



17-Aug-2012

Marla Miller
ARCADIS U.S., Inc.
211 N Florence Street
Suite 202
El Paso, TX 79901

Tel: (602) 797-4699
Fax: (915) 533-9045

Re: Former Asarco Smelter

Work Order: **1208351**

Dear Marla,

ALS Environmental received 1 sample on 08-Aug-2012 08:40 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 21.

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

Sincerely,

A handwritten signature in cursive script that reads "Bethany McDaniel".

Electronically approved by: Makenzie L. Henderson

Bethany McDaniel
Project Manager



Certificate No: TX: T104704231-12-10

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

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Client: ARCADIS U.S., Inc.
Project: Former Asarco Smelter
Work Order: 1208351

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1208351-01	QA080612	Soil		8/6/2012 14:15	8/8/2012 08:40	<input type="checkbox"/>

Client: ARCADIS U.S., Inc.
Project: Former Asarco Smelter
Work Order: 1208351

Case Narrative

Batch 63406, Metals, Sample 1208353-01: MS/MSD and DUP performed on an unrelated sample.

ALS Environmental

Date: 17-Aug-12

Client: ARCADIS U.S., Inc.
 Project: Former Asarco Smelter
 Sample ID: QA080612
 Collection Date: 8/6/2012 02:15 PM

Work Order: 1208351
 Lab ID: 1208351-01
 Matrix: SOIL

Analyses	Result	Qual	SDL	MLL	Units	Dilution Factor	Date Analyzed
SPLP MERCURY			Method: SW7470		Leachate: SW1312 / 8/10/12 Prep: SW7470 / 8/15/12		Analyst: JCJ
Mercury		U	0.000042	0.000200	mg/L	1	8/15/2012 17:11
SPLP METALS			Method: SW6020		Leachate: SW1312 / 8/10/12 Prep: SW3010A / 8/15/12		Analyst: SKS
Arsenic	0.00891		0.0013	0.00500	mg/L	1	8/16/2012 19:20
Barium	0.0270		0.00090	0.00500	mg/L	1	8/16/2012 19:20
Cadmium		U	0.00080	0.00200	mg/L	1	8/16/2012 19:20
Chromium	0.0123		0.0012	0.00500	mg/L	1	8/16/2012 19:20
Lead	0.00379	J	0.00070	0.00500	mg/L	1	8/16/2012 19:20
Selenium	0.0226		0.0010	0.00500	mg/L	1	8/16/2012 19:20
Silver		U	0.00080	0.00500	mg/L	1	8/16/2012 19:20
SPLP MISCELLANEOUS METALS			Method: SW6020		Leachate: SW1312 / 8/10/12 Prep: SW3010A / 8/15/12		Analyst: SKS
Antimony		U	0.00080	0.00500	mg/L	1	8/16/2012 19:20
Cobalt	0.00289	J	0.00080	0.00500	mg/L	1	8/16/2012 19:20
Copper	0.00587		0.0015	0.00500	mg/L	1	8/16/2012 19:20
Iron	9.96		0.078	0.200	mg/L	1	8/16/2012 19:20
Molybdenum	0.0536		0.0015	0.00500	mg/L	1	8/16/2012 19:20
Nickel	0.00620		0.0012	0.00500	mg/L	1	8/16/2012 19:20
Zinc	0.0327		0.0025	0.00500	mg/L	1	8/16/2012 19:20
MERCURY - SW7471B			Method: SW7471A		Prep: SW7471A / 8/13/12		Analyst: JCJ
Mercury	0.000721	J	0.00032	0.00399	mg/Kg-dry	1	8/13/2012 17:13
METALS			Method: SW6020		Prep: SW3050A / 8/14/12		Analyst: SKS
Antimony		U	0.21	0.522	mg/Kg-dry	1	8/14/2012 17:46
Arsenic	3.84		0.10	0.522	mg/Kg-dry	1	8/14/2012 17:46
Barium	92.6		0.083	0.522	mg/Kg-dry	1	8/14/2012 17:46
Cadmium	0.0855	J	0.052	0.522	mg/Kg-dry	1	8/14/2012 17:46
Chromium	7.59		0.094	0.522	mg/Kg-dry	1	8/14/2012 17:46
Cobalt	4.40		0.073	0.522	mg/Kg-dry	1	8/14/2012 17:46
Copper	6.31		0.10	0.522	mg/Kg-dry	1	8/14/2012 17:46
Iron	9,280		10	52.2	mg/Kg-dry	1	8/14/2012 17:46
Lead	5.67		0.052	0.522	mg/Kg-dry	1	8/14/2012 17:46
Molybdenum	1.61		0.16	0.522	mg/Kg-dry	1	8/14/2012 17:46
Nickel	7.04		0.094	0.522	mg/Kg-dry	1	8/14/2012 17:46
Selenium	1.09		0.19	0.522	mg/Kg-dry	1	8/14/2012 17:46
Silver		U	0.083	0.522	mg/Kg-dry	1	8/14/2012 17:46
Zinc	21.3		0.26	0.522	mg/Kg-dry	1	8/14/2012 17:46

