



**United States Environmental Protection Agency
Region 9 Laboratory**

**1337 S. 46th Street Building 201
Richmond, CA 94804**

**Subject: Analytical Testing Results - Project R10A01
SDG: 10029C**

**From: Brenda Bettencourt, Director
EPA Region 9 Laboratory
MTS-2**

**To: Colleen McKaughan
Office of the Director, Air Division
AIR-1**

Attached are the results from the analysis of samples from the **ASARCO Tailings Dam #8** project. These data have been reviewed in accordance with EPA Region 9 Laboratory policy.

A full documentation package for these data, including raw data and sample custody documentation, is on file at the EPA Region 9 Laboratory. If you would like to request additional review and/or validation of the data, please contact Eugenia McNaughton at the Region 9 Quality Assurance Office.

If you have any questions, please ask for Richard Bauer, the Lab Project Manager at (510)412-2300.

Electronic CC: Marc Herman, Pima County DEQ

Analyses included in this report:

Anions by Ion Chromatography

Metals by ICP

Percent Solids



United States Environmental Protection Agency
Region 9 Laboratory

1337 S. 46th Street, Building 201, Richmond, CA 94804
 Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Colleen McKaughan	Office of the Director, Air Division	SDG: 10029C
Project Number: R10A01	75 Hawthorne Street	Reported: 02/12/10 12:43
Project: ASARCO Tailings Dam #8	San Francisco CA, 94105	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
59-01,59-02,59-03 (COMP)	1001038-01	Solid	01/25/10 11:18	01/29/10 10:30
41-01,41-02,41-03 (COMP)	1001038-02	Solid	01/25/10 11:36	01/29/10 10:30
28-01,28-02,28-03 (COMP)	1001038-03	Solid	01/25/10 11:45	01/29/10 10:30
21-01,21-02,21-03 (COMP)	1001038-04	Solid	01/25/10 11:55	01/29/10 10:30
07-01,07-02,07-03 (COMP)	1001038-05	Solid	01/25/10 12:04	01/29/10 10:30
66-01,66-02,66-03 (COMP)	1001038-06	Solid	01/26/10 10:50	01/29/10 10:30
Rancho Resort Patio	1001038-07	Solid	01/08/10 00:00	01/29/10 10:30

SDG ID 10029C

Work Order(s)

1001038

Percent solids analysis on sample 1001038-07 (Rancho Resort Patio) could not performed due to insufficient sample. All results for this sample are on a wet-weight basis (as received).

Samples were received at 22 degrees C which is above the recommended temperature range of 0 to 6 degrees C. Anion results are qualified as estimated.



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Project Number: R10A01	75 Hawthorne Street	Reported: 02/12/10 12:43
Project: ASARCO Tailings Dam #8	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed	Method
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Lab ID: 1001038-01 **Solid - Sampled: 01/25/10 11:18**

Sample ID: 59-01,59-02,59-03 (COMP) **Metals by EPA 6000/7000 Series Methods**

Aluminum		6,500		110	mg/kg dry	B0B0014	02/03/10	02/04/10	6010B/SOP503
Antimony		ND	U	2.2	"	"	"	"	6010B/SOP503
Arsenic		4.8		2.2	"	"	"	"	6010B/SOP503
Barium		76		5.6	"	"	"	"	6010B/SOP503
Beryllium		0.39		0.11	"	"	"	"	6010B/SOP503
Cadmium		0.67		0.56	"	"	"	"	6010B/SOP503
Calcium		20,000		110	"	"	"	02/05/10	6010B/SOP503
Chromium		9.6		1.1	"	"	"	"	6010B/SOP503
Cobalt		4.8		2.2	"	"	"	02/04/10	6010B/SOP503
Copper		260		4.5	"	"	"	"	6010B/SOP503
Iron		11,000		110	"	"	"	"	6010B/SOP503
Lead		22		3.4	"	"	"	02/05/10	6010B/SOP503
Magnesium		6,500		56	"	"	"	"	6010B/SOP503
Manganese		270		5.6	"	"	"	02/04/10	6010B/SOP503
Molybdenum		97		5.6	"	"	"	02/05/10	6010B/SOP503
Nickel		3.3	C1, J	5.6	"	"	"	02/04/10	6010B/SOP503
Potassium		2,600		560	"	"	"	"	6010B/SOP503
Selenium		ND	U	2.2	"	"	"	"	6010B/SOP503
Silver		0.63	C1, J	1.1	"	"	"	"	6010B/SOP503
Sodium		250		56	"	"	"	"	6010B/SOP503
Thallium		ND	U	5.6	"	"	"	"	6010B/SOP503
Vanadium		15		2.2	"	"	"	"	6010B/SOP503
Zinc		230		9	"	"	"	"	6010B/SOP503

