6/15/2018 06:46 PM**
Client ID: Run ID: **VMS7_180615A** SeqNo: **5095981** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1773	55	1817	0	97.6	75-125	1577	11.7	30	
Ethylbenzene	1790	55	1817	0	98.5	75-125	1736	3.04	30	
m,p-Xylene	3448	110	3634	0	94.9	80-125	3212	7.07	30	
o-Xylene	1718	55	1817	0	94.6	75-125	1735	1	30	
Toluene	1791	55	1817	0	98.6	70-125	1789	0.152	30	
Xylenes, Total	5165	160	5451	0	94.8	75-125	4947	4.31	30	
Surr: 1,2-Dichloroethane-d4	*1994*	0	*1817*	0	*110*	*70-130*	1751	*13*	*30*	
Surr: 4-Bromofluorobenzene	*1825*	0	*1817*	0	*100*	*70-130*	1727	*5.52*	*30*	
Surr: Dibromofluoromethane	*1839*	0	*1817*	0	*101*	*70-130*	1819	*1.09*	*30*	
Surr: Toluene-d8	*1721*	0	*1817*	0	*94.7*	*70-130*	1644	*4.54*	*30*	

The following samples were analyzed in this batch: 1806796-01A 1806796-02A 1806796-03A 1806796-05A 1806796-06A

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

Client: Olsson Associates
Work Order: 1806796
Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **119903** Instrument ID **WETCHEM** Method: **SW9045D**

LCS Sample ID: **LCS-119903-119903** Units: **s.u.** Analysis Date: **6/16/2018 04:00 PM**
Client ID: Run ID: **WETCHEM_180616E** SeqNo: **5094315** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	3.93	0.10	4	0	98.2	90-110	0			

DUP Sample ID: **1806795-01A DUP** Units: **s.u.** Analysis Date: **6/16/2018 04:00 PM**
Client ID: Run ID: **WETCHEM_180616E** SeqNo: **5094317** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.3	0.10	0	0	0	0-0	7.21	1.24	20	

DUP Sample ID: **1806802-02A DUP** Units: **s.u.** Analysis Date: **6/16/2018 04:00 PM**
Client ID: Run ID: **WETCHEM_180616E** SeqNo: **5094328** Prep Date: **6/15/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.74	0.10	0	0	0	0-0	7.97	2.93	20	

The following samples were analyzed in this batch:

1806796-01A	1806796-02A	1806796-03A
1806796-05A	1806796-06A	

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

Client: Olsson Associates
Work Order: 1806796
Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **119951** Instrument ID **Titrator 1** Method: **USDA H60 Metho**

DUP Sample ID: **1806795-04BDUP** Units: **mmhos/cm @25°** Analysis Date: **6/18/2018 12:20 PM**

Client ID: Run ID: **TITRATOR 1_180618B** SeqNo: **5096530** Prep Date: **6/18/2018** DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	20.22	0.10	0	0	0		15.87	24.1	50	

The following samples were analyzed in this batch:

1806796-01B 1806796-02B 1806796-03B
1806796-05B 1806796-06B

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

Client: Olsson Associates
Work Order: 1806796
Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **120038** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK Sample ID: **MBLK-120038-120038** Units: **mg/Kg** Analysis Date: **6/20/2018 04:00 PM**
Client ID: Run ID: **WETCHEM_180620L** SeqNo: **5103011** Prep Date: **6/19/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	U	1.0								

LCS Sample ID: **LCS-120038-120038** Units: **mg/Kg** Analysis Date: **6/20/2018 04:00 PM**
Client ID: Run ID: **WETCHEM_180620L** SeqNo: **5103010** Prep Date: **6/19/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	4.48	1.0	5	0	89.6	80-120	0			

MS Sample ID: **1806796-01A MS** Units: **mg/Kg** Analysis Date: **6/20/2018 04:00 PM**
Client ID: **MCHA4-SS1** Run ID: **WETCHEM_180620L** SeqNo: **5102990** Prep Date: **6/19/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	2.67	1.0	5	-0.165	56.7	75-125	0			S

MS Sample ID: **1806796-01A MSI** Units: **mg/Kg** Analysis Date: **6/20/2018 04:00 PM**
Client ID: **MCHA4-SS1** Run ID: **WETCHEM_180620L** SeqNo: **5102992** Prep Date: **6/19/2018** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	1441	99	1657	-0.165	87	75-125	0			

MS Sample ID: **1806802-06A MS** Units: **mg/Kg** Analysis Date: **6/20/2018 04:00 PM**
Client ID: Run ID: **WETCHEM_180620L** SeqNo: **5103004** Prep Date: **6/19/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	2.592	0.97	4.854	-0.03846	54.2	75-125	0			S

MS Sample ID: **1806802-06A MSI** Units: **mg/Kg** Analysis Date: **6/20/2018 04:00 PM**
Client ID: Run ID: **WETCHEM_180620L** SeqNo: **5103006** Prep Date: **6/19/2018** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	1487	97	1656	-0.03846	89.8	75-125	0			

MSD Sample ID: **1806796-01A MSD** Units: **mg/Kg** Analysis Date: **6/20/2018 04:00 PM**
Client ID: **MCHA4-SS1** Run ID: **WETCHEM_180620L** SeqNo: **5102991** Prep Date: **6/19/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	2.567	0.96	4.808	-0.165	56.8	75-125	2.67	3.92	20	S