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

ALS Environmental

Date: 17-Aug-12

Client: ARCADIS U.S., Inc.
Project: Former Asarco Smelter
Sample ID: QA080612
Collection Date: 8/6/2012 02:15 PM

Work Order: 1208351
Lab ID: 1208351-01
Matrix: SOIL

Analyses	Result	Qual	SDL	ML	Units	Dilution Factor	Date Analyzed
MOISTURE			Method: SW3550			Analyst: KAH	
Percent Moisture	10.3		0.010	0.0100	wt%	1	8/14/2012 15:10

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

Work Order: 1208351
 Client: ARCADIS U.S., Inc.
 Project: Former Asarco Smelter

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
<u>Batch ID 63376</u> <u>Test Name: Mercury - SW7471B</u>						
1208351-01A	QA080612	Soil	8/6/2012 2:15:00 PM		8/13/2012 11:22 AM	8/13/2012 05:13 PM
<u>Batch ID 63406</u> <u>Test Name: Metals</u>						
1208351-01A	QA080612	Soil	8/6/2012 2:15:00 PM		8/14/2012 02:00 PM	8/14/2012 05:46 PM
<u>Batch ID 63432</u> <u>Test Name: SPLP Mercury</u>						
1208351-01A	QA080612	Soil	8/6/2012 2:15:00 PM	8/10/2012 8:00:00 AM	8/15/2012 10:48 AM	8/15/2012 05:11 PM
<u>Batch ID 63439</u> <u>Test Name: SPLP Metals</u>						
1208351-01A	QA080612	Soil	8/6/2012 2:15:00 PM	8/10/2012 8:00:00 AM	8/15/2012 10:00 AM	8/16/2012 07:20 PM
				8/10/2012 8:00:00 AM	8/15/2012 10:00 AM	8/16/2012 07:20 PM
<u>Batch ID R133187</u> <u>Test Name: Moisture</u>						
1208351-01A	QA080612	Soil	8/6/2012 2:15:00 PM			8/14/2012 03:10 PM

ALS Environmental

Date: 17-Aug-12

Client: ARCADIS U.S., Inc.
 Work Order: 1208351
 Project: Former Asarco Smelter

QC BATCH REPORT

Batch ID: **63376** Instrument ID **HG02** Method: **SW7471A**

MBLK	Sample ID: GBLKS1-081312-63376			Units: µg/Kg			Analysis Date: 8/13/2012 04:16 PM			
Client ID:	Run ID: HG02_120813A			SeqNo: 2900587			Prep Date: 8/13/2012		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	3.3								

LCS	Sample ID: GLCSS1-081312-63376			Units: µg/Kg			Analysis Date: 8/13/2012 04:18 PM			
Client ID:	Run ID: HG02_120813A			SeqNo: 2900588			Prep Date: 8/13/2012		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	346.7	3.3	333.3	0	104	85-115	0			

MS	Sample ID: 1208353-02CMS			Units: µg/Kg			Analysis Date: 8/13/2012 04:28 PM			
Client ID:	Run ID: HG02_120813A			SeqNo: 2900591			Prep Date: 8/13/2012		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	461.3	3.6	360.4	152.5	85.7	85-115	0			

MSD	Sample ID: 1208353-02CMSD			Units: µg/Kg			Analysis Date: 8/13/2012 04:30 PM			
Client ID:	Run ID: HG02_120813A			SeqNo: 2900592			Prep Date: 8/13/2012		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	484.9	3.6	359.7	152.5	92.4	85-115	461.3	5	20	

DUP	Sample ID: 1208353-02CDUP			Units: µg/Kg			Analysis Date: 8/13/2012 04:23 PM			
Client ID:	Run ID: HG02_120813A			SeqNo: 2900590			Prep Date: 8/13/2012		DF: 1	
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	140.1	3.5	0	0	0		152.5	8.46	20	

The following samples were analyzed in this batch: 1208351-01A

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

Client: ARCADIS U.S., Inc.
 Work Order: 1208351
 Project: Former Asarco Smelter

QC BATCH REPORT

Batch ID: **63406** Instrument ID **ICPMS05** Method: **SW6020**

MBLK Sample ID: **MBLKS1-081412-63406** Units: **mg/Kg** Analysis Date: **8/15/2012 03:52 PM**

Client ID: Run ID: **ICPMS05_120815A** SeqNo: **2903542** Prep Date: **8/14/2012** DF: **1**

Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	U	0.50								
Arsenic	U	0.50								
Barium	U	0.50								
Cadmium	U	0.50								
Chromium	U	0.50								
Cobalt	U	0.50								
Copper	U	0.50								
Iron	U	50								
Lead	U	0.50								
Molybdenum	U	0.50								
Nickel	U	0.50								
Selenium	U	0.50								
Silver	U	0.50								
Zinc	0.3116	0.50								J

LCS Sample ID: **MLCSS1-081412-63406** Units: **mg/Kg** Analysis Date: **8/14/2012 05:05 PM**

Client ID: Run ID: **ICPMS05_120814A** SeqNo: **2902100** Prep Date: **8/14/2012** DF: **1**

Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	8.81	0.50	10	0	88.1	80-120	0			
Arsenic	8.79	0.50	10	0	87.9	80-120	0			
Barium	10.09	0.50	10	0	101	80-120	0			
Cadmium	9.902	0.50	10	0	99	80-120	0			
Chromium	9.207	0.50	10	0	92.1	80-120	0			
Cobalt	9.293	0.50	10	0	92.9	80-120	0			
Copper	10.98	0.50	10	0	110	80-120	0			
Iron	935.9	50	1000	0	93.6	80-120	0			
Lead	9.977	0.50	10	0	99.8	80-120	0			
Molybdenum	9.633	0.50	10	0	96.3	80-120	0			
Nickel	9.672	0.50	10	0	96.7	80-120	0			
Selenium	9.908	0.50	10	0	99.1	80-120	0			
Silver	9.239	0.50	10	0	92.4	80-120	0			
Zinc	9.043	0.50	10	0	90.4	80-120	0			

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

Client: ARCADIS U.S., Inc.
 Work Order: 1208351
 Project: Former Asarco Smelter

QC BATCH REPORT

Batch ID: 63406 Instrument ID ICPMS05 Method: SW6020

MS Sample ID: 1208353-01CMS Units: mg/Kg Analysis Date: 8/14/2012 05:54 PM

Client ID: Run ID: ICPMS05_120814A SeqNo: 2902878 Prep Date: 8/14/2012 DF: 1

Analyte	Result	ML	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	9.265	0.48	9.574	0.2757	93.9	75-125	0			
Arsenic	12.17	0.48	9.574	3.524	90.3	75-125	0			
Barium	234.2	0.48	9.574	218.8	161	75-125	0			SEO
Cadmium	9.53	0.48	9.574	0.1833	97.6	75-125	0			
Chromium	51.43	0.48	9.574	39.62	123	75-125	0			O
Cobalt	15.21	0.48	9.574	6.964	86.1	75-125	0			
Copper	33.14	0.48	9.574	24.72	88	75-125	0			
Iron	17140	48	957.4	16410	76.4	75-125	0			O
Lead	75.75	0.48	9.574	65.23	110	75-125	0			O
Molybdenum	11.31	0.48	9.574	2.186	95.3	75-125	0			
Nickel	29.71	0.48	9.574	21.2	88.9	75-125	0			
Selenium	7.852	0.48	9.574	1.398	67.4	75-125	0			S
Silver	8.947	0.48	9.574	0.06297	92.8	75-125	0			
Zinc	75.76	0.48	9.574	62.34	140	75-125	0			SO

MSD Sample ID: 1208353-01CMSD Units: mg/Kg Analysis Date: 8/14/2012 05:56 PM

Client ID: Run ID: ICPMS05_120814A SeqNo: 2902879 Prep Date: 8/14/2012 DF: 1

Analyte	Result	ML	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	8.662	0.47	9.462	0.2757	88.6	75-125	9.265	6.73	25	
Arsenic	12.07	0.47	9.462	3.524	90.4	75-125	12.17	0.773	25	
Barium	268.7	0.47	9.462	218.8	527	75-125	234.2	13.7	25	SEO
Cadmium	9.107	0.47	9.462	0.1833	94.3	75-125	9.53	4.54	25	
Chromium	52.56	0.47	9.462	39.62	137	75-125	51.43	2.16	25	SO
Cobalt	15.01	0.47	9.462	6.964	85.1	75-125	15.21	1.31	25	
Copper	32.98	0.47	9.462	24.72	87.3	75-125	33.14	0.494	25	
Iron	16620	47	946.2	16410	22.5	75-125	17140	3.07	25	SO
Lead	79.42	0.47	9.462	65.23	150	75-125	75.75	4.73	25	SO
Molybdenum	11.15	0.47	9.462	2.186	94.7	75-125	11.31	1.49	25	
Nickel	28.7	0.47	9.462	21.2	79.3	75-125	29.71	3.44	25	
Selenium	8.918	0.47	9.462	1.398	79.5	75-125	7.852	12.7	25	
Silver	8.708	0.47	9.462	0.06297	91.4	75-125	8.947	2.71	25	
Zinc	70.31	0.47	9.462	62.34	84.2	75-125	75.76	7.47	25	O

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

Client: ARCADIS U.S., Inc.
 Work Order: 1208351
 Project: Former Asarco Smelter

QC BATCH REPORT

Batch ID: **63406** Instrument ID **ICPMS05** Method: **SW6020**

DUP Sample ID: **1208353-01CDUP** Units: **mg/Kg** Analysis Date: **8/14/2012 05:51 PM**

Client ID: Run ID: **ICPMS05_120814A** SeqNo: **2902877** Prep Date: **8/14/2012** DF: **1**

Analyte	Result	ML	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.2634	0.48	0	0	0	0-0	0.2757	0	25	J
Arsenic	3.39	0.48	0	0	0	0-0	3.524	3.89	25	
Cadmium	0.1455	0.48	0	0	0	0-0	0.1833	0	25	J
Chromium	41.94	0.48	0	0	0	0-0	39.62	5.68	25	
Cobalt	6.808	0.48	0	0	0	0-0	6.964	2.26	25	
Copper	25.93	0.48	0	0	0	0-0	24.72	4.77	25	
Iron	15890	48	0	0	0	0-0	16410	3.2	25	
Lead	65.15	0.48	0	0	0	0-0	65.23	0.114	25	
Molybdenum	2.386	0.48	0	0	0	0-0	2.186	8.73	25	
Nickel	21.31	0.48	0	0	0	0-0	21.2	0.522	25	
Selenium	0.8815	0.48	0	0	0	0-0	1.398	45.3	25	R
Silver	U	0.48	0	0	0	0-0	0.06297	0	25	
Zinc	65.72	0.48	0	0	0	0-0	62.34	5.27	25	

DUP Sample ID: **1208353-01CDUP** Units: **mg/Kg** Analysis Date: **8/15/2012 04:10 PM**

Client ID: Run ID: **ICPMS05_120815A** SeqNo: **2903555** Prep Date: **8/14/2012** DF: **10**

Analyte	Result	ML	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	303.6	4.8	0	0	0	0-0	208.3	37.2	25	R

The following samples were analyzed in this batch: 1208351-01A

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

Client: ARCADIS U.S., Inc.
 Work Order: 1208351
 Project: Former Asarco Smelter

QC BATCH REPORT

Batch ID: **63432** Instrument ID **Mercury** Method: **SW7470**

MBLK	Sample ID: GBLKW3-081512-63432					Units: mg/L	Analysis Date: 8/15/2012 04:41 PM			
Client ID:		Run ID: MERCURY_120815A			SeqNo: 2903668	Prep Date: 8/15/2012	DF: 1			
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.00020								

MBLK	Sample ID: GBLKP1-081312-63432					Units: mg/L	Analysis Date: 8/15/2012 04:45 PM			
Client ID:		Run ID: MERCURY_120815A			SeqNo: 2903672	Prep Date: 8/15/2012	DF: 1			
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.00020								

LCS	Sample ID: GLCSW3-081512-63432					Units: mg/L	Analysis Date: 8/15/2012 04:43 PM			
Client ID:		Run ID: MERCURY_120815A			SeqNo: 2903670	Prep Date: 8/15/2012	DF: 1			
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00479	0.00020	0.00555		0	86.3	80-120	0		

MS	Sample ID: 1208353-03CMS					Units: mg/L	Analysis Date: 8/15/2012 04:51 PM			
Client ID:		Run ID: MERCURY_120815A			SeqNo: 2903679	Prep Date: 8/15/2012	DF: 1			
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00492	0.00020	0.00555	0.000006	88.5	75-125		0		

MSD	Sample ID: 1208353-03CMSD					Units: mg/L	Analysis Date: 8/15/2012 04:53 PM			
Client ID:		Run ID: MERCURY_120815A			SeqNo: 2903681	Prep Date: 8/15/2012	DF: 1			
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00485	0.00020	0.00555	0.000006	87.3	75-125	0.00492	1.43	20	

DUP	Sample ID: 1208353-03CDUP					Units: mg/L	Analysis Date: 8/15/2012 04:49 PM			
Client ID:		Run ID: MERCURY_120815A			SeqNo: 2903676	Prep Date: 8/15/2012	DF: 1			
Analyte	Result	MLQ	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.00020	0	0	0	0-0	0.000006	0	20	

The following samples were analyzed in this batch: 1208351-01A

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

Client: ARCADIS U.S., Inc.
 Work Order: 1208351
 Project: Former Asarco Smelter

QC BATCH REPORT

Batch ID: **63439** Instrument ID **ICPMS05** Method: **SW6020**

MBLK Sample ID: **MBLKP1-081412-63439** Units: **mg/L** Analysis Date: **8/16/2012 07:12 PM**

Client ID: Run ID: **ICPMS05_120816A** SeqNo: **2906548** Prep Date: **8/15/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Lead	U	0.0050								
Selenium	U	0.0050								
Silver	U	0.0050								

MBLK Sample ID: **MBLKW2-081512-63439** Units: **mg/L** Analysis Date: **8/16/2012 07:15 PM**

Client ID: Run ID: **ICPMS05_120816A** SeqNo: **2906551** Prep Date: **8/15/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.0020								
Chromium	U	0.0050								
Lead	U	0.0050								
Selenium	U	0.0050								
Silver	U	0.0050								

MBLK Sample ID: **MBLKP1-081412-63439** Units: **mg/L** Analysis Date: **8/16/2012 07:12 PM**

Client ID: Run ID: **ICPMS05_120816A** SeqNo: **2906622** Prep Date: **8/15/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	U	0.0050								
Cobalt	U	0.0050								
Copper	U	0.0050								
Iron	U	0.20								
Molybdenum	0.001962	0.0050								J
Nickel	U	0.0050								
Zinc	0.003716	0.0050								J

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

Client: ARCADIS U.S., Inc.
 Work Order: 1208351
 Project: Former Asarco Smelter

QC BATCH REPORT

Batch ID: **63439** Instrument ID **ICPMS05** Method: **SW6020**

MBLK Sample ID: **MBLKW2-081512-63439** Units: **mg/L** Analysis Date: **8/16/2012 07:15 PM**

Client ID: Run ID: **ICPMS05_120816A** SeqNo: **2906623** Prep Date: **8/15/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	U	0.0050								
Cobalt	U	0.0050								
Copper	U	0.0050								
Iron	U	0.20								
Molybdenum	0.001834	0.0050								J
Nickel	U	0.0050								
Zinc	0.003308	0.0050								J

LCS Sample ID: **MLCSW2-081512-63439** Units: **mg/L** Analysis Date: **8/16/2012 07:18 PM**

Client ID: Run ID: **ICPMS05_120816A** SeqNo: **2906554** Prep Date: **8/15/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05163	0.0050	0.05	0	103	80-120	0			
Barium	0.05284	0.0050	0.05	0	106	80-120	0			
Cadmium	0.05073	0.0020	0.05	0	101	80-120	0			
Chromium	0.05303	0.0050	0.05	0	106	80-120	0			
Lead	0.05218	0.0050	0.05	0	104	80-120	0			
Selenium	0.05024	0.0050	0.05	0	100	80-120	0			
Silver	0.05319	0.0050	0.05	0	106	80-120	0			

LCS Sample ID: **MLCSW2-081512-63439** Units: **mg/L** Analysis Date: **8/16/2012 07:18 PM**

Client ID: Run ID: **ICPMS05_120816A** SeqNo: **2906624** Prep Date: **8/15/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.05367	0.0050	0.05	0	107	80-120	0			
Cobalt	0.05211	0.0050	0.05	0	104	80-120	0			
Copper	0.05199	0.0050	0.05	0	104	80-120	0			
Iron	5.229	0.20	5	0	105	80-120	0			
Molybdenum	0.0532	0.0050	0.05	0	106	80-120	0			
Nickel	0.05152	0.0050	0.05	0	103	80-120	0			
Zinc	0.05495	0.0050	0.05	0	110	80-120	0			

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

Client: ARCADIS U.S., Inc.
 Work Order: 1208351
 Project: Former Asarco Smelter

QC BATCH REPORT

Batch ID: **63439** Instrument ID **ICPMS05** Method: **SW6020**

MS		Sample ID: 1208353-02CMS			Units: mg/L		Analysis Date: 8/16/2012 07:31 PM			
Client ID:		Run ID: ICPMS05_120816A			SeqNo: 2906564		Prep Date: 8/15/2012		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05128	0.0050	0.05	0.000953	101	75-125	0			
Barium	0.1882	0.0050	0.05	0.136	104	75-125	0			
Cadmium	0.04908	0.0020	0.05	-0.000082	98.3	75-125	0			
Chromium	0.08739	0.0050	0.05	0.03949	95.8	75-125	0			
Lead	0.05031	0.0050	0.05	0.000115	100	75-125	0			
Selenium	0.0503	0.0050	0.05	-0.000053	101	75-125	0			
Silver	0.05103	0.0050	0.05	0.000008	102	75-125	0			

MS		Sample ID: 1208353-02CMS			Units: mg/L		Analysis Date: 8/16/2012 07:31 PM			
Client ID:		Run ID: ICPMS05_120816A			SeqNo: 2906631		Prep Date: 8/15/2012		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.05335	0.0050	0.05	0.000571	106	80-120	0			
Cobalt	0.05314	0.0050	0.05	0.003234	99.8	80-120	0			
Copper	0.06772	0.0050	0.05	0.01996	95.5	80-120	0			
Iron	4.964	0.20	5	0.02265	98.8	80-120	0			
Molybdenum	0.08824	0.0050	0.05	0.03733	102	80-120	0			
Nickel	0.05372	0.0050	0.05	0.005242	97	80-120	0			
Zinc	0.05016	0.0050	0.05	0.00623	87.9	80-120	0			

MSD		Sample ID: 1208353-02CMSD			Units: mg/L		Analysis Date: 8/16/2012 07:34 PM			
Client ID:		Run ID: ICPMS05_120816A			SeqNo: 2906565		Prep Date: 8/15/2012		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05223	0.0050	0.05	0.000953	103	75-125	0.05128	1.85	25	
Barium	0.1878	0.0050	0.05	0.136	104	75-125	0.1882	0.21	25	
Cadmium	0.04795	0.0020	0.05	-0.000082	96.1	75-125	0.04908	2.34	25	
Chromium	0.09348	0.0050	0.05	0.03949	108	75-125	0.08739	6.73	25	
Lead	0.05112	0.0050	0.05	0.000115	102	75-125	0.05031	1.58	25	
Selenium	0.05224	0.0050	0.05	-0.000053	105	75-125	0.0503	3.79	25	
Silver	0.05068	0.0050	0.05	0.000008	101	75-125	0.05103	0.688	25	

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

Client: ARCADIS U.S., Inc.
 Work Order: 1208351
 Project: Former Asarco Smelter

QC BATCH REPORT

Batch ID: 63439 Instrument ID ICPMS05 Method: SW6020

MSD		Sample ID: 1208353-02CMSD			Units: mg/L			Analysis Date: 8/16/2012 07:34 PM		
Client ID:		Run ID: ICPMS05_120816A			SeqNo: 2906633		Prep Date: 8/15/2012		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.0548	0.0050	0.05	0.000571	108	80-120	0.05335	2.68	20	
Cobalt	0.05556	0.0050	0.05	0.003234	105	80-120	0.05314	4.46	20	
Copper	0.0706	0.0050	0.05	0.01996	101	80-120	0.06772	4.16	20	
Iron	5.146	0.20	5	0.02265	102	80-120	4.964	3.59	20	
Molybdenum	0.0874	0.0050	0.05	0.03733	100	80-120	0.08824	0.953	20	
Nickel	0.0553	0.0050	0.05	0.005242	100	80-120	0.05372	2.88	20	
Zinc	0.05348	0.0050	0.05	0.00623	94.5	80-120	0.05016	6.4	20	

DUP		Sample ID: 1208353-02CDUP			Units: mg/L			Analysis Date: 8/16/2012 07:28 PM		
Client ID:		Run ID: ICPMS05_120816A			SeqNo: 2906562		Prep Date: 8/15/2012		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.001838	0.0050	0	0	0	0-0	0.000953	0	20	J
Barium	0.1384	0.0050	0	0	0	0-0	0.136	1.79	20	
Cadmium	U	0.0020	0	0	0	0-0	-0.000082	0	20	
Chromium	0.04178	0.0050	0	0	0	0-0	0.03949	5.64	20	
Lead	U	0.0050	0	0	0	0-0	0.000115	0	20	
Selenium	U	0.0050	0	0	0	0-0	-0.000053	0	20	
Silver	U	0.0050	0	0	0	0-0	0.000008	0	20	

DUP		Sample ID: 1208353-02CDUP			Units: mg/L			Analysis Date: 8/16/2012 07:28 PM		
Client ID:		Run ID: ICPMS05_120816A			SeqNo: 2906629		Prep Date: 8/15/2012		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	U	0.0050	0	0	0	0-0	0.000571	0	20	
Cobalt	0.003135	0.0050	0	0	0	0-0	0.003234	0	20	J
Copper	0.01955	0.0050	0	0	0	0-0	0.01996	2.05	20	
Iron	U	0.20	0	0	0	0-0	0.02265	0	20	
Molybdenum	0.03746	0.0050	0	0	0	0-0	0.03733	0.329	20	
Nickel	0.005502	0.0050	0	0	0	0-0	0.005242	4.84	20	
Zinc	0.002967	0.0050	0	0	0	0-0	0.00623	0	20	J

The following samples were analyzed in this batch: 1208351-01A

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

Client: ARCADIS U.S., Inc.
Work Order: 1208351
Project: Former Asarco Smelter

QC BATCH REPORT

Batch ID: **R133187** Instrument ID **Balance1** Method: **SW3550 (Dissolve)**

DUP	Sample ID: 1208350-07BDUP	Units: wt%	Analysis Date: 8/14/2012 03:10 PM							
Client ID:	Run ID: BALANCE1_120814C	SeqNo: 2903236	Prep Date:	DF: 1						
Analyte	Result	ML	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	19.94	0.010	0	0	0	0-0	19.66	1.43	20	

The following samples were analyzed in this batch:

1208351-01A

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

Client: ARCADIS U.S., Inc.
Project: Former Asarco Smelter
WorkOrder: 1208351

**QUALIFIERS,
ACRONYMS, UNITS**

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

<u>Acronym</u>	<u>Description</u>
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

<u>Units Reported</u>	<u>Description</u>
mg/Kg-dry	Milligrams per Kilogram - Dry weight corrected
mg/L	Milligrams per Liter
wt%	

Sample Receipt Checklist

Client Name: MALCOLM PIRNIE-EL PASO

Date/Time Received: 08-Aug-12 08:40

Work Order: 1208351

Received by: PMG

Checklist completed by Parash M. Giga 08-Aug-12
eSignature Date

Reviewed by: Bethany McDaniel 18-Aug-12
eSignature Date

Matrices: Soil
Carrier name: FedEx

- Shipping container/cooler in good condition? Yes [checked] No [] Not Present []
Custody seals intact on shipping container/cooler? Yes [checked] No [] Not Present []
Custody seals intact on sample bottles? Yes [] No [] Not Present [checked]
Chain of custody present? Yes [checked] No []
Chain of custody signed when relinquished and received? Yes [checked] No []
Chain of custody agrees with sample labels? Yes [checked] No []
Samples in proper container/bottle? Yes [checked] No []
Sample containers intact? Yes [checked] No []
Sufficient sample volume for indicated test? Yes [checked] No []
All samples received within holding time? Yes [checked] No []
Container/Temp Blank temperature in compliance? Yes [checked] No []

Temperature(s)/Thermometer(s): 2.9c C/U 003

Cooler(s)/Kit(s): Foam

Date/Time sample(s) sent to storage: 8/8/12 21:50

Water - VOA vials have zero headspace? Yes [] No [] No VOA vials submitted [checked]

Water - pH acceptable upon receipt? Yes [] No [] N/A [checked]

pH adjusted? Yes [] No [] N/A [checked]

pH adjusted by: []

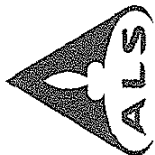
Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments: []

CorrectiveAction: []



ALS Laboratory Group
 10450 Stanciff Rd., Suite 210
 Houston, Texas 77099
 Tel. +1 281 530 5656
 Fax. +1 281 530 5887

Chain of Custody Form

1208351

MALCOLM PIRNIE-EL PASO: ARCADIS U.S., Inc.

Project: Former Asarco Smelter

Page 1 of 1

Customer Information				Project Information													
Purchase Order	Project Name			ALS Project Manager:													
Work Order	Project Number			Former Asarco Smelter													
Company Name	Bill To Company			Total Metals (site specific)													
Send Report To	Invoice Attn			SPRP Metals (site specific)													
Address	Address																
City/State/Zip	City/State/Zip																
Phone	Phone																
Fax	Fax																
e-Mail Address	e-Mail Address																
No.	Sample Description	Date	Time	Matrx	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	QA080612	8-6-12	1415	S	8	1	X	X									
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

QC Package: (Check One Box Below)
 Level II Std QC
 Level III Std QC/Raw Date
 Level IV SW846/CLP
 Other

Required Turnaround Time: (Check Box)
 STD 10 Wk Days
 5 Wk Days
 2 Wk Days
 24 Hour

Shipments Method: FedEX
 Received by (Laboratory):
 Date: 8-7-12 Time: 15:25
 Checked by (Laboratory):
 Date: 8-12-12 Time: 08:40 AM

Relinquished by: [Signature]
 Date: 8-7-12 Time: 15:25

Relinquished by: [Signature]
 Date: 8-12-12 Time: 08:40 AM

Logged by (Laboratory):
 Date: 8-12-12 Time: 08:40 AM

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

Notes:
 Cooler ID: [Blank]
 Cooler Temp: [Blank]

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.

3.2.2. Soil Boring Sampling

The following describes procedures to be followed for collecting soil samples from soil borings:

- Soil samples selected for laboratory analyses will be taken from the central, least disturbed portion of the soil core. Rocks, twigs, leaves, grass, root masses, other organic matter, and trash will be removed from the sample. If a composite sample is required the selected soil cores will be placed in a stainless steel bowl and composited. Soil samples will be collected in laboratory provided containers.
- A representative sample will be transferred to appropriate laboratory-supplied containers. The sample jars will be labeled with the site name, date, time, boring, sample identification number, and analysis to be performed.
- Remaining sample will be placed with the soil cuttings for disposal.
- Soil samples will be placed on ice as soon as possible and delivered to the analytical laboratories as soon as possible. Samples will be placed in a ice cooler and transported to the project laboratory according to procedures described in Section 6.

Soil samples will be analyzed for analytes described in Section 7 of the RAWP. A copy of Table 7.1 is presented below.

Area	COCLIST	Analytes of Interest
All New Samples	arsenic, cadmium, chromium, copper, iron, lead, selenium, zinc	antimony, barium, cobalt, mercury, molybdenum, nickel, silver
Caustic Areas	NA	hexavalent chromium
Unloading, Bedding and North Converter Staging Areas	NA	VOCs (1)
Unloading, Bedding and North Converter Staging Areas	NA	chlordan, endrin, hexachlorocyclopentadiene, methyl parathion
Diesel Spill Areas	BTEX (2) and total petroleum hydrocarbons	None
(1) VOCs = tetrachloroethene, trichloroethene, methylene chloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, carbon tetrachloride, chlorobenzene, 1,2-dichlorobenzene, trichlorofluoromethane, 1,1,2-trichloro-1,2,2-trifluoroethane, dichlorodifluoromethane, xylenes, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, methanol		

1208357

875316
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica

Custody Seal

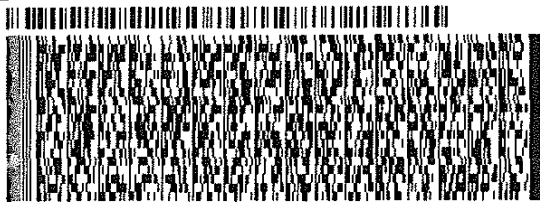
DATE

SIGNATURE

8-7-12
[Signature]

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
875316

1208357

ORIGIN ID: ELPA (915) 533-9025 MALCOLM PIRNIE INC	SHIP DATE: 07AUG12 ACTWGT: 8.5 LB CAD: /OFFC1902 DIMS: 13x9x11 IN
211 N FLORENCE ST EL PASO, TX 799011665 UNITED STATES US	BILL SENDER
TO SAMPLE MANAGER ALS LABORATORY GROUP 10450 STANCLIFF RD STE 210 HOUSTON TX 77099	
(281) 630-5656 INQ: REF: PO: DEPT:	
	
FedEx Express 	
TRK# 8005 6356 7600 0200	WED - 08 AUG A1 PRIORITY OVERNIGHT
XH SGRA	77099 TX-US IAH