Sample ID: 59-01,59-02,59-03 (COMP) **Conventional Chemistry Parameters by APHA/EPA Methods**

Chloride		ND	A2, J	11	"	B0B0018	02/03/10	02/03/10	300.0/SOP 530
Nitrate as N		ND	A2, J	1.1	"	"	"	"	300.0/SOP 530
Sulfate	RE1	9,400	A2, J	110	"	B0B0028	02/05/10	02/05/10	300.0/SOP 530
% Solids		89		1	%	B0B0019	02/03/10	02/04/10	3550C/SOP460

Lab ID: 1001038-02 **Solid - Sampled: 01/25/10 11:36**

Sample ID: 41-01,41-02,41-03 (COMP) **Metals by EPA 6000/7000 Series Methods**

Aluminum		10,000		120	mg/kg dry	B0B0014	02/03/10	02/04/10	6010B/SOP503
Antimony		ND	U	2.4	"	"	"	"	6010B/SOP503
Arsenic		6.4		2.4	"	"	"	"	6010B/SOP503
Barium		73		5.9	"	"	"	"	6010B/SOP503
Beryllium		0.62		0.12	"	"	"	"	6010B/SOP503
Cadmium		0.52	C1, J	0.59	"	"	"	"	6010B/SOP503
Calcium		30,000		120	"	"	"	02/05/10	6010B/SOP503
Chromium		9.7		1.2	"	"	"	"	6010B/SOP503
Cobalt		4.7		2.4	"	"	"	02/04/10	6010B/SOP503
Copper		390		4.7	"	"	"	"	6010B/SOP503



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Project Manager: Colleen McKaughan	Office of the Director, Air Division	SDG: 10029C
Project Number: R10A01	75 Hawthorne Street	Reported: 02/12/10 12:43
Project: ASARCO Tailings Dam #8	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed	Method
Lab ID:	1001038-02							Solid - Sampled: 01/25/10 11:36	
Sample ID:	41-01,41-02,41-03 (COMP)							Metals by EPA 6000/7000 Series Methods	
Iron		11,000		120	mg/kg dry	B0B0014	02/03/10	02/04/10	6010B/SOP503
Lead		28		3.5	"	"	"	02/05/10	6010B/SOP503
Magnesium		12,000		59	"	"	"	"	6010B/SOP503
Manganese		510		5.9	"	"	"	02/04/10	6010B/SOP503
Molybdenum		100		5.9	"	"	"	02/05/10	6010B/SOP503
Nickel		3.5	C1, J	5.9	"	"	"	02/04/10	6010B/SOP503
Potassium		4,100		590	"	"	"	"	6010B/SOP503
Selenium		ND	U	2.4	"	"	"	"	6010B/SOP503
Silver		0.85	C1, J	1.2	"	"	"	"	6010B/SOP503
Sodium		570		59	"	"	"	"	6010B/SOP503
Thallium		ND	U	5.9	"	"	"	"	6010B/SOP503
Vanadium		21		2.4	"	"	"	"	6010B/SOP503
Zinc		200		9.4	"	"	"	"	6010B/SOP503

Sample ID:	41-01,41-02,41-03 (COMP)							Conventional Chemistry Parameters by APHA/EPA Methods	
Chloride		110	A2, J	12	"	B0B0018	02/03/10	02/03/10	300.0/SOP 530
Nitrate as N		ND	A2, J	1.2	"	"	"	"	300.0/SOP 530
Sulfate	RE1	15,000	A2, J	290	"	B0B0028	02/05/10	02/05/10	300.0/SOP 530
% Solids		85		1	%	B0B0019	02/03/10	02/04/10	3550C/SOP460

Lab ID:	1001038-03							Solid - Sampled: 01/25/10 11:45	
Sample ID:	28-01,28-02,28-03 (COMP)							Metals by EPA 6000/7000 Series Methods	
Aluminum		7,100		110	mg/kg dry	B0B0014	02/03/10	02/04/10	6010B/SOP503
Antimony		ND	U	2.2	"	"	"	"	6010B/SOP503
Arsenic		6.7		2.2	"	"	"	"	6010B/SOP503
Barium		62		5.6	"	"	"	"	6010B/SOP503
Beryllium		0.47		0.11	"	"	"	"	6010B/SOP503
Cadmium		2.2		0.56	"	"	"	"	6010B/SOP503
Calcium		32,000		110	"	"	"	02/05/10	6010B/SOP503
Chromium		9.7		1.1	"	"	"	"	6010B/SOP503
Cobalt		6.4		2.2	"	"	"	02/04/10	6010B/SOP503
Copper		320		4.4	"	"	"	"	6010B/SOP503
Iron		15,000		110	"	"	"	"	6010B/SOP503
Lead		14		3.3	"	"	"	02/05/10	6010B/SOP503
Magnesium		9,000		56	"	"	"	"	6010B/SOP503
Manganese		480		5.6	"	"	"	02/04/10	6010B/SOP503
Molybdenum		76		5.6	"	"	"	02/05/10	6010B/SOP503
Nickel		4.0	C1, J	5.6	"	"	"	02/04/10	6010B/SOP503
Potassium		2,100		560	"	"	"	"	6010B/SOP503
Selenium		1.7	C1, J	2.2	"	"	"	"	6010B/SOP503
Silver		0.75	C1, J	1.1	"	"	"	"	6010B/SOP503
Sodium		200		56	"	"	"	"	6010B/SOP503



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Project Manager: Colleen McKaughan	Office of the Director, Air Division	SDG: 10029C
Project Number: R10A01	75 Hawthorne Street	Reported: 02/12/10 12:43
Project: ASARCO Tailings Dam #8	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed	Method
Lab ID: 1001038-03		Solid - Sampled: 01/25/10 11:45							
Sample ID: 28-01,28-02,28-03 (COMP)		Metals by EPA 6000/7000 Series Methods							
Thallium		ND	U	5.6	mg/kg dry	B0B0014	02/03/10	02/04/10	6010B/SOP503
Vanadium		17		2.2	"	"	"	"	6010B/SOP503
Zinc		820		8.9	"	"	"	"	6010B/SOP503
Sample ID: 28-01,28-02,28-03 (COMP)		Conventional Chemistry Parameters by APHA/EPA Methods							
Chloride		6.2	A2, C1	11	"	B0B0018	02/03/10	02/03/10	300.0/SOP 530
Nitrate as N		ND	A2, J	1.1	"	"	"	"	300.0/SOP 530
Sulfate	RE1	13,000	A2, J	280	"	B0B0028	02/05/10	02/05/10	300.0/SOP 530
% Solids		90		1	%	B0B0019	02/03/10	02/04/10	3550C/SOP460
Lab ID: 1001038-04		Solid - Sampled: 01/25/10 11:55							
Sample ID: 21-01,21-02,21-03 (COMP)		Metals by EPA 6000/7000 Series Methods							
Aluminum		5,400		120	mg/kg dry	B0B0014	02/03/10	02/04/10	6010B/SOP503
Antimony		ND	U	2.4	"	"	"	"	6010B/SOP503
Arsenic		4.5		2.4	"	"	"	"	6010B/SOP503
Barium		67		6	"	"	"	"	6010B/SOP503
Beryllium		0.45		0.12	"	"	"	"	6010B/SOP503
Cadmium		0.43	C1, J	0.60	"	"	"	"	6010B/SOP503
Calcium		32,000		120	"	"	02/05/10		6010B/SOP503
Chromium		9.2		1.2	"	"	"	"	6010B/SOP503
Cobalt		4.1		2.4	"	"	02/04/10		6010B/SOP503
Copper		310		4.8	"	"	"	"	6010B/SOP503
Iron		15,000		120	"	"	"	"	6010B/SOP503
Lead		23		3.6	"	"	02/05/10		6010B/SOP503
Magnesium		7,300		60	"	"	"	"	6010B/SOP503
Manganese		580		6	"	"	02/04/10		6010B/SOP503
Molybdenum		110		6	"	"	02/05/10		6010B/SOP503
Nickel		3.1	C1, J	6	"	"	02/04/10		6010B/SOP503
Potassium		1,700		600	"	"	"	"	6010B/SOP503
Selenium		ND	U	2.4	"	"	"	"	6010B/SOP503
Silver		0.93	C1, J	1.2	"	"	"	"	6010B/SOP503
Sodium		180		60	"	"	"	"	6010B/SOP503
Thallium		ND	U	6	"	"	"	"	6010B/SOP503
Vanadium		12		2.4	"	"	"	"	6010B/SOP503
Zinc		190		9.6	"	"	"	"	6010B/SOP503
Sample ID: 21-01,21-02,21-03 (COMP)		Conventional Chemistry Parameters by APHA/EPA Methods							
Chloride		ND	A2, J	12	"	B0B0018	02/03/10	02/03/10	300.0/SOP 530
Nitrate as N		ND	A2, J	1.2	"	"	"	"	300.0/SOP 530
Sulfate	RE1	18,000	A2, J	300	"	B0B0028	02/05/10	02/05/10	300.0/SOP 530
% Solids		83		1	%	B0B0019	02/03/10	02/04/10	3550C/SOP460
Lab ID: 1001038-05		Solid - Sampled: 01/25/10 12:04							



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Project Number: R10A01	75 Hawthorne Street	Reported: 02/12/10 12:43
Project: ASARCO Tailings Dam #8	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed	Method
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Lab ID: 1001038-05 **Solid - Sampled: 01/25/10 12:04**

Sample ID: 07-01,07-02,07-03 (COMP) **Metals by EPA 6000/7000 Series Methods**

Aluminum		3,400		120	mg/kg dry	B0B0014	02/03/10	02/04/10	6010B/SOP503
Antimony		ND	J, Q4, U	2.3	"	"	"	"	6010B/SOP503
Arsenic		3.0		2.3	"	"	"	"	6010B/SOP503
Barium		91		5.8	"	"	"	"	6010B/SOP503
Beryllium		0.42		0.12	"	"	"	"	6010B/SOP503
Cadmium		ND	U	0.58	"	"	"	"	6010B/SOP503
Calcium		31,000		120	"	"	"	02/05/10	6010B/SOP503
Chromium		7.3		1.2	"	"	"	"	6010B/SOP503
Cobalt		3.0		2.3	"	"	"	02/04/10	6010B/SOP503
Copper		250		4.7	"	"	"	"	6010B/SOP503
Iron		13,000		120	"	"	"	"	6010B/SOP503
Lead		15		3.5	"	"	"	02/05/10	6010B/SOP503
Magnesium		5,000		58	"	"	"	"	6010B/SOP503
Manganese		440		5.8	"	"	"	02/04/10	6010B/SOP503
Molybdenum		250	J, Q4	5.8	"	"	"	02/05/10	6010B/SOP503
Nickel		ND	U	5.8	"	"	"	02/04/10	6010B/SOP503
Potassium		1,200		580	"	"	"	"	6010B/SOP503
Selenium		ND	U	2.3	"	"	"	"	6010B/SOP503
Silver		0.63	C1, J	1.2	"	"	"	"	6010B/SOP503
Sodium		150		58	"	"	"	"	6010B/SOP503
Thallium		ND	U	5.8	"	"	"	"	6010B/SOP503
Vanadium		6.5		2.3	"	"	"	"	6010B/SOP503
Zinc		72		9.3	"	"	"	"	6010B/SOP503

Sample ID: 07-01,07-02,07-03 (COMP) **Conventional Chemistry Parameters by APHA/EPA Methods**

Chloride		ND	A2, J	12	"	B0B0018	02/03/10	02/03/10	300.0/SOP 530
Nitrate as N		ND	A2, J	1.2	"	"	"	"	300.0/SOP 530
Sulfate	RE1	17,000	A2, J	290	"	B0B0028	02/05/10	02/05/10	300.0/SOP 530
% Solids		86		1	%	B0B0019	02/03/10	02/04/10	3550C/SOP460