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

Client: Olsson Associates
Work Order: 1806796
Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **120038** Instrument ID **WETCHEM** Method: **SW7196A**

MSD Sample ID: **1806802-06A MSD** Units: **mg/Kg** Analysis Date: **6/20/2018 04:00 PM**

Client ID: Run ID: **WETCHEM_180620L** SeqNo: **5103005** Prep Date: **6/19/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	2.01	0.99	4.95	-0.03846	41.4	75-125	2.592	25.3	20	SR

The following samples were analyzed in this batch:

1806796-01A 1806796-02A 1806796-03A
1806796-05A 1806796-06A

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

Client: Olsson Associates
Work Order: 1806796
Project: MC Hagood A4 Spill

QC BATCH REPORT

Batch ID: **R238189** Instrument ID **MOIST** Method: **SW3550C**

MBLK Sample ID: **WBLKS-R238189** Units: **% of sample** Analysis Date: **6/15/2018 05:00 PM**
Client ID: Run ID: **MOIST_180615C** SeqNo: **5094459** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.050								

LCS Sample ID: **LCS-R238189** Units: **% of sample** Analysis Date: **6/15/2018 05:00 PM**
Client ID: Run ID: **MOIST_180615C** SeqNo: **5094458** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	99.99	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1806795-02A DUP** Units: **% of sample** Analysis Date: **6/15/2018 05:00 PM**
Client ID: Run ID: **MOIST_180615C** SeqNo: **5094438** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	11.3	0.050	0	0	0	0-0	11.08	1.97	10	

DUP Sample ID: **1806802-02A DUP** Units: **% of sample** Analysis Date: **6/15/2018 05:00 PM**
Client ID: Run ID: **MOIST_180615C** SeqNo: **5094449** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	16.63	0.050	0	0	0	0-0	17.35	4.24	10	

The following samples were analyzed in this batch:

1806796-01A	1806796-02A	1806796-03A
1806796-04A	1806796-05A	1806796-06A

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

Chain of Custody Form

ALS Environmental

Page 1 of 1

COC ID: 123456

☐ Cincinnati, OH +1 513 733 5336 ☑ Holland, MI +1 616 399 6070 ☐ Salt Lake City, UT +1 801 266 7700
☐ Everett, WA +1 425 356 2600 ☐ Houston, TX +1 281 530 5656 ☐ Spring City, PA +1 610 948 4903
☐ Fort Collins, CO +1 970 490 1511 ☐ Middletown, PA +1 717 944 5541 ☐ York, PA +1 717 505 5280

ALS Project Manager: | Work Order #: 1806796

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	MC Hagood A4 Spill	A	TPH (GRO & DRO)
Work Order		Project Number	013.3287.400.400004	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.	Dana Mack	D	Electrical Conductivity
Address	760 Horizon Drive, Ste. 102	Address		E	Sodium Adsorption Ratio
				F	pH
City/State/Zip	Grand Junction, CO 81506	City/State/Zip		G	Metals (See Attached List) CO Table 910
Phone	970.263.7800	Phone		H	Arsenic Only
Fax	970.263.7456	Fax		I	
e-Mail Address	tdobransky@entradainc.com	e-Mail Address	dmack@olssonassociates.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MCHA4-SS1	06/11/18	1015	Soil	8	2	X	X	X	X	X	X	X				
2	MCHA4-BG2	06/11/18	1020	Soil	8	2	X	X	X	X	X	X	X				
3	MCHA4-SS2	06/11/18	1035	Soil	8	2	X	X	X	X	X	X	X				
4	MCHA4-BG2	06/11/18	1040	Soil	8	1								X			
5	MCHA4-SS3	06/11/18	1100	Soil	8	2	X	X	X	X	X	X	X				
6	MCHA4-SS4	06/11/18	1110	Soil	8	2	X	X	X	X	X	X	X				
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign: Tim Dobransky

Shipment Method: FedEx

Required Turnaround Time: ☐STD 10 Wk Days ☑5 Wk Days ☐2 Wk Days ☐24 Hour ☐Other _____

Results Due Date:

Relinquished by:	Date: 6/11/18	Time: 1900	Received by:	Notes: Chevron Pricing Applies - Per Bruce Schlatter	
Relinquished by:	Date: 6/12-18	Time: 1550	Received by (Laboratory):	Cooler Temp.	QC Package: (Check Box Below)
Logged by (Laboratory):	Date: 6/14/18	Time: 0820	Checked by (Laboratory): 6/13/18 0930	4.9°c	x Level II: Standard QC; Level III: Std QC + Raw Data; Level IV: SW846 CLP-Like; Other: _____

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035 SDZ

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

ALS Group, USA

Sample Receipt Checklist

Client Name: **OLSSON** Date/Time Received: **13-Jun-18 09:30**

Work Order: **1806796** Received by: **KRW**

Checklist completed by Keith Wierenga eSignature 14-Jun-18 Date Reviewed by: Chad Whelton eSignature 14-Jun-18 Date

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.8/4.8 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	6/14/2018 8:36:42 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction: