

**Table 1**  
**Main Water Plant - Jumper Line Spill**  
**Soil Data Summary**

SAMPLE SUMMARY			
Location Description	MWP Jumper Line Spill		
Sample Type	Soil		

LABORATORY DATA SUMMARY			
Sample ID	MWP JUMPER	COGCC TABLE 910-1 CONCENTRATION LEVELS	UNITS
Depth	5'		
Sample Date	5/16/2018		
Analytical Parameters			
TPH			
TPH Gasoline Range Organics	<2.9	500	mg/kg
TPH Diesel Range Organics	18		
BTEX			
Benzene	<0.0072	0.17	mg/kg
Toluene	<0.012	85	mg/kg
Ethylbenzene	<0.0089	100	mg/kg
Total Xylene	<0.036	175	mg/kg
Metals			
Arsenic	11	0.39	mg/kg
Barium	160	15,000	mg/kg
Cadmium	2.5	70	mg/kg
Chromium	8	NA	mg/kg
Copper	11	3,100	mg/kg
Lead	7	400	mg/kg
Mercury	0.0082 J	23	mg/kg
Nickel	10	1,600	mg/kg
Selenium	3.6	390	mg/kg
Silver	<0.055	390	mg/kg
Zinc	47	23,000	mg/kg
SAR Metals Analysis			
Calcium	570	NA	mg/L
Magnesium	300	NA	mg/L
Sodium	1200	NA	mg/L
Sodium Adsorption Ratio	9.7	<12	ratio
Polynuclear Aromatic Hydrocarbons			
Acenaphthene	<0.0036	1,000	mg/kg
Anthracene	<0.0018	1,000	mg/kg
Benzo(a)anthracene	<0.0031	0.22	mg/kg
Benzo(a)pyrene	<0.0013	0.022	mg/kg
Benzo(b)fluoranthene	<0.0019	0.22	mg/kg
Benzo(k)fluoranthene	<0.0026	2.2	mg/kg
Chrysene	<0.0019	22	mg/kg
Dibenzo(a,h)anthracene	<0.0016	0.022	mg/kg
Fluoranthene	<0.0014	1,000	mg/kg
Fluorene	<0.0016	1,000	mg/kg
Indeno(1,2,3-cd)pyrene	<0.0015	0.22	mg/kg
Napthalene	<0.0095	23	mg/kg
Pyrene	<0.0018	1,000	mg/kg
General Chemistry			
Chromium, Hexavalent	<0.37	23	mg/kg
Chromium, Trivalent	8.1	120,000	mg/kg
Specific Conductivity	11	<4 or 2 x the background	mmhos/cm
pH	8.03	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



24-May-2018

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

Re: **MWP Jumper Line Spill**

Work Order: **18051341**

Dear Tim,

ALS Environmental received 1 sample on 18-May-2018 09:30 AM 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 22.

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,

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

Electronically approved by: Chad Whelton

Chad Whelton  
Project Manager

## Report of Laboratory Analysis

Certificate No: MN 998501

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

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**Client:** Olsson Associates  
**Project:** MWP Jumper Line Spill  
**Work Order:** 18051341

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**Work Order Sample Summary**

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<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>
18051341-01	MWP JUMPER 5ft. BGS	Soil		5/16/2018 12:20	5/18/2018 09:30	<input type="checkbox"/>

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<b><u>Qualifier</u></b>	<b><u>Description</u></b>
*	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.

<b><u>Acronym</u></b>	<b><u>Description</u></b>
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

<b><u>Units Reported</u></b>	<b><u>Description</u></b>
% of sample	Percent of Sample
mg/Kg	Milligrams per Kilogram
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: 24-May-18

**Client:** Olsson Associates  
**Project:** MWP Jumper Line Spill  
**Sample ID:** MWP JUMPER 5ft. BGS  
**Collection Date:** 5/16/2018 12:20 PM