Lab ID: 1001038-06 **Solid - Sampled: 01/26/10 10:50**

Sample ID: 66-01,66-02,66-03 (COMP) **Metals by EPA 6000/7000 Series Methods**

Aluminum		4,700		110	mg/kg dry	B0B0014	02/03/10	02/04/10	6010B/SOP503
Antimony		ND	U	2.1	"	"	"	"	6010B/SOP503
Arsenic		2.9		2.1	"	"	"	"	6010B/SOP503
Barium		31		5.3	"	"	"	"	6010B/SOP503
Beryllium		0.33		0.11	"	"	"	"	6010B/SOP503
Cadmium		ND	U	0.53	"	"	"	"	6010B/SOP503
Calcium		4,600		110	"	"	"	02/05/10	6010B/SOP503
Chromium		2.9		1.1	"	"	"	"	6010B/SOP503
Cobalt		2.6		2.1	"	"	"	02/04/10	6010B/SOP503



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Project Manager: Colleen McKaughan Project Number: R10A01 Project: ASARCO Tailings Dam #8	Office of the Director, Air Division 75 Hawthorne Street San Francisco CA, 94105	SDG: 10029C Reported: 02/12/10 12:43
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Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed	Method
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Lab ID: 1001038-06 **Solid - Sampled: 01/26/10 10:50**

Sample ID: 66-01,66-02,66-03 (COMP) **Metals by EPA 6000/7000 Series Methods**

Copper		30		4.3	mg/kg dry	B0B0014	02/03/10	02/04/10	6010B/SOP503
Iron		7,500		110	"	"	"	"	6010B/SOP503
Lead		9.8		3.2	"	"	"	02/05/10	6010B/SOP503
Magnesium		1,500		53	"	"	"	"	6010B/SOP503
Manganese		190		5.3	"	"	"	02/04/10	6010B/SOP503
Molybdenum		ND	U	5.3	"	"	"	02/05/10	6010B/SOP503
Nickel		ND	U	5.3	"	"	"	02/04/10	6010B/SOP503
Potassium		920		530	"	"	"	"	6010B/SOP503
Selenium		ND	U	2.1	"	"	"	"	6010B/SOP503
Silver		ND	U	1.1	"	"	"	"	6010B/SOP503
Sodium		37	C1, J	53	"	"	"	"	6010B/SOP503
Thallium		ND	U	5.3	"	"	"	"	6010B/SOP503
Vanadium		14		2.1	"	"	"	"	6010B/SOP503
Zinc		31		8.5	"	"	"	"	6010B/SOP503

Sample ID: 66-01,66-02,66-03 (COMP) **Conventional Chemistry Parameters by APHA/EPA Methods**

Chloride		ND	A2, J	11	"	B0B0018	02/03/10	02/03/10	300.0/SOP 530
Nitrate as N		1.3	A2, J	1.1	"	"	"	"	300.0/SOP 530
Sulfate		5.4	A2, J	5.3	"	"	"	"	300.0/SOP 530
% Solids		94		1	%	B0B0019	02/03/10	02/04/10	3550C/SOP460

Lab ID: 1001038-07 **Solid - Sampled: 01/08/10 00:00**

Sample ID: Rancho Resort Patio **Metals by EPA 6000/7000 Series Methods**

Aluminum		5,700		100	mg/kg wet	B0B0014	02/03/10	02/04/10	6010B/SOP503
Antimony		ND	U	2	"	"	"	"	6010B/SOP503
Arsenic		4.7		2	"	"	"	"	6010B/SOP503
Barium		73		5	"	"	"	"	6010B/SOP503
Beryllium		0.40		0.10	"	"	"	"	6010B/SOP503
Cadmium		0.40	C1, J	0.50	"	"	"	"	6010B/SOP503
Calcium		29,000		100	"	"	"	02/05/10	6010B/SOP503
Chromium		8.2		1	"	"	"	"	6010B/SOP503
Cobalt		4.6		2	"	"	"	02/04/10	6010B/SOP503
Copper		360		4	"	"	"	"	6010B/SOP503
Iron		13,000		100	"	"	"	"	6010B/SOP503
Lead		27		3	"	"	"	02/05/10	6010B/SOP503
Magnesium		8,300		50	"	"	"	"	6010B/SOP503
Manganese		320		5	"	"	"	02/04/10	6010B/SOP503
Molybdenum		210		5	"	"	"	02/05/10	6010B/SOP503
Nickel		3.2	C1, J	5	"	"	"	02/04/10	6010B/SOP503
Potassium		3,200		500	"	"	"	"	6010B/SOP503
Selenium		2.5		2	"	"	"	"	6010B/SOP503
Silver		0.69	C1, J	1	"	"	"	"	6010B/SOP503



**United States Environmental Protection Agency
Region 9 Laboratory**

1337 S. 46th Street, Building 201, Richmond, CA 94804
Phone:(510) 412-2300 Fax:(510) 412-2302

Project Manager: Colleen McKaughan	Office of the Director, Air Division	SDG: 10029C
Project Number: R10A01	75 Hawthorne Street	Reported: 02/12/10 12:43
Project: ASARCO Tailings Dam #8	San Francisco CA, 94105	

Sample Results

Analyte	Reanalysis / Extract	Result	Qualifiers / Comments	Quantitation Limit	Units	Batch	Prepared	Analyzed	Method	
Lab ID:	1001038-07						Solid - Sampled: 01/08/10 00:00			
Sample ID:	Rancho Resort Patio						Metals by EPA 6000/7000 Series Methods			
Sodium		6,800		50	mg/kg wet	B0B0014	02/03/10	02/04/10	6010B/SOP503	
Thallium		ND	U	5	"	"	"	"	6010B/SOP503	
Vanadium		13		2	"	"	"	"	6010B/SOP503	
Zinc		170		8	"	"	"	"	6010B/SOP503	
Sample ID:	Rancho Resort Patio						Conventional Chemistry Parameters by APHA/EPA Methods			
Chloride	RE1	4,300	A2, J	100	"	B0B0028	02/05/10	02/05/10	300.0/SOP 530	
Nitrate as N		8.4	A2, J	1	"	B0B0018	02/03/10	02/03/10	300.0/SOP 530	
Sulfate	RE1	28,000	A2, J	500	"	B0B0028	02/05/10	02/05/10	300.0/SOP 530	



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Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B0B0014 - 3050B Sld Acid Dig - Metals by 6010

Prepared: 02/03/10 Analyzed: 02/04/10
Metals by EPA 6000/7000 Series Methods - Quality Control

Blank (B0B0014-BLK1)

Aluminum	ND	U		100 mg/kg wet						
Antimony	ND	U		2 "						
Arsenic	ND	U		2 "						
Barium	ND	U		5 "						
Beryllium	ND	U		0.1 "						
Cadmium	ND	U		0.5 "						
Calcium	ND	U		100 "						
Chromium	ND	U		1 "						
Cobalt	ND	U		2 "						
Copper	ND	U		4 "						
Iron	ND	U		100 "						
Lead	ND	U		3 "						
Magnesium	ND	U		50 "						
Manganese	ND	U		5 "						
Molybdenum	ND	U		5 "						
Nickel	ND	U		5 "						
Potassium	ND	U		500 "						
Selenium	ND	U		2 "						
Silver	ND	U		1 "						
Sodium	ND	U		50 "						
Thallium	ND	U		5 "						
Vanadium	ND	U		2 "						
Zinc	ND	U		8 "						

Matrix Spike (B0B0014-MS1)

Source: 1001038-05

Aluminum	4,080	Q10		120 mg/kg dry	461	3,390	151	75-125		20
Antimony	46.9			2.3 "	115	ND	41	75-125		20
Arsenic	419			2.3 "	461	2.97	90	75-125		20
Barium	486			5.8 "	461	91.2	86	75-125		20
Beryllium	10.1			0.12 "	11.5	0.419	84	75-125		20
Cadmium	9.32			0.58 "	11.5	ND	81	75-125		20
Calcium	31,100	Q10		120 "	2300	30,800	14	75-125		20
Chromium	45.1			1.2 "	46.1	7.29	82	75-125		20
Cobalt	95.2			2.3 "	115	2.96	80	75-125		20
Copper	311			4.7 "	57.6	249	108	75-125		20
Iron	12,400	Q10		120 "	230	12,600	NR	75-125		20
Lead	109			3.5 "	115	15.5	81	75-125		20
Magnesium	6,840			58 "	2300	4,950	82	75-125		20
Manganese	535			5.8 "	115	435	87	75-125		20
Molybdenum	331			5.8 "	115	249	71	75-125		20
Nickel	91.4			5.8 "	115	ND	79	75-125		20



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Project Manager: Colleen McKaughan Project Number: R10A01 Project: ASARCO Tailings Dam #8	Office of the Director, Air Division 75 Hawthorne Street San Francisco CA, 94105	SDG: 10029C Reported: 02/12/10 12:43
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Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B0B0014 - 3050B Sld Acid Dig - Metals by 6010

Prepared: 02/03/10 Analyzed: 02/04/10

Metals by EPA 6000/7000 Series Methods - Quality Control

Matrix Spike (B0B0014-MS1)

Source: 1001038-05

Potassium	3,170		580	"	2300	1,230	84	75-125		20
Selenium	347		2.3	"	461	ND	75	75-125		20
Silver	10.4		1.2	"	11.5	0.629	84	75-125		20
Sodium	2,180		58	"	2300	147	88	75-125		20
Thallium	350		5.8	"	461	ND	76	75-125		20
Vanadium	114		2.3	"	115	6.5	93	75-125		20
Zinc	170		9.3	"	115	72.4	84	75-125		20

Matrix Spike Dup (B0B0014-MSD1)

Source: 1001038-05

Aluminum	3,940	Q10	120	mg/kg dry	452	3,390	122	75-125	4	20
Antimony	44.3		2.3	"	113	ND	39	75-125	6	20
Arsenic	407		2.3	"	452	2.97	89	75-125	3	20
Barium	476		5.8	"	452	91.2	85	75-125	2	20
Beryllium	9.83		0.12	"	11.3	0.419	83	75-125	3	20
Cadmium	9.15		0.58	"	11.3	ND	81	75-125	2	20
Calcium	28,600	Q10	120	"	2260	30,800	NR	75-125	8	20
Chromium	44.6		1.2	"	45.2	7.29	83	75-125	1	20
Cobalt	92.9		2.3	"	113	2.96	80	75-125	2	20
Copper	295		4.7	"	56.4	249	81	75-125	5	20
Iron	12,300	Q10	120	"	226	12,600	NR	75-125	1	20
Lead	108		3.5	"	113	15.5	82	75-125	1	20
Magnesium	6,930		58	"	2260	4,950	88	75-125	1	20
Manganese	528		5.8	"	113	435	82	75-125	1	20
Molybdenum	326		5.8	"	113	249	68	75-125	1	20
Nickel	90		5.8	"	113	ND	80	75-125	2	20
Potassium	3,090		580	"	2260	1,230	83	75-125	2	20
Selenium	337		2.3	"	452	ND	75	75-125	3	20
Silver	10.2		1.2	"	11.3	0.629	85	75-125	2	20
Sodium	2,130		58	"	2260	147	88	75-125	3	20
Thallium	342		5.8	"	452	ND	76	75-125	2	20
Vanadium	111		2.3	"	113	6.5	93	75-125	2	20
Zinc	159		9.3	"	113	72.4	76	75-125	7	20

Reference (B0B0014-SRM1)

Aluminum	303		100	mg/kg wet	309		98	62.49-137		
Antimony	190		2	"	213		89	60.75-140		
Arsenic	920		2	"	930		99	65.98-134		
Barium	4.89	C1, J	5	"	5.30		92	47.17-153		
Beryllium	16.5		0.1	"	18.8		88	81.38-118		
Cadmium	34		0.5	"	41.6		82	77.16-123		
Calcium	184,000		500	"	184000		100	77.68-122		
Chromium	86		1	"	96.5		89	80.06-119		



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Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch B0B0014 - 3050B Sld Acid Dig - Metals by 6010

Prepared: 02/03/10 Analyzed: 02/04/10

Metals by EPA 6000/7000 Series Methods - Quality Control

Reference (B0B0014-SRM1)

Cobalt	126			2 "	140		90	82.42-118		
Copper	5,890			20 "	6680		88	85.73-114		
Iron	19,600			100 "	21000		93	80.14-120		
Lead	186			3 "	224		83	74.82-125		
Magnesium	103,000			250 "	113000		91	86.28-114		
Manganese	184			5 "	201		92	83.53-117		
Nickel	47.4			5 "	56.8		83	76.58-123		
Potassium	ND	U		500 "	102			0-370		
Selenium	47.5			2 "	37.0		128	47.57-152		
Silver	24			1 "	20.9		115	63.16-136		
Sodium	36.6	C1, J		50 "	92.8		39	0-299		
Thallium	26.5			5 "	38.1		69	64.57-135		
Vanadium	65.5			2 "	65.8		99	80.55-119		
Zinc	153			8 "	175		87	72.97-127		

Batch B0B0018 - -Water Extract Inorg - Anions

Prepared & Analyzed: 02/03/10

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Blank (B0B0018-BLK1)

Chloride	ND			10 mg/kg wet						
Nitrate as N	ND			1 "						
Sulfate	ND			5 "						

LCS (B0B0018-BS1)

Chloride	98.8			10 mg/kg wet	101		98	90-110		200
Nitrate as N	50.4			1 "	50.1		101	90-110		200
Sulfate	103			5 "	101		101	90-110		200

Matrix Spike (B0B0018-MS1)

Source: 1001038-06

Chloride	112			11 mg/kg dry	107	ND	105	80-120		20
Nitrate as N	56.3			1.1 "	52.9	1.31	104	80-120		20
Sulfate	124			5.3 "	107	5.41	111	80-120		20

Matrix Spike Dup (B0B0018-MSD1)

Source: 1001038-06

Chloride	111			11 mg/kg dry	108	ND	103	80-120	0.8	20
Nitrate as N	55.8			1.1 "	53.3	1.31	102	80-120	0.9	20
Sulfate	120			5.3 "	108	5.41	106	80-120	4	20

Batch B0B0019 - Solids, Dry Weight (Prep) - Solids, Dry Weight

Prepared: 02/03/10 Analyzed: 02/04/10

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Blank (B0B0019-BLK1)

% Solids	ND			1 %						
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Duplicate (B0B0019-DUP1)

Source: 1001038-04

% Solids	83			1 %		83			0	20
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Batch B0B0028 - -Water Extract Inorg - Anions

Prepared & Analyzed: 02/05/10

1001038 FINAL 02 12 10 1243



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Project Manager: Colleen McKaughan	Office of the Director, Air Division	SDG: 10029C
Project Number: R10A01	75 Hawthorne Street	Reported: 02/12/10 12:43
Project: ASARCO Tailings Dam #8	San Francisco CA, 94105	

Quality Control

Analyte	Result	Qualifiers / Comments	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control										
Blank (B0B0028-BLK1)										
Chloride	ND			10 mg/kg wet						
Nitrate as N	ND			1 "						
Sulfate	ND			5 "						
LCS (B0B0028-BS1)										
Chloride	98.7			10 mg/kg wet	100		99	90-110		200
Nitrate as N	49.6			1 "	49.6		100	90-110		200
Sulfate	104			5 "	100		103	90-110		200



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Project Manager: Colleen McKaughan

Project Number: R10A01

Project: ASARCO Tailings Dam #8

Office of the Director, Air Division

75 Hawthorne Street

San Francisco CA, 94105

SDG: 10029C

Reported: 02/12/10 12:43

Qualifiers and Comments

Q4 The matrix spike and/or matrix spike duplicate associated with this sample did not meet recovery criteria for this analyte (see MS/MSD results for this batch in QC summary)

Q10 The analyte concentration in the unfortified sample is significantly greater than the concentration spiked into the matrix spike and matrix spike duplicate. The reported spike recovery is not a meaningful measure of the dataset's analytical accuracy.

J The reported result for this analyte should be considered an estimated value.

C1 The reported concentration for this analyte is below the quantitation limit.

A2 The sample was received above the recommended temperature range.

U Not Detected

NR Not Reported

RE1, RE2, etc: Result is from a sample re-analysis.