**Work Order:** 18051341  
**Lab ID:** 18051341-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015C</b>		Prep: SW3546 / 5/21/18		Analyst: <b>MEB</b>
<b>DRO (C10-C28)</b>	<b>18</b>		<b>3.5</b>	<b>6.0</b>	<b>mg/Kg-dry</b>	<b>1</b>	5/23/2018 14:53
Surr: 4-Terphenyl-d14	66.1			34-130	%REC	1	5/23/2018 14:53
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015D</b>		Prep: SW5035 / 5/21/18		Analyst: <b>MEB</b>
<b>GRO (C6-C10)</b>	<b>U</b>		<b>2.9</b>	<b>7.0</b>	<b>mg/Kg</b>	<b>1</b>	5/21/2018 22:47
Surr: Toluene-d8	102			71-123	%REC	1	5/21/2018 22:47
<b>MERCURY BY CVAA</b>							
			Method: <b>SW7471B</b>		Prep: SW7471 / 5/21/18		Analyst: <b>RSB</b>
<b>Mercury</b>	<b>0.0082</b>	<b>J</b>	<b>0.0018</b>	<b>0.018</b>	<b>mg/Kg-dry</b>	<b>1</b>	5/21/2018 13:13
<b>METALS ANALYSIS BY ICP</b>							
			Method: <b>SW846 6010C</b>		Prep: SW3050B / 5/21/18		Analyst: <b>RH</b>
<b>Arsenic</b>	<b>11</b>		<b>0.11</b>	<b>0.44</b>	<b>mg/Kg-dry</b>	<b>1</b>	5/21/2018 21:35
<b>Barium</b>	<b>160</b>		<b>0.18</b>	<b>0.44</b>	<b>mg/Kg-dry</b>	<b>1</b>	5/22/2018 13:09
<b>Cadmium</b>	<b>2.5</b>		<b>0.042</b>	<b>0.88</b>	<b>mg/Kg-dry</b>	<b>1</b>	5/21/2018 21:35
<b>Chromium</b>	<b>8.1</b>		<b>0.025</b>	<b>0.44</b>	<b>mg/Kg-dry</b>	<b>1</b>	5/21/2018 21:35
<b>Copper</b>	<b>11</b>		<b>0.19</b>	<b>0.88</b>	<b>mg/Kg-dry</b>	<b>1</b>	5/21/2018 21:35
<b>Lead</b>	<b>7.2</b>		<b>0.093</b>	<b>0.44</b>	<b>mg/Kg-dry</b>	<b>1</b>	5/21/2018 21:35
<b>Nickel</b>	<b>10</b>		<b>0.18</b>	<b>0.44</b>	<b>mg/Kg-dry</b>	<b>1</b>	5/21/2018 21:35
<b>Selenium</b>	<b>3.6</b>		<b>0.25</b>	<b>0.88</b>	<b>mg/Kg-dry</b>	<b>1</b>	5/21/2018 21:35
Silver	U		0.055	0.44	mg/Kg-dry	1	5/21/2018 21:35
<b>Zinc</b>	<b>47</b>		<b>0.070</b>	<b>0.88</b>	<b>mg/Kg-dry</b>	<b>1</b>	5/21/2018 21:35
<b>SOLUBLE CATIONS FOR SAR</b>							
			Method: <b>SW6020A</b>		Prep: USDA Method 20B / 5/23/18		Analyst: <b>JF</b>
<b>Calcium</b>	<b>570</b>		<b>0.86</b>	<b>5.0</b>	<b>mg/L</b>	<b>10</b>	5/23/2018 14:43
<b>Magnesium</b>	<b>300</b>		<b>0.068</b>	<b>2.0</b>	<b>mg/L</b>	<b>10</b>	5/23/2018 14:43
<b>Sodium</b>	<b>1,200</b>		<b>0.34</b>	<b>2.0</b>	<b>mg/L</b>	<b>10</b>	5/23/2018 14:43
<b>SODIUM ADSORPTION RATIO</b>							
			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 5/23/18		Analyst: <b>RH</b>
<b>Sodium Adsorption Ratio</b>	<b>9.7</b>		<b>0.010</b>	<b>0.010</b>	<b>none</b>	<b>1</b>	5/23/2018
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>							
			Method: <b>SW846 8270D</b>		Prep: SW3546 / 5/21/18		Analyst: <b>RM</b>
Acenaphthene	U		0.0036	0.050	mg/Kg-dry	1	5/21/2018 18:05
Anthracene	U		0.0018	0.050	mg/Kg-dry	1	5/21/2018 18:05
Benzo(a)anthracene	U		0.0031	0.050	mg/Kg-dry	1	5/21/2018 18:05
Benzo(a)pyrene	U		0.0013	0.050	mg/Kg-dry	1	5/21/2018 18:05
Benzo(b)fluoranthene	U		0.0019	0.050	mg/Kg-dry	1	5/21/2018 18:05
Benzo(k)fluoranthene	U		0.0026	0.050	mg/Kg-dry	1	5/21/2018 18:05
Chrysene	U		0.0019	0.050	mg/Kg-dry	1	5/21/2018 18:05
Dibenzo(a,h)anthracene	U		0.0016	0.050	mg/Kg-dry	1	5/21/2018 18:05
Fluoranthene	U		0.0014	0.050	mg/Kg-dry	1	5/21/2018 18:05

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

# ALS Group, USA

Date: 24-May-18

**Client:** Olsson Associates  
**Project:** MWP Jumper Line Spill  
**Sample ID:** MWP JUMPER 5ft. BGS  
**Collection Date:** 5/16/2018 12:20 PM

**Work Order:** 18051341  
**Lab ID:** 18051341-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0016	0.050	mg/Kg-dry	1	5/21/2018 18:05
Indeno(1,2,3-cd)pyrene	U		0.0015	0.050	mg/Kg-dry	1	5/21/2018 18:05
Naphthalene	U		0.0095	0.050	mg/Kg-dry	1	5/21/2018 18:05
Pyrene	U		0.0018	0.050	mg/Kg-dry	1	5/21/2018 18:05
Surr: 2-Fluorobiphenyl	66.2			20-140	%REC	1	5/21/2018 18:05
Surr: 4-Terphenyl-d14	96.2			22-172	%REC	1	5/21/2018 18:05
Surr: Nitrobenzene-d5	80.5			28-140	%REC	1	5/21/2018 18:05
<b>VOLATILE ORGANIC COMPOUNDS</b>			Method: <b>SW8260C</b>		Prep: SW5035 / 5/21/18		Analyst: <b>EMR</b>
Benzene	U		0.0072	0.042	mg/Kg	1	5/22/2018 06:16
Ethylbenzene	U		0.0089	0.042	mg/Kg	1	5/22/2018 06:16
m,p-Xylene	U		0.020	0.085	mg/Kg	1	5/22/2018 06:16
o-Xylene	U		0.016	0.042	mg/Kg	1	5/22/2018 06:16
Toluene	U		0.012	0.042	mg/Kg	1	5/22/2018 06:16
Xylenes, Total	U		0.036	0.13	mg/Kg	1	5/22/2018 06:16
Surr: 1,2-Dichloroethane-d4	98.8			70-130	%REC	1	5/22/2018 06:16
Surr: 4-Bromofluorobenzene	101			70-130	%REC	1	5/22/2018 06:16
Surr: Dibromofluoromethane	91.6			70-130	%REC	1	5/22/2018 06:16
Surr: Toluene-d8	98.0			70-130	%REC	1	5/22/2018 06:16
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 5/23/18		Analyst: <b>ED</b>
Electrical Conductivity @ Saturation	11		0.011	0.10	mmhos/cm @25°	20	5/23/2018 15:20
<b>CHROMIUM, TRIVALENT</b>			Method: <b>CALCULATION</b>				Analyst: <b>JB</b>
Chromium, Trivalent	8.1		0.37	1.2	mg/Kg-dry	1	5/22/2018 13:40
<b>CHROMIUM, HEXAVALENT</b>			Method: <b>SW7196A</b>		Prep: SW3060A / 5/21/18		Analyst: <b>RP</b>
Chromium, Hexavalent	U		0.37	1.2	mg/Kg-dry	1	5/22/2018 13:30
<b>MOISTURE</b>			Method: <b>SW3550C</b>				Analyst: <b>BTG</b>
Moisture	17		0.025	0.050	% of sample	1	5/22/2018 13:48
<b>PH</b>			Method: <b>SW9045D</b>		Prep: EXTRACT / 5/22/18		Analyst: <b>RZM</b>
pH	8.03		0.10	0.100	s.u.	1	5/23/2018 10:55

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

Client: Olsson Associates

Work Order: 18051341

Project: MWP Jumper Line Spill

## QC BATCH REPORT

Batch ID: 118595

Instrument ID GC8

Method: SW8015C

<b>MBLK</b>		Sample ID: <b>DBLKS1-118595-118595</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/23/2018 01:26 PM</b>		
Client ID:		Run ID: <b>GC8_180523A</b>				SeqNo: <b>5048857</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>
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

2.267 0 3.33 0 68.1 34-130 0

<b>LCS</b>		Sample ID: <b>DLCSS1-118595-118595</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/23/2018 01:55 PM</b>		
Client ID:		Run ID: <b>GC8_180523A</b>				SeqNo: <b>5048858</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

332.2 5.0 333 0 99.7 65-122 0

Surr: 4-Terphenyl-d14

2.667 0 3.33 0 80.1 34-130 0

<b>MS</b>		Sample ID: <b>18051243-12B MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/23/2018 05:47 PM</b>		
Client ID:		Run ID: <b>GC8_180523A</b>				SeqNo: <b>5050784</b>		Prep Date: <b>5/21/2018</b>		DF: <b>50</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

661.2 240 324.2 410.8 77.2 65-122 0

Surr: 4-Terphenyl-d14

2.434 0 3.242 0 75.1 34-130 0

<b>MSD</b>		Sample ID: <b>18051243-12B MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/23/2018 06:17 PM</b>		
Client ID:		Run ID: <b>GC8_180523A</b>				SeqNo: <b>5050785</b>		Prep Date: <b>5/21/2018</b>		DF: <b>50</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)

661.2 240 325.4 410.8 77 65-122 661.2 0.00464 30

Surr: 4-Terphenyl-d14

3.257 0 3.254 0 100 34-130 2.434 28.9 30

The following samples were analyzed in this batch:

18051341-01A

Client: Olsson Associates  
 Work Order: 18051341  
 Project: MWP Jumper Line Spill

# QC BATCH REPORT

Batch ID: **118632** Instrument ID **GC9** Method: **SW8015D**

<b>MBLK</b>		Sample ID: <b>MBLK-118632-118632</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>5/21/2018 06:22 PM</b>		
Client ID:		Run ID: <b>GC9_180521A</b>				SeqNo: <b>5046369</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>
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	5164	0	5000	0	103	71-123	0			

<b>LCS</b>		Sample ID: <b>LCS-118632-118632</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>5/21/2018 04:53 PM</b>		
Client ID:		Run ID: <b>GC9_180521A</b>				SeqNo: <b>5046367</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	406000	5,000	500000	0	81.2	71-123	0			
Surr: Toluene-d8	5742	0	5000	0	115	71-123	0			

<b>MS</b>		Sample ID: <b>18051308-01A MS</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>5/21/2018 08:49 PM</b>		
Client ID:		Run ID: <b>GC9_180521A</b>				SeqNo: <b>5046374</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	432800	5,100	505800	0	85.6	71-123	0			
Surr: Toluene-d8	5540	0	5058	0	110	71-123	0			

<b>MSD</b>		Sample ID: <b>18051308-01A MSD</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>5/21/2018 09:18 PM</b>		
Client ID:		Run ID: <b>GC9_180521A</b>				SeqNo: <b>5046375</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	429600	5,100	505800	0	84.9	71-123	432800	0.735	30	
Surr: Toluene-d8	5388	0	5058	0	107	71-123	5540	2.79	30	

The following samples were analyzed in this batch:

18051341-01A

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



Client: Olsson Associates  
 Work Order: 18051341  
 Project: MWP Jumper Line Spill

# QC BATCH REPORT

Batch ID: **118636** Instrument ID **HG1** Method: **SW7471B**

MBLK		Sample ID: MBLK-118636-118636				Units: mg/Kg		Analysis Date: 5/21/2018 12:11 PM		
Client ID:		Run ID: HG1_180521A				SeqNo: 5043599		Prep Date: 5/21/2018		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-118636-118636				Units: mg/Kg		Analysis Date: 5/21/2018 12:13 PM		
Client ID:		Run ID: HG1_180521A				SeqNo: 5043600		Prep Date: 5/21/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1617 0.020 0.1665 0 97.1 80-120 0

MS		Sample ID: 18051300-01AMS					Units: mg/Kg		Analysis Date: 5/21/2018 12:18 PM		
Client ID:			Run ID: HG1_180521A			SeqNo: 5043602		Prep Date: 5/21/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury 0.1445 0.016 0.1368 0.001314 105 75-125 0

MSD		Sample ID: 18051300-01AMSD				Units: mg/Kg		Analysis Date: 5/21/2018 12:21 PM		
Client ID:		Run ID: HG1_180521A			SeqNo: 5043603		Prep Date: 5/21/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1416 0.016 0.1367 0.001314 103 75-125 0.1445 2.05 35

The following samples were analyzed in this batch:

18051341-01A

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

Client: Olsson Associates  
 Work Order: 18051341  
 Project: MWP Jumper Line Spill

## QC BATCH REPORT

Batch ID: **118615** Instrument ID **ICP2** Method: **SW846 6010C**

<b>MBLK</b>		Sample ID: <b>MBLK-118615-118615</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/21/2018 08:38 PM</b>		
Client ID:		Run ID: <b>ICP2_180521A</b>				SeqNo: <b>5044469</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>
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								
Chromium	U	0.25								
Copper	U	0.50								
Lead	U	0.25								
Nickel	U	0.25								
Selenium	U	0.50								
Silver	U	0.25								
Zinc	U	0.50								

<b>LCS</b>		Sample ID: <b>LCS-118615-118615</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/21/2018 08:44 PM</b>		
Client ID:		Run ID: <b>ICP2_180521A</b>				SeqNo: <b>5044470</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.84	0.25	5	0	96.8	80-120	0			
Cadmium	5.183	0.50	5	0	104	80-120	0			
Chromium	5.376	0.25	5	0	108	80-120	0			
Copper	5.32	0.50	5	0	106	80-120	0			
Lead	5.274	0.25	5	0	105	80-120	0			
Nickel	5.343	0.25	5	0	107	80-120	0			
Selenium	4.895	0.50	5	0	97.9	80-120	0			
Silver	5.05	0.25	5	0	101	80-120	0			
Zinc	5.092	0.50	5	0	102	80-120	0			

<b>LCS</b>		Sample ID: <b>LCS-118615-118615</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/22/2018 12:18 PM</b>		
Client ID:		Run ID: <b>ICP2_180522A</b>				SeqNo: <b>5045837</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	5.044	0.25	5	0	101	80-120	0			

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

Client: Olsson Associates  
 Work Order: 18051341  
 Project: MWP Jumper Line Spill

# QC BATCH REPORT

Batch ID: 118615 Instrument ID ICP2 Method: SW846 6010C

MS				Sample ID: 18051270-04AMS			Units: mg/Kg		Analysis Date: 5/21/2018 09:10 PM		
Client ID:			Run ID: ICP2_180521A			SeqNo: 5044474		Prep Date: 5/21/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	7.915	0.38	7.587	1.884	79.5	75-125	0				
Cadmium	6.965	0.76	7.587	1.264	75.1	75-125	0				
Chromium	13.35	0.38	7.587	4.123	122	75-125	0				
Copper	18.28	0.76	7.587	10.95	96.6	75-125	0				
Lead	13.79	0.38	7.587	9.045	62.6	75-125	0			S	
Nickel	11.05	0.38	7.587	11.55	-6.53	75-125	0			S	
Selenium	9.846	0.76	7.587	3.411	84.8	75-125	0				
Silver	7.496	0.38	7.587	-0.6944	108	75-125	0				
Zinc	58.77	0.76	7.587	44.84	184	75-125	0			SO	

MS				Sample ID: 18051270-04AMS				Units: mg/Kg			Analysis Date: 5/22/2018 12:43 PM					
Client ID:				Run ID: ICP2_180522A				SeqNo: 5045841			Prep Date: 5/21/2018		DF: 1			
Analyte				Result		PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value		%RPD	RPD Limit	Qual
Barium				201.9		0.38	7.587	278.2		-1010	75-125	0				SO

MSD				Sample ID: 18051270-04AMSD			Units: mg/Kg		Analysis Date: 5/21/2018 09:16 PM		
Client ID:			Run ID: ICP2_180521A			SeqNo: 5044475		Prep Date: 5/21/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	7.863	0.38	7.599	1.884	78.7	75-125	7.915	0.662	20		
Cadmium	6.878	0.76	7.599	1.264	73.9	75-125	6.965	1.26	20	S	
Chromium	13.3	0.38	7.599	4.123	121	75-125	13.35	0.362	20		
Copper	18.38	0.76	7.599	10.95	97.7	75-125	18.28	0.542	20		
Lead	13.48	0.38	7.599	9.045	58.4	75-125	13.79	2.25	20	S	
Nickel	10.55	0.38	7.599	11.55	-13.1	75-125	11.05	4.63	20	S	
Selenium	9.788	0.76	7.599	3.411	83.9	75-125	9.846	0.594	20		
Silver	7.538	0.38	7.599	-0.6944	108	75-125	7.496	0.556	20		
Zinc	55.98	0.76	7.599	44.84	147	75-125	58.77	4.85	20	SO	

MSD				Sample ID: 18051270-04AMSD				Units: mg/Kg		Analysis Date: 5/22/2018 12:50 PM			
Client ID:				Run ID: ICP2_180522A				SeqNo: 5045842		Prep Date: 5/21/2018		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual		
Barium		192	0.38	7.599	278.2	-1130	75-125	201.9	5.04	20	SO		

The following samples were analyzed in this batch:

18051341-01A

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

**Client:** Olsson Associates  
**Work Order:** 18051341  
**Project:** MWP Jumper Line Spill

## QC BATCH REPORT

Batch ID: **118734** Instrument ID **ICPMS3** Method: **SW6020A**

<b>DUP</b>		Sample ID: <b>18051341-01ADUP</b>				Units: <b>mg/L</b>		Analysis Date: <b>5/23/2018 02:44 PM</b>		
Client ID: <b>MWP JUMPER 5ft. BGS</b>		Run ID: <b>ICPMS3_180523A</b>				SeqNo: <b>5048641</b>		Prep Date: <b>5/23/2018</b>		DF: <b>10</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	579.6	5.0	0	0	0	0-0	571.9	1.33		
Magnesium	329.3	2.0	0	0	0	0-0	303.2	8.24		
Sodium	1296	2.0	0	0	0	0-0	1158	11.3		

The following samples were analyzed in this batch:

18051341-01A

Batch ID: **118734** Instrument ID **SAR** Method: **USDA H60 Metho**

<b>DUP</b>		Sample ID: <b>18051341-01ADUP</b>				Units: <b>none</b>		Analysis Date: <b>5/23/2018</b>		
Client ID: <b>MWP JUMPER 5ft. BGS</b>		Run ID: <b>SAR_180523A</b>				SeqNo: <b>5053669</b>		Prep Date: <b>5/23/2018</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	10.66	0.010	0	0	0		9.736	9.01	50	

The following samples were analyzed in this batch:

18051341-01A

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

Client: Olsson Associates  
 Work Order: 18051341  
 Project: MWP Jumper Line Spill

# QC BATCH REPORT

Batch ID: 118610 Instrument ID SVMS6 Method: SW846 8270D

MBLK		Sample ID: SBLKS1-118610-118610				Units: µg/Kg		Analysis Date: 5/21/2018 05:07 PM		
Client ID:		Run ID: SVMS6_180521A				SeqNo: 5046446		Prep Date: 5/21/2018		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	2387	0	3333	0	71.6	20-140	0			
Surr: 4-Terphenyl-d14	3438	0	3333	0	103	22-172	0			
Surr: Nitrobenzene-d5	3079	0	3333	0	92.4	28-140	0			

LCS		Sample ID: SLCSS1-118610-118610				Units: µg/Kg		Analysis Date: 5/21/2018 05:22 PM		
Client ID:		Run ID: SVMS6_180521A				SeqNo: 5046447		Prep Date: 5/21/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	798.4	42	1333	0	59.9	40-140	0			
Anthracene	880.1	42	1333	0	66	40-140	0			
Benzo(a)anthracene	833	42	1333	0	62.5	40-140	0			
Benzo(a)pyrene	896.3	42	1333	0	67.2	40-140	0			
Benzo(b)fluoranthene	835.9	42	1333	0	62.7	40-140	0			
Benzo(k)fluoranthene	970.6	42	1333	0	72.8	40-140	0			
Chrysene	985.1	42	1333	0	73.9	40-140	0			
Dibenzo(a,h)anthracene	821.7	42	1333	0	61.6	40-140	0			
Fluoranthene	885.2	42	1333	0	66.4	40-140	0			
Fluorene	823.3	42	1333	0	61.8	40-140	0			
Indeno(1,2,3-cd)pyrene	905.2	42	1333	0	67.9	40-140	0			
Naphthalene	901.6	42	1333	0	67.6	40-140	0			
Pyrene	1034	42	1333	0	77.6	40-140	0			
Surr: 2-Fluorobiphenyl	2291	0	3333	0	68.7	20-140	0			
Surr: 4-Terphenyl-d14	3151	0	3333	0	94.5	22-172	0			
Surr: Nitrobenzene-d5	2737	0	3333	0	82.1	28-140	0			

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

Client: Olsson Associates  
 Work Order: 18051341  
 Project: MWP Jumper Line Spill

# QC BATCH REPORT

Batch ID: 118610 Instrument ID SVMS6 Method: SW846 8270D

MS				Sample ID: 18051341-01A MS			Units: µg/Kg		Analysis Date: 5/21/2018 05:36 PM	
Client ID: MWP JUMPER 5ft. BGS				Run ID: SVMS6_180521A			SeqNo: 5046448		Prep Date: 5/21/2018	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	939.3	41	1325	0	70.9	40-140	0			
Anthracene	1035	41	1325	0	78.1	40-140	0			
Benzo(a)anthracene	904.7	41	1325	0	68.3	40-140	0			
Benzo(a)pyrene	729.5	41	1325	0	55.1	40-140	0			
Benzo(b)fluoranthene	844.8	41	1325	0	63.8	40-140	0			
Benzo(k)fluoranthene	999	41	1325	0	75.4	40-140	0			
Chrysene	1067	41	1325	0	80.6	40-140	0			
Dibenzo(a,h)anthracene	1112	41	1325	0	84	40-140	0			
Fluoranthene	1166	41	1325	0	88	40-140	0			
Fluorene	928.8	41	1325	0	70.1	40-140	0			
Indeno(1,2,3-cd)pyrene	1156	41	1325	0	87.3	40-140	0			
Naphthalene	1244	41	1325	0	93.9	40-140	0			
Pyrene	1289	41	1325	0	97.3	40-140	0			
Surr: 2-Fluorobiphenyl	2485	0	3312	0	75	20-140	0			
Surr: 4-Terphenyl-d14	2704	0	3312	0	81.6	22-172	0			
Surr: Nitrobenzene-d5	3196	0	3312	0	96.5	28-140	0			

MSD				Sample ID: 18051341-01A MSD			Units: µg/Kg		Analysis Date: 5/21/2018 05:50 PM	
Client ID: MWP JUMPER 5ft. BGS				Run ID: SVMS6_180521A			SeqNo: 5046449		Prep Date: 5/21/2018	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	921.6	40	1291	0	71.4	40-140	939.3	1.9	30	
Anthracene	1052	40	1291	0	81.5	40-140	1035	1.63	30	
Benzo(a)anthracene	895.4	40	1291	0	69.4	40-140	904.7	1.03	30	
Benzo(a)pyrene	828.4	40	1291	0	64.2	40-140	729.5	12.7	30	
Benzo(b)fluoranthene	839.3	40	1291	0	65	40-140	844.8	0.658	30	
Benzo(k)fluoranthene	1015	40	1291	0	78.6	40-140	999	1.58	30	
Chrysene	1058	40	1291	0	81.9	40-140	1067	0.893	30	
Dibenzo(a,h)anthracene	1127	40	1291	0	87.3	40-140	1112	1.33	30	
Fluoranthene	941	40	1291	0	72.9	40-140	1166	21.3	30	
Fluorene	924.7	40	1291	0	71.6	40-140	928.8	0.442	30	
Indeno(1,2,3-cd)pyrene	1141	40	1291	0	88.3	40-140	1156	1.36	30	
Naphthalene	1194	40	1291	0	92.4	40-140	1244	4.15	30	
Pyrene	1200	40	1291	0	92.9	40-140	1289	7.15	30	
Surr: 2-Fluorobiphenyl	2467	0	3228	0	76.4	20-140	2485	0.7	0	
Surr: 4-Terphenyl-d14	2954	0	3228	0	91.5	22-172	2704	8.82	0	
Surr: Nitrobenzene-d5	2743	0	3228	0	85	28-140	3196	15.3	0	

The following samples were analyzed in this batch:

18051341-01A

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

Client: Olsson Associates  
 Work Order: 18051341  
 Project: MWP Jumper Line Spill

# QC BATCH REPORT

Batch ID: **118631** Instrument ID **VMS8** Method: **SW8260C**

MBLK Sample ID: <b>MBLK-118631-118631</b>				Units: <b>µg/Kg-dry</b>			Analysis Date: <b>5/22/2018 09:49 PM</b>			
Client ID:		Run ID: <b>VMS8_180522B</b>		SeqNo: <b>5047657</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	30	0	0	0	0-0	0			
Ethylbenzene	U	30	0	0	0	0-0	0			
m,p-Xylene	U	60	0	0	0	0-0	0			
o-Xylene	U	30	0	0	0	0-0	0			
Toluene	U	30	0	0	0	0-0	0			
Xylenes, Total	U	90	0	0	0	0-0	0			
Surr: 1,2-Dichloroethane-d4	909.5	0	1000	0	91	70-130	0			
Surr: 4-Bromofluorobenzene	930	0	1000	0	93	70-130	0			
Surr: Dibromofluoromethane	886.5	0	1000	0	88.6	70-130	0			
Surr: Toluene-d8	953	0	1000	0	95.3	70-130	0			

MBLK Sample ID: <b>MBLK-118631-118631</b>				Units: <b>µg/Kg-dry</b>			Analysis Date: <b>5/23/2018 12:39 PM</b>			
Client ID:		Run ID: <b>VMS9_180523A</b>		SeqNo: <b>5049644</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	30	0	0	0	0-0	0			
Ethylbenzene	U	30	0	0	0	0-0	0			
m,p-Xylene	U	60	0	0	0	0-0	0			
o-Xylene	U	30	0	0	0	0-0	0			
Toluene	U	30	0	0	0	0-0	0			
Xylenes, Total	U	90	0	0	0	0-0	0			
Surr: 1,2-Dichloroethane-d4	953	0	1000	0	95.3	70-130	0			
Surr: 4-Bromofluorobenzene	914	0	1000	0	91.4	70-130	0			
Surr: Dibromofluoromethane	829.5	0	1000	0	83	70-130	0			
Surr: Toluene-d8	947	0	1000	0	94.7	70-130	0			

LCS Sample ID: <b>LCS-118631-118631</b>				Units: <b>µg/Kg-dry</b>			Analysis Date: <b>5/22/2018 09:01 PM</b>			
Client ID:		Run ID: <b>VMS8_180522B</b>		SeqNo: <b>5047656</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	997.5	30	1000	0	99.8	75-125	0			
Ethylbenzene	1007	30	1000	0	101	75-125	0			
m,p-Xylene	1999	60	2000	0	100	80-125	0			
o-Xylene	996.5	30	1000	0	99.6	75-125	0			
Toluene	1024	30	1000	0	102	70-125	0			
Xylenes, Total	2996	90	3000	0	99.8	75-125	0			
Surr: 1,2-Dichloroethane-d4	898.5	0	1000	0	89.8	70-130	0			
Surr: 4-Bromofluorobenzene	936.5	0	1000	0	93.6	70-130	0			
Surr: Dibromofluoromethane	971.5	0	1000	0	97.2	70-130	0			
Surr: Toluene-d8	954.5	0	1000	0	95.4	70-130	0			

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

Client: Olsson Associates  
 Work Order: 18051341  
 Project: MWP Jumper Line Spill

# QC BATCH REPORT

Batch ID: **118631** Instrument ID **VMS8** Method: **SW8260C**

LCS					Sample ID: LCS-118631-118631			Units: µg/Kg-dry		Analysis Date: 5/23/2018 11:26 AM	
Client ID:			Run ID: VMS9_180523A			SeqNo: 5049637		Prep Date: 5/21/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1057	30	1000	0	106	75-125	0				
Ethylbenzene	1084	30	1000	0	108	75-125	0				
m,p-Xylene	2209	60	2000	0	110	80-125	0				
o-Xylene	1100	30	1000	0	110	75-125	0				
Toluene	1050	30	1000	0	105	70-125	0				
Xylenes, Total	3310	90	3000	0	110	75-125	0				
Surr: 1,2-Dichloroethane-d4	1004	0	1000	0	100	70-130	0				
Surr: 4-Bromofluorobenzene	1040	0	1000	0	104	70-130	0				
Surr: Dibromofluoromethane	947	0	1000	0	94.7	70-130	0				
Surr: Toluene-d8	994.5	0	1000	0	99.4	70-130	0				

MS				Sample ID: 18051308-01A MS				Units: µg/Kg-dry		Analysis Date: 5/23/2018 09:58 PM	
Client ID:		Run ID: VMS9_180523A			SeqNo: 5049650		Prep Date: 5/21/2018		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	998	30	1012	0	98.6	75-125	0				
Ethylbenzene	1064	30	1012	0	105	75-125	0				
m,p-Xylene	2138	61	2023	24.79	104	80-125	0				
o-Xylene	1092	30	1012	0	108	75-125	0				
Toluene	1054	30	1012	0	104	70-125	0				
Xylenes, Total	3230	91	3035	25	106	75-125	0				
Surr: 1,2-Dichloroethane-d4	909.5	0	1012	0	89.9	70-130	0				
Surr: 4-Bromofluorobenzene	1031	0	1012	0	102	70-130	0				
Surr: Dibromofluoromethane	913.5	0	1012	0	90.3	70-130	0				
Surr: Toluene-d8	1005	0	1012	0	99.3	70-130	0				

MSD				Sample ID: 18051308-01A MSD			Units: µg/Kg-dry		Analysis Date: 5/23/2018 10:23 PM		
Client ID:			Run ID: VMS9_180523A			SeqNo: 5049656		Prep Date: 5/21/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	949.5	30	1012	0	93.8	75-125	998	4.99	30		
Ethylbenzene	1044	30	1012	0	103	75-125	1064	1.92	30		
m,p-Xylene	2064	61	2023	24.79	101	80-125	2138	3.54	30		
o-Xylene	1068	30	1012	0	106	75-125	1092	2.2	30		
Toluene	1014	30	1012	0	100	70-125	1054	3.91	30		
Xylenes, Total	3132	91	3035	25	102	75-125	3230	3.09	30		
Surr: 1,2-Dichloroethane-d4	883.2	0	1012	0	87.3	70-130	909.5	2.93	30		
Surr: 4-Bromofluorobenzene	1047	0	1012	0	104	70-130	1031	1.51	30		
Surr: Dibromofluoromethane	877.1	0	1012	0	86.7	70-130	913.5	4.07	30		
Surr: Toluene-d8	1019	0	1012	0	101	70-130	1005	1.4	30		

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



**Client:** Olsson Associates  
**Work Order:** 18051341  
**Project:** MWP Jumper Line Spill

## QC BATCH REPORT

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Batch ID: **118631**      Instrument ID **VMS8**      Method: **SW8260C**

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**The following samples were analyzed in this batch:**

18051341- 01A
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**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates  
 Work Order: 18051341  
 Project: MWP Jumper Line Spill

## QC BATCH REPORT

Batch ID: **118678** Instrument ID **WETCHEM** Method: **SW7196A**

<b>MBLK</b>		Sample ID: <b>MBLK-118678-118678</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/22/2018 01:30 PM</b>		
Client ID:		Run ID: <b>WETCHEM_180522G</b>		SeqNo: <b>5045683</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

<b>LCS</b>		Sample ID: <b>LCS-118678-118678</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/22/2018 01:30 PM</b>		
Client ID:		Run ID: <b>WETCHEM_180522G</b>		SeqNo: <b>5045684</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.433 0.96 4.808 0 92.2 80-120 0

<b>MS</b>		Sample ID: <b>18051270-01A MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/22/2018 01:30 PM</b>		
Client ID:		Run ID: <b>WETCHEM_180522G</b>		SeqNo: <b>5045687</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.58 1.0 5 0.09 69.8 75-125 0 S

<b>MS</b>		Sample ID: <b>18051270-01A MSI</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/22/2018 01:30 PM</b>		
Client ID:		Run ID: <b>WETCHEM_180522G</b>		SeqNo: <b>5045689</b>		Prep Date: <b>5/21/2018</b>		DF: <b>100</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1649 100 1657 0.09 99.5 75-125 0

<b>MSD</b>		Sample ID: <b>18051270-01A MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>5/22/2018 01:30 PM</b>		
Client ID:		Run ID: <b>WETCHEM_180522G</b>		SeqNo: <b>5045688</b>		Prep Date: <b>5/21/2018</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.19 1.0 5 0.09 62 75-125 3.58 11.5 20 S

The following samples were analyzed in this batch:

18051341-01A

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

**Client:** Olsson Associates  
**Work Order:** 18051341  
**Project:** MWP Jumper Line Spill

## QC BATCH REPORT

Batch ID: **118723** Instrument ID **WETCHEM** Method: **SW9045D**

LCS				Sample ID: LCS-118723-118723				Units: s.u.			Analysis Date: 5/23/2018 10:55 AM			
Client ID:				Run ID: WETCHEM_180523E				SeqNo: 5047817			Prep Date: 5/22/2018		DF: 1	
Analyte				Result		PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

pH	3.97	0.10	4	0	99.2	90-110	0			
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DUP		Sample ID: 18051270-07A DUP				Units: s.u.		Analysis Date: 5/23/2018 10:55 AM		
Client ID:		Run ID: WETCHEM_180523E				SeqNo: 5047828		Prep Date: 5/22/2018		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

pH	6.93	0.10	0	0	0	0-0	7.13	2.84	20	
----	------	------	---	---	---	-----	------	------	----	--

DUP				Sample ID: 18051341-01A DUP				Units: s.u.		Analysis Date: 5/23/2018 10:55 AM			
Client ID: MWP JUMPER 5ft. BGS				Run ID: WETCHEM_180523E				SeqNo: 5047836		Prep Date: 5/22/2018		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			

pH	7.99	0.10	0	0	0	0-0	8.03	0.499	20	
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The following samples were analyzed in this batch:

18051341-01A
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**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Olsson Associates  
**Work Order:** 18051341  
**Project:** MWP Jumper Line Spill

## QC BATCH REPORT

Batch ID: **118734** Instrument ID **Titration 1** Method: **USDA H60 Metho**

<b>DUP</b>		Sample ID: <b>18051341-01ADUP</b>				Units: <b>mmhos/cm @25°</b>		Analysis Date: <b>5/23/2018 03:20 PM</b>		
Client ID: <b>MWP JUMPER 5ft. BGS</b>		Run ID: <b>TITRATOR 1_180523B</b>		SeqNo: <b>5048907</b>		Prep Date: <b>5/23/2018</b>		DF: <b>20</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	12.18	0.10	0	0	0		11.34	7.12	50	

The following samples were analyzed in this batch:

18051341-01A

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

**Client:** Olsson Associates  
**Work Order:** 18051341  
**Project:** MWP Jumper Line Spill

## QC BATCH REPORT

Batch ID: **R236420** Instrument ID **MOIST** Method: **SW3550C**

<b>MBLK</b>		Sample ID: <b>WBLKS-R236420</b>				Units: % of sample		Analysis Date: <b>5/22/2018 01:48 PM</b>		
Client ID:		Run ID: <b>MOIST_180522B</b>				SeqNo: <b>5047616</b>		Prep Date:		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.050

<b>LCS</b>		Sample ID: <b>LCS-R236420</b>				Units: % of sample		Analysis Date: <b>5/22/2018 01:48 PM</b>		
Client ID:		Run ID: <b>MOIST_180522B</b>				SeqNo: <b>5047615</b>		Prep Date:		DF: <b>1</b>
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

<b>DUP</b>		Sample ID: <b>18051327-01A DUP</b>				Units: % of sample		Analysis Date: <b>5/22/2018 01:48 PM</b>		
Client ID:		Run ID: <b>MOIST_180522B</b>				SeqNo: <b>5047607</b>		Prep Date:		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 4.87 0.050 0 0 0 0-0 4.86 0.206 10

<b>DUP</b>		Sample ID: <b>18051327-03A DUP</b>				Units: % of sample		Analysis Date: <b>5/22/2018 01:48 PM</b>		
Client ID:		Run ID: <b>MOIST_180522B</b>				SeqNo: <b>5047610</b>		Prep Date:		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 4.75 0.050 0 0 0 0-0 4.96 4.33 10

The following samples were analyzed in this batch:

18051341-01A

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



**Environmental**

# 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 5341

☐ Salt Lake City, UT  
+1 801 266 7700

☐ Spring City, PA  
+1 610 948 4903

☐ York, PA  
+1 717 505 5280

ALS Project Manager:

Work Order #:

19051341

Customer Information		Project Information					Parameter/Method Request for Analysis													
Purchase Order		Project Name	MWP Jumper Line 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												
City/State/Zip	Grand Junction, CO 81506	City/State/Zip						F pH												
Phone	970.263.7800	Phone						G Metals (See Attached List) CO Table 910												
Fax	970.263.7456	Fax						H Arsenic Only												
e-Mail Address	tdobransky@entradainc.com	e-Mail Address	dmack@olssonassociates.com					I												
								J												
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold			
1	MWP JUMMPER 5 ft. BGS	05/16/18	1220	Soil	8	2	X	X	X	X	X	X	X							
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Sampler(s): Please Print & Sign Tim Dobransky		Shipment Method: FedEx		Required Turnaround Time: <input type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input checked="" type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour		Results Due Date:	
Relinquished by:		Date: 5/17/18	Time: 1030	Received by:		Notes: Chevron Pricing Applies - Per Bruce Schlatter	
Relinquished by:		Date: 5-17-18	Time: 1830	Received by (Laboratory):		QC Package: (Check Box Below)	
Logged by (Laboratory):		Date: 5/18/18	Time: 0950	Checked by (Laboratory):		Cooler Temp. 4.2°C	<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:
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5036							

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

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Sample Receipt Checklist

Client Name: **OLSSON**

Date/Time Received: **18-May-18 09:30**

Work Order: **18051341**

Received by: **KRW**

Checklist completed by Keith Wurenga  
eSignature

19-May-18  
Date

Reviewed by: Chad Whelton  
eSignature

20-May-18  
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>5/19/2018 9:56:46 AM</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: