1112206 - R8 SDMS

ASARCO

Linda Jacobson (3 Copies)
RCRA Project Manager
US EPA Region VIII
8ENF-T
1595 Wynkoop Street
Denver, Colorado 80202-1129

November 10, 2008

SENT BY CERTIFIED MAIL
RETURN RECEIPT REQUESTED

CONSENT DECREE
CIVIL ACTION NO. CV 98-3-H-CCL
EAST HELENA SITE
WORK PERFORMED IN OCTOBER 2008
PROGRESS REPORT #118

Dear Ms. Jacobson:

On May 5, 1998, Asarco and the United States Environmental Protection Agency (EPA) entered into a Consent Decree (Decree) to further the objectives of the Resource Conservation and Recovery Act (RCRA) and the Clean Water Act (CWA). Section XI of the Decree (Reporting: Corrective Action) requires Asarco to submit certified monthly progress reports to EPA which discuss the actions taken by Asarco in achieving compliance with the Decree. The reports are to be submitted to EPA no later than the twentieth (20th) day of the following month. The following describes only those activities that have occurred or are related to projects performed during October 2008 and early November 2008. The historical actions taken by Asarco in achieving compliance with the Decree are contained in previous monthly progress reports.

a. Describe the actions, progress, and status of projects which have been undertaken pursuant to Part VII of the Decree;

The RCRA Consent Decree annual public meeting took place on October 29, 2008 at 7:00 pm at the East Helena Volunteer Firehall. In accordance with Section IX of the Decree (Community Relations at East Helena), notices that announced the annual public meeting were published on October 19, 2008 and October 26, 2008 in the Sunday editions of the Helena Independent Record. The affidavit of publication is attached to this monthly progress report. An October 26, 2008 Independent Record newspaper article further publicized the October 29, 2008 public meeting. Asarco mailed more than 150 letters, announcing the public meeting, to interested parties. During the meeting, the Montana Department of Environmental Quality presented an update on 2008 cleaning and demolition project being conducted at the East Helena Plant.

On November 3, 2008, Asarco submitted to EPA by electronic mail a draft Risk Assessment outline.

Interim Measures

On September 23, 2008, Asarco submitted to EPA Arcadis's Phase 1 Historic Recordation Report and electronic scanned copies of the engineering designs in support of the East Helena Smelter Historic Recordation Phase 1 project. EPA hand delivered a copy of the report directly to the Montana Historic Society State Preservation Officer Review and Compliance Officer. On September 30, 2008, four additional copies of the Report, CRIS forms, and archival photographs were submitted by federal express to EPA. Per EPA's request, Asarco submitted on October 6, 2008 revised CRIS Forms and archival photographs with hand-written notations on each directly to the Montana Historic Society State Preservation Officer Review and Compliance Officer.

During October 2008, IRS Environmental completed the pre-cleaning tasks and URS/Cleveland Wrecking Company (URS/CWC) completed the cleaning and demolition set forth in the cleaning and demolition schedule. The major waste hauling from the acid plant, baghouse, and blast furnace and Monier flue systems to the CAMU Phase 2 cell was completed on October 27, 2008. On October 6 and 8, 2008, Asarco submitted to EPA the latest 2008 cleaning and demolition project schedule.

On October 23, 2008, grouting of the underground utility lines commenced with the sealing of the sanitary sewer lines. Household bleach was added to the water used to flush the sanitary sewer lines prior to grouting. The bleach and water were collected and routed to Asarco's on-site water treatment facility. A short section of the sanitary sewer line was initially sealed by pumping (without pressure) the grout into an open manhole. This action was preformed to determine if the grout mix could be introduced without pressure and still achieve the prescribed sealing objectives. Once confirmation was obtained by observing a steady flow of grout exiting a down-stream manhole, the pumping of the grout continued and the remaining sections were filled using this procedure. This process continued until the projected 640 linear feet of the sanitary sewer (12" pipes) was grouted. In addition, Asarco elected to grout an additional 460 linear feet of sanitary sewer pipeline that began near the concentrate storage and handling building and terminated at the dross plant slurry wall area. Approximately 40 yd^3 of grout were used to seal the entire sanitary sewer lines. The volume of grout necessary to fill the underground pipe section was calculated to be 32 yd^3, with the remaining 8 yd^3 used to fill the manholes.

On October 28, 2008, the prescribed Wilson Irrigation Ditch pipe was grouted using the same technique as previously described for the sanitary sewer lines, with the exception of adding bleach to the flush water. Since the pipe diameter varies, the exact grout volume necessary to fill the Wilson Irrigation Ditch pipe

could not be precisely determined. The 130 yd^3 of grout used to fill the Wilson Irrigation Ditch pipe approximates the estimated volume.

On October 31, 2008, the grouting of the underground utility lines in the acid plant area commenced. An unanticipated blockage in the Upper Lake acid plant water piping prevented the grout from filling the entire pipe. Several large pits have been excavated to gain access to the pipeline where potential valves or other obstruction may exist. Once the blockage is located and removed, the grouting process will resume. As of November 4, 2008, approximately 17 yd^3 of grout was pumped into the Upper Lake acid plant water pipes.

On October 30, 2008, EPA conducted a compliance evaluation inspection (CEI) of the cleaning and demolition activities. The inspection revealed no observed violations.

Corrective Action Management Unit (CAMU)

During October 2008, URS continued with the placement of cleaning and demolition material in the CAMU Phase 2 Cell. The entire footprint of the CAMU Phase 2 cell has been covered with waste, which was placed and shaped to allow positive drainage of storm water from the yet-to-be installed interim cap. On October 10, 2008, Asarco provided EPA with the most recent drawing of the proposed waste placement and drainage plan for the CAMU Phase 2 cell, as prepared by Hydrometrics. On November 4, 2008, Asarco provided EPA by electronic mail a revised CAMU Phase 2 cell interim cap drainage plan. A copy of the revised plan is attached to this monthly progress report.

On October 21, 2008, Fusion Technologies mobilized to install the leak detection and leachate collection riser extensions on the CAMU Phase 2 cell. However, faulty wire in the fusion machine postponed the riser installation until October 25, 2008. Hydrometrics personnel continue to photograph, record truck contents, and weigh every truck hauling waste to the CAMU Phase 2 cell. Hydrometrics personnel also sample the contents of the haul trucks at a frequency of 1 sample per 20 truckloads.

In response to an October 3, 2008 EPA letter, Asarco has 1) pumped down the CAMU phase 2 cell leak detection sump and recorded the volume of water removed each week, 2) recorded the on-site pH and SC and post pumping inflow after each instances in which the CAMU Phase 2 leak detection sump has been dewatered, 3) completed steps 1 and 2 above on a daily basis to determine if the loading in the east corner of the CAMU Phase 2 cell results in increased flow into the leak detection sump or change in water quality, and 4) obtained water quality samples from the CAMU Phase 1 cell leachate collection and leak detection systems. The completion of the first three tasks is described in an attachment to this monthly progress report. If necessary, these tasks will continue into November.

On October 2, 2008 and October 10, 2008, water quality samples were collected from the CAMU Phase 1 cell leachate collection and leak detection systems, respectively. The analytical laboratory reports for these sampling events are attached to this monthly progress report.

Weekly construction progress meetings are being conducted each Wednesday morning. All participants are encouraged to attend or connect to the meeting through a telephone conference bridge. EPA is being provided summary minutes of each weekly meeting as well as daily and weekly CAMU construction reports.

RI/FS Long-Term Monitoring Program

On October 1, 2008, Asarco submitted to EPA the updated groundwater monitoring well summary in Excel spreadsheet format.

During October 2008, Hydrometrics personnel initiated the Fall long-term monitoring program. Surface water sampling was conducted on October 24, 2008. A total of six surface water stations were monitored and two QA/QC samples were collected. Water levels were collected from 135 monitoring sites on October 27, 2008. Groundwater monitoring well sampling began on October 28, 2008. As of October 31, 2008, a total of 30 groundwater samples were collected from the monitoring wells. The samples were submitted to Energy Laboratories in Helena, Montana for analyses of parameters outlined in Table A or Table C (CAMU wells) of the Updated Monitoring Program (February 2008). In addition to the 30 groundwater monitoring well samples, 9 QA/QC samples were submitted to the lab for quality control purposes (3 duplicates, 3 DI blanks, and 3 rinsate blanks).

The Fall long-term monitoring program will continue through most of November 2008. Hydrometrics anticipates completing the monitoring program near November 21, 2008. This time frame could change to accommodate weather conditions and/or conflicts with demolition.

On October 13, 2008, Asarco conducted the monthly sampling of select residential groundwater wells, as prescribed in RI/FS Long-Term Monitoring Program (February 2008). At the request of Scott Brown (Montana Office of EPA), residential well samples were collected from Sam Woods Property located at 1193 and 1195/1197 East Clark Street. The laboratory analytical reports for the October 2008 sampling event have not been received from Energy Laboratories. Copies of the September 2008 residential well notification letters along with the respective laboratory analytical reports have been attached to this monthly progress report.

A summary of the correspondence transmitted as part of the East Helena Consent Decree in October 2008 is included in Attachment 1.

b. Identify any requirements under the Part VII of the Decree that were not completed in a timely manner, and problems or anticipated problem areas affecting compliance with the Decree;

The flow filling of the sanitary sewer lines and Wilson Irrigation Ditch pipe was preformed by pumping the grout material through each system. The use of pressure was not necessary to ensure a proper seal nor required to achieve a steady flow of grout exiting the pipe outlets. There were no other requirements that were not completed in a timely manner nor were there problems or anticipated problem areas that may affect compliance with the Decree.

c. Describe projects completed during the prior month, as well as activities scheduled for the next month;

In accordance with the 1) 2006 Interim Measures Work Plan Addendum, Final Cleaning, Soil Sampling, Backfilling, and Interim Cap Work Plan and 2) 2006 Interim Measures Work Plan Addendum, Former Acid Plant Sediment Drying Area Slurry Wall, Monitoring, Operation, and Maintenance Work Plan, four areas in which interim caps have been installed are being inspected on a monthly basis with the most recent inspections occurring on October 9, 2008.

CAMU Landfill - In accordance with the July 2000 CAMU Design Analysis Report (Operation and Maintenance Plan), the CAMU is being inspected monthly with the last inspection occurring on October 3, 2008. This monthly inspection documented that the CAMU Phase 1 cell is operating as designed.

During November 2008, URS/Cleveland Wrecking Company is scheduled to conclude the activities set forth in the approved schedule. Northwest Lining is scheduled to mobilize the first week of November 2008 to begin installing the temporary liner in the demolition footprint and interim cap on the CAMU Phase 2 cell. Hydrometrics anticipates completing the fall monitoring program near November 21, 2008.

d. Describe and estimate the percentage of studies completed;

The Pump and Treat Pilot Scale Testing for Source Area Reduction of Groundwater Contamination is approximately 100% complete.

The jar testing (Phase I) of the East Helena PRB Materials Testing Program is 100% complete.

The slurry wall construction in the former acid plant sediment drying area is 100% complete. On July 24, 2008, Asarco submitted to EPA the Addendum to Interim Measures Work Plan, Former Acid Plan Sediment Drying Wall, Monitoring, Operations, and Maintenance Report, Asarco East Helena Facility.

The interim capping project for the former acid plant sediment drying area, dross area, sinter plant area, gas cleaning section of the acid plant, and thaw house is 100% complete.

The revised January 2008 CAMU Phase 2 Cell Design Analyses is 100% complete, the CAMU Phase 2 Cell financial assurance is fully funded, and construction/waste placement of the CAMU Phase 2 cell is approximately 30% complete.

The slurry wall construction in the former speiss-dross plant area is 100% complete. On September 18, 2008, Asarco submitted to EPA the Addendum to Interim Measures Work Plan, Speiss-Dross Area Slurry Wall, Monitoring, Operations, and Maintenance Report, Asarco East Helena Facility.

e. Describe and summarize all findings to date;

The details of past findings through September 2008 are described and summarized in previous monthly progress reports.

f. Describe actions being taken to address problems;

There were no other actions required to address problems associated with the Decree.

g. Identify changes in key personnel during the period;

Asarco continues to use the services of Asarco technical personnel and Hydrometrics Incorporated to perform the various activities required under the Consent Decree.

h. Include copies of the results of sampling and tests conducted and other data generated pursuant to work performed under Part VII of the Decree since the last Progress Report. Asarco may submit data that has been validated and confirmed by Asarco to supplement any prior submitted data. Updated validated and confirmed data shall be included with the RFI Report, if not delivered before;

Two validation packages entitled "*Validation Summary, Asarco East Helena Interim Measures, Post RI/FS Long-Term Monitoring Project, Slurry Wall Sample Event, Inorganic Analyses, August 2008*" and "*Validation Summary, Asarco East Helena Post RI/FS Long-Term Monitoring Program, East Helena Residential Groundwater, Inorganic Analyses, September 2008 Sample Event*" are attached to this monthly progress report.

i. Describe the status of financial assurance mechanisms, including whether any changes have occurred, or are expected to occur which might affect them, and the status of efforts to bring such mechanisms back into compliance with the requirements of this Decree.

ASARCO filed a voluntary petition for relief under chapter 11 of Title 11 of the United States Bankruptcy Code in the Southern District of Texas on August 9, 2005. ASARCO hopes to use its chapter 11 bankruptcy proceeding to improve its financial position to the point where it can successfully reorganize and emerge from bankruptcy. ASARCO further hopes that at that time it will be in a position to make the required financial assurance demonstration. Asarco has established the necessary CAMU Phase 2 Cell financial assurance and has provided EPA with the complete executed original of the CAMU Trust Fund Agreement.

Sincerely,

Jon Nickel

CERTIFICATION
PURSUANT TO U.S. v ASARCO INCORPORATED
(CV-98-3-H-CCL, USDC, D. Montana)

I certify under penalty of law that this document, October 2008 Progress Report and all attachments, were prepared under my direct supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Signature _____
Name: Thomas L. Aldrich
Title: Vice President Environmental Affairs
Date: November 7, 2008

CONSENT DECREE
EAST HELENA SITE
OCTOBER 2008 PROGRESS REPORT
SUMMARY OF CORRESPONDENCE
ATTACHMENT 1

DATE OF TRANSMITTAL	CORRESPONDENCE SENT FROM	CORRESPONDENCE SENT TO	SUBJECT	RESPONSE
Attached to This Monthly Progress Report	Jon Nickel	Linda Jacobson	Affidavit of Publication for October 29, 2008 Public Meeting	No Formal Response Required
October 1, 2008	Jon Nickel	Linda Jacobson	Updated Groundwater Monitoring Well Summary	No Formal Response Required
October 6, 2008	Jon Nickel	Josef Warhank	Revised CRIS Forms and Archival Photographs with Hand-Written Notations	Awaiting EPA Approval
October 6 and 8, 2008	Jon Nickel	Linda Jacobson	Revised 2008 Cleaning and Demolition Project Schedule	No Formal Response Required
October 10, 2008 and November 4, 2008	Jon Nickel	Linda Jacobson	Proposed Waste Placement and Drainage plan for the CAMU Phase 2 cell	No Formal Response Required
November 3, 2008	Jon Nickel	Linda Jacobson	Asarco's Draft Risk Assessment Outline	Awaiting EPA Schedule for Review and Comment
Throughout October 2008	Jon Nickel and Mark Rhodes	Linda Jacobson	CAMU Phase 2 Cell - Daily and Weekly Progress Reports	No Formal Response Required

Attached to This Monthly Progress Report	Jon Nickel	Linda Jacobson	Validation Summary, Asarco East Helena Interim Measures, Post RI/FS Long-Term Monitoring Project, Slurry Wall Sample Event, Inorganic Analyses, August 2008	No Formal Response Required
Attached to This Monthly Progress Report	Jon Nickel	Linda Jacobson	Validation Summary, Asarco East Helena Post RI/FS Long-Term Monitoring Program, East Helena Residential Groundwater, Inorganic Analyses, September 2008 Sample Event	No Formal Response Required

October 2008 RCRA Consent Decree Progress Report

Affidavit of Publication

Notices

Legal Notices

PUBLIC NOTICE

A public meeting will be held Wednesday, October 29, 2008 at 7:00 pm at the City of East Helena Volunteer Firehall located on 4 East Pacific Street in East Helena. During the meeting, ASARCO representatives will provide the public with an update regarding the process of implementing the East Helena Consent Decree, CV 98-3-H-CCL. The public will be provided with an update on the most recent monitoring results, the remedial actions that are taking place, and a schedule for future activities. United States Environmental Protection Agency (EPA) representatives will participate in the discussions. The Montana Department of Environmental Quality will also provide a presentation on the work that Asarco has completed this year in cleaning and demolition within the East Helena Plant. There will be an opportunity for the public to ask questions. Asarco, EPA, and the Montana Department of Environmental Quality encourage all East Helena residents to attend this informative meeting.

October 19, 26, 2008

AFFIDAVIT OF PUBLICATION
STATE OF MONTANA,

County of Lewis & Clark,

Jessica Burton

Being duly sworn, deposes and says:

That she is the principal clerk of the Independent Record a newspaper of general circulation published daily in the City of Helena, in the County of Lewis & Clark, State of Montana, and has charge of the advertisement thereof:

That the Public Notice Public Meeting ASARCO

a true copy of which is hereto annexed, was published in said newspaper on the following dates: viz.:

October 19, 26, 2008

making in all 2 publication(s).

Jessica Burton

Subscribed and sworn to before me this 27 day of October, 2008.

Rose Marie Farr

NOTARY PUBLIC for the State of Montana
Printed Name: Rose Marie Farr
Residing at Helena, Montana
My commission expires 8-15-2010

(NOTARIAL SEAL)

October 2008 RCRA Consent Decree Progress Report

CAMU Phase 2 Cell -
Leachate Collection and Leak Detection Analysis

CAMU Phase 2 Cell -
Leachate Collection and Leak Detection Analysis

Hydrometrics personnel continued to pump the leak detection and leachate collection sumps at the CAMU Phase 2 cell. As of October 31, 2008 approximately 4,795 gallons of water has been pumped from the leachate collection sump and 319 gallons has been pumped from the leak detection sump. The leachate collection sump continues to collect water. No flow has been recorded in the leak detection sump since October 7, 2008. The volumes and flow rates for the leachate collection and leak detection sumps are illustrated in Tables 1 and 2, respectively.

TABLE 1- LEACHATE COLLECTION SUMP

LEACHATE COLLECTION SUMP			
Date	Volume (Gallons)	Field Parameters (If Measured)	Flow Rate
9/2/2008	340		
9/3/2008	220		
9/4/2008	150		
9/5/2008	130		
9/8/2008	120		
9/9/2008	400		
9/10/2008	285		
9/11/2008	200		
9/12/2008	200		
9/15/2008	420		
9/16/2008	350		
9/24/2008	325		
9/25/2008	430		
9/26/2008	175		
9/29/2008	175		
9/30/2008	150		
10/1/2008	150		1 Liter in 45 sec.
10/7/2008	100		1 Liter in 60 sec.
10/9/2008	100	Temp-12.9 C^0, D.O.-6.17 mg/L, pH-7.50, SC-1273 □S/cm	1 Liter in 35 sec.
10/14/2008	100		1 Liter in 60 sec.
10/15/2008	70		0.5 Liter in 60 sec.
10/16/2008	75		0.25 Liter in 60 sec.
10/17/2008	70	Temp-9.64 C^0, D.O.-6.17 mg/L, pH-7.25, SC-1352 □S/cm	0.25 Liter in 60 sec.
10/20/2008	60		0.25 Liter in 60 sec.
Total Volume	4795		

TABLE 2 – LEAK DETECTION SUMP

LEAK DETECTION SUMP		
Date	Volume (Gallons)	Flow Rate
9/24/2008	34	
9/25/2008	94	
9/26/2008	60	
9/29/2008	65	
9/30/2008	34	
10/1/2008	17	Slow drip, not measurable
10/7/2008	15	None
10/9/2008	Dry	None
10/14/2008	Dry	None
10/15/2008	Dry	None
10/16/2008	Dry	None
10/17/2008	Dry	None
10/20/2008	Dry	None
Total Volume	319	

October 2008 RCRA Consent Decree Progress Report

Demolition Footprint Exposed Area
Soil Sampling Locations

Demolition Footprint Exposed Area
Soil Sampling Locations

On October 23, 2008, Hydrometrics initiated the demolition footprint exposed areas soil sampling procedure. The exposed area soil sampling was conducted from October 23, 2008 to October 28, 2008 at the 17 locations illustrated on the attached map. As part of the final demolition plan and prior to soil sampling, at least three feet of sub-surface soil was removed from all exposed soil sampling areas. All surface samples (0"-4") were composited from five exposed soil sample areas. The following discussion further describes the sampling location and intervals.

Thursday, October 23, 2008

Exposed soil samples were collected from the three Monier Flue sample locations MOF1, MOF2, and MOF3. Exposed soil samples were collected from three of the five blast furnace baghouse locations BFB1, BFB2, and BFB3. All samples were collected at the specified sampling interval 0-4", 4-12", 1-2', 2-4', 4-6', 6-8', 8-10', 10-12', and 12-15' (from 0-15') at all six sample areas.

Friday, October 24, 2008

Exposed soil samples were collected from the remaining two baghouse locations BFB4 and BFB5. All samples were collected at the specified sampling interval 0-4", 4-12", 1-2', 2-4', 4-6', 6-8', 8-10', 10-12', and 12-15' (from 0-15') for both sample areas.

Monday, October 27, 2008

Exposed soil samples were collected from the two acid plant sample locations ACP1 and ACP2. Exposed soil samples were collected from two of the seven blast furnace flue sample locations BLF1 and BLF2. All samples were collected at the specified sampling interval 0-4", 4-12", 1-2', 2-4', 4-6', 6-8', 8-10', 10-12', and 12-15' (from 0-15') for all four sample areas. The location of ACP2 was adjusted from within the 200' Acid plant stack footprint to an exposed soils area just southeast.

Tuesday, October 28, 2008

Exposed soil samples were collected from the remaining five blast furnace flue sample locations BLF3, BLF4, BLF5, BLF6, and BLF7 at the proper sampling interval to the following depths:

- BLF3-0-6' Groundwater was encountered at 4'. The excavation hole was staying open to 4'. Soil samples were collected from 4-6'. Samples below this interval were not collected since the hole was caving and would not be considered representative.

- BLF4-0-4' Groundwater was encountered at 2'. The excavation hole was staying open to 2'. Soil samples were collected from 2-4'. Samples below this interval were not collected since the hole was caving and would not be considered representative.

- BLF5-0-10' Groundwater was encountered at 6'. The excavation hole was staying open to 8'. Soil samples were collected from 8-10'. Samples below this interval were not collected since the hole was caving and would not be considered representative.

- BLF6-0-6' Groundwater was encountered at 2.5'. The excavation hole was staying open to 4'. Soil samples were collected from 4-6'. Samples below this interval were not collected since the hole was caving and would not be considered representative.

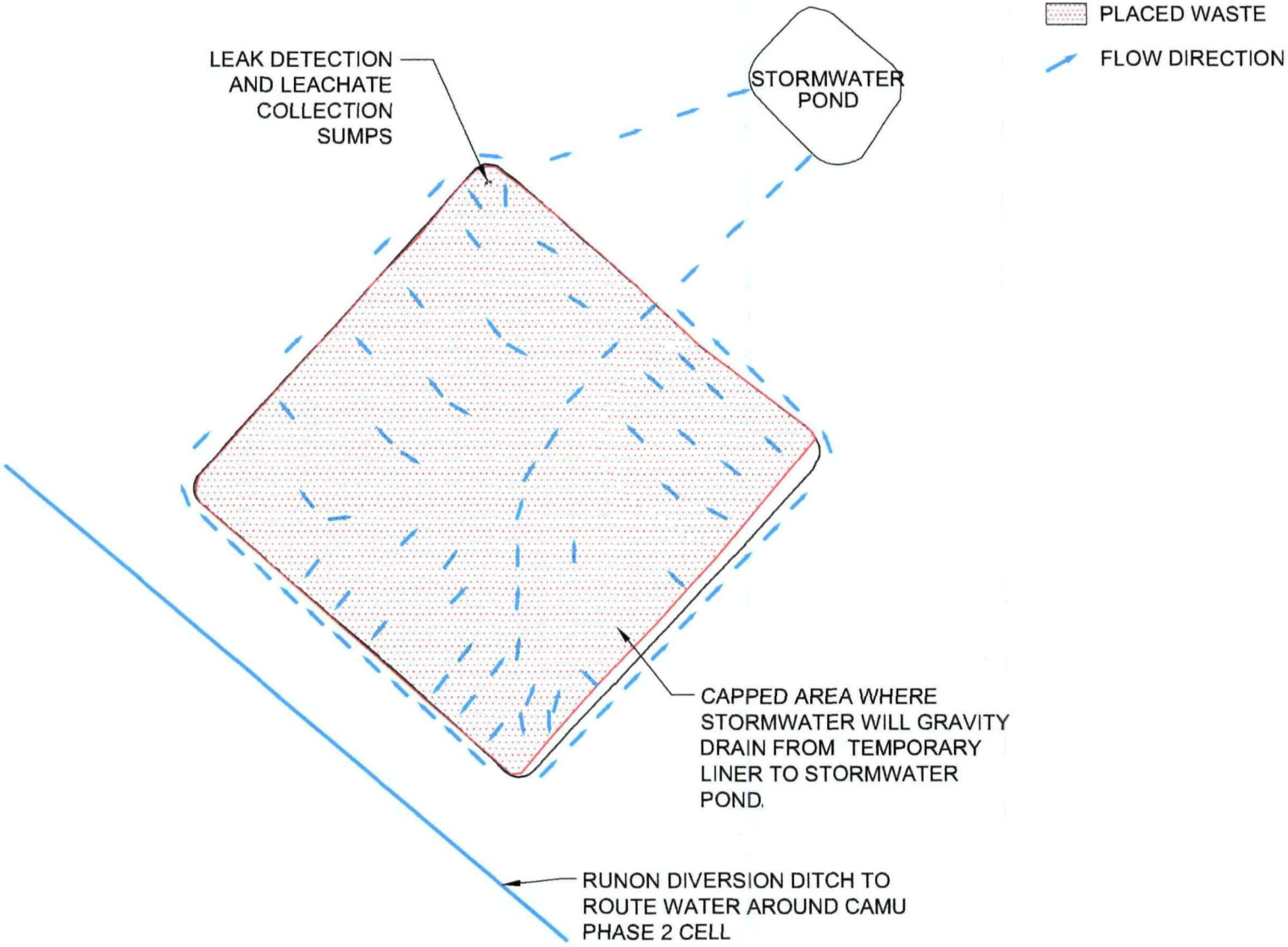
- BLF7-0-15' All samples were collected from this sample location.

Asarco East Helena
Demolition Footprint Exposed Area
October 2008 Soil Sampling Locations

K:\PROJECT\7054\TestPitGIS\TP_GPS_Survey.mxd

October 2008 RCRA Consent Decree Progress Report

CAMU Phase 2 Cell Interim Cap Drainage Plan



ASARCO LLC. - EAST HELENA PLANT CAMU PHASE 2 CELL	CAMU TEMPORARY CAP DRAINAGE PLAN	FIGURE 1

UPDATE TIME: 4:25 PM
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Hydrometrics, Inc.

October 2008 RCRA Consent Decree Progress Report

CAMU Phase 1 Cell Leachate Collection and Leak Detection Laboratory Analytical Report

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: CAMU Phase I Cell
Lab ID: H08100068-001
Client Sample ID: Leachate Collection

Report Date: 10/20/08
Collection Date: 10/02/08 12:30
DateReceived: 10/06/08
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Conductivity	6520	umhos/cm		1		A2510 B	10/07/08 16:45 / jlh
Solids, Total Dissolved TDS @ 180 C	4500	mg/L		10		A2540 C	10/06/08 14:37 / abb
INORGANICS							
Alkalinity, Total as CaCO3	670	mg/L		5		A2320 B	10/07/08 13:31 / kjw
Chloride	370	mg/L		1		E300.0	10/09/08 00:58 / abb
Sulfate	2000	mg/L		1		E300.0	10/09/08 00:58 / abb
METALS, DISSOLVED							
Aluminum	ND	mg/L		0.1		E200.7	10/08/08 13:12 / eli-b
Antimony	ND	mg/L		0.005		E200.8	10/11/08 13:20 / eli-b
Arsenic	8.26	mg/L	D	0.02		E200.7	10/08/08 13:12 / eli-b
Barium	ND	mg/L		0.1		E200.7	10/08/08 13:12 / eli-b
Beryllium	ND	mg/L		0.001		E200.7	10/08/08 13:12 / eli-b
Cadmium	0.042	mg/L		0.001		E200.7	10/08/08 13:12 / eli-b
Calcium	594	mg/L		5		E200.7	10/08/08 13:12 / eli-b
Chromium	0.002	mg/L		0.001		E200.8	10/13/08 23:41 / eli-b
Cobalt	0.05	mg/L		0.01		E200.7	10/08/08 13:12 / eli-b
Copper	0.018	mg/L		0.004		E200.8	10/11/08 13:20 / eli-b
Iron	0.41	mg/L		0.02		E200.7	10/08/08 13:12 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/11/08 13:20 / eli-b
Magnesium	133	mg/L		5		E200.7	10/08/08 13:12 / eli-b
Manganese	34.20	mg/L		0.02		E200.7	10/08/08 13:12 / eli-b
Mercury	ND	mg/L		0.006		E200.8	10/11/08 13:20 / eli-b
Nickel	0.07	mg/L		0.01		E200.7	10/08/08 13:12 / eli-b
Potassium	35	mg/L		5		E200.7	10/08/08 13:12 / eli-b
Selenium	0.168	mg/L		0.005		E200.8	10/11/08 13:20 / eli-b
Silver	ND	mg/L		0.005		E200.8	10/11/08 13:20 / eli-b
Sodium	630	mg/L		5		E200.7	10/08/08 13:12 / eli-b
Thallium	ND	mg/L		0.002		E200.8	10/11/08 13:20 / eli-b
Vanadium	ND	mg/L		0.01		E200.7	10/08/08 13:12 / eli-b
Zinc	0.10	mg/L		0.02		E200.7	10/08/08 13:12 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

FIELD PARAMETERS: ph 6.58 SU
CONDUCTIVITY 4410 umhos/cm
TEMP. 13.5°C
D.O. 15.88 mg/l

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: Leak Detection
Project: CAMU Phase 1 Cell
Matrix: Aqueous

Lab ID: H08100156-001
Collection Date: 10/10/08 09:00
DateReceived: 10/10/08
Report Date: 10/29/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Conductivity	3020	umhos/cm		1		A2510 B	10/14/08 14:21 / abb			COND_081014A	11	081014A-COND-PROBE W
Solids, Total Dissolved TDS @ 180 C	2450	mg/L		10		A2540 C	10/14/08 11:34 / kjw			SOLIDS_081014B	4	081014A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	500	mg/L		5		A2320 B	10/21/08 13:23 / abb			TITTR_081021A	6	081021A-ALK-W
Chloride	190	mg/L		1		E300.0	10/15/08 20:14 / abb			IC101-H_081015A	36	R49185
Sulfate	1100	mg/L		1		E300.0	10/15/08 20:14 / abb			IC101-H_081015A	36	R49185
METALS, DISSOLVED												
Aluminum	ND	mg/L		0.1		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Antimony	ND	mg/L		0.005		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Arsenic	0.057	mg/L		0.005		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Barium	ND	mg/L		0.1		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Beryllium	ND	mg/L		0.001		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Cadmium	0.001	mg/L		0.001		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Calcium	376	mg/L		5		E200.7	10/16/08 13:14 / eli-b			SUB-B119317	12	B_R119317
Chromium	0.002	mg/L		0.001		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Cobalt	ND	mg/L		0.01		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Copper	0.006	mg/L		0.004		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Iron	0.79	mg/L		0.02		E200.7	10/16/08 13:14 / eli-b			SUB-B119317	12	B_R119317
Lead	ND	mg/L		0.005		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Magnesium	95	mg/L		5		E200.7	10/16/08 13:14 / eli-b			SUB-B119317	12	B_R119317
Manganese	6.09	mg/L		0.02		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Mercury	ND	mg/L		0.006		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Nickel	0.02	mg/L		0.01		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Potassium	14	mg/L		5		E200.7	10/16/08 13:14 / eli-b			SUB-B119317	12	B_R119317
Selenium	0.197	mg/L		0.005		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Silver	ND	mg/L		0.005		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Sodium	276	mg/L		5		E200.7	10/16/08 13:14 / eli-b			SUB-B119317	12	B_R119317
Thallium	ND	mg/L		0.002		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Vanadium	ND	mg/L		0.01		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254
Zinc	ND	mg/L		0.02		E200.8	10/15/08 20:14 / eli-b			SUB-B119254	23	B_R119254

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

FIELD PARAMETERS: pH 6.62 SU
CONDUCTIVITY 26666 umhos/cm
TEMP 10.2°C D.O. 5.53 mg/l

ASARCO

October 29, 2008

David Jensen
P. O. Box 1021
401 Gail Street
East Helena, Montana 59635

Dear Mr. Jensen:

Enclosed are the analytical results for the water samples (both original and duplicate) that were collected from your ground water well on September 28, 2008. All the results are reported in milligrams per liter, unless otherwise noted. The physical parameters are reported in the units noted on the attached laboratory analytical report. "ND" indicates that the parameter was not detected at the reporting limit.

The water quality of your well is good with near neutral pH and low levels of total dissolved solids and metals. The tested water quality parameters of the well for the constituents sampled are better than the Montana Human Health Standards and Federal Maximum Concentration Limits (MCL)/Action Levels. These recent water quality results are consistent with previous monitoring data from your site and do not indicate significant changes from historical baseline data.

If you have any questions about the enclosed water quality results, please feel free to contact me at 227-4529.

Sincerely,

Jon Nickel

Enclosure

Cc: Tom Aldrich
Bob Miller

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0908-300
Project: RI/FS Long Term Monitoring Sept 2008
Matrix: Aqueous

Jensen Residents (Original)
401 Gail Street

Lab ID: H08090485-001
Collection Date: 09/28/08 08:30
DateReceived: 09/30/08
Report Date: 10/23/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.2	s.u.		0.1		A4500-H B	10/02/08 09:00 / kjw			PH_081002A	5	081002A-PH-W
Conductivity	779	umhos/cm		1		A2510 B	10/02/08 17:04 / jlh			COND_081002A	2	081002A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/30/08 14:18 / kjw			SOLIDS_080930A	3	080930A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	550	mg/L		10		A2540 C	09/30/08 14:12 / kjw			SOLIDS_080930B	23	080930A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	120	mg/L		1		A2320 B	10/01/08 11:35 / abb			TITTR_081001A	3	081001A-ALK-W
Bicarbonate as HCO3	150	mg/L		1		A2320 B	10/01/08 11:35 / abb			TITTR_081001A	3	081001A-ALK-W
Chloride	27	mg/L		1		E300.0	10/06/08 15:33 / abb			IC101-H_081006A	18	R48946
Sulfate	230	mg/L		1		E300.0	10/06/08 15:33 / abb			IC101-H_081006A	18	R48946
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728
Cadmium	ND	mg/L		0.001		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728
Calcium	102	mg/L		1		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Copper	ND	mg/L		0.004		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728
Iron	ND	mg/L		0.02		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Lead	ND	mg/L		0.005		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728
Magnesium	22	mg/L		1		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Manganese	ND	mg/L		0.02		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Potassium	6	mg/L		1		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Selenium	0.017	mg/L		0.005		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728
Sodium	25	mg/L		1		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Zinc	0.03	mg/L		0.02		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0908-301
Project: RI/FS Long Term Monitoring Sept 2008
Matrix: Aqueous

Jensen Residence (Duplicate)
401 Gail Street

Lab ID: H08090485-002
Collection Date: 09/28/08 08:40
DateReceived: 09/30/08
Report Date: 10/23/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.2	s.u.		0.1		A4500-H B	10/02/08 09:01 / kjw			PH_081002A	6	081002A-PH-W
Conductivity	784	umhos/cm		1		A2510 B	10/02/08 17:05 / jlh			COND_081002A	3	081002A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/30/08 14:18 / kjw			SOLIDS_080930A	4	080930A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	560	mg/L		10		A2540 C	09/30/08 14:13 / kjw			SOLIDS_080930B	24	080930A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	120	mg/L		1		A2320 B	10/01/08 11:56 / abb			TITTR_081001A	4	081001A-ALK-W
Bicarbonate as HCO3	150	mg/L		1		A2320 B	10/01/08 11:56 / abb			TITTR_081001A	4	081001A-ALK-W
Chloride	27	mg/L		1		E300.0	10/06/08 15:52 / abb			IC101-H_081006A	19	R48946
Sulfate	230	mg/L		1		E300.0	10/06/08 15:52 / abb			IC101-H_081006A	19	R48946
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	10/08/08 04:42 / eli-b			SUB-B118767	1	B_R118767
Cadmium	ND	mg/L		0.001		E200.8	10/08/08 04:42 / eli-b			SUB-B118767	1	B_R118767
Calcium	103	mg/L		1		E200.7	10/02/08 12:57 / eli-b			SUB-B118590	2	B_R118590
Copper	ND	mg/L		0.004		E200.8	10/08/08 04:42 / eli-b			SUB-B118767	1	B_R118767
Iron	ND	mg/L		0.02		E200.7	10/02/08 12:57 / eli-b			SUB-B118590	2	B_R118590
Lead	ND	mg/L		0.005		E200.8	10/08/08 04:42 / eli-b			SUB-B118767	1	B_R118767
Magnesium	21	mg/L		1		E200.7	10/02/08 12:57 / eli-b			SUB-B118590	2	B_R118590
Manganese	ND	mg/L		0.02		E200.7	10/02/08 12:57 / eli-b			SUB-B118590	2	B_R118590
Potassium	6	mg/L		1		E200.7	10/02/08 12:57 / eli-b			SUB-B118590	2	B_R118590
Selenium	0.018	mg/L		0.005		E200.8	10/08/08 04:42 / eli-b			SUB-B118767	1	B_R118767
Sodium	25	mg/L		1		E200.7	10/02/08 12:57 / eli-b			SUB-B118590	2	B_R118590
Zinc	ND	mg/L		0.02		E200.8	10/08/08 04:42 / eli-b			SUB-B118767	1	B_R118767

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

ASARCO

October 29, 2008

Mrs. Louise Nordstrom
P. O. Box 601
109 Gail Street
East Helena, Montana 59635

Dear Mrs. Nordstrom:

Enclosed are the analytical results for the irrigation water samples that were collected from your groundwater well on September 28, 2008. All the results are reported in milligrams per liter, unless otherwise noted. The physical parameters are reported in the units noted on the attached laboratory analytical report. "ND" indicates that the parameter was not detected at the reporting limit.

The water quality of your well is good with near neutral pH and low levels of total dissolved solids and metals. The tested water quality parameters of the well for the constituents sampled are better than all Montana Human Health Standards. These recent water quality results are consistent with previous monitoring data from your site and do not indicate significant changes from historical baseline data.

If you have any questions about the enclosed water quality results, please feel free to contact me at 227-4529.

Sincerely,

Jon Nickel

Enclosure
Cc: Bob Miller
Tom Aldrich

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0908-303
Project: RI/FS Long Term Monitoring Sept 2008
Matrix: Aqueous

Nordstrom Residence
109 Gail Street

Lab ID: H08090485-004
Collection Date: 09/28/08 09:40
DateReceived: 09/30/08
Report Date: 10/23/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.4	s.u.		0.1		A4500-H B	10/02/08 09:04 / kjw			PH_081002A	9	081002A-PH-W
Conductivity	319	umhos/cm		1		A2510 B	10/02/08 17:15 / jlh			COND_081002A	6	081002A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/30/08 14:19 / kjw			SOLIDS_080930A	6	080930A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	206	mg/L		10		A2540 C	09/30/08 14:14 / kjw			SOLIDS_080930B	26	080930A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	84	mg/L		1		A2320 B	10/01/08 12:42 / abb			TITTR_081001A	6	081001A-ALK-W
Bicarbonate as HCO3	100	mg/L		1		A2320 B	10/01/08 12:42 / abb			TITTR_081001A	6	081001A-ALK-W
Chloride	6	mg/L		1		E300.0	10/06/08 17:10 / abb			IC101-H_081006A	23	R48946
Sulfate	55	mg/L		1		E300.0	10/06/08 17:10 / abb			IC101-H_081006A	23	R48946
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767
Cadmium	ND	mg/L		0.001		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767
Calcium	35	mg/L		1		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Copper	ND	mg/L		0.004		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767
Iron	ND	mg/L		0.02		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Lead	ND	mg/L		0.005		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767
Magnesium	7	mg/L		1		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Manganese	ND	mg/L		0.02		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Potassium	3	mg/L		1		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Selenium	ND	mg/L		0.005		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767
Sodium	14	mg/L		1		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Zinc	ND	mg/L		0.02		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

ASARCO

October 29, 2008

Pat Foley
203 Gail Street
P. O. Box 1551
East Helena, Montana 59635

Dear Mr. Foley:

Enclosed are the analytical results for the water samples that were collected from the 203 Gail Street ground water well on September 28, 2008. All the results are reported in milligrams per liter, unless otherwise noted. The physical parameters are reported in the units noted on the attached laboratory analytical report. "ND" indicates that the parameter was not detected at the reporting limit.

The water quality of your well is good with near neutral pH and low levels of total dissolved solids and metals. The tested water quality parameters of the well for the constituents sampled are better than the Montana Human Health Standards and Federal Maximum Contaminant Level (MCL)/Action Levels. These recent water quality results are consistent with previous monitoring data from your site and do not indicate significant changes from historical baseline data.

If you have any questions about the enclosed water quality results, please feel free to contact me at 227-4529.

Sincerely,

Jon Nickel

Enclosure

Cc: Bob Miller
Tom Aldrich

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0908-302
Project: RI/FS Long Term Monitoring Sept 2008
Matrix: Aqueous

Foley Residence
203 Gail Street

Lab ID: H08090485-003
Collection Date: 09/28/08 09:10
DateReceived: 09/30/08
Report Date: 10/23/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.4	s.u.		0.1		A4500-H B	10/02/08 09:03 / kjw			PH_081002A	8	081002A-PH-W
Conductivity	301	umhos/cm		1		A2510 B	10/02/08 17:09 / jlh			COND_081002A	4	081002A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/30/08 14:18 / kjw			SOLIDS_080930A	5	080930A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	191	mg/L		10		A2540 C	09/30/08 14:13 / kjw			SOLIDS_080930B	25	080930A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	78	mg/L		1		A2320 B	10/01/08 12:39 / abb			TITTR_081001A	5	081001A-ALK-W
Bicarbonate as HCO3	95	mg/L		1		A2320 B	10/01/08 12:39 / abb			TITTR_081001A	5	081001A-ALK-W
Chloride	5	mg/L		1		E300.0	10/06/08 16:12 / abb			IC101-H_081006A	20	R48946
Sulfate	53	mg/L		1		E300.0	10/06/08 16:12 / abb			IC101-H_081006A	20	R48946
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Cadmium	ND	mg/L		0.001		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Calcium	32	mg/L		1		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Copper	0.015	mg/L		0.004		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Iron	ND	mg/L		0.02		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Lead	ND	mg/L		0.005		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Magnesium	6	mg/L		1		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Manganese	ND	mg/L		0.02		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Potassium	3	mg/L		1		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Selenium	ND	mg/L		0.005		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Sodium	14	mg/L		1		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Zinc	ND	mg/L		0.02		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

TARGET SHEET

EPA REGION VIII

SUPERFUND DOCUMENT MANAGEMENT SYSTEM

DOCUMENT NUMBER: 1112206

SITE NAME: EAST HELENA RCRA CORRECTIVE ACTION

DOCUMENT DATE: 11/10/2008

DOCUMENT NOT SCANNED

Due to one of the following reasons:

- ☐ PHOTOGRAPHS
- ☐ 3-DIMENSIONAL
- ☐ OVERSIZED
- ☑ AUDIO/VISUAL
- ☐ PERMANENTLY BOUND DOCUMENTS
- ☐ POOR LEGIBILITY
- ☐ OTHER
- ☐ NOT AVAILABLE
- ☐ TYPES OF DOCUMENTS NOT TO BE SCANNED
  (Data Packages, Data Validation, Sampling Data, CBI, Chain of Custody)

DOCUMENT DESCRIPTION:

1 CD - EAST HELENA ASARCO SLURRY WALL SAMPLING DV REPORTS, AUGUST 2008

Contact the Superfund Records Center to view available document.
(303) 312-6473

VALIDATION SUMMARY

ASARCO EAST HELENA INTERIM MEASURES

POST RI/FS LONG-TERM MONITORING PROJECT

SLURRY WALL SAMPLE EVENT

INORGANIC ANALYSES

AUGUST 2008

ENERGY LABORATORY WORK ORDER NOS.
H08080354 AND H08080360

Prepared for:
Mr. Jon Nickel
ASARCO Incorporated
PO Box 1230
East Helena, MT 59635

Prepared by:
Linda L. Tangen
6900 Cherry Blossom Lane
Albuquerque, NM 87111

October 2008

TABLE OF CONTENTS

LIST OF APPENDICES II

GLOSSARY OF TERMS III

SUMMARY 1

1. INTRODUCTION 3

2. DELIVERABLES 3

3. FIELD PROCEDURES 3

4. FIELD BLANKS 4

5. FIELD DUPLICATES 4

6. LABORATORY PROCEDURES 5

7. DETECTION LIMITS 5

8. LABORATORY BLANKS 5

9. LABORATORY MATRIX SPIKES 6

10. LABORATORY DUPLICATES 6

11. LABORATORY CONTROL STANDARDS 7

12. INTERPARAMETER COMPARISON 7

13. HISTORICAL COMPARISON SUMMARY 8

14. DATA QUALITY OBJECTIVES 8

REFERENCES 10

LIST OF APPENDICES

APPENDIX 1: TABLE

APPENDIX 2: DATABASE

APPENDIX 3: FIELD NOTES

APPENDIX 4: CHAIN OF CUSTODY

APPENDIX 5: LABORATORY REPORT

GLOSSARY OF TERMS

CLP..... Contract Laboratory Program

COC..... Chain of Custody

CRDL..... Contract Required Detection Limit

DI..... Deionized Water

DIS..... Dissolved

ELI-Hel ..... Energy Laboratories, Inc., Helena, Montana

EPA..... U.S. Environmental Protection Agency

LCS..... Laboratory Control Sample

MS ..... Matrix Spike

NA ..... Not Applicable

PDLG..... Project Detection Limit Goal

RI/FS..... Remedial Investigation/Feasibility Study

QC ..... Quality Control

RPD ..... Relative Percent Difference

RL..... Reporting Level

SC..... Specific Conductivity

SOW ..... Statement of Work

SWL..... Static Water Level

TDS ..... Total Dissolved Solids

SUMMARY

Groundwater samples were collected on August 19 and 20, 2008 for the ASARCO East Helena Post Remedial Investigation/Feasibility Study (Post-RI/FS) Slurry Wall sample event. Inorganic constituents for these samples were validated using U.S. Environmental Protection Agency (EPA) guidelines for data validation (EPA 2002) and the project work plan (ASARCO 2002 and ASARCO 2007). Samples were analyzed by Energy Laboratories, Inc. (ELI-Hel) in Helena, Montana, under work orders: H08080354 and H08080360.

The historical summary table is located in Appendix 1, and the validated database is located in Appendix 2. Field notes, chain of custodies, and laboratory reports are located in Appendices 3, 4, and 5, respectively.

Data quality objectives for this project are as follows:

- **Precision** is determined by the number of field and laboratory duplicate sample results within quality control (QC) limits. This is quantitatively reported as the number of duplicate results within QC limits per total number of duplicate results, expressed as a percentage.

  For this sampling event, 100% (32 out of 32 results) of the field duplicate and 100% (153 out of 153 results) of the laboratory duplicate results were within control limits. Overall precision was calculated at 100%.

- **Accuracy** is determined by the matrix spike (MS) and laboratory control sample (LCS) results within QC control limits. This is quantitatively reported as the number of MS and LCS results within QC limits per total number of MS and LCS expressed as a percentage.

  For this sampling event, 100% (95 out of 95 results) of the LCS and 100% (96 out of 96 results) of the MS results were within control limits. Overall accuracy was calculated at 100%.

- **Completeness** is determined by the number of valid data per number of planned data. This is quantitatively reported as a percentage. The completeness goal for this project is 90%.

  For this sampling event, the completeness goal of 90% was met. The completeness for sample collection and analysis was calculated at 93.1% (430 valid out of 462 planned data). This percentage was due to an omitted distilled water (DI) blank (32 results).

Conclusion

In conclusion, the **data collected in August 2008 for the ASARCO Post-RI/FS Slurry Wall sample event are deemed acceptable and can be used for the purposes they were intended.** Of the measured results, **100% can be used without qualification.**

Data Validation Report by: Linda L. Tangen

Client Review: Jon Nickel

DATA VALIDATION REPORT

1. INTRODUCTION

- This validation applies to inorganic analytes from 12 groundwater samples for the ASARCO East Helena Post-RI/FS Slurry Wall sample event. These samples were collected on August 19 and 20, 2008 and included one field blank and one field duplicate.

- Validation procedures used are generally consistent with:
  - _X_ EPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganics Data Review (EPA 2002)
  - _X_ Work Plan – Interim Measures Work Plan Addendum (ASARCO 2002 and ASARCO 2007)
  - ___ Other

- Overall level of validation:
  - ___ CLP
  - _X_ Standard – Field and laboratory quality control (QC) samples are reviewed; and samples associated with QC violations are flagged.

2. DELIVERABLES

- All laboratory document deliverables were present as specified in the CLP-Statement of Work (SOW) (EPA 2001), and/or the project contract.
  - _X_Yes
  - ___No

- All documentation of field procedures was provided as required.
  - _X_Yes
  - ___No

- All data entry was consistent, accurate, and complete
  - _X_Yes
  - ___ No

3. FIELD PROCEDURES

- All project-required sites were visited.
  - _X_Yes
  - ___ No

- All project-required samples were collected.
  - _X_Yes
  - ___ No

- Field parameters were measured in accordance with the project work plan.
  _X_Yes
  ____ No

- Field instruments were calibrated daily and before measurements were collected.
  _X_Yes
  ___ No

- Chains of Custodies (COCs) were properly filled out and signed by the field personnel.
  ___Yes
  _X_ No – see notes
  Notes: A distilled water (DI) blank that was collected in the field and delivered to the laboratory, was not recorded on the chain of custody. The laboratory was instructed to dispose of the sample.

- Samples were properly preserved.
  _X_Yes
  ____ No

4. FIELD BLANKS

Please note that the highest blank value associated with any particular analyte is the blank value used for the flagging process.

- Deionized (DI) and rinsate blanks were carried out at the proper frequency (one rinsate blank and one DI blank per 20 samples).
  ____ Yes
  _X_ No – see notes
  Notes: Although a DI blank was collected and sent to the laboratory, the field technician did not record the blank sample on the COC. The laboratory was instructed by the project manager to dispose of the sample. Consequentially, 32 results were subtracted from the project's total planned results.

- Reported results for field blanks were less than the Project Detection Limit Goals (PDLGs).
  _X_Yes
  ____ No

5. FIELD DUPLICATES

- Field duplicates have been collected at the proper frequency (one field duplicate per 20 samples).
  _X_Yes
  ____ No

- Field duplicate relative percent differences (RPDs) were within the required control limits (RPD of 20% or less). If the sample or duplicate result is less than or equal to five times the PDLG, the RPD criteria are not used. In these cases, the difference between the sample and the duplicate results must be within ± the PDLG.

  _X_ Yes
  ____ No

6. LABORATORY PROCEDURES

- **Laboratory procedures followed**

  _X_ CLP-SOW (EPA 2001)
  ____ SW-846 (EPA 1986)
  _X_ Methods for Chemical Analysis of Water and Wastes (EPA 1983)

- **Holding times met**

  _X_ Yes
  ____ No

- **Consistency with project requirements**

  Analyses were carried out as requested.
  _X_ Yes
  ___ No

  Project specified methods were used.
  _X_ Yes
  ____ No

7. DETECTION LIMITS

- Reporting levels (RLs) were less than or equal to the PDLGs.

  _X_ Yes
  ____ No

8. LABORATORY BLANKS

Please note that the highest blank value associated with any particular analyte is the blank value used for the flagging process.

- **Method blanks**

  Blanks were prepared and analyzed at the required frequency (one per batch or one per 20 samples, whichever is greater).
  _X_ Yes
  ___ No

All the analytes in the blank were less than the PDLG (and/or reporting limits).
_X_ Yes
____ No

9. LABORATORY MATRIX SPIKES

- The matrix spike (MS) was added at the proper concentration.
  _X_ Yes
  ____ No

- A matrix spike (MS) sample (pre-digestion) was analyzed at the proper frequency (one per batch and/or matrix).
  ____ Yes
  _X_ No – see notes

  Notes: The following sample batches did not meet the frequency criteria for MS samples. Samples are not qualified for not meeting laboratory QC frequency requirements.

Reason For Not Meeting Required Frequency	Parameter	Analytical Batch	Assoc. Sample Batch (Lab Code Prefix)	Assoc. Samples (Lab Code Suffix)
MS from Unknown Source	Calcium, Iron, Magnesium, Potassium, Sodium	B_R116363	H08080354	1
MS from Unknown Source	Silver	B_R116539	H08080354	1
MS from Unknown Source	Arsenic III, Arsenic IV	R47743	H08080354	1
MS from Unknown Source	Barium, Cobalt, Potassium, Sodium	B_R116425	H08080360	1->3,7->11
MS from Unknown Source	Barium, Cobalt, Potassium, Sodium	B_R117280	H08080360	6

- MS recoveries were within the required control limits (75-125%).
  _X_ Yes
  ____ No

10. LABORATORY DUPLICATES

- Laboratory duplicate samples were analyzed at the proper frequency (one per batch or one per 20 samples, whichever is greater).
  _X_ Yes
  ____ No

- The laboratory duplicate RPDs were within the required control limits (RPD of 20 or less). If the sample or duplicate result is less than or equal to five times the PDLG, the RPD criteria are not used. In these cases, the difference between the sample and the duplicate results must be within ± the PDLG.

  _X_ Yes
  ____ No

11. LABORATORY CONTROL STANDARDS

- The reference material used for the laboratory control sample (LCS) was of the correct matrix.

  _X_ Yes
  ____ No

- LCS' were prepared and analyzed at the proper frequency (one per batch or one per 20 samples, whichever is greater).

  _X_ Yes
  ____ No

- LCS recoveries were within the required control limits.

  _X_ Yes
  ____ No

12. INTERPARAMETER COMPARISON

The following interparameter comparisons were conducted for this review.

- **Dissolved vs. Speciation Concentrations for Arsenic and Selenium:** The sum of speciation concentrations for arsenic and selenium were compared to the associated dissolved concentrations. All results were in order for this sampling event (pairs were within control limits for duplicate measurements - refer to section 5 for control limits).
- **Lab SC vs. Field SC:** All field and lab SC comparisons were in order for this sampling event (pairs were within control limits for duplicate measurements - refer to section 5 for control limits).
- **TDS vs. Lab SC:** The ratio of TDS to lab SC should lie between 0.55 and 0.75. In natural waters with high sulfate, the ratio may be much higher. This ratio is intended to be a check on the accuracy of the TDS and lab SC measurements. (It should be noted that these measurements are less accurate in dilute waters.) All TDS and lab SC comparisons were in order with ratios ranging from 0.64 to 0.73.

13. HISTORICAL COMPARISON SUMMARY

Data for this sampling event were compared sampling events. Refer to Table 1 in Appendix 1 for sites with analyte concentrations greater than three times the standard deviation from the historical mean.

14. DATA QUALITY OBJECTIVES

Project data quality objectives

Data quality objectives for this project are met when QC sample results are within the required control limits. The evaluation of field and laboratory QC samples gives a quantitative measure of precision and accuracy.

- **Precision** is determined by field and laboratory duplicate sample results that are within control limits. Following is a summary of the precision for this sampling event.

QC Type	Total Results	# of Results Out of Control Limits	# of Results Within Control Limits	% Within Control Limits
Field Duplicates	32	0	32	100.0%
Lab Duplicates	153	0	153	100.0%
Overall	**185**	**0**	**185**	**100.0%**

- **Accuracy** is determined by MS and LCS results that are within control limits. Following is a summary of the accuracy for this sampling event.

QC Type	Total Results	# of Results Out of Control Limits	# of Results Within Control Limits	% Within Control Limits
LCS	95	0	95	100.0%
Matrix Spikes	96	0	96	100.0%
Overall	**191**	**0**	**191**	**100.0%**

- **Completeness** is calculated by the number of valid (not rejected) data per number of planned data, expressed as a percentage. **The completeness goal for the ASARCO Post-RI/FS project is 90%. This goal was met for the August 2008 sampling event.** Following is a detailed summary of the completeness for this sampling event.

# of Planned Measurements	Actual # of Measurements	# of Rejected or Anomalous Measurements	# of Valid Measurements	Completeness
462	**430***	**0**	**430**	**93.1%**

***Note:** Due to an omitted DI blank, 32 measurements were subtracted from the project's total planned measurements. Refer to Sections 3 and 4 for details.

- **Completeness** can also be calculated by the number of non-qualified data per number of measurements. Following is a summary of non-qualified data completeness.

# of Measurements	# of Qualified Measurements	# Not Qualified	% Not Qualified
430	0	430	100.0%

- **In conclusion**, data collected in August 2008 for the ASARCO Post-RI/FS Slurry Wall sample event are deemed acceptable and can be used for the purposes they were intended. Of the measured results, **100% can be used without qualification**.

Data Validation Report by: Linda L. Tangen

Client Review by: Jon Nickel

REFERENCES

ASARCO 2002. *Interim Measures Work Plan Addendum, East Helena Facility.* ASARCO Consulting Inc. Revised May.

ASARCO 2007. *Addendum to Interim Measures Work Plan, East Helena Facility, Former Acid Plant Sediment Drying Area Slurry Wall, Monitoring, Operation, and Maintenance work Plan.* ASARCO LLC. October 18, 2006. Revision April 20, 2007.

EPA 1983. *Methods for Chemical Analysis of Water and Wastes.* United States Environmental Protection Agency. March.

EPA 1986. *Test Method for Evaluating Solid Waste: Physical/Chemical Methods 3rd Ed. 4 Vols.* United States Environmental Protection Agency. EPA 530/SW-846. November 1986. Update IVB. Rev 6. February 2007.

EPA 2001. *USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis.* United States Environmental Protection Agency. Document Number ILM05.2. December.

EPA 2002. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* United States Environmental Protection Agency. July.

APPENDIX 1

TABLE

Table 1. Historical Comparisons Summary~

ASARCO East Helena Slurry Wall Samples

August 2008

~Where this sampling event's data and historical mean difference is greater than three times the historical standard devation.

Station	This Sampling Event's Data		----------Historical Data----------					Comparison To Historical Data		
Parameter	Sample Date	Value	Cnt	Min	Max	Mean	Std Dev	# of Std Dev*	High or Low	Elev DL**
All units are in ppm unless noted otherwise.										
MW-10	**8/20/2008**	**AEH-0808-109**								
Magnesium (Mg)	DIS	27	5	22	25	22.8000	1.3038	3.22	Highest	
Sulfate (SO4)		130	5	110	120	117.2000	4.2071	3.04	Highest	
Water Temperature (C) (Fld)		11.3	5	9.47	10.5	9.8380	0.4505	3.25	Highest	
MW-11	**8/20/2008**	**AEH-0808-111**								
Magnesium (Mg)	DIS	14	4	12	13	12.2500	0.5000	3.5	Highest	
MW-3	**8/20/2008**	**AEH-0808-103**								
Total Alkalinity As CACO3		240	17	250	260	255.9412	4.7759	3.34	Lowest	
MW-4	**8/19/2008**	**AEH-0808-100**								
Potassium (K)	DIS	5	12	6	7	6.5500	0.4982	3.11	Lowest	
MW-6	**8/20/2008**	**AEH-0808-112**								
Calcium (Ca)	DIS	124	7	92	106	96.5714	4.9618	5.53	Highest	
Chloride (Cl)		26	7	7.1	10	8.9286	1.0594	16.1	Highest	
Iron (Fe)	DIS	0.07	7	0.2	0.32	0.2543	0.0454	4.06	Lowest	
Magnesium (Mg)	DIS	28	7	19	22	20.5714	0.9759	7.61	Highest	
Potassium (K)	DIS	7	7	5	6	5.1714	0.3729	4.90	Highest	
Sulfate (SO4)		180	7	69	124	101.5714	21.1176	3.71	Highest	
TDS (Measured at 180 C)		564	7	441	505	479.5714	22.6337	3.73	Highest	
MW-8	**8/20/2008**	**AEH-0808-108**								
pH (Fld)		7	5	7.21	7.26	7.2340	0.0241	9.72	Lowest	
MW-9	**8/20/2008**	**AEH-0808-106**								
pH (Fld)		1.17	5	7.29	7.42	7.3680	0.0522	119	Lowest	

Notes:

* # of Std Dev (from historical mean) = Value and historical mean difference divided by the historical standard deviation.

**Elevated = Elevated Detection Limit; An elevated reporting limit was used for the sample's value. The true value may be less than the reporting limit and therefore the value and historical average difference may not be greater than three times the standard deviation; and/or the sample's value may not be the highest historical concentration.

APPENDIX 2

DATABASE

ANALYSES SUMMARY REPORT

Slurry Wall Samples - August 2008

Database: ASARCO, East Helena Plant

Table of Contents by Station Type

Page	Station Type	Station Name
1	Groundwater	MW-1
3	Groundwater	MW-2
3	Groundwater	MW-3
3	Groundwater	MW-4
5	Groundwater	MW-5
5	Groundwater	MW-6
5	Groundwater	MW-8
7	Groundwater	MW-9
1	Groundwater	MW-10
1	Groundwater	MW-11
7	Quality Control	RINSATE

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

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ANALYSES SUMMARY REPORT

Slurry Wall Samples - August 2008

Database: ASARCO, East Helena Plant

Table of Contents By Lab Sample ID

Page	Lab Sample ID	Sample ID	Sample Date	Station Name
3	H08080354-001	AEH-0808-100	8/19/2008	MW-4
1	H08080360-001	AEH-0808-102	8/20/2008	MW-1
3	H08080360-002	AEH-0808-103	8/20/2008	MW-3
3	H08080360-003	AEH-0808-104	8/20/2008	MW-3
7	H08080360-004	AEH-0808-105	8/20/2008	RINSATE
7	H08080360-005	AEH-0808-106	8/20/2008	MW-9
5	H08080360-006	AEH-0808-107	8/20/2008	MW-5
5	H08080360-007	AEH-0808-108	8/20/2008	MW-8
1	H08080360-008	AEH-0808-109	8/20/2008	MW-10
3	H08080360-009	AEH-0808-110	8/20/2008	MW-2
1	H08080360-010	AEH-0808-111	8/20/2008	MW-11
5	H08080360-011	AEH-0808-112	8/20/2008	MW-6

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

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ANALYSES SUMMARY REPORT

Slurry Wall Samples - August 2008

Database: ASARCO, East Helena Plant

Table of Contents by Sample ID

Page	Sample ID	Lab Sample ID	Sample Date	Station Name
3	AEH-0808-100	H08080354-001	8/19/2008	MW-4
1	AEH-0808-102	H08080360-001	8/20/2008	MW-1
3	AEH-0808-103	H08080360-002	8/20/2008	MW-3
3	AEH-0808-104	H08080360-003	8/20/2008	MW-3
7	AEH-0808-105	H08080360-004	8/20/2008	RINSATE
7	AEH-0808-106	H08080360-005	8/20/2008	MW-9
5	AEH-0808-107	H08080360-006	8/20/2008	MW-5
5	AEH-0808-108	H08080360-007	8/20/2008	MW-8
1	AEH-0808-109	H08080360-008	8/20/2008	MW-10
3	AEH-0808-110	H08080360-009	8/20/2008	MW-2
1	AEH-0808-111	H08080360-010	8/20/2008	MW-11
5	AEH-0808-112	H08080360-011	8/20/2008	MW-6

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

Run Time: 10/2/2008 6:05:08 PM

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ANALYSES SUMMARY REPORT

Slurry Wall Samples - August 2008

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	MW-1	MW-10	MW-11
Water	SAMPLE DATE	8/20/2008	8/20/2008	8/20/2008
	SAMPLE TIME	10:45	16.30	18:00
	LAB	ELI	ELI	ELI
	LAB NUMBER	H08080360-001	H08080360-008	H08080360-010
	SAMPLE NUMBER	AEH-0808-102	AEH-0808-109	AEH-0808-111
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION			
	REMARKS			
Common Ions (mg/L): ppm unless noted				
	Calcium (Ca) (DIS)	54	107	58
	Chloride (Cl)	13	17	29
	Magnesium (Mg) (DIS)	12	27	14
	Potassium (K) (DIS)	5	8	12
	Sodium (Na) (DIS)	24	35	57
	Sulfate (SO4)	79	130	160
	Total Alkalinity As CACO3	110	260	110
Metals (mg/L): ppm unless noted				
	Selenium-IV (DIS)	<0.005	<0.005	<0.005
	Selenium-VI (DIS)	<0.005	<0.005	<0.005
	Aluminum (Al) (DIS)	<0.1	<0.1	<0.1
	Antimony (Sb) (DIS)	<0.005	<0.005	<0.005
	Arsenic (As) (DIS)	<0.005	0.01	0.017
	Arsenic III (DIS)	<0.005	<0.005	<0.005
	Arsenic V (DIS)	0.0073	0.009	0.0151
	Barium (Ba) (DIS)	<0.1	<0.1	<0.1
	Beryllium (Be) (DIS)	<0.001	<0.001	<0.001
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001
	Chromium (Cr) (DIS)	<0.001	<0.001	<0.001
	Cobalt (Co) (DIS)	<0.01	<0.01	<0.01
	Copper (Cu) (DIS)	<0.004	<0.004	<0.004
	Iron (Fe) (DIS)	<0.02	<0.02	<0.02
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	<0.01	<0.01
	Mercury (Hg) (DIS)	<0.006	<0.006	<0.006
	Nickel (Ni) (DIS)	<0.01	<0.01	<0.01
	Selenium (Se) (DIS)	<0.005	<0.005	<0.005
	Silver (Ag) (DIS)	<0.005	<0.005	<0.005
	Thallium (Tl) (DIS)	<0.002	<0.002	<0.002
	Vanadium (V) (DIS)	<0.01	<0.01	<0.01
	Zinc (Zn) (DIS)	<0.02	<0.02	<0.02
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)	8.14	4.24	7.03
	Depth To Water Level (ft)	50.73	39.01	62.31
	pH (Fld)	7.01	7.01	7.42
	SC (umhos/cm at 25 C) (Fld)	452	797	671

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

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ANALYSES SUMMARY REPORT

Slurry Wall Samples - August 2008

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	MW-1	MW-10	MW-11
Water	SAMPLE DATE	8/20/2008	8/20/2008	8/20/2008
	SAMPLE TIME	10:45	16:30	18:00
	LAB	ELI	ELI	ELI
	LAB NUMBER	H08080360-001	H08080360-008	H08080360-010
	SAMPLE NUMBER	AEH-0808-102	AEH-0808-109	AEH-0808-111
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION			
	REMARKS			
Physical/Fld-Lab: ppm unless noted				
	SC (umhos/cm at 25 C)	430	748	632
	TDS (Measured at 180 C)	291	505	451
	Water Temperature (C) (Fld)	11.5	11.3	13.7

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Slurry Wall Samples - August 2008

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	MW-2	MW-3	MW-3	MW-4
Water	SAMPLE DATE	8/20/2008	8/20/2008	8/20/2008	8/19/2008
	SAMPLE TIME	17:10	12:35	12:45	10:50
	LAB	ELI	ELI	ELI	ELI
	LAB NUMBER	H08080360-009	H08080360-002	H08080360-003	H08080354-001
	SAMPLE NUMBER	AEH-0808-110	AEH-0808-103	AEH-0808-104	AEH-0808-100
	TYPE	Groundwater	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI	RI
	DESCRIPTION				
	REMARKS			Field Duplicate	
Common Ions (mg/L): ppm unless noted					
	Calcium (Ca) (DIS)	71	92	92	52
	Chloride (Cl)	6	11	11	10
	Magnesium (Mg) (DIS)	16	21	21	10
	Potassium (K) (DIS)	6	7	7	5
	Sodium (Na) (DIS)	18	21	22	26
	Sulfate (SO4)	14	68	67	70
	Total Alkalinity As CACO3	230	240	240	160
Metals (mg/L): ppm unless noted					
	Selenium-IV (DIS)	<0.005	<0.005	<0.005	<0.005
	Selenium-VI (DIS)	<0.005	0.0053	0.005	<0.005
	Aluminum (Al) (DIS)	<0.1	<0.1	<0.1	<0.1
	Antimony (Sb) (DIS)	<0.005	<0.005	<0.005	<0.005
	Arsenic (As) (DIS)	0.011	0.011	0.011	<0.005
	Arsenic III (DIS)	0.0103	<0.005	<0.005	<0.005
	Arsenic V (DIS)	<0.005	0.0109	0.0111	0.0051
	Barium (Ba) (DIS)	<0.1	<0.1	<0.1	<0.1
	Beryllium (Be) (DIS)	<0.001	<0.001	<0.001	<0.001
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001	<0.001
	Chromium (Cr) (DIS)	<0.001	<0.001	<0.001	<0.001
	Cobalt (Co) (DIS)	<0.01	<0.01	<0.01	<0.01
	Copper (Cu) (DIS)	<0.004	<0.004	<0.004	<0.004
	Iron (Fe) (DIS)	<0.02	<0.02	<0.02	0.03
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	0.26	0.03	0.03	<0.01
	Mercury (Hg) (DIS)	<0.006	<0.006	<0.006	<0.006
	Nickel (Ni) (DIS)	<0.01	<0.01	<0.01	<0.01
	Selenium (Se) (DIS)	<0.005	0.006	0.006	<0.005
	Silver (Ag) (DIS)	<0.005	<0.005	<0.005	<0.005
	Thallium (Tl) (DIS)	<0.002	<0.002	<0.002	<0.002
	Tin (Sn) (DIS)				<0.1
	Vanadium (V) (DIS)	<0.01	<0.01	<0.01	<0.01
	Zinc (Zn) (DIS)	<0.02	<0.02	<0.02	<0.02
Physical/Fld-Lab: ppm unless noted					
	Oxygen (O) (DIS) (Fld)	0.22	0.24		8.08
	Depth To Water Level (ft)	34.63	30.16		45.31
	pH (Fld)	6.72	6.74		7.09
	SC (umhos/cm at 25 C) (Fld)	488	644		507

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

Run Time: 10/2/2008 6:05:08 PM

C:\EnviroDataDB\Databases\V5_B_DB\EastHelena.mdb

ANALYSES SUMMARY REPORT

Slurry Wall Samples - August 2008

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	MW-2	MW-3	MW-3	MW-4
Water	SAMPLE DATE	8/20/2008	8/20/2008	8/20/2008	8/19/2008
	SAMPLE TIME	17:10	12:35	12:45	10:50
	LAB	ELI	ELI	ELI	ELI
	LAB NUMBER	H08080360-009	H08080360-002	H08080360-003	H08080354-001
	SAMPLE NUMBER	AEH-0808-110	AEH-0808-103	AEH-0808-104	AEH-0808-100
	TYPE	Groundwater	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI	RI
	DESCRIPTION				
	REMARKS			Field Duplicate	
Physical/Fld-Lab: ppm unless noted					
	SC (umhos/cm at 25 C)	462	612	615	484
	TDS (Measured at 180 C)	309	389	382	328
	Water Temperature (C) (Fld)	10.7	11		12.2

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Slurry Wall Samples - August 2008

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	MW-5	MW-6	MW-8
Water	SAMPLE DATE	8/20/2008	8/20/2008	8/20/2008
	SAMPLE TIME	13:05	18:30	15:50
	LAB	ELI	ELI	ELI
	LAB NUMBER	H08080360-006	H08080360-011	H08080360-007
	SAMPLE NUMBER	AEH-0808-107	AEH-0808-112	AEH-0808-108
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION			
	REMARKS			
Common Ions (mg/L): ppm unless noted				
	Calcium (Ca) (DIS)	34	124	57
	Chloride (Cl)	6	26	10
	Magnesium (Mg) (DIS)	7	28	11
	Potassium (K) (DIS)	<5	7	7
	Sodium (Na) (DIS)	23	27	24
	Sulfate (SO4)	28	180	64
	Total Alkalinity As CACO3	140	240	160
Metals (mg/L): ppm unless noted				
	Selenium-IV (DIS)	<0.005	<0.005	<0.005
	Selenium-VI (DIS)	<0.005	<0.005	<0.005
	Aluminum (Al) (DIS)	<0.1	<0.1	<0.1
	Antimony (Sb) (DIS)	<0.005	<0.005	<0.005
	Arsenic (As) (DIS)	0.007	0.089	0.006
	Arsenic III (DIS)	<0.005	0.045	<0.005
	Arsenic V (DIS)	0.008	0.0357	0.0079
	Barium (Ba) (DIS)	<0.1	0.1	<0.1
	Beryllium (Be) (DIS)	<0.001	<0.001	<0.001
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001
	Chromium (Cr) (DIS)	<0.001	<0.001	<0.001
	Cobalt (Co) (DIS)	<0.01	<0.01	<0.01
	Copper (Cu) (DIS)	<0.004	<0.004	<0.004
	Iron (Fe) (DIS)	<0.02	0.07	<0.02
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	4.72	<0.01
	Mercury (Hg) (DIS)	<0.006	<0.006	<0.006
	Nickel (Ni) (DIS)	<0.01	<0.01	<0.01
	Selenium (Se) (DIS)	<0.005	0.007	<0.005
	Silver (Ag) (DIS)	<0.005	<0.005	<0.005
	Thallium (Tl) (DIS)	<0.002	<0.002	<0.002
	Vanadium (V) (DIS)	<0.01	<0.01	<0.01
	Zinc (Zn) (DIS)	<0.02	<0.02	<0.02
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)	7.5		6.46
	Depth To Water Level (ft)	51.98		50.62
	pH (Fld)	7.37		7
	SC (umhos/cm at 25 C) (Fld)	354		478

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Slurry Wall Samples - August 2008

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	MW-5	MW-6	MW-8
Water	SAMPLE DATE	8/20/2008	8/20/2008	8/20/2008
	SAMPLE TIME	13:05	18:30	15:50
	LAB	ELI	ELI	ELI
	LAB NUMBER	H08080360-006	H08080360-011	H08080360-007
	SAMPLE NUMBER	AEH-0808-107	AEH-0808-112	AEH-0808-108
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION			
	REMARKS			
Physical/Fld-Lab: ppm unless noted				
	SC (umhos/cm at 25 C)	337	763	414
	TDS (Measured at 180 C)	219	564	301
	Water Temperature (C) (Fld)	11.7		11.6

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Slurry Wall Samples - August 2008

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	MW-9	RINSATE
Water	SAMPLE DATE	8/20/2008	8/20/2008
	SAMPLE TIME	14:20	13:00
	LAB	ELI	ELI
	LAB NUMBER	H08080360-005	H08080360-004
	SAMPLE NUMBER	AEH-0808-106	AEH-0808-105
	TYPE	Groundwater	QC
	GROUP	RI	RI
	DESCRIPTION		
	REMARKS		Blank
Common Ions (mg/L): ppm unless noted			
	Calcium (Ca) (DIS)	48	<5
	Chloride (Cl)	8	<1
	Magnesium (Mg) (DIS)	9	<5
	Potassium (K) (DIS)	5	<5
	Sodium (Na) (DIS)	24	<5
	Sulfate (SO4)	50	<1
	Total Alkalinity As CACO3	160	<5
Metals (mg/L): ppm unless noted			
	Selenium-IV (DIS)	<0.005	<0.005
	Selenium-VI (DIS)	<0.005	<0.005
	Aluminum (Al) (DIS)	<0.1	<0.1
	Antimony (Sb) (DIS)	<0.005	<0.005
	Arsenic (As) (DIS)	0.006	<0.005
	Arsenic III (DIS)	<0.005	<0.005
	Arsenic V (DIS)	0.0075	<0.005
	Barium (Ba) (DIS)	<0.1	<0.1
	Beryllium (Be) (DIS)	<0.001	<0.001
	Cadmium (Cd) (DIS)	<0.001	<0.001
	Chromium (Cr) (DIS)	<0.001	<0.001
	Cobalt (Co) (DIS)	<0.01	<0.01
	Copper (Cu) (DIS)	<0.004	<0.004
	Iron (Fe) (DIS)	<0.02	<0.02
	Lead (Pb) (DIS)	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	<0.01
	Mercury (Hg) (DIS)	<0.006	<0.006
	Nickel (Ni) (DIS)	<0.01	<0.01
	Selenium (Se) (DIS)	<0.005	<0.005
	Silver (Ag) (DIS)	<0.005	<0.005
	Thallium (Tl) (DIS)	<0.002	<0.002
	Vanadium (V) (DIS)	<0.01	<0.01
	Zinc (Zn) (DIS)	<0.02	<0.02
Physical/Fld-Lab: ppm unless noted			
	Oxygen (O) (DIS) (Fld)	7.35	
	Depth To Water Level (ft)	56.96	
	pH (Fld)	7.17	
	SC (umhos/cm at 25 C) (Fld)	438	

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Slurry Wall Samples - August 2008

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	MW-9	RINSATE
Water	SAMPLE DATE	8/20/2008	8/20/2008
	SAMPLE TIME	14:20	13:00
	LAB	ELI	ELI
	LAB NUMBER	H08080360-005	H08080360-004
	SAMPLE NUMBER	AEH-0808-106	AEH-0808-105
	TYPE	Groundwater	QC
	GROUP	RI	RI
	DESCRIPTION		
	REMARKS		Blank
Physical/Fld-Lab: ppm unless noted			
	SC (umhos/cm at 25 C)	414	2
	TDS (Measured at 180 C)	282	<10
	Water Temperature (C) (Fld)	11.9	

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

Run Time: 10/2/2008 6:05:08 PM

C:\EnviroDataDB\Databases\V5_B_DB\EastHelena.mdb

APPENDIX 3

FIELD NOTES

Site	Sample Code#	Date	Time	SWL'	TD'
MW-4	AEH-0808-100	8.19.08	10:50	45.31	74.0
DI Blank	AEH-0808-101	8.19.08	11:10	—	—
MW-1	AEH-0808-102	8.20.08	10:45	50.73	70.0
MW-3	AEH-0808-103	8.20.08	12:35	50.16	52.00
MW-3 Duplicate	AEH-0808-104	8.20.08	12:45	same	

Well No. MW-4

pH 7.09	Bottle/Pres.	Analysis	Odor NONE
SC 507	1-250/F/HNO_3	D-Metals	Vol- 14.0
Temp 12.2	1-L/UF/Raw	Comm	GPM 0.2
DO 8.08	1-~~250~~ 500/F/HCL	As 3/5	Color NONE
	1-~~250~~ 500/F/Raw	Se 4/6	
	~~1-500/UF/HNO_3~~	~~Tot-Metals~~	
Purge & Sample	2" Sub Pump	12-Volt	Names AJ LC

Well No. DI Blank Filled samples directly from culligan carbon

pH	Bottle/Pres.	Analysis	Odor
SC	1-250/F/HNO_3	D-Metals	Vol-
Temp	1-L/UF/Raw	Comm	GPM
DO	1-~~250~~ 500/F/HCL	As 3/5	Color
	1-~~250~~ 500/F/Raw	Se 4/6	
	~~1-500/UF/HNO_3~~	~~Tot-Metals~~	
Purge & Sample	2" Sub Pump	12-Volt	Names AJ, LC

Well No. MW-1

pH 7.01	Bottle/Pres.	Analysis	Odor NONE
SC 452	1-250/F/HNO_3	D-Metals	Vol- 9.3
Temp 11.5	1-L/UF/Raw	Comm	GPM 0.6
DO 8.14	1-~~250~~ 500/F/HCL	As 3/5	Color NONE
	1-~~250~~ 500/F/Raw	Se 4/6	
	~~1-500/UF/HNO_3~~	~~Tot-Metals~~	
Purge & Sample	2" Sub Pump	12-Volt	Names AJ, LC

Well No. MW-3

pH 6.74	Bottle/Pres.	Analysis	Odor NONE
SC 644	1-250/F/HNO_3	D-Metals	Vol- 10.6
Temp 11.0	1-L/UF/Raw	Comm	GPM 0.6
DO 0.24	1-~~250~~ 500/F/HCL	As 3/5	Color NONE
	1-~~250~~ 500/F/Raw	Se 4/6	
	~~1-500/UF/HNO_3~~	~~Tot-Metals~~	
Purge & Sample	2" Sub Pump	12-Volt	Names AJ, LC

Well No. MW-3 Duplicate

pH	Bottle/Pres.	Analysis	Odor
SC	1-250/F/HNO_3	D-Metals	Vol-
Temp	1-L/UF/Raw	Comm	GPM
DO	1-~~250~~ 500/F/HCL	As 3/5	Color
	1-~~250~~ 500/F/Raw	Se 4/6	
	~~1-500/UF/HNO_3~~	~~Tot-Metals~~	
Purge & Sample	2" Sub Pump	12-Volt	Names AJ, LC

Same

Same

Lavrie

Site	Sample Code #:	Date	Time	Stat'	TD'
Rinsate Blank	AEH-0808-105	8.20.08	13:00	—	—
MW-9	AEH-0808-106	8.20.08	14:20	56.96'	72.00'
MW-5	AEH-0808-107	8.20.08	15:05	51.98'	74.00
MW-8	AEH-0808-108	8.20.08	15:50	50.62	72.00
MW-10	AEH-0808-109	8.20.08	16:30	39.01	64.00'

Lowe

Well No. Rinsate Blank

Rank aliquots ~~Carboy thoroughly~~ filled 3 samples after filtering. Filled 1 sample directly.

	Bottle/Pres.	Analysis
pH	1-250/F/HNO_3	D-Metals
SC	1-L/UF/Raw	Comm
Temp	1-~~250~~ 500/F/HCL	As 3/5
DO	1-~~250~~ 500/F/Raw	Se 4/6
	~~1-500/UF/HNO_3~~	~~Tot-Metals~~

Purge & Sample 2" Sub Pump 12-Volt Names AJ, LC

Well No. MW-9

	Bottle/Pres.	Analysis		
pH 7.17	1-250/F/HNO_3	D-Metals	Odor	NONE
SC 438	1-L/UF/Raw	Comm	Vol-	7.2
Temp 11.9	1-~~250~~ 500/F/HCL	As 3/5	GPM	0.2
DO 7.35	1-~~250~~ 500/F/Raw	Se 4/6	Color	NONE
	~~1-500/UF/HNO_3~~	~~Tot-Metals~~		

Purge & Sample 2" Sub Pump 12-Volt Names AJ, LC

Well No. MW-5

	Bottle/Pres.	Analysis		
pH 7.37	1-250/F/HNO_3	D-Metals	Odor	NONE
SC 354	1-L/UF/Raw	Comm	Vol-	10.5
Temp 11.7	1-~~250~~ 500/F/HCL	As 3/5	GPM	0.5
DO 7.30	1-~~250~~ 500/F/Raw	Se 4/6	Color	NONE
	~~1-500/UF/HNO_3~~	~~Tot-Metals~~		

Purge & Sample 2" Sub Pump 12-Volt Names AJ, LC

Well No. MW-8

	Bottle/Pres.	Analysis		
pH 7.00	1-250/F/HNO_3	D-Metals	Odor	NONE
SC 478	1-L/UF/Raw	Comm	Vol-	10.5
Temp 11.6	1-~~250~~ 500/F/HCL	As 3/5	GPM	0.5
DO 6.46	1-~~250~~ 500/F/Raw	Se 4/6	Color	NONE
	~~1-500/UF/HNO_3~~	~~Tot-Metals~~		

Purge & Sample 2" Sub Pump 12-Volt Names AJ, LC

Well No. MW-10

	Bottle/Pres.	Analysis		
pH 7.01	1-250/F/HNO_3	D-Metals	Odor	NONE
SC 797	1-L/UF/Raw	Comm	Vol-	12.0
Temp 11.3	1-~~250~~ 500/F/HCL	As 3/5	GPM	0.8
DO 4.24	1-~~250~~ 500/F/Raw	Se 4/6	Color	NONE
	~~1-500/UF/HNO_3~~	~~Tot-Metals~~		

Purge & Sample 2" Sub Pump 12-Volt Names AJ, LC

Carlos

Site	Sample Code #:	Date	Time	SWL'	TD'
MW-2	AEH-0808-110	8-20-08	17:10	34.63	68.00

Well No. MW-2

pH	6.72	Bottle/Pres.	Analysis	Odor	NONE
SC	488	1-250/F/HNO_3	D-Metals	Vol-	16.0
Temp	10.7	1-L/UF/Raw	Comm	GPM	0.8
DO	0.22	1-~~250~~ 500/F/HCL	As 3/5	Color	NONE
		1-~~250~~ 500/F/Raw	Se 4/6		
		~~1-500/UF/HNO_3~~	~~Tot-Metals~~		
Purge & Sample		2" Sub Pump	12-Volt	Names	AJ, LC

MW-11	AEH-0808-111	8-20-08	18:00	62.31	72.00

Well No. MW-11

pH	7.42	Bottle/Pres.	Analysis	Odor	NONE
SC	671	1-250/F/HNO_3	D-Metals	Vol-	4.8
Temp	13.7	1-L/UF/Raw	Comm	GPM	0.2
DO	7.03	1-~~250~~ 500/F/HCL	As 3/5	Color	NONE
		1-~~250~~ 500/F/Raw	Se 4/6		
		~~1-500/UF/HNO_3~~	~~Tot-Metals~~		
Purge & Sample		2" Sub Pump	12-Volt	Names	AJ, LC

MW-6	AEH-0808-112	8-20-08	18:30	26.40	43.0

Well No. MW-6

pH	6.84	Bottle/Pres.	Analysis	Odor	NONE
SC	879	1-250/F/HNO_3	D-Metals	Vol-	8.0
Temp	10.7	1-L/UF/Raw	Comm	GPM	1.0
DO	0.21	1-~~250~~ 500/F/HCL	As 3/5	Color	NONE
		1-~~250~~ 500/F/Raw	Se 4/6		
		~~1-500/UF/HNO_3~~	~~Tot-Metals~~		
Purge & Sample		2" Sub Pump	12-Volt	Names	AJ, LC

(15) 8-7-08 Decon Pump Lewis C

INDEX OF CURVE AND REDUCTION TABLES

Table I–SLOPE STAKE

Table II–STADIA CORRECTION AND HORIZONTAL DISTANCES

Table III–TRIGONOMETRIC FORMULAE

Table IV–NATURAL TRIGONOMETRICAL FUNCTIONS

CURVE FORMULAE

Table V–TANGENTS AND EXTERNALS TO A I° CURVE

USEFUL RELATIONS

Table VI–INCHES TO DECIMALS OF A FOOT

Table VII–MINUTES IN DECIMALS OF A DEGREE

Table VIII–MIDDLE ORDINATES OF RAILS

Table IX–SHORT RADIUS CURVES

Table X–RODS IN FEET, 10THS AND 100THS OF FEET

Table XI–LINKS IN FEET, 10THS AND 100THS OF FEET

APPENDIX 4

CHAIN OF CUSTODIES

CHAIN OF CUSTODY RECORD

Hydrometrics, Inc.

3020 Bozeman Avenue • Helena, Montana 59601 • (406) 443-4150

PROJ. NO.: 1054

PROJECT NAME: Asarco E. HLV CAMU Quarterly Monitoring

SAMPLERS: (Signature)

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF/RAW	Nutrients UF/H_2SO_4	Diss. Metal F/HNO_3	CN UF/NaOH	Total Metals UF/HNO_3	Total Recoverable Metals UF/HNO_3	BTEX	TPH	As 3/5	Se 4/6					REMARKS
8-19-08	10:50		X	AEH-0808-100	4	X		X						X	X					See Parameter List
																				H08080384-001

Relinquished (Signature)	Date/Time	Received by: (Signature)	Lab	P.O. #	Shipped via: Bus, Fed Ex, UPS
	8-20-08 15:28				Other ____ Air Bill # ____
Relinquished (Signature)	Date/Time	Received by: (Signature)	Remarks: temp 4.4		
Relinquished (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Enclosed: ☐ Parameter sheet w/detection limits ☐ QA/QC standard mixing instructions ☐ Cover letter ☐ Other ____	

Split Samples: [] Accepted [] Declined ____ Signature

HFORM-1-5/99

Return results & electronic copy to:
QA/QC Dept. at address at top of page

TABLE 3-3. CAMU GROUNDWATER ANALYTICAL PARAMETER LIST

Parameter	Analytical Method[1]	Practical Quantitation Limit (mg/L)
	Field Parameters	
pH	Field SOP	None
Specific conductance	Field SOP	None
Dissolved oxygen	Field SOP	None
Water temperature	Field SOP	None
Water level	Field SOP	None
	Laboratory Parameters	
Major Cations/Anions and Physical Parameters		
Calcium (Ca)	215.1/200.7	5
Magnesium (Mg)	242.1/200.7	5
Sodium (Na)	273.1/200.7	5
Potassium (K)	258.1/200.7	5
Sulfate (SO4)	300.0	1
Chloride (Cl)	300.0	1
Total alkalinity as $CaCO_3$	310.1	5
Total dissolved solids	160.1	10
Specific Conductance	120.1	None
Metals (Dissolved)		
Aluminum (Al)	200.7/200.8	0.1
Antimony (Sb)	200.7/200.8	0.005
Arsenic (As)	200.7/200.8	0.005
Arsenic III/V	E 1632A M	0.005
Barium (Ba)	200.7/200.8	0.1
Beryllium (Be)	200.7/200.8	0.001
Cadmium (Cd)	200.7/200.8	0.001
Chromium (Cr)	200.7/200.8	0.001
Cobalt (Co)	200.7/200.8	0.01
Copper (Cu)	200.7/200.8	0.004
Iron (Fe)	200.7/200.8	0.02
Lead (Pb)	200.7/200.8	0.005
Manganese (Mn)	200.7/200.8	0.015
Mercury (Hg)	200.8/245.1	0.006
Nickel (Ni)	200.7/200.8	0.01
Selenium (Se)	200.7/200.8	0.005
Selenium IV/VI	SM 3114B M	0.005
Silver (Ag)	200.7/200.8	0.005
Thallium (Tl)	200.7/200.8	0.002
Tin (Sn)	200.7/200.8	0.1
Vanadium (V)	200.7/200.8	0.01
Zinc (Zn)	200.7/200.8	0.02

NOTES: (1) Field Standard Operating Procedures (SOPs) approved for previous work at the Asarco East Helena Site will be used as guidance for collection of field water quality parameters. Laboratory analytical methods are from EPA's *Methods for Chemical Analysis of Water and Wastes* (1983); supplemental EPA methods (E), or *Standard Methods for the Examination of Water and Wastewater* (SM). M = modified.

Hydrometrics, Inc.

CHAIN OF CUSTODY RECORD

3020 Bozeman Avenue • Helena, Montana 59601 • (406) 443-4150

PROJ. NO. 1054

PROJECT NAME E. Helena Asarco Quarterly Monitoring

SAMPLERS: (Signature)

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF/RAW	Nutrients UF/H_2SO_4	Diss. Metal F/HNO_3	CN UF/NaOH	Total Metals UF/HNO_3	Total Recoverable Metals UF/HNO_3	BTEX	TPH	As 3/5	Se 4/6					REMARKS
~~8/19/08~~			~~X~~	~~AEH-0808~~	~~4~~	~~X~~		~~X~~						~~X~~	~~X~~				~~8-21-08~~	~~See Attached~~
8/20/08	10:45		X	AEH-0808-102	4	X		X						X	X				H080820360-001	Parameter
	12:35			103															002	List
	12:45			104															003	
	13:00			105															004	
	14:20			106															005	
	15:05			107															006	
	15:50			108															007	
	16:30			109															008	
	17:10			110															009	
	18:00			111															010	
	18:30			112															011	

Relinquished (Signature)	Date/Time	Received by: (Signature)	Lab	P.O. #	Shipped via: Bus, Fed Ex, UPS
	8/21/08 13:10				Other Hand delivered
					Air Bill #

Relinquished (Signature)	Date/Time	Received by: (Signature)	Remarks
			temp 4.1

Relinquished (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Enclosed: ☐ Parameter sheet w/detection limits ☐ QA/QC standard mixing instructions ☐ Cover letter ☐ Other

Split Samples: [] Accepted [] Declined _____ Signature

HFORM-1-5/99

Return results & electronic copy to:
QA/QC Dept. at address at top of page

TABLE C. CAMU GROUNDWATER ANALYTICAL PARAMETER LIST

Parameter	Analytical Method[1]	Practical Quantitation Limit (mg/L)
	Field Parameters	
PH	Field SOP	None
Specific conductance	Field SOP	None
Dissolved oxygen	Field SOP	None
Water temperature	Field SOP	None
Water level	Field SOP	None
	Laboratory Parameters	
Major Cations/Anions and Physical Parameters		
Calcium (Ca)	215.1/200.7	5
Magnesium (Mg)	242.1/200.7	5
Sodium (Na)	273.1/200.7	5
Potassium (K)	258.1/200.7	5
Sulfate (SO4)	300.0	1
Chloride (Cl)	300.0	1
Total alkalinity as $CaCO_3$	310.1	5
Total dissolved solids	160.1	10
Specific Conductance	120.1	None
Metals (Dissolved)		
Aluminum (Al)	200.7/200.8	0.1
Antimony (Sb)	200.7/200.8	0.005
Arsenic (As)	200.7/200.8	0.005
Arsenic III/V	E 1632A M	0.005
Barium (Ba)	200.7/200.8	0.1
Beryllium (Be)	200.7/200.8	0.001
Cadmium (Cd)	200.7/200.8	0.001
Chromium (Cr)	200.7/200.8	0.001
Cobalt (Co)	200.7/200.8	0.01
Copper (Cu)	200.7/200.8	0.004
Iron (Fe)	200.7/200.8	0.02
Lead (Pb)	200.7/200.8	0.005
Manganese (Mn)	200.7/200.8	0.015
Mercury (Hg)	200.8/245.1	0.006
Nickel (Ni)	200.7/200.8	0.01
Selenium (Se)	200.7/200.8	0.005
Selenium IV/VI	SM 3114B M	0.005
Silver (Ag)	200.7/200.8	0.005
Thallium (Tl)	200.7/200.8	0.002
Vanadium (V)	200.7/200.8	0.01
Zinc (Zn)	200.7/200.8	0.02

(1) Field Standard Operating Procedures (SOPs) approved for previous work at the Asarco East Helena Site will be used as guidance for collection of field water quality parameters. Laboratory analytical methods are from EPA's *Methods for Chemical Analysis of Water and Wastes* (1983); supplemental EPA methods (E), or *Standard Methods for the Examination of Water and Wastewater* (SM). M = modified.

APPENDIX 5

LABORATORY REPORT

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

ANALYTICAL SUMMARY REPORT

September 15, 2008

Asarco Consulting
5219 N Shirley St
Ruston, WA 98407

Workorder No.: H08080354 Quote ID: H323 - Asarco Sampling

Project Name: 1054 Asarco E. Helean CAMU Quarterly Monitoring

Energy Laboratories Inc received the following 1 sample from Asarco Consulting on 8/20/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H08080354-001	AEH-0808-100	08/19/08 10:50	08/20/08	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Conductivity Arsenic Speciation Dissolved Selenium By CVAA, Dissolved Selenium-IV, Dissolved Selenium-VI, Dissolved Anions by Ion Chromatography Solids, Total Dissolved

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT, EPA # MT00005
eli-c - Energy Laboratories, Inc. - Casper, WY, EPA# WY00002
eli-g - Energy Laboratories, Inc. - Gillette, WY, EPA# WY00006
eli-h - Energy Laboratories, Inc. - Helena, MT, EPA# MT00945
eli-r - Energy Laboratories, Inc. - Rapid City, SD, EPA# SD00012
eli-t - Energy Laboratories, Inc. - College Station, TX, EPA# TX01520

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES, INC. will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories are indicated within the Laboratory Analytical Report.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

ELI appreciates the opportunity to provide you with this analytical service. For additional information, including certifications, and analytical services visit our web page www.energylab.com.

Jonathan D. Hager

Digitally signed by Jonathan D. Hager
DN: cn=Jonathan D. Hager, o=Energy Laboratory-Helena, ou=Assistant Lab Manager, email=jhager@energylab.com, c=US
Date: 2008.09.15 12:24:26 -06'00'

Report Approved By:_____

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-100
Project: 1054 Asarco E. Helean CAMU Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080354-001
Collection Date: 08/19/08 10:50
DateReceived: 08/20/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Conductivity	484	umhos/cm		1		A2510 B	08/22/08 11:40 / kjw			COND_080822A	4	080822A-COND-PROBE W
Solids, Total Dissolved TDS @ 180 C	328	mg/L		10		A2540 C	08/21/08 16:04 / abb			SOLIDS_080821A	3	080821A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	160	mg/L		5		A2320 B	08/28/08 10:18 / abb			TITTR_080828A	4	080828A-ALK-W
Chloride	10	mg/L		1		E300.0	08/26/08 13:24 / skd			IC101-H_080826A	18	R47909
Sulfate	70	mg/L		1		E300.0	08/26/08 13:24 / skd			IC101-H_080826A	18	R47909
METALS, DISSOLVED												
Aluminum	ND	mg/L		0.1		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Antimony	ND	mg/L		0.005		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Arsenic	ND	mg/L		0.005		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Barium	ND	mg/L		0.1		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Beryllium	ND	mg/L		0.001		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Cadmium	ND	mg/L		0.001		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Calcium	52	mg/L		5		E200.7	08/23/08 01:22 / eli-b			SUB-B116363	26	B_R116363
Chromium	ND	mg/L		0.001		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Cobalt	ND	mg/L		0.01		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Copper	ND	mg/L		0.004		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Iron	0.03	mg/L	D	0.03		E200.7	08/23/08 01:22 / eli-b			SUB-B116363	26	B_R116363
Lead	ND	mg/L		0.005		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Magnesium	10	mg/L		5		E200.7	08/23/08 01:22 / eli-b			SUB-B116363	26	B_R116363
Manganese	ND	mg/L		0.01		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Mercury	ND	mg/L		0.006		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Nickel	ND	mg/L		0.01		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Potassium	5	mg/L		5		E200.7	08/23/08 01:22 / eli-b			SUB-B116363	26	B_R116363
Selenium	ND	mg/L		0.005		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Silver	ND	mg/L		0.005		E200.8	08/27/08 13:16 / eli-b			SUB-B116539	17	B_R116539
Sodium	26	mg/L		5		E200.7	08/23/08 01:22 / eli-b			SUB-B116363	26	B_R116363
Thallium	ND	mg/L		0.002		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Tin	ND	mg/L		0.1		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Vanadium	ND	mg/L		0.01		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346
Zinc	ND	mg/L		0.02		E200.8	08/22/08 11:45 / eli-b			SUB-B116346	1	B_R116346

Report Definitions:
RL - Analyte reporting limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-100
Project: 1054 Asarco E. Helean CAMU Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080354-001
Collection Date: 08/19/08 10:50
DateReceived: 08/20/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS - SPECIATED												
Arsenic-III	ND	ug/L		5.0		E1632AM	08/20/08 23:27 / eau			SA MILLENNIUM_080820A	8	R47743
Arsenic-V	5.1	ug/L		5.0		E1632AM	08/20/08 23:27 / eau			SA MILLENNIUM_080820A	8	R47743
METALS, SPECIATED												
Selenium-IV	ND	mg/L		0.0050		A3114 B	08/23/08 11:12 / skd			SA MILLENNIUM_080823B	7	R47832
Selenium-VI	ND	mg/L		0.0050		A3114 B	08/23/08 10:01 / skd			SA MILLENNIUM_080823C	4	R47833

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

Energy Laboratories Inc
Workorder Receipt Checklist

H08080354

Asarco Consulting

Login completed by: Roxanne L. Tubbs

Date and Time Received: 8/20/2008 3:28 PM

Reviewed by: Amanda Blackburn

Received by: rlt

Reviewed Date: 8/25/2008 11:43:00 AM

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature:	4.4°C		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

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Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: 080821A-SLDS-TDS-W

Run ID :Run Order: **SOLIDS_080821A: 1** SampType: **Laboratory Control Sample** Sample ID: **LCS1_080821A** Method: **A2540 C**
Analysis Date: **08/21/08 16:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	896	10	1000		90	90	110				

Associated samples: H08080354-001A

Run ID :Run Order: **SOLIDS_080821A: 2** SampType: **Method Blank** Sample ID: **MBLK1_080821A** Method: **A2540 C**
Analysis Date: **08/21/08 16:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	ND	1.0									

Associated samples: H08080354-001A

Run ID :Run Order: **SOLIDS_080821A: 5** SampType: **Sample Duplicate** Sample ID: **H08080360-001ADUP** Method: **A2540 C**
Analysis Date: **08/21/08 16:05** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	293	10						291	0.7	20	

Associated samples: H08080354-001A

Run ID :Run Order: **SOLIDS_080821A: 9** SampType: **Sample Matrix Spike** Sample ID: **H08080360-004AMS** Method: **A2540 C**
Analysis Date: **08/21/08 16:06** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	1940	10	2000		97	80	120				

Associated samples: H08080354-001A

Run ID :Run Order: **SOLIDS_080821A: 10** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-004AMSD** Method: **A2540 C**
Analysis Date: **08/21/08 16:06** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	1920	10	2000		96	80	120	1940	0.9	10	

Associated samples: H08080354-001A

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: 080821A-SLDS-TDS-W

Run ID :Run Order: **SOLIDS_080821A: 14** SampType: **Sample Duplicate** Sample ID: **H08080360-007ADUP** Method: **A2540 C**

Analysis Date: **08/21/08 16:08** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	308	10						301	2.3	20	

Associated samples: **H08080354-001A**

Qualifiers:
ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: 080822A-COND-PROBE

Run ID :Run Order: **COND_080822A: 1** SampType: **Laboratory Control Sample** Sample ID: **LCS1_080822A** Method: **A2510 B**
Analysis Date: **08/22/08 11:36** Units: **umhos/cm** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	693	1.0	717.5		97	90	110				

Associated samples: H08080354-001A

Run ID :Run Order: **COND_080822A: 7** SampType: **Sample Duplicate** Sample ID: **H08080360-002ADUP** Method: **A2510 B**
Analysis Date: **08/22/08 11:45** Units: **umhos/cm** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	612	1.0						612.1	0	10	

Associated samples: H08080354-001A

Run ID :Run Order: **COND_080822A: 13** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV1_080822A** Method: **A2510 B**
Analysis Date: **08/22/08 12:01** Units: **umhos/cm** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	709	1.0	717.5		99	90	110				

Associated samples:

Run ID :Run Order: **COND_080822A: 17** SampType: **Sample Duplicate** Sample ID: **H08080360-010ADUP** Method: **A2510 B**
Analysis Date: **08/22/08 12:05** Units: **umhos/cm** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	632	1.0						632	0	10	

Associated samples: H08080354-001A

Run ID :Run Order: **COND_080822A: 26** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV3_080822A** Method: **A2510 B**
Analysis Date: **08/22/08 14:22** Units: **umhos/cm** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	1410	1.0	1412		100	90	110				

Associated samples:

Qualifiers:
ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

Date: 15-Sep-08

BatchID: 080828A-ALK-W

Run ID :Run Order: **TITTR_080828A: 1** SampType: **Method Blank** Sample ID: **MBLK1_080828A** Method: **A2320 B**
Analysis Date: **08/28/08 09:38** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	1									

Associated samples: H08080354-001A

Run ID :Run Order: **TITTR_080828A: 2** SampType: **Laboratory Control Sample** Sample ID: **LCS1_080828A** Method: **A2320 B**
Analysis Date: **08/28/08 09:43** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	590	4.0	600		98	90	110				

Associated samples: H08080354-001A

Run ID :Run Order: **TITTR_080828A: 6** SampType: **Sample Matrix Spike** Sample ID: **H08080360-001AMS** Method: **A2320 B**
Analysis Date: **08/28/08 10:28** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	690	4.0	600	112.4	96	90	110				

Associated samples: H08080354-001A

Run ID :Run Order: **TITTR_080828A: 7** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-001AMSD** Method: **A2320 B**
Analysis Date: **08/28/08 10:33** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	670	4.0	600	112.4	92	90	110	685.6	2.8	20	

Associated samples: H08080354-001A

Run ID :Run Order: **TITTR_080828A: 15** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV1_080828A** Method: **A2320 B**
Analysis Date: **08/28/08 12:03** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	1000	4.0	1000		101	90	110				

Associated samples:

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
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R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

ANALYTICAL QC SUMMARY REPORT

BatchID: 080828A-ALK-W

Date: *15-Sep-08*

Run ID :Run Order: **TITTR_080828A: 20** SampType: **Sample Duplicate** Sample ID: **H08080395-001ADUP** Method: **A2320 B**

Analysis Date: **08/28/08 13:06** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	43	4.0						41.79	2.4	20	

Associated samples: H08080354-001A

Run ID :Run Order: **TITTR_080828A: 27** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV2_080828A** Method: **A2320 B**

Analysis Date: **08/28/08 13:41** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	1000	4.0	1000		102	90	110				

Associated samples:

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

Date: *15-Sep-08*

BatchID: B_R116346

Run ID :Run Order: **SUB-B116346: 2** SampType: **Initial Calibration Verification Standard** Sample ID: **QCS-080514A, 080514B, 080225B** Method: **E200.8**

Analysis Date: **08/22/08 10:22** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.24	0.10	0.25		98	90	110				
Antimony	0.050	0.050	0.05		101	90	110				
Arsenic	0.050	0.0050	0.05		99	90	110				
Barium	0.050	0.10	0.05		100	90	110				
Beryllium	0.025	0.0010	0.025		100	90	110				
Cadmium	0.026	0.0010	0.025		104	90	110				
Chromium	0.051	0.010	0.05		102	90	110				
Cobalt	0.050	0.010	0.05		100	90	110				
Copper	0.052	0.010	0.05		105	90	110				
Lead	0.050	0.010	0.05		100	90	110				
Manganese	0.24	0.010	0.25		95	90	110				
Mercury	0.0019	0.0010	0.002		97	90	110				
Nickel	0.052	0.010	0.05		105	90	110				
Selenium	0.051	0.0050	0.05		102	90	110				
Thallium	0.050	0.10	0.05		100	90	110				
Tin	0.050	0.10	0.05		101	90	110				
Vanadium	0.050	0.10	0.05		99	90	110				
Zinc	0.052	0.010	0.05		103	90	110				

Associated samples: H08080354-001B

Run ID :Run Order: **SUB-B116346: 3** SampType: **Method Blank** Sample ID: **LRB** Method: **E200.8**

Analysis Date: **08/22/08 11:25** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.0001									
Antimony	ND	4E-06									
Arsenic	ND	4E-05									
Barium	ND	3E-05									
Beryllium	ND	4E-06									
Cadmium	ND	3E-06									
Chromium	ND	4E-05									
Cobalt	ND	5E-06									
Copper	ND	3E-05									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

Date: 15-Sep-08

BatchID: B_R116346

Run ID :Run Order: **SUB-B116346: 3** SampType: **Method Blank** Sample ID: **LRB** Method: **E200.8**

Analysis Date: **08/22/08 11:25** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	3E-06									
Manganese	0.0001	6E-06									
Mercury	ND	1E-05									
Nickel	ND	3E-05									
Selenium	ND	0.0001									
Thallium	ND	4E-06									
Tin	ND	8E-06									
Vanadium	ND	3E-05									
Zinc	0.0008	3E-05									

Associated samples: H08080354-001B

Run ID :Run Order: **SUB-B116346: 4** SampType: **Laboratory Fortified Blank** Sample ID: **LFB** Method: **E200.8**

Analysis Date: **08/22/08 11:31** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.049	0.10	0.05		97	85	115				
Antimony	0.051	0.050	0.05		102	85	115				
Arsenic	0.050	0.0050	0.05		101	85	115				
Barium	0.050	0.10	0.05		101	85	115				
Beryllium	0.048	0.0010	0.05		96	85	115				
Cadmium	0.050	0.0010	0.05		99	85	115				
Chromium	0.049	0.010	0.05		99	85	115				
Cobalt	0.049	0.010	0.05		99	85	115				
Copper	0.049	0.010	0.05		97	85	115				
Lead	0.050	0.010	0.05		100	85	115				
Manganese	0.050	0.010	0.05	0.0001255	100	85	115				
Mercury	0.0010	0.0010	0.001		103	85	115				
Nickel	0.049	0.010	0.05		97	85	115				
Selenium	0.049	0.0050	0.05		98	85	115				
Thallium	0.050	0.10	0.05		100	85	115				
Tin	0.051	0.10	0.05		101	85	115				
Vanadium	0.050	0.10	0.05		100	85	115				
Zinc	0.050	0.010	0.05	0.0008242	99	85	115				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

ANALYTICAL QC SUMMARY REPORT

BatchID: B_R116346

Date: *15-Sep-08*

Run ID :Run Order: **SUB-B116346: 4** SampType: **Laboratory Fortified Blank** Sample ID: **LFB** Method: **E200.8**
Analysis Date: **08/22/08 11:31** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H08080354-001B**

Run ID :Run Order: **SUB-B116346: 5** SampType: **Sample Matrix Spike** Sample ID: **H08080354-001B** Method: **E200.8**
Analysis Date: **08/22/08 11:51** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.05567	0.10	0.05	0.009259	93	70	130				
Antimony	0.05028	0.0050	0.05	0.0002211	100	70	130				
Arsenic	0.05533	0.0050	0.05	0.00326	104	70	130				
Barium	0.09156	0.10	0.05	0.04421	95	70	130				
Beryllium	0.04612	0.0010	0.05	0.0000349	92	70	130				
Cadmium	0.04817	0.0010	0.05	0.000075	96	70	130				
Chromium	0.04902	0.010	0.05	0.0002072	98	70	130				
Cobalt	0.04931	0.010	0.05	0.002024	95	70	130				
Copper	0.04841	0.010	0.05	0.0003053	96	70	130				
Lead	0.04839	0.010	0.05	0.0001204	97	70	130				
Manganese	0.05278	0.010	0.05	0.004298	97	70	130				
Mercury	0.001040	0.0010	0.001	0.0000156	102	70	130				
Nickel	0.04807	0.010	0.05	0.0006438	95	70	130				
Selenium	0.05435	0.0050	0.05	0.001156	106	70	130				
Thallium	0.04815	0.0050	0.05		96	70	130				
Tin	0.04876	0.10	0.05		98	70	130				
Vanadium	0.05176	0.10	0.05	0.002709	98	70	130				
Zinc	0.05133	0.010	0.05	0.002608	97	70	130				

Associated samples: **H08080354-001B**

Run ID :Run Order: **SUB-B116346: 6** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080354-001B** Method: **E200.8**
Analysis Date: **08/22/08 11:58** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.05588	0.10	0.05	0.009259	93	70	130	0.05567	0	20	
Antimony	0.04990	0.0050	0.05	0.0002211	99	70	130	0.05028	0.8	20	
Arsenic	0.05479	0.0050	0.05	0.00326	103	70	130	0.05533	1	20	
Barium	0.09086	0.10	0.05	0.04421	93	70	130	0.09156	0	20	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: B_R116346

Run ID :Run Order: **SUB-B116346: 6** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080354-001B** Method: **E200.8**

Analysis Date: **08/22/08 11:58** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	0.04670	0.0010	0.05	0.0000349	93	70	130	0.04612	1.2	20	
Cadmium	0.04799	0.0010	0.05	0.000075	96	70	130	0.04817	0.4	20	
Chromium	0.04837	0.010	0.05	0.0002072	96	70	130	0.04902	1.3	20	
Cobalt	0.04988	0.010	0.05	0.002024	96	70	130	0.04931	1.1	20	
Copper	0.04780	0.010	0.05	0.0003053	95	70	130	0.04841	1.3	20	
Lead	0.04869	0.010	0.05	0.0001204	97	70	130	0.04839	0.6	20	
Manganese	0.05260	0.010	0.05	0.004298	97	70	130	0.05278	0.3	20	
Mercury	0.001134	0.0010	0.001	0.0000156	112	70	130	0.00104	8.6	20	
Nickel	0.04729	0.010	0.05	0.0006438	93	70	130	0.04807	1.6	20	
Selenium	0.05456	0.0050	0.05	0.001156	107	70	130	0.05435	0.4	20	
Thallium	0.04919	0.0050	0.05		98	70	130	0.04815	2.1	20	
Tin	0.04902	0.10	0.05		98	70	130	0.04876	0	20	
Vanadium	0.05163	0.10	0.05	0.002709	98	70	130	0.05176	0	20	
Zinc	0.05133	0.010	0.05	0.002608	97	70	130	0.05133	0	20	

Associated samples: **H08080354-001B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: B_R116363

Run ID :Run Order: **SUB-B116363: 10** SampType: **Continuing Calibration Verification Standard** Sample ID: **ICV** Method: **E200.7**
Analysis Date: **08/22/08 13:15** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	23.9	1.0	25		96	95	105				
Iron	2.50	0.030	2.5		100	95	105				
Magnesium	24.2	1.0	25		97	95	105				
Potassium	24.1	1.0	25		96	95	105				
Sodium	24.4	1.0	25		98	95	105				

Associated samples: H08080354-001B

Run ID :Run Order: **SUB-B116363: 11** SampType: **Method Blank** Sample ID: **MB-TJADIS080822A** Method: **E200.7**
Analysis Date: **08/22/08 13:41** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	0.02									
Iron	ND	0.005									
Magnesium	ND	0.1									
Potassium	ND	0.07									
Sodium	ND	0.04									

Associated samples: H08080354-001B

Run ID :Run Order: **SUB-B116363: 12** SampType: **Laboratory Fortified Blank** Sample ID: **LFB-TJADIS080822A** Method: **E200.7**
Analysis Date: **08/22/08 13:45** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	48.8	1.0	50		98	85	115				
Iron	4.90	0.030	5		98	85	115				
Magnesium	49.1	1.0	50		98	85	115				
Potassium	49.9	1.0	50		100	85	115				
Sodium	49.7	1.0	50		99	85	115				

Associated samples: H08080354-001B

Run ID :Run Order: **SUB-B116363: 18** SampType: **Sample Matrix Spike** Sample ID: **B08081869-001CMS2** Method: **E200.7**
Analysis Date: **08/23/08 00:25** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	86	1.0	50	35.71	101	70	130				

Qualifiers:
ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo
BatchID: B_R116363
Date: 15-Sep-08

Run ID :Run Order: **SUB-B116363: 18** SampType: **Sample Matrix Spike** Sample ID: **B08081869-001CMS2** Method: **E200.7**
Analysis Date: **08/23/08 00:25** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	5.2	0.030	5	0.01642	103	70	130				
Magnesium	64	1.0	50	11.15	105	70	130				
Potassium	52	1.0	50	0.7625	102	70	130				
Sodium	62	1.0	50	9.792	104	70	130				

Associated samples: H08080354-001B

Run ID :Run Order: **SUB-B116363: 19** SampType: **Sample Matrix Spike Duplicate** Sample ID: **B08081869-001CMSD2** Method: **E200.7**
Analysis Date: **08/23/08 00:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	82	1.0	50	35.71	93	70	130	86.41	5.1	20	
Iron	4.7	0.030	5	0.01642	94	70	130	5.153	9.3	20	
Magnesium	59	1.0	50	11.15	96	70	130	63.69	7.5	20	
Potassium	48	1.0	50	0.7625	95	70	130	51.8	7.4	20	
Sodium	58	1.0	50	9.792	97	70	130	62.03	6.4	20	

Associated samples: H08080354-001B

Run ID :Run Order: **SUB-B116363: 22** SampType: **Sample Matrix Spike** Sample ID: **B08081791-002BMS2** Method: **E200.7**
Analysis Date: **08/22/08 19:25** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	120	1.0	50	73.52	100	70	130				
Iron	4.9	0.030	5		97	70	130				
Magnesium	110	1.0	50	57.62	105	70	130				
Potassium	53	1.0	50	2.686	101	70	130				
Sodium	140	1.0	50	92.85	103	70	130				

Associated samples: H08080354-001B

Run ID :Run Order: **SUB-B116363: 23** SampType: **Sample Matrix Spike Duplicate** Sample ID: **B08081791-002BMSD2** Method: **E200.7**
Analysis Date: **08/22/08 19:28** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	120	1.0	50	73.52	95	70	130	123.5	1.9	20	
Iron	4.8	0.030	5		96	70	130	4.862	1.3	20	

Qualifiers:
ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
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Project: 1054 Asarco E. Helean CAMU Quarterly Mo

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: B_R116363

Run ID :Run Order: **SUB-B116363: 23** SampType: **Sample Matrix Spike Duplicate** Sample ID: **B08081791-002BMSD2** Method: **E200.7**

Analysis Date: **08/22/08 19:28** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Magnesium	110	1.0	50	57.62	101	70	130	110	1.9	20	
Potassium	51	1.0	50	2.686	96	70	130	53.03	4.1	20	
Sodium	140	1.0	50	92.85	91	70	130	144.1	4.1	20	

Associated samples: **H08080354-001B**

Run ID :Run Order: **SUB-B116363: 25** SampType: **Laboratory Fortified Blank** Sample ID: **LFB-TJADIS080822A** Method: **E200.7**

Analysis Date: **08/22/08 13:49** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	46.0	1.0	50		92	85	115				
Iron	4.54	0.030	5		91	85	115				
Magnesium	46.7	1.0	50		93	85	115				
Potassium	44.2	1.0	50		88	85	115				
Sodium	44.9	1.0	50		90	85	115				

Associated samples: **H08080354-001B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

Date: 15-Sep-08

BatchID: B_R116539

Run ID :Run Order: **SUB-B116539: 4** SampType: **Method Blank** Sample ID: **LRB** Method: **E200.8**
Analysis Date: **08/27/08 11:36** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	ND	7E-06									

Associated samples: H08080354-001B

Run ID :Run Order: **SUB-B116539: 6** SampType: **Laboratory Fortified Blank** Sample ID: **LFB** Method: **E200.8**
Analysis Date: **08/27/08 12:03** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	0.018	0.0050	0.02		90	85	115				

Associated samples: H08080354-001B

Run ID :Run Order: **SUB-B116539: 11** SampType: **Initial Calibration Verification Standard** Sample ID: **QCS-080514A, 080514B, 080225B** Method: **E200.8**
Analysis Date: **08/27/08 19:46** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	0.026	0.0050	0.025		105	90	110				

Associated samples: H08080354-001B

Run ID :Run Order: **SUB-B116539: 18** SampType: **Initial Calibration Verification Standard** Sample ID: **QCS-080514A, 080514B, 080225B** Method: **E200.8**
Analysis Date: **08/27/08 10:22** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	0.026	0.0050	0.025		103	90	110				

Associated samples: H08080354-001B

Run ID :Run Order: **SUB-B116539: 19** SampType: **Sample Matrix Spike** Sample ID: **B08082063-004BMS** Method: **E200.8**
Analysis Date: **08/27/08 12:23** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	0.01853	0.0050	0.02		93	70	130				

Associated samples: H08080354-001B

Qualifiers:
ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

ANALYTICAL QC SUMMARY REPORT

BatchID: B_R116539

Date: *15-Sep-08*

Run ID :Run Order: **SUB-B116539: 20** SampType: **Sample Matrix Spike Duplicate** Sample ID: **B08082063-004BMSD** Method: **E200.8**

Analysis Date: **08/27/08 12:30** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	0.01842	0.0050	0.02		92	70	130	0.01853	0.6	20	

Associated samples: **H08080354-001B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

BatchID: R47743

Date: 15-Sep-08

Run ID :Run Order: **PSA MILLENNIUM_080820A: 2** SampType: **Initial Calibration Verification Standard** Sample ID: **As080820-ICV** Method: **E1632AM**

Analysis Date: **08/20/08 21:50** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	24	5.0	25		96	90	110				
Arsenic-V	27	5.0	25		108	90	110				

Associated samples: **H08080354-001C**

Run ID :Run Order: **PSA MILLENNIUM_080820A: 3** SampType: **CRDL Standard for ICP** Sample ID: **As080820-10** Method: **E1632AM**

Analysis Date: **08/20/08 22:04** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	11	5.0	10		106	90	110				
Arsenic-V	10.0	5.0	10		100	90	110				

Associated samples: **H08080354-001C**

Run ID :Run Order: **PSA MILLENNIUM_080820A: 4** SampType: **Continuing Calibration Verification Standard** Sample ID: **As080820-50** Method: **E1632AM**

Analysis Date: **08/20/08 22:12** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	55	5.0	50		109	90	110				
Arsenic-V	54	5.0	50		107	90	110				

Associated samples: **H08080354-001C**

Run ID :Run Order: **PSA MILLENNIUM_080820A: 5** SampType: **Method Blank** Sample ID: **MBLK_13r** Method: **E1632AM**

Analysis Date: **08/20/08 22:21** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	ND	0.3									
Arsenic-V	ND	0.3									

Associated samples: **H08080354-001C**

Run ID :Run Order: **PSA MILLENNIUM_080820A: 6** SampType: **Laboratory Control Sample** Sample ID: **As080820-LCS** Method: **E1632AM**

Analysis Date: **08/20/08 22:30** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	54	5.0	50		108	90	110				
Arsenic-V	55	5.0	50		109	90	110				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo
BatchID: R47743
Date: 15-Sep-08

Run ID :Run Order: **PSA MILLENNIUM_080820A: 6** SampType: **Laboratory Control Sample** Sample ID: **As080820-LCS** Method: **E1632AM**
Analysis Date: **08/20/08 22:30** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: H08080354-001C

Run ID :Run Order: **PSA MILLENNIUM_080820A: 10** SampType: **Sample Matrix Spike** Sample ID: **H08080106-002A MS** Method: **E1632AM**
Analysis Date: **08/20/08 23:08** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	19	5.0	50		38	80	120				S
Arsenic-V	51	5.0	50	15.64	71	80	120				S

Associated samples: H08080354-001C

Run ID :Run Order: **PSA MILLENNIUM_080820A: 11** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080106-002A MSD** Method: **E1632AM**
Analysis Date: **08/20/08 23:16** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	20	5.0	50		39	80	120	19.21	2.1	20	S
Arsenic-V	53	5.0	50	15.64	75	80	120	51.05	4.3	20	S

Associated samples: H08080354-001C

Run ID :Run Order: **PSA MILLENNIUM_080820A: 13** SampType: **Sample Duplicate** Sample ID: **H08080354-001CDUP** Method: **E1632AM**
Analysis Date: **08/20/08 23:36** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	ND	5.0							0	20	
Arsenic-V	5.1	5.0						5.08	0.6	20	

Associated samples: H08080354-001C

Run ID :Run Order: **PSA MILLENNIUM_080820A: 14** SampType: **Continuing Calibration Verification Standard** Sample ID: **AS080820-50** Method: **E1632AM**
Analysis Date: **08/20/08 23:45** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	52	5.0	50		104	90	110				
Arsenic-V	52	5.0	50		105	90	110				

Associated samples:

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

BatchID: R47832

Date: 15-Sep-08

Run ID :Run Order: **PSA MILLENNIUM_080823B: 1** SampType: **Initial Calibration Verification Standard** Sample ID: **ICV** Method: **A3114 B**
Analysis Date: **08/23/08 10:53** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-IV	0.0470	0.0050	0.05		94	90	110				

Associated samples: H08080354-001D

Run ID :Run Order: **PSA MILLENNIUM_080823B: 3** SampType: **Laboratory Control Sample** Sample ID: **LCS** Method: **A3114 B**
Analysis Date: **08/23/08 11:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-IV	0.0518	0.0050	0.05		104	70	130				

Associated samples: H08080354-001D

Run ID :Run Order: **PSA MILLENNIUM_080823B: 6** SampType: **Method Blank** Sample ID: **MBLK** Method: **A3114 B**
Analysis Date: **08/23/08 11:11** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-IV	ND	0.0003									

Associated samples: H08080354-001D

Run ID :Run Order: **PSA MILLENNIUM_080823B: 12** SampType: **Sample Matrix Spike** Sample ID: **H08080360-004DMS** Method: **A3114 B**
Analysis Date: **08/23/08 11:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-IV	0.0543	0.0050	0.05		109	80	120				

Associated samples: H08080354-001D

Run ID :Run Order: **PSA MILLENNIUM_080823B: 13** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-004DMSD** Method: **A3114 B**
Analysis Date: **08/23/08 11:21** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-IV	0.0545	0.0050	0.05		109	80	120	0.05427	0.4	20	

Associated samples: H08080354-001D

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

ANALYTICAL QC SUMMARY REPORT

BatchID: R47832

Date: *15-Sep-08*

Run ID :Run Order: **PSA MILLENNIUM_080823B: 18** SampType: **Sample Duplicate** Sample ID: **H08080360-008DDUP** Method: **A3114 B**

Analysis Date: **08/23/08 11:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-IV	ND	0.0050							0	20	

Associated samples: **H08080354-001D**

Run ID :Run Order: **PSA MILLENNIUM_080823B: 19** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV** Method: **A3114 B**

Analysis Date: **08/23/08 11:31** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-IV	0.0926	0.0050	0.1		93	90	110				

Associated samples:

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

BatchID: R47833

Date: 15-Sep-08

Run ID :Run Order: **PSA MILLENNIUM_080823C: 1** SampType: **Method Blank** Sample ID: **MBLK** Method: **A3114 B**
Analysis Date: **08/23/08 09:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	ND	0.0003									

Associated samples: H08080354-001D

Run ID :Run Order: **PSA MILLENNIUM_080823C: 2** SampType: **Initial Calibration Verification Standard** Sample ID: **ICV** Method: **A3114 B**
Analysis Date: **08/23/08 09:58** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	0.0454	0.0050	0.05		91	90	110				

Associated samples: H08080354-001D

Run ID :Run Order: **PSA MILLENNIUM_080823C: 3** SampType: **Laboratory Control Sample** Sample ID: **LCS** Method: **A3114 B**
Analysis Date: **08/23/08 09:59** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	0.0934	0.0050	0.1		93	90	110				

Associated samples: H08080354-001D

Run ID :Run Order: **PSA MILLENNIUM_080823C: 10** SampType: **Sample Matrix Spike** Sample ID: **H08080360-004DMS** Method: **A3114 B**
Analysis Date: **08/23/08 10:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	0.0947	0.0050	0.1		95	80	120				

Associated samples: H08080354-001D

Run ID :Run Order: **PSA MILLENNIUM_080823C: 11** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-004DMSD** Method: **A3114 B**
Analysis Date: **08/23/08 10:12** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	0.0941	0.0050	0.1		94	80	120	0.0947	0.6	20	

Associated samples: H08080354-001D

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

ANALYTICAL QC SUMMARY REPORT

BatchID: R47833

Date: *15-Sep-08*

Run ID :Run Order: **PSA MILLENNIUM_080823C: 16** SampType: **Sample Duplicate** Sample ID: **H08080360-008DDUP** Method: **A3114 B**
Analysis Date: **08/23/08 10:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	0.000778	0.0050						0.000785	0	20	

Associated samples: H08080354-001D

Run ID :Run Order: **PSA MILLENNIUM_080823C: 17** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV** Method: **A3114 B**
Analysis Date: **08/23/08 10:21** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	0.102	0.0050	0.1		102	90	110				

Associated samples:

Run ID :Run Order: **PSA MILLENNIUM_080823C: 22** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV** Method: **A3114 B**
Analysis Date: **08/23/08 10:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	0.103	0.0050	0.1		103	90	110				

Associated samples:

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
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R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

BatchID: R47909

Date: 15-Sep-08

Run ID :Run Order: **IC101-H_080826A: 11** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV** Method: **E300.0**
Analysis Date: **08/26/08 11:08** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25	1.0	25		101	90	110				
Sulfate	100	1.0	100		101	90	110				

Associated samples: H08080354-001A

Run ID :Run Order: **IC101-H_080826A: 12** SampType: **Initial Calibration Verification Standard** Sample ID: **ICV** Method: **E300.0**
Analysis Date: **08/26/08 11:28** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25	1.0	25		102	90	110				
Sulfate	100	1.0	100		104	90	110				

Associated samples: H08080354-001A

Run ID :Run Order: **IC101-H_080826A: 13** SampType: **Laboratory Fortified Blank** Sample ID: **LFB** Method: **E300.0**
Analysis Date: **08/26/08 11:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	9.4	1.0	10		94	90	110				
Sulfate	37	1.0	40	0.023	93	90	110				

Associated samples: H08080354-001A

Run ID :Run Order: **IC101-H_080826A: 14** SampType: **Method Blank** Sample ID: **MBLK** Method: **E300.0**
Analysis Date: **08/26/08 12:07** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND										
Sulfate	0.02										

Associated samples: H08080354-001A

Run ID :Run Order: **IC101-H_080826A: 16** SampType: **Laboratory Control Sample** Sample ID: **LCS** Method: **E300.0**
Analysis Date: **08/26/08 12:46** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	88	1.0	87.47		101	90	110				
Sulfate	28	1.0	28.53	0.023	99	90	110				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080354
Project: 1054 Asarco E. Helean CAMU Quarterly Mo

BatchID: R47909

Date: 15-Sep-08

Run ID :Run Order: **IC101-H_080826A: 16** SampType: **Laboratory Control Sample** Sample ID: **LCS** Method: **E300.0**
Analysis Date: **08/26/08 12:46** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: H08080354-001A

Run ID :Run Order: **IC101-H_080826A: 22** SampType: **Sample Matrix Spike** Sample ID: **H08080360-003A MS** Method: **E300.0**
Analysis Date: **08/26/08 14:42** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	37	1.0	25	11.07	102	90	110				
Sulfate	170	1.0	100	67.31	106	90	110				

Associated samples: H08080354-001A

Run ID :Run Order: **IC101-H_080826A: 23** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-003A MSD** Method: **E300.0**
Analysis Date: **08/26/08 15:02** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	36	1.0	25	11.07	99	90	110	36.69	2.4	20	
Sulfate	170	1.0	100	67.31	103	90	110	172.9	1.4	20	

Associated samples: H08080354-001A

Run ID :Run Order: **IC101-H_080826A: 28** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV** Method: **E300.0**
Analysis Date: **08/26/08 16:39** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25	1.0	25		101	90	110				
Sulfate	100	1.0	100		101	90	110				

Associated samples:

Run ID :Run Order: **IC101-H_080826A: 42** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV** Method: **E300.0**
Analysis Date: **08/26/08 21:11** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25	1.0	25		101	90	110				
Sulfate	100	1.0	100		102	90	110				

Associated samples:

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

ANALYTICAL SUMMARY REPORT

September 15, 2008

Asarco Consulting
5219 N Shirley St
Ruston, WA 98407

Workorder No.: H08080360 Quote ID: H323 - Asarco Sampling

Project Name: 1054 Asarco E Helena Quarterly Monitoring

Energy Laboratories Inc received the following 11 samples from Asarco Consulting on 8/21/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H08080360-001	AEH-0808-102	08/20/08 10:45	08/21/08	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Conductivity Arsenic Speciation Dissolved Selenium By CVAA, Dissolved Selenium-IV, Dissolved Selenium-VI, Dissolved Anions by Ion Chromatography Solids, Total Dissolved
H08080360-002	AEH-0808-103	08/20/08 12:35	08/21/08	Aqueous	Same As Above
H08080360-003	AEH-0808-104	08/20/08 12:45	08/21/08	Aqueous	Same As Above
H08080360-004	AEH-0808-105	08/20/08 13:00	08/21/08	Aqueous	Same As Above
H08080360-005	AEH-0808-106	08/20/08 14:20	08/21/08	Aqueous	Same As Above
H08080360-006	AEH-0808-107	08/20/08 13:05	08/21/08	Aqueous	Same As Above
H08080360-007	AEH-0808-108	08/20/08 15:50	08/21/08	Aqueous	Same As Above
H08080360-008	AEH-0808-109	08/20/08 16:30	08/21/08	Aqueous	Same As Above
H08080360-009	AEH-0808-110	08/20/08 17:10	08/21/08	Aqueous	Same As Above
H08080360-010	AEH-0808-111	08/20/08 18:00	08/21/08	Aqueous	Same As Above
H08080360-011	AEH-0808-112	08/20/08 18:30	08/21/08	Aqueous	Same As Above

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT, EPA # MT00005
eli-c - Energy Laboratories, Inc. - Casper, WY, EPA# WY00002
eli-g - Energy Laboratories, Inc. - Gillette, WY, EPA# WY00006
eli-h - Energy Laboratories, Inc. - Helena, MT, EPA# MT00945
eli-r - Energy Laboratories, Inc. - Rapid City, SD, EPA# SD00012
eli-t - Energy Laboratories, Inc. - College Station, TX, EPA# TX01520

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES, INC. will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories are indicated within the Laboratory Analytical Report.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

ELI appreciates the opportunity to provide you with this analytical service. For additional information, including certifications, and analytical services visit our web page www.energylab.com.

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ANALYTICAL SUMMARY REPORT

September 15, 2008

Asarco Consulting
5219 N Shirley St
Ruston, WA 98407

Workorder No.: H08080360 Quote ID: H323 - Asarco Sampling

Project Name: 1054 Asarco E Helena Quarterly Monitoring

Energy Laboratories Inc received the following 11 samples from Asarco Consulting on 8/21/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test

Report Approved By: Jonathan D. Hager

Digitally signed by Jonathan D. Hager
DN: cn=Jonathan D. Hager, o=Energy Laboratories-Helena, ou=Assistant Lab Manager, email=jhager@energylab.com, c=US
Date: 2008.09.15 09:59:19 -06:00'

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-102
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-001
Collection Date: 08/20/08 10:45
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Conductivity	430	umhos/cm		1		A2510 B	08/22/08 11:42 / kjw			COND_080822A	5	080822A-COND-PROBE W
Solids, Total Dissolved TDS @ 180 C	291	mg/L		10		A2540 C	08/21/08 16:05 / abb			SOLIDS_080821A	4	080821A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	110	mg/L		5		A2320 B	08/28/08 10:22 / abb			TITTR_080828A	5	080828A-ALK-W
Chloride	13	mg/L		1		E300.0	08/26/08 13:44 / skd			IC101-H_080826A	19	R47909
Sulfate	79	mg/L		1		E300.0	08/26/08 13:44 / skd			IC101-H_080826A	19	R47909
METALS, DISSOLVED												
Aluminum	ND	mg/L		0.1		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
Antimony	ND	mg/L		0.005		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
Arsenic	ND	mg/L		0.005		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
Barium	ND	mg/L		0.1		E200.7	08/25/08 18:36 / eli-b			SUB-B116425	7	B_R116425
Beryllium	ND	mg/L		0.001		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
Cadmium	ND	mg/L		0.001		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
Calcium	54	mg/L		5		E200.7	08/25/08 18:36 / eli-b			SUB-B116425	7	B_R116425
Chromium	ND	mg/L		0.001		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
Cobalt	ND	mg/L		0.01		E200.7	08/25/08 18:36 / eli-b			SUB-B116425	7	B_R116425
Copper	ND	mg/L		0.004		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
Iron	ND	mg/L		0.02		E200.7	08/25/08 18:36 / eli-b			SUB-B116425	7	B_R116425
Lead	ND	mg/L		0.005		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
Magnesium	12	mg/L		5		E200.7	08/25/08 18:36 / eli-b			SUB-B116425	7	B_R116425
Manganese	ND	mg/L		0.01		E200.7	08/25/08 18:36 / eli-b			SUB-B116425	7	B_R116425
Mercury	ND	mg/L		0.006		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
Nickel	ND	mg/L		0.01		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
Potassium	5	mg/L		5		E200.7	08/25/08 18:36 / eli-b			SUB-B116425	7	B_R116425
Selenium	ND	mg/L		0.005		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
Silver	ND	mg/L		0.005		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
Sodium	24	mg/L		5		E200.7	08/25/08 18:36 / eli-b			SUB-B116425	7	B_R116425
Thallium	ND	mg/L		0.002		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
Vanadium	ND	mg/L		0.01		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
Zinc	ND	mg/L		0.02		E200.8	08/26/08 12:09 / eli-b			SUB-B116500	1	B_R116500
METALS - SPECIATED												
Arsenic-III	ND	ug/L		5.0		E1632AM	08/22/08 12:44 / skd			MILLENNIUM_080822A	10	R47834

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-102
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-001
Collection Date: 08/20/08 10:45
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS - SPECIATED												
Arsenic-V	7.3	ug/L		5.0		E1632AM	08/22/08 12:44 / skd			A MILLENNIUM_080822A	10	R47834
METALS, SPECIATED												
Selenium-IV	ND	mg/L		0.0050		A3114 B	08/23/08 11:14 / skd			SA MILLENNIUM_080823B	8	R47832
Selenium-VI	ND	mg/L		0.0050		A3114 B	08/23/08 10:04 / skd			SA MILLENNIUM_080823C	6	R47833

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-103
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-002
Collection Date: 08/20/08 12:35
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Conductivity	612	umhos/cm		1		A2510 B	08/22/08 11:43 / kjw			COND_080822A	6	080822A-COND-PROBE W
Solids, Total Dissolved TDS @ 180 C	389	mg/L		10		A2540 C	08/21/08 16:05 / abb			SOLIDS_080821A	6	080821A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	240	mg/L		5		A2320 B	08/28/08 10:44 / abb			TITTR_080828A	8	080828A-ALK-W
Chloride	11	mg/L		1		E300.0	08/26/08 14:03 / skd			IC101-H_080826A	20	R47909
Sulfate	68	mg/L		1		E300.0	08/26/08 14:03 / skd			IC101-H_080826A	20	R47909
METALS, DISSOLVED												
Aluminum	ND	mg/L		0.1		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
Antimony	ND	mg/L		0.005		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
Arsenic	0.011	mg/L		0.005		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
Barium	ND	mg/L		0.1		E200.7	08/25/08 18:40 / eli-b			SUB-B116425	8	B_R116425
Beryllium	ND	mg/L		0.001		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
Cadmium	ND	mg/L		0.001		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
Calcium	92	mg/L		5		E200.7	08/25/08 18:40 / eli-b			SUB-B116425	8	B_R116425
Chromium	ND	mg/L		0.001		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
Cobalt	ND	mg/L		0.01		E200.7	08/25/08 18:40 / eli-b			SUB-B116425	8	B_R116425
Copper	ND	mg/L		0.004		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
Iron	ND	mg/L		0.02		E200.7	08/25/08 18:40 / eli-b			SUB-B116425	8	B_R116425
Lead	ND	mg/L		0.005		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
Magnesium	21	mg/L		5		E200.7	08/25/08 18:40 / eli-b			SUB-B116425	8	B_R116425
Manganese	0.03	mg/L		0.01		E200.7	08/25/08 18:40 / eli-b			SUB-B116425	8	B_R116425
Mercury	ND	mg/L		0.006		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
Nickel	ND	mg/L		0.01		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
Potassium	7	mg/L		5		E200.7	08/25/08 18:40 / eli-b			SUB-B116425	8	B_R116425
Selenium	0.006	mg/L		0.005		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
Silver	ND	mg/L		0.005		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
Sodium	21	mg/L		5		E200.7	08/25/08 18:40 / eli-b			SUB-B116425	8	B_R116425
Thallium	ND	mg/L		0.002		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
Vanadium	ND	mg/L		0.01		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
Zinc	ND	mg/L		0.02		E200.8	08/26/08 13:11 / eli-b			SUB-B116500	2	B_R116500
METALS - SPECIATED												
Arsenic-III	ND	ug/L		5.0		E1632AM	08/22/08 12:53 / skd			A MILLENNIUM_080822A	11	R47834

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-103
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-002
Collection Date: 08/20/08 12:35
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS - SPECIATED												
Arsenic-V	10.9	ug/L		5.0		E1632AM	08/22/08 12:53 / skd			A MILLENNIUM_080822A	11	R47834
METALS, SPECIATED												
Selenium-IV	ND	mg/L		0.0050		A3114 B	08/23/08 11:15 / skd			SA MILLENNIUM_080823B	9	R47832
Selenium-VI	0.0053	mg/L		0.0050		A3114 B	08/23/08 10:06 / skd			SA MILLENNIUM_080823C	7	R47833

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-104
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-003
Collection Date: 08/20/08 12:45
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Conductivity	615	umhos/cm		1		A2510 B	08/22/08 11:46 / kjw			COND_080822A	8	080822A-COND-PROBE W
Solids, Total Dissolved TDS @ 180 C	382	mg/L		10		A2540 C	08/21/08 16:06 / abb			SOLIDS_080821A	7	080821A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	240	mg/L		5		A2320 B	08/28/08 10:55 / abb			TITTR_080828A	9	080828A-ALK-W
Chloride	11	mg/L		1		E300.0	08/26/08 14:23 / skd			IC101-H_080826A	21	R47909
Sulfate	67	mg/L		1		E300.0	08/26/08 14:23 / skd			IC101-H_080826A	21	R47909
METALS, DISSOLVED												
Aluminum	ND	mg/L		0.1		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
Antimony	ND	mg/L		0.005		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
Arsenic	0.011	mg/L		0.005		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
Barium	ND	mg/L		0.1		E200.7	08/25/08 18:52 / eli-b			SUB-B116425	9	B_R116425
Beryllium	ND	mg/L		0.001		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
Cadmium	ND	mg/L		0.001		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
Calcium	92	mg/L		5		E200.7	08/25/08 18:52 / eli-b			SUB-B116425	9	B_R116425
Chromium	ND	mg/L		0.001		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
Cobalt	ND	mg/L		0.01		E200.7	08/25/08 18:52 / eli-b			SUB-B116425	9	B_R116425
Copper	ND	mg/L		0.004		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
Iron	ND	mg/L		0.02		E200.7	08/25/08 18:52 / eli-b			SUB-B116425	9	B_R116425
Lead	ND	mg/L		0.005		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
Magnesium	21	mg/L		5		E200.7	08/25/08 18:52 / eli-b			SUB-B116425	9	B_R116425
Manganese	0.03	mg/L		0.01		E200.7	08/25/08 18:52 / eli-b			SUB-B116425	9	B_R116425
Mercury	ND	mg/L		0.006		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
Nickel	ND	mg/L		0.01		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
Potassium	7	mg/L		5		E200.7	08/25/08 18:52 / eli-b			SUB-B116425	9	B_R116425
Selenium	0.006	mg/L		0.005		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
Silver	ND	mg/L		0.005		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
Sodium	22	mg/L		5		E200.7	08/25/08 18:52 / eli-b			SUB-B116425	9	B_R116425
Thallium	ND	mg/L		0.002		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
Vanadium	ND	mg/L		0.01		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
Zinc	ND	mg/L		0.02		E200.8	08/26/08 13:19 / eli-b			SUB-B116500	3	B_R116500
METALS - SPECIATED												
Arsenic-III	ND	ug/L		5.0		E1632AM	08/22/08 13:10 / skd			MILLENNIUM_080822A	13	R47834

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-104
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-003
Collection Date: 08/20/08 12:45
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS - SPECIATED												
Arsenic-V	11.1	ug/L		5.0		E1632AM	08/22/08 13:10 / skd			A MILLENNIUM_080822A	13	R47834
METALS, SPECIATED												
Selenium-IV	ND	mg/L		0.0050		A3114 B	08/23/08 11:17 / skd			A MILLENNIUM_080823B	10	R47832
Selenium-VI	0.0050	mg/L		0.0050		A3114 B	08/23/08 10:07 / skd			SA MILLENNIUM_080823C	8	R47833

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-105
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-004
Collection Date: 08/20/08 13:00
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Conductivity	2	umhos/cm		1		A2510 B	08/22/08 14:23 / kjw			COND_080822A	9	080822A-COND-PROBE W
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	08/21/08 16:06 / abb			SOLIDS_080821A	8	080821A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	ND	mg/L		5		A2320 B	08/28/08 10:59 / abb			TITTR_080828A	10	080828A-ALK-W
Chloride	ND	mg/L		1		E300.0	08/26/08 15:21 / skd			IC101-H_080826A	24	R47909
Sulfate	ND	mg/L		1		E300.0	08/26/08 15:21 / skd			IC101-H_080826A	24	R47909
METALS, DISSOLVED												
Aluminum	ND	mg/L		0.1		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Antimony	ND	mg/L		0.005		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Arsenic	ND	mg/L		0.005		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Barium	ND	mg/L		0.1		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Beryllium	ND	mg/L		0.001		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Cadmium	ND	mg/L		0.001		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Calcium	ND	mg/L		5		E200.7	09/02/08 13:07 / eli-b			SUB-B116801	1	B_R116801
Chromium	ND	mg/L		0.001		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Cobalt	ND	mg/L		0.01		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Copper	ND	mg/L		0.004		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Iron	ND	mg/L		0.02		E200.7	09/02/08 13:07 / eli-b			SUB-B116801	1	B_R116801
Lead	ND	mg/L		0.005		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Magnesium	ND	mg/L		5		E200.7	09/02/08 13:07 / eli-b			SUB-B116801	1	B_R116801
Manganese	ND	mg/L		0.01		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Mercury	ND	mg/L		0.006		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Nickel	ND	mg/L		0.01		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Potassium	ND	mg/L		5		E200.7	09/02/08 13:07 / eli-b			SUB-B116801	1	B_R116801
Selenium	ND	mg/L		0.005		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Silver	ND	mg/L		0.005		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Sodium	ND	mg/L		5		E200.7	09/02/08 13:07 / eli-b			SUB-B116801	1	B_R116801
Thallium	ND	mg/L		0.002		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Vanadium	ND	mg/L		0.01		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
Zinc	ND	mg/L		0.02		E200.8	09/03/08 16:49 / eli-b			SUB-B116873	19	B_R116873
METALS - SPECIATED												
Arsenic-III	ND	ug/L		5.0		E1632AM	08/22/08 13:19 / skd			MILLENNIUM_080822A	14	R47834

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-105
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-004
Collection Date: 08/20/08 13:00
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS - SPECIATED												
Arsenic-V	ND	ug/L		5.0		E1632AM	08/22/08 13:19 / skd			A MILLENNIUM_080822A	14	R47834
METALS, SPECIATED												
Selenium-IV	ND	mg/L		0.0050		A3114 B	08/23/08 11:18 / skd			A MILLENNIUM_080823B	11	R47832
Selenium-VI	ND	mg/L		0.0050		A3114 B	08/23/08 10:09 / skd			SA MILLENNIUM_080823C	9	R47833

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-106
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-005
Collection Date: 08/20/08 14:20
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Conductivity	414	umhos/cm		1		A2510 B	08/22/08 11:55 / kjw			COND_080822A	10	080822A-COND-PROBE W
Solids, Total Dissolved TDS @ 180 C	282	mg/L		10		A2540 C	08/21/08 16:07 / abb			SOLIDS_080821A	11	080821A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	160	mg/L		5		A2320 B	08/28/08 11:03 / abb			TITTR_080828A	11	080828A-ALK-W
Chloride	8	mg/L		1		E300.0	08/26/08 15:40 / skd			IC101-H_080826A	25	R47909
Sulfate	50	mg/L		1		E300.0	08/26/08 15:40 / skd			IC101-H_080826A	25	R47909
METALS, DISSOLVED												
Aluminum	ND	mg/L		0.1		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Antimony	ND	mg/L		0.005		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Arsenic	0.006	mg/L		0.005		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Barium	ND	mg/L		0.1		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Beryllium	ND	mg/L		0.001		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Cadmium	ND	mg/L		0.001		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Calcium	48	mg/L		5		E200.7	09/02/08 13:18 / eli-b			SUB-B116801	2	B_R116801
Chromium	ND	mg/L		0.001		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Cobalt	ND	mg/L		0.01		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Copper	ND	mg/L		0.004		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Iron	ND	mg/L		0.02		E200.7	09/02/08 13:18 / eli-b			SUB-B116801	2	B_R116801
Lead	ND	mg/L		0.005		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Magnesium	9	mg/L		5		E200.7	09/02/08 13:18 / eli-b			SUB-B116801	2	B_R116801
Manganese	ND	mg/L		0.01		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Mercury	ND	mg/L		0.006		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Nickel	ND	mg/L		0.01		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Potassium	5	mg/L		5		E200.7	09/02/08 13:18 / eli-b			SUB-B116801	2	B_R116801
Selenium	ND	mg/L		0.005		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Silver	ND	mg/L		0.005		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Sodium	24	mg/L		5		E200.7	09/02/08 13:18 / eli-b			SUB-B116801	2	B_R116801
Thallium	ND	mg/L		0.002		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Vanadium	ND	mg/L		0.01		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
Zinc	ND	mg/L		0.02		E200.8	09/03/08 16:56 / eli-b			SUB-B116873	20	B_R116873
METALS - SPECIATED												
Arsenic-III	ND	ug/L		5.0		E1632AM	08/22/08 13:28 / skd			MILLENNIUM_080822A	15	R47834

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-106
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-005
Collection Date: 08/20/08 14:20
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS - SPECIATED												
Arsenic-V	7.5	ug/L		5.0		E1632AM	08/22/08 13:28 / skd			MILLENNIUM_080822A	15	R47834
METALS, SPECIATED												
Selenium-IV	ND	mg/L		0.0050		A3114 B	08/23/08 11:23 / skd			MILLENNIUM_080823B	14	R47832
Selenium-VI	ND	mg/L		0.0050		A3114 B	08/23/08 10:13 / skd			MILLENNIUM_080823C	12	R47833

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-107
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-006
Collection Date: 08/20/08 13:05
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Conductivity	337	umhos/cm		1		A2510 B	08/22/08 11:57 / kjw			COND_080822A	11	080822A-COND-PROBE W
Solids, Total Dissolved TDS @ 180 C	219	mg/L		10		A2540 C	08/21/08 16:07 / abb			SOLIDS_080821A	12	080821A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	140	mg/L		5		A2320 B	08/28/08 11:12 / abb			TITTR_080828A	12	080828A-ALK-W
Chloride	6	mg/L		1		E300.0	08/26/08 16:00 / skd			IC101-H_080826A	26	R47909
Sulfate	28	mg/L		1		E300.0	08/26/08 16:00 / skd			IC101-H_080826A	26	R47909
METALS, DISSOLVED												
Aluminum	ND	mg/L		0.1		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
Antimony	ND	mg/L		0.005		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
Arsenic	0.007	mg/L		0.005		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
Barium	ND	mg/L		0.1		E200.7	09/11/08 03:37 / eli-b			SUB-B117280	1	B_R117280
Beryllium	ND	mg/L		0.001		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
Cadmium	ND	mg/L		0.001		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
Calcium	34	mg/L		5		E200.7	09/11/08 03:37 / eli-b			SUB-B117280	1	B_R117280
Chromium	ND	mg/L		0.001		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
Cobalt	ND	mg/L		0.01		E200.7	09/11/08 03:37 / eli-b			SUB-B117280	1	B_R117280
Copper	ND	mg/L		0.004		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
Iron	ND	mg/L		0.02		E200.7	09/11/08 03:37 / eli-b			SUB-B117280	1	B_R117280
Lead	ND	mg/L		0.005		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
Magnesium	7	mg/L		5		E200.7	09/11/08 03:37 / eli-b			SUB-B117280	1	B_R117280
Manganese	ND	mg/L		0.01		E200.7	09/11/08 03:37 / eli-b			SUB-B117280	1	B_R117280
Mercury	ND	mg/L		0.006		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
Nickel	ND	mg/L		0.01		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
Potassium	ND	mg/L		5		E200.7	09/11/08 03:37 / eli-b			SUB-B117280	1	B_R117280
Selenium	ND	mg/L		0.005		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
Silver	ND	mg/L		0.005		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
Sodium	23	mg/L		5		E200.7	09/11/08 03:37 / eli-b			SUB-B117280	1	B_R117280
Thallium	ND	mg/L		0.002		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
Vanadium	ND	mg/L		0.01		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
Zinc	ND	mg/L		0.02		E200.8	08/26/08 13:42 / eli-b			SUB-B116500	6	B_R116500
METALS - SPECIATED												
Arsenic-III	ND	ug/L		5.0		E1632AM	08/22/08 13:54 / skd			MILLENNIUM_080822A	18	R47834

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-107
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-006
Collection Date: 08/20/08 13:05
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS - SPECIATED												
Arsenic-V	8.0	ug/L		5.0		E1632AM	08/22/08 13:54 / skd			A MILLENNIUM_080822A	18	R47834
METALS, SPECIATED												
Selenium-IV	ND	mg/L		0.0050		A3114 B	08/23/08 11:25 / skd			A MILLENNIUM_080823B	15	R47832
Selenium-VI	ND	mg/L		0.0050		A3114 B	08/23/08 10:15 / skd			A MILLENNIUM_080823C	13	R47833

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-108
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-007
Collection Date: 08/20/08 15:50
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Conductivity	414	umhos/cm		1		A2510 B	08/22/08 11:58 / kjw			COND_080822A	12	080822A-COND-PROBE W
Solids, Total Dissolved TDS @ 180 C	301	mg/L		10		A2540 C	08/21/08 16:07 / abb			SOLIDS_080821A	13	080821A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	160	mg/L		5		A2320 B	08/28/08 11:38 / abb			TITTR_080828A	13	080828A-ALK-W
Chloride	10	mg/L		1		E300.0	08/26/08 16:19 / skd			IC101-H_080826A	27	R47909
Sulfate	64	mg/L		1		E300.0	08/26/08 16:19 / skd			IC101-H_080826A	27	R47909
METALS, DISSOLVED												
Aluminum	ND	mg/L		0.1		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
Antimony	ND	mg/L		0.005		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
Arsenic	0.006	mg/L		0.005		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
Barium	ND	mg/L		0.1		E200.7	08/25/08 19:08 / eli-b			SUB-B116425	13	B_R116425
Beryllium	ND	mg/L		0.001		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
Cadmium	ND	mg/L		0.001		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
Calcium	57	mg/L		5		E200.7	08/25/08 19:08 / eli-b			SUB-B116425	13	B_R116425
Chromium	ND	mg/L		0.001		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
Cobalt	ND	mg/L		0.01		E200.7	08/25/08 19:08 / eli-b			SUB-B116425	13	B_R116425
Copper	ND	mg/L		0.004		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
Iron	ND	mg/L		0.02		E200.7	08/25/08 19:08 / eli-b			SUB-B116425	13	B_R116425
Lead	ND	mg/L		0.005		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
Magnesium	11	mg/L		5		E200.7	08/25/08 19:08 / eli-b			SUB-B116425	13	B_R116425
Manganese	ND	mg/L		0.01		E200.7	08/25/08 19:08 / eli-b			SUB-B116425	13	B_R116425
Mercury	ND	mg/L		0.006		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
Nickel	ND	mg/L		0.01		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
Potassium	7	mg/L		5		E200.7	08/25/08 19:08 / eli-b			SUB-B116425	13	B_R116425
Selenium	ND	mg/L		0.005		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
Silver	ND	mg/L		0.005		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
Sodium	24	mg/L		5		E200.7	08/25/08 19:08 / eli-b			SUB-B116425	13	B_R116425
Thallium	ND	mg/L		0.002		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
Vanadium	ND	mg/L		0.01		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
Zinc	ND	mg/L		0.02		E200.8	08/26/08 13:50 / eli-b			SUB-B116500	7	B_R116500
METALS - SPECIATED												
Arsenic-III	ND	ug/L		5.0		E1632AM	08/22/08 14:54 / skd			A MILLENNIUM_080822A	19	R47834

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-108
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-007
Collection Date: 08/20/08 15:50
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS - SPECIATED												
Arsenic-V	7.9	ug/L		5.0		E1632AM	08/22/08 14:54 / skd			MILLENNIUM_080822A	19	R47834
METALS, SPECIATED												
Selenium-IV	ND	mg/L		0.0050		A3114 B	08/23/08 11:26 / skd			MILLENNIUM_080823B	16	R47832
Selenium-VI	ND	mg/L		0.0050		A3114 B	08/23/08 10:16 / skd			MILLENNIUM_080823C	14	R47833

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-109
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-008
Collection Date: 08/20/08 16:30
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Conductivity	748	umhos/cm		1		A2510 B	08/22/08 12:02 / kjw			COND_080822A	14	080822A-COND-PROBE W
Solids, Total Dissolved TDS @ 180 C	505	mg/L		10		A2540 C	08/21/08 16:10 / abb			SOLIDS_080821A	15	080821A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	260	mg/L		5		A2320 B	08/28/08 11:46 / abb			TITTR_080828A	14	080828A-ALK-W
Chloride	17	mg/L		1		E300.0	08/26/08 17:18 / skd			IC101-H_080826A	30	R47909
Sulfate	130	mg/L		1		E300.0	08/26/08 17:18 / skd			IC101-H_080826A	30	R47909
METALS, DISSOLVED												
Aluminum	ND	mg/L		0.1		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
Antimony	ND	mg/L		0.005		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
Arsenic	0.010	mg/L		0.005		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
Barium	ND	mg/L		0.1		E200.7	08/25/08 19:12 / eli-b			SUB-B116425	14	B_R116425
Beryllium	ND	mg/L		0.001		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
Cadmium	ND	mg/L		0.001		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
Calcium	107	mg/L		5		E200.7	08/25/08 19:12 / eli-b			SUB-B116425	14	B_R116425
Chromium	ND	mg/L		0.001		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
Cobalt	ND	mg/L		0.01		E200.7	08/25/08 19:12 / eli-b			SUB-B116425	14	B_R116425
Copper	ND	mg/L		0.004		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
Iron	ND	mg/L		0.02		E200.7	08/25/08 19:12 / eli-b			SUB-B116425	14	B_R116425
Lead	ND	mg/L		0.005		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
Magnesium	27	mg/L		5		E200.7	08/25/08 19:12 / eli-b			SUB-B116425	14	B_R116425
Manganese	ND	mg/L		0.01		E200.7	08/25/08 19:12 / eli-b			SUB-B116425	14	B_R116425
Mercury	ND	mg/L		0.006		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
Nickel	ND	mg/L		0.01		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
Potassium	8	mg/L		5		E200.7	08/25/08 19:12 / eli-b			SUB-B116425	14	B_R116425
Selenium	ND	mg/L		0.005		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
Silver	ND	mg/L		0.005		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
Sodium	35	mg/L		5		E200.7	08/25/08 19:12 / eli-b			SUB-B116425	14	B_R116425
Thallium	ND	mg/L		0.002		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
Vanadium	ND	mg/L		0.01		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
Zinc	ND	mg/L		0.02		E200.8	08/26/08 13:57 / eli-b			SUB-B116500	8	B_R116500
METALS - SPECIATED												
Arsenic-III	ND	ug/L		5.0		E1632AM	08/22/08 15:03 / skd			A MILLENNIUM_080822A	20	R47834

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-109
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-008
Collection Date: 08/20/08 16:30
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS - SPECIATED												
Arsenic-V	9.0	ug/L		5.0		E1632AM	08/22/08 15:03 / skd			A MILLENNIUM_080822A	20	R47834
METALS, SPECIATED												
Selenium-IV	ND	mg/L		0.0050		A3114 B	08/23/08 11:28 / skd			A MILLENNIUM_080823B	17	R47832
Selenium-VI	ND	mg/L		0.0050		A3114 B	08/23/08 10:18 / skd			A MILLENNIUM_080823C	15	R47833

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-110
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-009
Collection Date: 08/20/08 17:10
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Conductivity	462	umhos/cm		1		A2510 B	08/22/08 12:03 / kjw			COND_080822A	15	080822A-COND-PROBE W
Solids, Total Dissolved TDS @ 180 C	309	mg/L		10		A2540 C	08/21/08 16:11 / abb			SOLIDS_080821A	16	080821A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	230	mg/L		5		A2320 B	08/28/08 12:41 / abb			TITTR_080828A	16	080828A-ALK-W
Chloride	6	mg/L		1		E300.0	08/26/08 17:37 / skd			IC101-H_080826A	31	R47909
Sulfate	14	mg/L		1		E300.0	08/26/08 17:37 / skd			IC101-H_080826A	31	R47909
METALS, DISSOLVED												
Aluminum	ND	mg/L		0.1		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
Antimony	ND	mg/L		0.005		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
Arsenic	0.011	mg/L		0.005		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
Barium	ND	mg/L		0.1		E200.7	08/25/08 19:24 / eli-b			SUB-B116425	15	B_R116425
Beryllium	ND	mg/L		0.001		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
Cadmium	ND	mg/L		0.001		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
Calcium	71	mg/L		5		E200.7	08/25/08 19:24 / eli-b			SUB-B116425	15	B_R116425
Chromium	ND	mg/L		0.001		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
Cobalt	ND	mg/L		0.01		E200.7	08/25/08 19:24 / eli-b			SUB-B116425	15	B_R116425
Copper	ND	mg/L		0.004		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
Iron	ND	mg/L		0.02		E200.7	08/25/08 19:24 / eli-b			SUB-B116425	15	B_R116425
Lead	ND	mg/L		0.005		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
Magnesium	16	mg/L		5		E200.7	08/25/08 19:24 / eli-b			SUB-B116425	15	B_R116425
Manganese	0.26	mg/L		0.01		E200.7	08/25/08 19:24 / eli-b			SUB-B116425	15	B_R116425
Mercury	ND	mg/L		0.006		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
Nickel	ND	mg/L		0.01		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
Potassium	6	mg/L		5		E200.7	08/25/08 19:24 / eli-b			SUB-B116425	15	B_R116425
Selenium	ND	mg/L		0.005		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
Silver	ND	mg/L		0.005		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
Sodium	18	mg/L		5		E200.7	08/25/08 19:24 / eli-b			SUB-B116425	15	B_R116425
Thallium	ND	mg/L		0.002		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
Vanadium	ND	mg/L		0.01		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
Zinc	ND	mg/L		0.02		E200.8	08/26/08 14:05 / eli-b			SUB-B116500	9	B_R116500
METALS - SPECIATED												
Arsenic-III	10.3	ug/L		5.0		E1632AM	08/22/08 15:12 / skd			A MILLENNIUM_080822A	23	R47834

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-110
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-009
Collection Date: 08/20/08 17:10
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS - SPECIATED												
Arsenic-V	ND	ug/L		5.0		E1632AM	08/22/08 15:12 / skd			MILLENNIUM_080822A	23	R47834
METALS, SPECIATED												
Selenium-IV	ND	mg/L		0.0050		A3114 B	08/23/08 11:34 / skd			MILLENNIUM_080823B	21	R47832
Selenium-VI	ND	mg/L		0.0050		A3114 B	08/23/08 10:24 / skd			MILLENNIUM_080823C	19	R47833

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-111
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-010
Collection Date: 08/20/08 18:00
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Conductivity	632	umhos/cm		1		A2510 B	08/22/08 12:05 / kjw			COND_080822A	16	080822A-COND-PROBE W
Solids, Total Dissolved TDS @ 180 C	451	mg/L		10		A2540 C	08/21/08 16:11 / abb			SOLIDS_080821A	17	080821A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	110	mg/L		5		A2320 B	08/28/08 12:46 / abb			TITTR_080828A	17	080828A-ALK-W
Chloride	29	mg/L		1		E300.0	08/26/08 17:56 / skd			IC101-H_080826A	32	R47909
Sulfate	160	mg/L		1		E300.0	08/26/08 17:56 / skd			IC101-H_080826A	32	R47909
METALS, DISSOLVED												
Aluminum	ND	mg/L		0.1		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
Antimony	ND	mg/L		0.005		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
Arsenic	0.017	mg/L		0.005		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
Barium	ND	mg/L		0.1		E200.7	08/25/08 19:28 / eli-b			SUB-B116425	16	B_R116425
Beryllium	ND	mg/L		0.001		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
Cadmium	ND	mg/L		0.001		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
Calcium	58	mg/L		5		E200.7	08/25/08 19:28 / eli-b			SUB-B116425	16	B_R116425
Chromium	ND	mg/L		0.001		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
Cobalt	ND	mg/L		0.01		E200.7	08/25/08 19:28 / eli-b			SUB-B116425	16	B_R116425
Copper	ND	mg/L		0.004		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
Iron	ND	mg/L		0.02		E200.7	08/25/08 19:28 / eli-b			SUB-B116425	16	B_R116425
Lead	ND	mg/L		0.005		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
Magnesium	14	mg/L		5		E200.7	08/25/08 19:28 / eli-b			SUB-B116425	16	B_R116425
Manganese	ND	mg/L		0.01		E200.7	08/25/08 19:28 / eli-b			SUB-B116425	16	B_R116425
Mercury	ND	mg/L		0.006		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
Nickel	ND	mg/L		0.01		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
Potassium	12	mg/L		5		E200.7	08/25/08 19:28 / eli-b			SUB-B116425	16	B_R116425
Selenium	ND	mg/L		0.005		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
Silver	ND	mg/L		0.005		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
Sodium	57	mg/L		5		E200.7	08/25/08 19:28 / eli-b			SUB-B116425	16	B_R116425
Thallium	ND	mg/L		0.002		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
Vanadium	ND	mg/L		0.01		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
Zinc	ND	mg/L		0.02		E200.8	08/26/08 14:44 / eli-b			SUB-B116500	10	B_R116500
METALS - SPECIATED												
Arsenic-III	ND	ug/L		5.0		E1632AM	08/22/08 15:21 / skd			A MILLENNIUM_080822A	24	R47834

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-111
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-010
Collection Date: 08/20/08 18:00
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS - SPECIATED												
Arsenic-V	15.1	ug/L		5.0		E1632AM	08/22/08 15:21 / skd			A MILLENNIUM_080822A	24	R47834
METALS, SPECIATED												
Selenium-IV	ND	mg/L		0.0050		A3114 B	08/23/08 11:36 / skd			A MILLENNIUM_080823B	22	R47832
Selenium-VI	ND	mg/L		0.0050		A3114 B	08/23/08 10:26 / skd			A MILLENNIUM_080823C	20	R47833

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-112
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-011
Collection Date: 08/20/08 18:30
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
Conductivity	763	umhos/cm		1		A2510 B	08/22/08 12:06 / kjw			COND_080822A	18	080822A-COND-PROBE W
Solids, Total Dissolved TDS @ 180 C	564	mg/L		10		A2540 C	08/21/08 16:11 / abb			SOLIDS_080821A	18	080821A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	240	mg/L		5		A2320 B	08/28/08 12:56 / abb			TITTR_080828A	18	080828A-ALK-W
Chloride	26	mg/L		1		E300.0	08/26/08 18:16 / skd			IC101-H_080826A	33	R47909
Sulfate	180	mg/L		1		E300.0	08/26/08 18:16 / skd			IC101-H_080826A	33	R47909
METALS, DISSOLVED												
Aluminum	ND	mg/L		0.1		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
Antimony	ND	mg/L		0.005		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
Arsenic	0.089	mg/L		0.005		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
Barium	0.1	mg/L		0.1		E200.7	08/25/08 19:40 / eli-b			SUB-B116425	17	B_R116425
Beryllium	ND	mg/L		0.001		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
Cadmium	ND	mg/L		0.001		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
Calcium	124	mg/L		5		E200.7	08/25/08 19:40 / eli-b			SUB-B116425	17	B_R116425
Chromium	ND	mg/L		0.001		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
Cobalt	ND	mg/L		0.01		E200.7	08/25/08 19:40 / eli-b			SUB-B116425	17	B_R116425
Copper	ND	mg/L		0.004		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
Iron	0.07	mg/L		0.02		E200.7	08/25/08 19:40 / eli-b			SUB-B116425	17	B_R116425
Lead	ND	mg/L		0.005		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
Magnesium	28	mg/L		5		E200.7	08/25/08 19:40 / eli-b			SUB-B116425	17	B_R116425
Manganese	4.72	mg/L		0.01		E200.7	08/25/08 19:40 / eli-b			SUB-B116425	17	B_R116425
Mercury	ND	mg/L		0.006		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
Nickel	ND	mg/L		0.01		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
Potassium	7	mg/L		5		E200.7	08/25/08 19:40 / eli-b			SUB-B116425	17	B_R116425
Selenium	0.007	mg/L		0.005		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
Silver	ND	mg/L		0.005		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
Sodium	27	mg/L		5		E200.7	08/25/08 19:40 / eli-b			SUB-B116425	17	B_R116425
Thallium	ND	mg/L		0.002		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
Vanadium	ND	mg/L		0.01		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
Zinc	ND	mg/L		0.02		E200.8	08/26/08 14:52 / eli-b			SUB-B116500	11	B_R116500
METALS - SPECIATED												
Arsenic-III	45.0	ug/L		5.0		E1632AM	08/22/08 15:30 / skd			MILLENNIUM_080822A	25	R47834

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Client Sample ID: AEH-0808-112
Project: 1054 Asarco E Helena Quarterly Monitoring
Matrix: Aqueous

Lab ID: H08080360-011
Collection Date: 08/20/08 18:30
DateReceived: 08/21/08
Report Date: 09/15/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS - SPECIATED												
Arsenic-V	35.7	ug/L		5.0		E1632AM	08/22/08 15:30 / skd			A MILLENNIUM_080822A	25	R47834
METALS, SPECIATED												
Selenium-IV	ND	mg/L		0.0050		A3114 B	08/23/08 11:37 / skd			A MILLENNIUM_080823B	23	R47832
Selenium-VI	ND	mg/L		0.0050		A3114 B	08/23/08 10:27 / skd			A MILLENNIUM_080823C	21	R47833

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

Energy Laboratories Inc
Workorder Receipt Checklist

H08080360

Asarco Consulting

Login completed by: Roxanne L. Tubbs

Reviewed by: Amanda Blackburn

Reviewed Date: 8/27/2008 11:12:00 AM

Date and Time Received: 8/21/2008 1:10 PM

Received by: rlt

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature:	4.1°C		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

Received samples AEH-0808-101 not listed on chain of custody, discard samples per G. Bryce. 8/21/08 rt

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Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: 080821A-SLDS-TDS-W

Run ID :Run Order: **SOLIDS_080821A: 1** SampType: **Laboratory Control Sample** Sample ID: **LCS1_080821A** Method: **A2540 C**
Analysis Date: **08/21/08 16:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	896	10	1000		90	90	110				

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **SOLIDS_080821A: 2** SampType: **Method Blank** Sample ID: **MBLK1_080821A** Method: **A2540 C**
Analysis Date: **08/21/08 16:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	*ND*	*1.0*									

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **SOLIDS_080821A: 5** SampType: **Sample Duplicate** Sample ID: **H08080360-001ADUP** Method: **A2540 C**
Analysis Date: **08/21/08 16:05** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	293	10						291	0.7	20	

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **SOLIDS_080821A: 9** SampType: **Sample Matrix Spike** Sample ID: **H08080360-004AMS** Method: **A2540 C**
Analysis Date: **08/21/08 16:06** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	1940	10	2000		97	80	120				

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **SOLIDS_080821A: 10** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-004AMSD** Method: **A2540 C**
Analysis Date: **08/21/08 16:06** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	1920	10	2000		96	80	120	1940	0.9	10	

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: 080821A-SLDS-TDS-W

Run ID :Run Order: **SOLIDS_080821A: 14** SampType: **Sample Duplicate** Sample ID: **H08080360-007ADUP** Method: **A2540 C**

Analysis Date: **08/21/08 16:08** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	308	10						301	2.3	20	

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: 080822A-COND-PROBE

Run ID :Run Order: **COND_080822A: 1** SampType: **Laboratory Control Sample** Sample ID: **LCS1_080822A** Method: **A2510 B**
Analysis Date: **08/22/08 11:36** Units: **umhos/cm** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	693	1.0	717.5		97	90	110				

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **COND_080822A: 7** SampType: **Sample Duplicate** Sample ID: **H08080360-002ADUP** Method: **A2510 B**
Analysis Date: **08/22/08 11:45** Units: **umhos/cm** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	612	1.0						612.1	0	10	

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **COND_080822A: 13** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV1_080822A** Method: **A2510 B**
Analysis Date: **08/22/08 12:01** Units: **umhos/cm** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	709	1.0	717.5		99	90	110				

Associated samples: H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **COND_080822A: 17** SampType: **Sample Duplicate** Sample ID: **H08080360-010ADUP** Method: **A2510 B**
Analysis Date: **08/22/08 12:05** Units: **umhos/cm** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	632	1.0						632	0	10	

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **COND_080822A: 26** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV3_080822A** Method: **A2510 B**
Analysis Date: **08/22/08 14:22** Units: **umhos/cm** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	1410	1.0	1412		100	90	110				

Associated samples:

Qualifiers:
ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: 080828A-ALK-W

Run ID :Run Order: **TITTR_080828A: 1** SampType: **Method Blank** Sample ID: **MBLK1_080828A** Method: **A2320 B**
Analysis Date: **08/28/08 09:38** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	1									

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **TITTR_080828A: 2** SampType: **Laboratory Control Sample** Sample ID: **LCS1_080828A** Method: **A2320 B**
Analysis Date: **08/28/08 09:43** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	590	4.0	600		98	90	110				

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **TITTR_080828A: 6** SampType: **Sample Matrix Spike** Sample ID: **H08080360-001AMS** Method: **A2320 B**
Analysis Date: **08/28/08 10:28** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	690	4.0	600	112.4	96	90	110				

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **TITTR_080828A: 7** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-001AMSD** Method: **A2320 B**
Analysis Date: **08/28/08 10:33** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	670	4.0	600	112.4	92	90	110	685.6	2.8	20	

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **TITTR_080828A: 15** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV1_080828A** Method: **A2320 B**
Analysis Date: **08/28/08 12:03** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	1000	4.0	1000		101	90	110				

Associated samples: H08080360-009A; H08080360-010A; H08080360-011A

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

BatchID: 080828A-ALK-W

Date: *15-Sep-08*

Run ID :Run Order: **TITTR_080828A: 20** SampType: **Sample Duplicate** Sample ID: **H08080395-001ADUP** Method: **A2320 B**

Analysis Date: **08/28/08 13:06** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	43	4.0						41.79	2.4	20	

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **TITTR_080828A: 27** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV2_080828A** Method: **A2320 B**

Analysis Date: **08/28/08 13:41** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	1000	4.0	1000		102	90	110				

Associated samples:

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: B_R116425

Run ID :Run Order: **SUB-B116425: 2** SampType: **Continuing Calibration Verification Standard** Sample ID: **ICV** Method: **E200.7**

Analysis Date: **08/25/08 17:14** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	2.58	0.10	2.5		103	95	105				
Calcium	25.6	1.0	25		102	95	105				
Cobalt	2.63	0.020	2.5		105	95	105				
Iron	2.54	0.030	2.5		102	95	105				
Magnesium	25.4	1.0	25		101	95	105				
Manganese	2.53	0.010	2.5		101	95	105				
Potassium	25.1	1.0	25		101	95	105				
Sodium	25.5	1.0	25		102	95	105				

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Run ID :Run Order: **SUB-B116425: 18** SampType: **Method Blank** Sample ID: **MB-SPDIS080825A** Method: **E200.7**

Analysis Date: **08/25/08 18:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	0.0001	0.0001									
Calcium	0.02	0.009									
Cobalt	ND	0.0010									
Iron	ND	0.002									
Magnesium	ND	0.01									
Manganese	0.0003	0.0002									
Potassium	ND	0.02									
Sodium	ND	0.2									

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Run ID :Run Order: **SUB-B116425: 19** SampType: **Laboratory Fortified Blank** Sample ID: **LFB-SPDIS080825A** Method: **E200.7**

Analysis Date: **08/25/08 18:08** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	0.982	0.10	1	0.00015	98	85	115				
Calcium	48.0	1.0	50	0.01546	96	85	115				
Cobalt	0.903	0.020	1		90	85	115				
Iron	4.91	0.030	5		98	85	115				
Magnesium	48.5	1.0	50		97	85	115				
Manganese	4.76	0.010	5	0.00033	95	85	115				

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; N - Analyte concentration was not sufficiently high to calculate RPD
J - Analyte detected below quantitation limits; *R - RPD outside accepted recovery limits*; *A - Analyte concentration greater than three times the spike amount*

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: B_R116425

Run ID :Run Order: **SUB-B116425: 19** SampType: **Laboratory Fortified Blank** Sample ID: **LFB-SPDIS080825A** Method: **E200.7**
Analysis Date: **08/25/08 18:08** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Potassium	47.7	1.0	50		95	85	115				
Sodium	49.2	1.0	50		98	85	115				

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Run ID :Run Order: **SUB-B116425: 20** SampType: **Sample Matrix Spike** Sample ID: **B08082063-004BMS2** Method: **E200.7**
Analysis Date: **08/25/08 18:16** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	0.9816	0.10	1	0.00545	98	70	130				
Calcium	96.61	1.0	50	60.7	72	70	130				
Cobalt	0.9033	0.010	1		90	70	130				
Iron	4.857	0.030	5	0.03166	97	70	130				
Magnesium	56.65	1.0	50	9.26	95	70	130				
Manganese	4.768	0.010	5	0.03748	95	70	130				
Potassium	49.87	1.0	50	2.312	95	70	130				
Sodium	135.2	1.0	50	83.5	103	70	130				

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Run ID :Run Order: **SUB-B116425: 21** SampType: **Sample Matrix Spike Duplicate** Sample ID: **B08082063-004BMSD2** Method: **E200.7**
Analysis Date: **08/25/08 18:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	0.9919	0.10	1	0.00545	99	70	130	0.9816	1	20	
Calcium	98.98	1.0	50	60.7	77	70	130	96.61	2.4	20	
Cobalt	0.9311	0.010	1		93	70	130	0.9033	3	20	
Iron	4.931	0.030	5	0.03166	98	70	130	4.857	1.5	20	
Magnesium	57.37	1.0	50	9.26	96	70	130	56.65	1.3	20	
Manganese	4.875	0.010	5	0.03748	97	70	130	4.768	2.2	20	
Potassium	49.73	1.0	50	2.312	95	70	130	49.87	0.3	20	
Sodium	134.1	1.0	50	83.5	101	70	130	135.2	0.8	20	

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Qualifiers:
ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

BatchID: B_R116425

Date: 15-Sep-08

Run ID :Run Order: **SUB-B116425: 22** SampType: **Sample Matrix Spike** Sample ID: **B08082193-008BMS2** Method: **E200.7**
Analysis Date: **08/25/08 19:16** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	1.044	0.10	1	0.07429	97	70	130				
Calcium	134.0	1.0	50	107	54	70	130				S
Cobalt	0.9095	0.010	1	0.00181	91	70	130				
Iron	4.837	0.030	5		97	70	130				
Magnesium	71.48	1.0	50	26.8	89	70	130				
Manganese	4.779	0.010	5		96	70	130				
Potassium	53.87	1.0	50	7.85	92	70	130				
Sodium	87.24	1.0	50	34.66	105	70	130				

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Run ID :Run Order: **SUB-B116425: 23** SampType: **Sample Matrix Spike Duplicate** Sample ID: **B08082193-008BMSD2** Method: **E200.7**
Analysis Date: **08/25/08 19:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	1.026	0.10	1	0.07429	95	70	130	1.044	1.8	20	
Calcium	130.8	1.0	50	107	48	70	130	134	2.4	20	S
Cobalt	0.8930	0.010	1	0.00181	89	70	130	0.9095	1.8	20	
Iron	4.662	0.030	5		93	70	130	4.837	3.7	20	
Magnesium	70.04	1.0	50	26.8	86	70	130	71.48	2	20	
Manganese	4.628	0.010	5		93	70	130	4.779	3.2	20	
Potassium	50.63	1.0	50	7.85	86	70	130	53.87	6.2	20	
Sodium	83.53	1.0	50	34.66	98	70	130	87.24	4.3	20	

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Run ID :Run Order: **SUB-B116425: 24** SampType: **Sample Matrix Spike** Sample ID: **B08082006-002CMS2** Method: **E200.7**
Analysis Date: **08/25/08 19:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	1.945	0.10	2	0.00966	97	70	130				
Calcium	154.1	1.0	100	63.44	91	70	130				
Cobalt	1.796	0.010	2		90	70	130				
Iron	10.10	0.030	10	0.481	96	70	130				
Magnesium	119.5	1.0	100	23.56	96	70	130				
Manganese	9.410	0.010	10	0.07158	93	70	130				

Qualifiers:
ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits
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A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: B_R116425

Run ID :Run Order: **SUB-B116425: 24** SampType: **Sample Matrix Spike** Sample ID: **B08082006-002CMS2** Method: **E200.7**

Analysis Date: **08/25/08 19:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Potassium	97.05	1.0	100	4.666	92	70	130				
Sodium	363.2	1.0	100	255.4	108	70	130				

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Run ID :Run Order: **SUB-B116425: 25** SampType: **Sample Matrix Spike Duplicate** Sample ID: **B08082006-002CMSD2** Method: **E200.7**

Analysis Date: **08/25/08 20:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	1.967	0.10	2	0.00966	98	70	130	1.945	1.2	20	
Calcium	156.6	1.0	100	63.44	93	70	130	154.1	1.6	20	
Cobalt	1.807	0.010	2		90	70	130	1.796	0.6	20	
Iron	10.15	0.030	10	0.481	97	70	130	10.1	0.5	20	
Magnesium	120.3	1.0	100	23.56	97	70	130	119.5	0.7	20	
Manganese	9.560	0.010	10	0.07158	95	70	130	9.41	1.6	20	
Potassium	97.52	1.0	100	4.666	93	70	130	97.05	0.5	20	
Sodium	364.4	1.0	100	255.4	109	70	130	363.2	0.3	20	

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Qualifiers:
ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
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A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

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Work Order: H08080360
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ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: B_R116500

Run ID :Run Order: **SUB-B116500: 12** SampType: **Method Blank** Sample ID: **LRB** Method: **E200.8**

Analysis Date: **08/26/08 11:08** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 15	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.0001									
Antimony	ND	1E-05									
Arsenic	ND	4E-05									
Beryllium	ND	3E-05									
Cadmium	ND	9E-06									
Chromium	ND	4E-05									
Copper	ND	7E-05									
Lead	ND	8E-06									
Mercury	ND	1E-05									
Nickel	ND	3E-05									
Selenium	ND	0.0001									
Silver	ND	3E-05									
Thallium	ND	7E-06									
Vanadium	ND	3E-05									
Zinc	0.0006	3E-05									

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-006B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Run ID :Run Order: **SUB-B116500: 13** SampType: **Laboratory Fortified Blank** Sample ID: **LFB** Method: **E200.8**

Analysis Date: **08/26/08 11:16** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 15	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.052	0.10	0.05		103	85	115				
Antimony	0.048	0.050	0.05		97	85	115				
Arsenic	0.051	0.0050	0.05		101	85	115				
Beryllium	0.053	0.0010	0.05		105	85	115				
Cadmium	0.050	0.0010	0.05		99	85	115				
Chromium	0.053	0.010	0.05		106	85	115				
Copper	0.053	0.010	0.05		105	85	115				
Lead	0.049	0.010	0.05		99	85	115				
Mercury	0.0010	0.0010	0.001		101	85	115				
Nickel	0.053	0.010	0.05		106	85	115				
Selenium	0.050	0.0050	0.05		100	85	115				
Silver	0.018	0.0050	0.02		91	85	115				
Thallium	0.050	0.10	0.05		99	85	115				

Qualifiers:
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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

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Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: B_R116500

Run ID :Run Order: **SUB-B116500: 13** SampType: **Laboratory Fortified Blank** Sample ID: **LFB** Method: **E200.8**
Analysis Date: **08/26/08 11:16** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 15	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vanadium	0.053	0.10	0.05		106	85	115				
Zinc	0.050	0.010	0.05	0.00064	99	85	115				

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-006B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Run ID :Run Order: **SUB-B116500: 14** SampType: **Sample Matrix Spike** Sample ID: **H08080360-001B** Method: **E200.8**
Analysis Date: **08/26/08 12:17** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 15	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.2579	0.10	0.25	0.00375	102	70	130				
Antimony	0.2458	0.0050	0.25		98	70	130				
Arsenic	0.2561	0.0050	0.25	0.0042	101	70	130				
Beryllium	0.2656	0.0010	0.25		106	70	130				
Cadmium	0.2471	0.0010	0.25	0.00005	99	70	130				
Chromium	0.2593	0.010	0.25	0.00025	104	70	130				
Copper	0.2609	0.010	0.25		104	70	130				
Lead	0.2460	0.010	0.25	0.00015	98	70	130				
Mercury	0.005500	0.0010	0.005		110	70	130				
Nickel	0.2629	0.010	0.25	0.00025	105	70	130				
Selenium	0.2535	0.0050	0.25	0.0025	100	70	130				
Silver	0.1067	0.0050	0.1		107	70	130				
Thallium	0.2449	0.0050	0.25	0.0002	98	70	130				
Vanadium	0.2646	0.10	0.25	0.00455	104	70	130				
Zinc	0.2577	0.010	0.25	0.0066	100	70	130				

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-006B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Run ID :Run Order: **SUB-B116500: 15** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-001B** Method: **E200.8**
Analysis Date: **08/26/08 12:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 15	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.2531	0.10	0.25	0.00375	100	70	130	0.2579	1.9	20	
Antimony	0.2455	0.0050	0.25		98	70	130	0.2458	0.1	20	
Arsenic	0.2573	0.0050	0.25	0.0042	101	70	130	0.2561	0.4	20	
Beryllium	0.2603	0.0010	0.25		104	70	130	0.2656	2	20	
Cadmium	0.2455	0.0010	0.25	0.00005	98	70	130	0.2471	0.7	20	

Qualifiers: ND - Not Detected at the Reporting Limit
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A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

Date: 15-Sep-08

BatchID: B_R116500

Run ID :Run Order: **SUB-B116500: 15** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-001B** Method: **E200.8**

Analysis Date: **08/26/08 12:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 15	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.2577	0.010	0.25	0.00025	103	70	130	0.2593	0.6	20	
Copper	0.2579	0.010	0.25		103	70	130	0.2609	1.2	20	
Lead	0.2532	0.010	0.25	0.00015	101	70	130	0.246	2.9	20	
Mercury	0.005380	0.0010	0.005		108	70	130	0.0055	2.2	20	
Nickel	0.2563	0.010	0.25	0.00025	102	70	130	0.2629	2.5	20	
Selenium	0.2538	0.0050	0.25	0.0025	101	70	130	0.2535	0.1	20	
Silver	0.09650	0.0050	0.1		97	70	130	0.1067	10	20	
Thallium	0.2523	0.0050	0.25	0.0002	101	70	130	0.2449	3	20	
Vanadium	0.2617	0.10	0.25	0.00455	103	70	130	0.2646	1.1	20	
Zinc	0.2598	0.010	0.25	0.0066	101	70	130	0.2577	0.8	20	

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-006B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Run ID :Run Order: **SUB-B116500: 16** SampType: **Sample Matrix Spike** Sample ID: **B08082193-011BMS** Method: **E200.8**

Analysis Date: **08/26/08 14:59** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 15	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.2510	0.10	0.25	0.0009	100	70	130				
Antimony	0.2474	0.0050	0.25		99	70	130				
Arsenic	0.3417	0.0050	0.25	0.0889	101	70	130				
Beryllium	0.2613	0.0010	0.25		105	70	130				
Cadmium	0.2516	0.0010	0.25		101	70	130				
Chromium	0.2540	0.010	0.25		102	70	130				
Copper	0.2534	0.010	0.25		101	70	130				
Lead	0.2490	0.010	0.25		100	70	130				
Mercury	0.005250	0.0010	0.005	0.0001	103	70	130				
Nickel	0.2513	0.010	0.25	0.0012	100	70	130				
Selenium	0.2609	0.0050	0.25	0.00665	102	70	130				
Silver	0.09395	0.0050	0.1		94	70	130				
Thallium	0.2502	0.0050	0.25	0.0001	100	70	130				
Vanadium	0.2548	0.10	0.25	0.0011	101	70	130				
Zinc	0.2545	0.010	0.25	0.0071	99	70	130				

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-006B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Qualifiers:
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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

BatchID: B_R116500

Date: 15-Sep-08

Run ID :Run Order: **SUB-B116500: 17** SampType: **Sample Matrix Spike Duplicate** Sample ID: **B08082193-011BMSD** Method: **E200.8**

Analysis Date: **08/26/08 15:07** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 15	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.2416	0.10	0.25	0.0009	96	70	130	0.251	3.8	20	
Antimony	0.2465	0.0050	0.25		99	70	130	0.2474	0.3	20	
Arsenic	0.3342	0.0050	0.25	0.0889	98	70	130	0.3417	2.2	20	
Beryllium	0.2475	0.0010	0.25		99	70	130	0.2613	5.4	20	
Cadmium	0.2460	0.0010	0.25		98	70	130	0.2516	2.3	20	
Chromium	0.2460	0.010	0.25		98	70	130	0.254	3.2	20	
Copper	0.2476	0.010	0.25		99	70	130	0.2534	2.3	20	
Lead	0.2461	0.010	0.25		98	70	130	0.249	1.2	20	
Mercury	0.005250	0.0010	0.005	0.0001	103	70	130	0.00525	0	20	
Nickel	0.2426	0.010	0.25	0.0012	97	70	130	0.2513	3.5	20	
Selenium	0.2552	0.0050	0.25	0.00665	99	70	130	0.2609	2.2	20	
Silver	0.08420	0.0050	0.1		84	70	130	0.09395	11	20	
Thallium	0.2468	0.0050	0.25	0.0001	99	70	130	0.2502	1.4	20	
Vanadium	0.2463	0.10	0.25	0.0011	98	70	130	0.2548	3.4	20	
Zinc	0.2547	0.010	0.25	0.0071	99	70	130	0.2545	0	20	

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-006B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Run ID :Run Order: **SUB-B116500: 18** SampType: **Initial Calibration Verification Standard** Sample ID: **QCS - ME080514B, ME080514A, ME080225B** Method: **E200.8**

Analysis Date: **08/26/08 16:24** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 15	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.24	0.10	0.25		97	90	110				
Antimony	0.051	0.050	0.05		102	90	110				
Arsenic	0.050	0.0050	0.05		100	90	110				
Beryllium	0.025	0.0010	0.025		100	90	110				
Cadmium	0.025	0.0010	0.025		99	90	110				
Chromium	0.050	0.010	0.05		100	90	110				
Copper	0.050	0.010	0.05		101	90	110				
Lead	0.050	0.010	0.05		100	90	110				
Mercury	0.0020	0.0010	0.002		101	90	110				
Nickel	0.051	0.010	0.05		102	90	110				
Selenium	0.050	0.0050	0.05		100	90	110				
Silver	0.025	0.0050	0.025		100	90	110				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

Date: 15-Sep-08

BatchID: B_R116500

Run ID :Run Order: **SUB-B116500: 18** SampType: **Initial Calibration Verification Standard** Sample ID: **QCS - ME080514B, ME080514A, ME080225B** Method: **E200.8**

Analysis Date: **08/26/08 16:24** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 15	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Thallium	0.050	0.10	0.05		100	90	110				
Vanadium	0.050	0.10	0.05		100	90	110				
Zinc	0.050	0.010	0.05		100	90	110				

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-006B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Run ID :Run Order: **SUB-B116500: 20** SampType: **Initial Calibration Verification Standard** Sample ID: **QCS - ME080514B, ME080514A, ME080225B** Method: **E200.8**

Analysis Date: **08/26/08 10:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 15	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.24	0.10	0.25		98	90	110				
Antimony	0.051	0.050	0.05		101	90	110				
Arsenic	0.049	0.0050	0.05		98	90	110				
Beryllium	0.025	0.0010	0.025		101	90	110				
Cadmium	0.024	0.0010	0.025		97	90	110				
Chromium	0.049	0.010	0.05		99	90	110				
Copper	0.050	0.010	0.05		100	90	110				
Lead	0.050	0.010	0.05		99	90	110				
Mercury	0.0020	0.0010	0.002		101	90	110				
Nickel	0.050	0.010	0.05		100	90	110				
Selenium	0.050	0.0050	0.05		100	90	110				
Silver	0.025	0.0050	0.025		100	90	110				
Thallium	0.050	0.10	0.05		100	90	110				
Vanadium	0.048	0.10	0.05		97	90	110				
Zinc	0.049	0.010	0.05		99	90	110				

Associated samples: H08080360-001B; H08080360-002B; H08080360-003B; H08080360-006B; H08080360-007B; H08080360-008B; H08080360-009B; H08080360-010B; H08080360-011B

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: B_R116801

Run ID :Run Order: **SUB-B116801: 3** SampType: **Continuing Calibration Verification Standard** Sample ID: **ICV** Method: **E200.7**
Analysis Date: **09/02/08 12:51** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.4	1.0	25		97	95	105				
Iron	2.54	0.030	2.5		102	95	105				
Magnesium	24.0	1.0	25		96	95	105				
Potassium	25.7	1.0	25		103	95	105				
Sodium	24.9	1.0	25		99	95	105				

Associated samples: H08080360-004B; H08080360-005B

Run ID :Run Order: **SUB-B116801: 4** SampType: **Method Blank** Sample ID: **MB-TJADIS080902A** Method: **E200.7**
Analysis Date: **09/02/08 12:59** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	0.03	0.02									
Iron	ND	0.005									
Magnesium	ND	0.1									
Potassium	ND	0.07									
Sodium	ND	0.04									

Associated samples: H08080360-004B; H08080360-005B

Run ID :Run Order: **SUB-B116801: 5** SampType: **Laboratory Fortified Blank** Sample ID: **LFB-TJADIS080902A** Method: **E200.7**
Analysis Date: **09/02/08 13:03** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	50.7	1.0	50	0.02928	101	85	115				
Iron	5.12	0.030	5		102	85	115				
Magnesium	50.0	1.0	50		100	85	115				
Potassium	50.5	1.0	50		101	85	115				
Sodium	51.8	1.0	50		104	85	115				

Associated samples: H08080360-004B; H08080360-005B

Run ID :Run Order: **SUB-B116801: 6** SampType: **Sample Matrix Spike** Sample ID: **H08080360-004B** Method: **E200.7**
Analysis Date: **09/02/08 13:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	51.57	1.0	50	0.02584	103	70	130				

Qualifiers:
ND - Not Detected at the Reporting Limit
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A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

Date: 15-Sep-08

BatchID: B_R116801

Run ID :Run Order: **SUB-B116801: 6** SampType: **Sample Matrix Spike** Sample ID: **H08080360-004B** Method: **E200.7**

Analysis Date: **09/02/08 13:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	5.184	0.030	5		104	70	130				
Magnesium	51.68	1.0	50		103	70	130				
Potassium	51.61	1.0	50		103	70	130				
Sodium	53.10	1.0	50	0.06802	106	70	130				

Associated samples: H08080360-004B; H08080360-005B

Run ID :Run Order: **SUB-B116801: 7** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-004B** Method: **E200.7**

Analysis Date: **09/02/08 13:14** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 5	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	51.77	1.0	50	0.02584	103	70	130	51.57	0.4	20	
Iron	5.281	0.030	5		106	70	130	5.184	1.8	20	
Magnesium	51.61	1.0	50		103	70	130	51.68	0.2	20	
Potassium	51.87	1.0	50		104	70	130	51.61	0.5	20	
Sodium	52.07	1.0	50	0.06802	104	70	130	53.1	2	20	

Associated samples: H08080360-004B; H08080360-005B

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: B_R116873

Run ID :Run Order: **SUB-B116873: 6** SampType: **Initial Calibration Verification Standard** Sample ID: **QCS - ME080514B, ME080514A, ME080225B** Method: **E200.8**

Analysis Date: **09/03/08 10:43** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.25	0.10	0.25		98	90	110				
Antimony	0.052	0.050	0.05		104	90	110				
Arsenic	0.051	0.0050	0.05		101	90	110				
Barium	0.050	0.10	0.05		101	90	110				
Beryllium	0.026	0.0010	0.025		103	90	110				
Cadmium	0.025	0.0010	0.025		101	90	110				
Chromium	0.051	0.010	0.05		103	90	110				
Cobalt	0.052	0.010	0.05		103	90	110				
Copper	0.051	0.010	0.05		102	90	110				
Lead	0.051	0.010	0.05		102	90	110				
Manganese	0.25	0.010	0.25		100	90	110				
Mercury	0.0020	0.0010	0.002		100	90	110				
Nickel	0.052	0.010	0.05		103	90	110				
Selenium	0.052	0.0050	0.05		103	90	110				
Silver	0.025	0.0050	0.025		102	90	110				
Thallium	0.051	0.10	0.05		103	90	110				
Vanadium	0.051	0.10	0.05		102	90	110				
Zinc	0.051	0.010	0.05		103	90	110				

Associated samples: H08080360-004B; H08080360-005B

Run ID :Run Order: **SUB-B116873: 7** SampType: **Method Blank** Sample ID: **LRB** Method: **E200.8**

Analysis Date: **09/03/08 11:33** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.0001									
Antimony	ND	1E-05									
Arsenic	ND	4E-05									
Barium	ND	3E-05									
Beryllium	ND	3E-05									
Cadmium	ND	9E-06									
Chromium	ND	4E-05									
Cobalt	ND	1E-05									
Copper	ND	7E-05									

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; N - Analyte concentration was not sufficiently high to calculate RPD; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits; A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

Date: *15-Sep-08*

BatchID: B_R116873

Run ID :Run Order: **SUB-B116873: 7** SampType: **Method Blank** Sample ID: **LRB** Method: **E200.8**

Analysis Date: **09/03/08 11:33** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	8E-06									
Manganese	ND	5E-05									
Mercury	ND	1E-05									
Nickel	3E-05	3E-05									
Selenium	ND	0.0001									
Silver	ND	3E-05									
Thallium	ND	7E-06									
Vanadium	ND	3E-05									
Zinc	0.001	3E-05									

Associated samples: H08080360-004B; H08080360-005B

Run ID :Run Order: **SUB-B116873: 8** SampType: **Laboratory Fortified Blank** Sample ID: **LFB** Method: **E200.8**

Analysis Date: **09/03/08 11:41** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.051	0.10	0.05		102	85	115				
Antimony	0.051	0.050	0.05		102	85	115				
Arsenic	0.052	0.0050	0.05		104	85	115				
Barium	0.051	0.10	0.05		102	85	115				
Beryllium	0.053	0.0010	0.05		106	85	115				
Cadmium	0.051	0.0010	0.05		103	85	115				
Chromium	0.052	0.010	0.05		104	85	115				
Cobalt	0.052	0.010	0.05		104	85	115				
Copper	0.053	0.010	0.05		105	85	115				
Lead	0.052	0.010	0.05		104	85	115				
Manganese	0.052	0.010	0.05		104	85	115				
Mercury	0.0010	0.0010	0.001		103	85	115				
Nickel	0.051	0.010	0.05	0.00003	103	85	115				
Selenium	0.053	0.0050	0.05		105	85	115				
Silver	0.019	0.0050	0.02		95	85	115				
Thallium	0.052	0.10	0.05		105	85	115				
Vanadium	0.052	0.10	0.05		104	85	115				
Zinc	0.054	0.010	0.05	0.00115	105	85	115				

Qualifiers:
ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: B_R116873

Run ID :Run Order: **SUB-B116873: 8** SampType: **Laboratory Fortified Blank** Sample ID: **LFB** Method: **E200.8**
Analysis Date: **09/03/08 11:41** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: H08080360-004B; H08080360-005B

Run ID :Run Order: **SUB-B116873: 9** SampType: **Initial Calibration Verification Standard** Sample ID: **QCS - ME080514B, ME080514A, ME080225B** Method: **E200.8**
Analysis Date: **09/03/08 16:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.25	0.10	0.25		100	90	110				
Antimony	0.051	0.050	0.05		103	90	110				
Arsenic	0.050	0.0050	0.05		101	90	110				
Barium	0.051	0.10	0.05		102	90	110				
Beryllium	0.026	0.0010	0.025		103	90	110				
Cadmium	0.026	0.0010	0.025		104	90	110				
Chromium	0.051	0.010	0.05		103	90	110				
Cobalt	0.051	0.010	0.05		102	90	110				
Copper	0.051	0.010	0.05		102	90	110				
Lead	0.051	0.010	0.05		102	90	110				
Manganese	0.25	0.010	0.25		100	90	110				
Mercury	0.0020	0.0010	0.002		100	90	110				
Nickel	0.052	0.010	0.05		104	90	110				
Selenium	0.051	0.0050	0.05		102	90	110				
Silver	0.025	0.0050	0.025		102	90	110				
Thallium	0.051	0.10	0.05		103	90	110				
Vanadium	0.051	0.10	0.05		103	90	110				
Zinc	0.051	0.010	0.05		103	90	110				

Associated samples: H08080360-004B; H08080360-005B

Run ID :Run Order: **SUB-B116873: 21** SampType: **Sample Matrix Spike** Sample ID: **B08082695-005AMS** Method: **E200.8**
Analysis Date: **09/03/08 19:07** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.26	0.10	0.05	0.2121		70	130				A
Antimony	0.052	0.0030	0.05	0.00004	103	70	130				
Arsenic	0.053	0.0010	0.05	0.00052	105	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

Date: *15-Sep-08*

BatchID: B_R116873

Run ID :Run Order: **SUB-B116873: 21** SampType: **Sample Matrix Spike** Sample ID: **B08082695-005AMS** Method: **E200.8**

Analysis Date: **09/03/08 19:07** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	0.25	0.10	0.05	0.2041		70	130				A
Beryllium	0.054	0.0010	0.05		108	70	130				
Cadmium	0.051	0.0010	0.05	0.00132	100	70	130				
Chromium	0.050	0.010	0.05	0.00026	100	70	130				
Cobalt	0.049	0.010	0.05	0.00008	99	70	130				
Copper	0.051	0.010	0.05	0.00163	99	70	130				
Lead	0.052	0.0010	0.05	0.00003	103	70	130				
Manganese	0.052	0.010	0.05	0.00148	101	70	130				
Mercury	0.0010	0.00020	0.001		101	70	130				
Nickel	0.048	0.010	0.05	0.00083	95	70	130				
Selenium	0.053	0.0050	0.05	0.00047	105	70	130				
Silver	0.019	0.0050	0.02		96	70	130				
Thallium	0.052	0.0010	0.05		103	70	130				
Vanadium	0.051	0.10	0.05	0.0004	102	70	130				
Zinc	0.055	0.010	0.05	0.00309	103	70	130				

Associated samples: H08080360-004B; H08080360-005B

Run ID :Run Order: **SUB-B116873: 22** SampType: **Sample Matrix Spike Duplicate** Sample ID: **B08082695-005AMSD** Method: **E200.8**

Analysis Date: **09/03/08 19:15** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.26	0.10	0.05	0.2121		70	130	0.2579	0.1	20	A
Antimony	0.052	0.0030	0.05	0.00004	104	70	130	0.05167	0.8	20	
Arsenic	0.054	0.0010	0.05	0.00052	106	70	130	0.05295	1	20	
Barium	0.25	0.10	0.05	0.2041		70	130	0.2469	1	20	A
Beryllium	0.054	0.0010	0.05		108	70	130	0.05378	0	20	
Cadmium	0.052	0.0010	0.05	0.00132	101	70	130	0.05122	1.3	20	
Chromium	0.050	0.010	0.05	0.00026	100	70	130	0.05013	0.2	20	
Cobalt	0.050	0.010	0.05	0.00008	100	70	130	0.04942	1.2	20	
Copper	0.052	0.010	0.05	0.00163	100	70	130	0.05108	1	20	
Lead	0.052	0.0010	0.05	0.00003	103	70	130	0.05159	0	20	
Manganese	0.052	0.010	0.05	0.00148	101	70	130	0.05177	0.4	20	
Mercury	0.0010	0.00020	0.001		103	70	130	0.00101	2.3	20	
Nickel	0.049	0.010	0.05	0.00083	96	70	130	0.04821	0.8	20	

Qualifiers:
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Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: B_R116873

Run ID :Run Order: **SUB-B116873: 22** SampType: **Sample Matrix Spike Duplicate** Sample ID: **B08082695-005AMSD** Method: **E200.8**

Analysis Date: **09/03/08 19:15** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 18	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.054	0.0050	0.05	0.00047	107	70	130	0.05322	1.8	20	
Silver	0.019	0.0050	0.02		95	70	130	0.01918	1.2	20	
Thallium	0.052	0.0010	0.05		103	70	130	0.05156	0.3	20	
Vanadium	0.052	0.10	0.05	0.0004	103	70	130	0.05141	0	20	
Zinc	0.055	0.010	0.05	0.00309	103	70	130	0.05466	0.1	20	

Associated samples: H08080360-004B; H08080360-005B

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Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: B_R117280

Run ID :Run Order: **SUB-B117280: 2** SampType: **Continuing Calibration Verification Standard** Sample ID: **ICV** Method: **E200.7**
Analysis Date: **09/10/08 10:36** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	2.57	0.10	2.5		103	95	105				
Calcium	23.9	1.0	25		95	95	105				
Cobalt	2.57	0.020	2.5		103	95	105				
Iron	2.48	0.030	2.5		99	95	105				
Magnesium	23.8	1.0	25		95	95	105				
Manganese	2.59	0.010	2.5		103	95	105				
Potassium	24.7	1.0	25		99	95	105				
Sodium	24.1	1.0	25		96	95	105				

Associated samples: H08080360-006B

Run ID :Run Order: **SUB-B117280: 3** SampType: **Method Blank** Sample ID: **MB-TJADIS080910A** Method: **E200.7**
Analysis Date: **09/10/08 10:43** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	0.0002									
Calcium	0.02	0.02									
Cobalt	ND	0.003									
Iron	ND	0.005									
Magnesium	ND	0.1									
Manganese	ND	0.001									
Potassium	ND	0.07									
Sodium	ND	0.04									

Associated samples: H08080360-006B

Run ID :Run Order: **SUB-B117280: 4** SampType: **Laboratory Fortified Blank** Sample ID: **LFB-TJADIS080910A** Method: **E200.7**
Analysis Date: **09/10/08 10:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	1.09	0.10	1		109	85	115				
Calcium	49.4	1.0	50	0.0185	99	85	115				
Cobalt	1.02	0.020	1		102	85	115				
Iron	4.89	0.030	5		98	85	115				
Magnesium	49.4	1.0	50		99	85	115				
Manganese	4.96	0.010	5		99	85	115				

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ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring
BatchID: B_R117280
Date: 15-Sep-08

Run ID :Run Order: **SUB-B117280: 4** SampType: **Laboratory Fortified Blank** Sample ID: **LFB-TJADIS080910A** Method: **E200.7**
Analysis Date: **09/10/08 10:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Potassium	48.0	1.0	50		96	85	115				
Sodium	50.0	1.0	50		100	85	115				

Associated samples: H08080360-006B

Run ID :Run Order: **SUB-B117280: 5** SampType: **Sample Matrix Spike** Sample ID: **B08090817-001BMS2** Method: **E200.7**
Analysis Date: **09/11/08 03:53** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	1.365	0.10	1	0.3493	102	70	130				
Calcium	59.72	1.0	50	11.96	96	70	130				
Cobalt	0.9887	0.010	1		99	70	130				
Iron	4.887	0.030	5	0.1516	95	70	130				
Magnesium	51.94	1.0	50	3.411	97	70	130				
Manganese	4.852	0.010	5	0.03471	96	70	130				
Potassium	56.63	1.0	50	5.811	102	70	130				
Sodium	221.3	1.0	50	173	97	70	130				

Associated samples: H08080360-006B

Run ID :Run Order: **SUB-B117280: 6** SampType: **Sample Matrix Spike Duplicate** Sample ID: **B08090817-001BMSD2** Method: **E200.7**
Analysis Date: **09/11/08 03:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 8	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	1.381	0.10	1	0.3493	103	70	130	1.365	1.2	20	
Calcium	61.38	1.0	50	11.96	99	70	130	59.72	2.7	20	
Cobalt	1.025	0.010	1		103	70	130	0.9887	3.6	20	
Iron	5.074	0.030	5	0.1516	98	70	130	4.887	3.8	20	
Magnesium	53.83	1.0	50	3.411	101	70	130	51.94	3.6	20	
Manganese	5.025	0.010	5	0.03471	100	70	130	4.852	3.5	20	
Potassium	57.43	1.0	50	5.811	103	70	130	56.63	1.4	20	
Sodium	222.6	1.0	50	173	99	70	130	221.3	0.6	20	

Associated samples: H08080360-006B

Qualifiers:
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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring
BatchID: R47832
Date: 15-Sep-08

Run ID :Run Order: **PSA MILLENNIUM_080823B: 1** SampType: **Initial Calibration Verification Standard** Sample ID: **ICV** Method: **A3114 B**
Analysis Date: **08/23/08 10:53** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-IV	0.0470	0.0050	0.05		94	90	110				

Associated samples: H08080360-001D; H08080360-002D; H08080360-003D; H08080360-004D; H08080360-005D; H08080360-006D; H08080360-007D; H08080360-008D; H08080360-009D; H08080360-010D; H08080360-011D

Run ID :Run Order: **PSA MILLENNIUM_080823B: 3** SampType: **Laboratory Control Sample** Sample ID: **LCS** Method: **A3114 B**
Analysis Date: **08/23/08 11:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-IV	0.0518	0.0050	0.05		104	70	130				

Associated samples: H08080360-001D; H08080360-002D; H08080360-003D; H08080360-004D; H08080360-005D; H08080360-006D; H08080360-007D; H08080360-008D; H08080360-009D; H08080360-010D; H08080360-011D

Run ID :Run Order: **PSA MILLENNIUM_080823B: 6** SampType: **Method Blank** Sample ID: **MBLK** Method: **A3114 B**
Analysis Date: **08/23/08 11:11** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-IV	ND	0.0003									

Associated samples: H08080360-001D; H08080360-002D; H08080360-003D; H08080360-004D; H08080360-005D; H08080360-006D; H08080360-007D; H08080360-008D; H08080360-009D; H08080360-010D; H08080360-011D

Run ID :Run Order: **PSA MILLENNIUM_080823B: 12** SampType: **Sample Matrix Spike** Sample ID: **H08080360-004DMS** Method: **A3114 B**
Analysis Date: **08/23/08 11:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-IV	0.0543	0.0050	0.05		109	80	120				

Associated samples: H08080360-001D; H08080360-002D; H08080360-003D; H08080360-004D; H08080360-005D; H08080360-006D; H08080360-007D; H08080360-008D; H08080360-009D; H08080360-010D; H08080360-011D

Run ID :Run Order: **PSA MILLENNIUM_080823B: 13** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-004DMSD** Method: **A3114 B**
Analysis Date: **08/23/08 11:21** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-IV	0.0545	0.0050	0.05		109	80	120	0.05427	0.4	20	

Associated samples: H08080360-001D; H08080360-002D; H08080360-003D; H08080360-004D; H08080360-005D; H08080360-006D; H08080360-007D; H08080360-008D; H08080360-009D; H08080360-010D; H08080360-011D

Qualifiers:
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Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

BatchID: R47832

Date: *15-Sep-08*

Run ID :Run Order: **PSA MILLENNIUM_080823B: 18** SampType: **Sample Duplicate** Sample ID: **H08080360-008DDUP** Method: **A3114 B**

Analysis Date: **08/23/08 11:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-IV	ND	0.0050							0	20	

Associated samples: H08080360-001D; H08080360-002D; H08080360-003D; H08080360-004D; H08080360-005D; H08080360-006D; H08080360-007D; H08080360-008D; H08080360-009D; H08080360-010D; H08080360-011D

Run ID :Run Order: **PSA MILLENNIUM_080823B: 19** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV** Method: **A3114 B**

Analysis Date: **08/23/08 11:31** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-IV	0.0926	0.0050	0.1		93	90	110				

Associated samples: H08080360-009D; H08080360-010D; H08080360-011D

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ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring
BatchID: R47833
Date: 15-Sep-08

Run ID :Run Order: **PSA MILLENNIUM_080823C: 1** SampType: **Method Blank** Sample ID: **MBLK** Method: **A3114 B**
Analysis Date: **08/23/08 09:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	ND	0.0003									

Associated samples: H08080360-001D; H08080360-002D; H08080360-003D; H08080360-004D; H08080360-005D; H08080360-006D; H08080360-007D; H08080360-008D; H08080360-009D; H08080360-010D; H08080360-011D

Run ID :Run Order: **PSA MILLENNIUM_080823C: 2** SampType: **Initial Calibration Verification Standard** Sample ID: **ICV** Method: **A3114 B**
Analysis Date: **08/23/08 09:58** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	0.0454	0.0050	0.05		91	90	110				

Associated samples: H08080360-001D; H08080360-002D; H08080360-003D; H08080360-004D; H08080360-005D; H08080360-006D; H08080360-007D; H08080360-008D; H08080360-009D; H08080360-010D; H08080360-011D

Run ID :Run Order: **PSA MILLENNIUM_080823C: 3** SampType: **Laboratory Control Sample** Sample ID: **LCS** Method: **A3114 B**
Analysis Date: **08/23/08 09:59** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	0.0934	0.0050	0.1		93	90	110				

Associated samples: H08080360-001D; H08080360-002D; H08080360-003D; H08080360-004D; H08080360-005D; H08080360-006D; H08080360-007D; H08080360-008D; H08080360-009D; H08080360-010D; H08080360-011D

Run ID :Run Order: **PSA MILLENNIUM_080823C: 10** SampType: **Sample Matrix Spike** Sample ID: **H08080360-004DMS** Method: **A3114 B**
Analysis Date: **08/23/08 10:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	0.0947	0.0050	0.1		95	80	120				

Associated samples: H08080360-001D; H08080360-002D; H08080360-003D; H08080360-004D; H08080360-005D; H08080360-006D; H08080360-007D; H08080360-008D; H08080360-009D; H08080360-010D; H08080360-011D

Run ID :Run Order: **PSA MILLENNIUM_080823C: 11** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-004DMSD** Method: **A3114 B**
Analysis Date: **08/23/08 10:12** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	0.0941	0.0050	0.1		94	80	120	0.0947	0.6	20	

Associated samples: H08080360-001D; H08080360-002D; H08080360-003D; H08080360-004D; H08080360-005D; H08080360-006D; H08080360-007D; H08080360-008D; H08080360-009D; H08080360-010D; H08080360-011D

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ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring
BatchID: R47833
Date: 15-Sep-08

Run ID :Run Order: **PSA MILLENNIUM_080823C: 16** SampType: **Sample Duplicate** Sample ID: **H08080360-008DDUP** Method: **A3114 B**

Analysis Date: **08/23/08 10:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	0.000778	0.0050						0.000785	0	20	

Associated samples: H08080360-001D; H08080360-002D; H08080360-003D; H08080360-004D; H08080360-005D; H08080360-006D; H08080360-007D; H08080360-008D; H08080360-009D; H08080360-010D; H08080360-011D

Run ID :Run Order: **PSA MILLENNIUM_080823C: 17** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV** Method: **A3114 B**

Analysis Date: **08/23/08 10:21** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	0.102	0.0050	0.1		102	90	110				

Associated samples: H08080360-009D; H08080360-010D; H08080360-011D

Run ID :Run Order: **PSA MILLENNIUM_080823C: 22** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV** Method: **A3114 B**

Analysis Date: **08/23/08 10:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium-VI	0.103	0.0050	0.1		103	90	110				

Associated samples:

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Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: R47834

Run ID :Run Order: **PSA MILLENNIUM_080822A: 1** SampType: **Initial Calibration Verification Standard** Sample ID: **As080822-ICV** Method: **E1632AM**

Analysis Date: **08/22/08 11:16** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	23	5.0	25		90	90	110				
Arsenic-V	23	5.0	25		92	90	110				

Associated samples: H08080360-001C; H08080360-002C; H08080360-003C; H08080360-004C; H08080360-005C; H08080360-006C; H08080360-007C; H08080360-008C; H08080360-009C; H08080360-010C; H08080360-011C

Run ID :Run Order: **PSA MILLENNIUM_080822A: 2** SampType: **Continuing Calibration Verification Standard** Sample ID: **As080822-50** Method: **E1632AM**

Analysis Date: **08/22/08 12:19** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	49	5.0	50		97	90	110				
Arsenic-V	49	5.0	50		98	90	110				

Associated samples:

Run ID :Run Order: **PSA MILLENNIUM_080822A: 3** SampType: **Laboratory Control Sample** Sample ID: **As080822-LCS** Method: **E1632AM**

Analysis Date: **08/22/08 12:32** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	49	5.0	50		99	90	110				
Arsenic-V	46	5.0	50		92	90	110				

Associated samples: H08080360-001C; H08080360-002C; H08080360-003C; H08080360-004C; H08080360-005C; H08080360-006C; H08080360-007C; H08080360-008C; H08080360-009C; H08080360-010C; H08080360-011C

Run ID :Run Order: **PSA MILLENNIUM_080822A: 6** SampType: **CRDL Standard for ICP** Sample ID: **As080822-10** Method: **E1632AM**

Analysis Date: **08/22/08 11:31** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	9.1	5.0	10		91	90	110				
Arsenic-V	11	5.0	10		108	90	110				

Associated samples: H08080360-001C; H08080360-002C; H08080360-003C; H08080360-004C; H08080360-005C; H08080360-006C; H08080360-007C; H08080360-008C; H08080360-009C; H08080360-010C; H08080360-011C

Run ID :Run Order: **PSA MILLENNIUM_080822A: 8** SampType: **Method Blank** Sample ID: **MBLK_13r** Method: **E1632AM**

Analysis Date: **08/22/08 11:49** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	ND	0.3									
Arsenic-V	ND	0.3									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring
BatchID: R47834
Date: 15-Sep-08

Run ID :Run Order: **PSA MILLENNIUM_080822A: 8** SampType: **Method Blank** Sample ID: **MBLK_13r** Method: **E1632AM**
Analysis Date: **08/22/08 11:49** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: H08080360-001C; H08080360-002C; H08080360-003C; H08080360-004C; H08080360-005C; H08080360-006C; H08080360-007C; H08080360-008C; H08080360-009C; H08080360-010C; H08080360-011C

Run ID :Run Order: **PSA MILLENNIUM_080822A: 12** SampType: **Sample Duplicate** Sample ID: **H08080360-002CDUP** Method: **E1632AM**
Analysis Date: **08/22/08 13:01** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	ND	5.0							0	20	
Arsenic-V	11	5.0						10.92	4	20	

Associated samples: H08080360-001C; H08080360-002C; H08080360-003C; H08080360-004C; H08080360-005C; H08080360-006C; H08080360-007C; H08080360-008C; H08080360-009C; H08080360-010C; H08080360-011C

Run ID :Run Order: **PSA MILLENNIUM_080822A: 16** SampType: **Sample Matrix Spike** Sample ID: **H08080360-005C MS** Method: **E1632AM**
Analysis Date: **08/22/08 13:36** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	53	5.0	50		106	80	120				
Arsenic-V	64	5.0	50	7.53	112	80	120				

Associated samples: H08080360-001C; H08080360-002C; H08080360-003C; H08080360-004C; H08080360-005C; H08080360-006C; H08080360-007C; H08080360-008C; H08080360-009C; H08080360-010C; H08080360-011C

Run ID :Run Order: **PSA MILLENNIUM_080822A: 17** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-005C MSD** Method: **E1632AM**
Analysis Date: **08/22/08 13:45** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	52	5.0	50		104	80	120	53.22	1.9	20	
Arsenic-V	64	5.0	50	7.53	113	80	120	63.74	0.3	20	

Associated samples: H08080360-001C; H08080360-002C; H08080360-003C; H08080360-004C; H08080360-005C; H08080360-006C; H08080360-007C; H08080360-008C; H08080360-009C; H08080360-010C; H08080360-011C

Run ID :Run Order: **PSA MILLENNIUM_080822A: 21** SampType: **Continuing Calibration Verification Standard** Sample ID: **As080822-50** Method: **E1632AM**
Analysis Date: **08/22/08 14:45** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	55	5.0	50		109	90	110				
Arsenic-V	55	5.0	50		110	90	110				

Associated samples: H08080360-009C; H08080360-010C; H08080360-011C

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

Date: *15-Sep-08*

BatchID: R47834

Run ID :Run Order: **PSA MILLENNIUM_080822A: 26** SampType: **Continuing Calibration Verification Standard** Sample ID: **As080822-50** Method: **E1632AM**

Analysis Date: **08/22/08 15:39** Units: **ug/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic-III	54	5.0	50		107	90	110				
Arsenic-V	55	5.0	50		109	90	110				

Associated samples:

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

BatchID: R47909

Date: *15-Sep-08*

Run ID :Run Order: **IC101-H_080826A: 11** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV** Method: **E300.0**

Analysis Date: **08/26/08 11:08** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25	1.0	25		101	90	110				
Sulfate	100	1.0	100		101	90	110				

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A

Run ID :Run Order: **IC101-H_080826A: 12** SampType: **Initial Calibration Verification Standard** Sample ID: **ICV** Method: **E300.0**

Analysis Date: **08/26/08 11:28** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25	1.0	25		102	90	110				
Sulfate	100	1.0	100		104	90	110				

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **IC101-H_080826A: 13** SampType: **Laboratory Fortified Blank** Sample ID: **LFB** Method: **E300.0**

Analysis Date: **08/26/08 11:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	9.4	1.0	10		94	90	110				
Sulfate	37	1.0	40	0.023	93	90	110				

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **IC101-H_080826A: 14** SampType: **Method Blank** Sample ID: **MBLK** Method: **E300.0**

Analysis Date: **08/26/08 12:07** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND										
Sulfate	0.02										

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **IC101-H_080826A: 15** SampType: **CRDL Standard for ICP** Sample ID: **CRI** Method: **E300.0**

Analysis Date: **08/26/08 12:26** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0.25	1.0	0.25		100	50	150				
Sulfate	0.91	1.0	1		91	50	150				

Qualifiers:
ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring
BatchID: R47909
Date: 15-Sep-08

Run ID :Run Order: **IC101-H_080826A: 15** SampType: **CRDL Standard for ICP** Sample ID: **CRI** Method: **E300.0**
Analysis Date: **08/26/08 12:26** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **IC101-H_080826A: 16** SampType: **Laboratory Control Sample** Sample ID: **LCS** Method: **E300.0**
Analysis Date: **08/26/08 12:46** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	88	1.0	87.47		101	90	110				
Sulfate	28	1.0	28.53	0.023	99	90	110				

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **IC101-H_080826A: 22** SampType: **Sample Matrix Spike** Sample ID: **H08080360-003A MS** Method: **E300.0**
Analysis Date: **08/26/08 14:42** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	37	1.0	25	11.07	102	90	110				
Sulfate	170	1.0	100	67.31	106	90	110				

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **IC101-H_080826A: 23** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-003A MSD** Method: **E300.0**
Analysis Date: **08/26/08 15:02** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	36	1.0	25	11.07	99	90	110	36.69	2.4	20	
Sulfate	170	1.0	100	67.31	103	90	110	172.9	1.4	20	

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **IC101-H_080826A: 28** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV** Method: **E300.0**
Analysis Date: **08/26/08 16:39** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25	1.0	25		101	90	110				
Sulfate	100	1.0	100		101	90	110				

Associated samples: H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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ANALYTICAL QC SUMMARY REPORT

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

Date: 15-Sep-08

BatchID: R47909

Run ID :Run Order: **IC101-H_080826A: 29** SampType: **Continuing Calibration Blank** Sample ID: **CCB** Method: **E300.0**
Analysis Date: **08/26/08 16:58** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	1.0									
Sulfate	ND	1.0									

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **IC101-H_080826A: 34** SampType: **Sample Matrix Spike** Sample ID: **H08080360-011A MS** Method: **E300.0**
Analysis Date: **08/26/08 18:35** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	51	1.0	25	26.48	97	90	110				
Sulfate	280	1.0	100	175.5	100	90	110				

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **IC101-H_080826A: 35** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08080360-011A MSD** Method: **E300.0**
Analysis Date: **08/26/08 18:55** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	51	1.0	25	26.48	98	90	110	50.67	0.4	20	
Sulfate	280	1.0	100	175.5	101	90	110	275	0.5	20	

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Run ID :Run Order: **IC101-H_080826A: 42** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV** Method: **E300.0**
Analysis Date: **08/26/08 21:11** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25	1.0	25		101	90	110				
Sulfate	100	1.0	100		102	90	110				

Associated samples:

Run ID :Run Order: **IC101-H_080826A: 43** SampType: **Continuing Calibration Blank** Sample ID: **CCB** Method: **E300.0**
Analysis Date: **08/26/08 21:30** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	1.0									
Sulfate	0.096	1.0									

Qualifiers:
ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco Consulting
Work Order: H08080360
Project: 1054 Asarco E Helena Quarterly Monitoring

ANALYTICAL QC SUMMARY REPORT

BatchID: R47909

Date: *15-Sep-08*

Run ID :Run Order: **IC101-H_080826A: 43** SampType: **Continuing Calibration Blank** Sample ID: **CCB** Method: **E300.0**

Analysis Date: **08/26/08 21:30** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: H08080360-001A; H08080360-002A; H08080360-003A; H08080360-004A; H08080360-005A; H08080360-006A; H08080360-007A; H08080360-008A; H08080360-009A; H08080360-010A; H08080360-011A

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

VALIDATION SUMMARY

ASARCO EAST HELENA POST RI/FS LONG-TERM MONITORING PROGRAM

EAST HELENA RESIDENTIAL GROUNDWATER INORGANIC ANALYSES

SEPTEMBER 2008 SAMPLE EVENT

(ENERGY LABORATORY WORK ORDER NO. H08090485)

Prepared for:
Mr. Jon Nickel
ASARCO Incorporated
PO Box 1230
East Helena, MT 59635

Prepared by:
Linda L. Tangen
6900 Cherry Blossom Lane
Albuquerque, NM 87111

October 2008

GLOSSARY OF TERMS

CLP..... Contract Laboratory Program

COC..... Chain of Custody

CRDL..... Contract Required Detection Limit

DI..... Deionized Water

DIS..... Dissolved

DQO..... Data Quality Objective

ELI-Hel ..... Energy Laboratories, Inc., Helena, Montana

EPA..... U.S. Environmental Protection Agency

ICV ..... Initial Calibration Verification

IDL ..... Instrument Detection Limit

LCS..... Laboratory Control Sample

LFB..... Laboratory Fortified Blank

MS ..... Matrix Spike

NA ..... Not Applicable

PDLG..... Project Detection Limit Goal

QC ..... Quality Control

RI/FS..... Remedial Investigation/Feasibility Study

RPD ..... Relative Percent Difference

SC ..... Specific Conductivity

TDS ..... Total Dissolved Solids

SUMMARY

East Helena private well water (groundwater) samples were collected September 28, 2008 for the ASARCO East Helena Facility Post RI/FS Long-Term Monitoring sample event. Inorganic constituents for these samples were validated using U.S. Environmental Protection Agency (EPA) guidelines for data validation (EPA 2002) and the project work plan (ASARCO 2002 and 2007). Samples were analyzed by Energy Laboratories, Inc. (ELI-Hel) in Helena, Montana, under work order H08080096.

The historical summary table is located in Appendix 1 and the validated database is located in Appendix 2. Field notes, chain of custody forms, and laboratory reports are located in Appendices 3, 4, and 5, respectively.

Data quality objectives for this project are as follows:

- **Precision** is determined by field and laboratory duplicate sample results that are within control limits. The completeness objective for precision is 90% of the duplicate sample results within control limits. **This objective was met as 100% of the field and laboratory duplicate results were within control limits.**

- **Accuracy** is determined by laboratory control sample (LCS) and matrix spike (MS) sample results that are within control limits. The completeness objective for accuracy is 90% of the LCS and MS sample results within control limits. **This objective was met as 100% of the LCS results and 100% of the MS results were within control limits.**

  ***Note:** Due to the lack of LCSs for dissolved metals, fortified laboratory blanks were used to assess the accuracy for these analytes. In several cases, samples used for matrix spikes for were from unknown sources and therefore, could not be used to evaluate the accuracy of this sampling event's data. This is explained further in the following report.

- **Completeness** is calculated by the number of valid (not rejected) data per number of planned data, expressed as a percentage. The completeness goal for this project was 90%. **This goal was met as 100% of the planned data were analyzed and deemed valid.**

Conclusion

The data collected in August 2008 for the ASARCO East Helena Post RI/FS Long Term Monitoring Program are deemed acceptable and can be used for the purposes they were intended. Of the measured results, **100% can be used without qualification**.

Data Validation Report by: Linda L. Tangen

Client Review: Jon Nickel

DATA VALIDATION REPORT

1. INTRODUCTION

- This validation applies to analyses for five groundwater and quality control samples collected on September 28, 2008 for the ASARCO East Helena Post RI/FS Long-Term Monitoring Program (ASARCO 2002 and 2007). Samples were analyzed by Energy Laboratories in Helena, Montana (ELI-Hel) under work order H08090485. One field blank and one field duplicate samples were included with these samples.

- Validation procedures used are generally consistent with:
  - _X_ EPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganics Data Review (EPA 2002)
  - _X_ Work Plan – Interim Measures Work Plan Addendum (ASARCO 2002)
  - _X_ Post RI/FS Long-Term Monitoring Program (ASARCO 2007)
  - ____ Other

- Overall level of validation:
  - ____ CLP
  - _X_ Standard – Field and laboratory quality control (QC) samples are reviewed; and samples associated with QC violations are flagged.
  - ____ Visual

2. DELIVERABLES

- All laboratory document deliverables were present as specified in the CLP-Statement of Work (EPA 2001), and/or the project contract.
  - _X_ Yes
  - ____ No

- All documentation of field procedures was provided as required.
  - _X_ Yes
  - ____ No

3. FIELD PROCEDURES

- Samples were collected from all project-required sites.
  - _X_ Yes
  - ____ No

- Field parameters were measured in accordance with the project work plan.
  - _X_ Yes
  - ____ No

- Field instruments were calibrated daily and before measurements were collected.
  _X_ Yes
  ____ No

- Chains of Custodies (COCs) were properly filled out and signed by the field personnel.
  _X_ Yes
  ____ No

- Data entry into field books, on COCs, and on sample labels were accurate and complete.
  _X_ Yes
  ____ No

4. FIELD BLANKS

Blanks: Please note that the highest blank value associated with any particular analyte is the blank value used for the flagging process.

Deionized water (DI), trip, rinsate, or any other field blanks have been carried out at the proper frequency (one rinsate blank and one DI blank per event).
_X_ Yes
____ No

Reported results on the field blanks were less than the Project Detection Limit Goals (PDLGs) or reporting limit.
_X_ Yes
____ No

5. FIELD DUPLICATES

Field duplicates have been collected at the proper frequency (one field duplicate per event).
_X_ Yes
____ No

Field duplicate relative percent differences (RPDs) were within the required control limits (RPD of 20% or less). If the sample or duplicate result is less or equal to five times the PDLG, the RPD criteria are not used. In these cases, the difference between the sample and the duplicate results must be within ± the PDLG.
_X_ Yes
____ No

6. LABORATORY PROCEDURES

- **Laboratory procedures followed**

  _X_ CLP-Statement of Work (EPA 2001)
  ____ SW-846 (EPA 1986)
  _X_ Methods for Chemical Analysis of Water and Wastes (EPA 1983)

- **Holding times met**

  _X_ Yes
  ____ No

- **Consistency with project requirements**

  Analyses were carried out as required by the project work plan (ASARCO 2002 and 2007).
  _X_ Yes
  ____ No

  Project specified methods were used.
  _X_ Yes
  ____ No

7. DETECTION LIMITS

- Reporting detection limits met PDLGs.

  _X_ Yes – see notes
  ____ No

  Notes: The laboratory used reporting limit 0.020 mg/L instead of the requested 0.015 mg/L for dissolved manganese. Corrective action was taken and the laboratory revised the report with the correct reporting limit.

8. LABORATORY BLANKS

Please note that the highest blank value associated with any particular analyte is the blank value used for the flagging process.

- Method blanks were prepared and analyzed at the required frequency (one per batch or one per 20 samples, whichever is greater.

  _X_ Yes
  ____ No

- All the analytes in the blank were less than the PDLG.

  _X_ Yes
  ____ No

9. LABORATORY MATRIX SPIKES

- A Matrix Spike (MS) sample (pre-digestion) was analyzed at the proper frequency (one per batch and/or matrix).

  ___ Yes
  _X_ No – see notes
  Notes: The sample used for the total dissolved solids (TDS) MS was from an unknown source. Therefore, the LCS was used to determine the accuracy for this analyte. Validation procedures do not require data qualification for this omission.

- MS recoveries were within the required control limits (75-125%).

  _X_ Yes
  ___ No

10. LABORATORY DUPLICATES

- Laboratory duplicate samples were analyzed at the proper frequency (one per batch or one per 20 samples, whichever is greater).

  _X_ Yes
  ___ No

- RPDs were within the required control limits (RPD of 20% or less). If the sample or duplicate result is less or equal to five times the PDLG, the RPD criteria are not used. In these cases, the difference between the sample and the duplicate results must be within ± the PDLG.

  _X_ Yes
  ___ No

11. LABORATORY CONTROL STANDARDS (LCS)

Laboratory Fortified Blanks (LFBs) were used in lieu of LCS' for metal analyses. This is acceptable for the purpose of the project.

- The reference material used for the LCS or LFB was of the correct matrix.

  _X_ Yes
  ___ No

- LCS' or LFBs were prepared and analyzed at the proper frequency (one per batch or one per 20 samples, whichever is greater).

  _X_ Yes
  ___ No

- LCS recoveries were within the required control limits (80-120% or certified range).
  _X_ Yes
  ____ No

12. INTERPARAMETER COMPARISON

_X_ Lab pH vs. Field pH
_X_ Lab Specific Conductivity (SC) vs. Field SC
_X_ Total Dissolved Solids (TDS) vs. Field SC

Lab pH vs. Field pH: Field and lab pH pairs were compared using laboratory duplicate criteria (refer to section 10). These comparisons were less than or equal to 6.0 RPD and therefore acceptable for the purposes of the project.

Lab SC vs. Field SC: Field and lab SC pairs were compared using laboratory duplicate criteria (refer to section 10). These comparisons were less than or equal to 32.4 RPD. Following is a summary of the sites with field and lab SC pairs greater than 20 RPD. Action was not taken on these data.

Site	Sample Code	Sample Date	Field SC (umohs/cm)	Lab SC (umohs/cm)	RPD	Action
109 Gail	EHR-0908-303	9/28/08	230	319	32.4	None - Values in line with historical data.
203 Gail	EHR-0908-302	9/28/08	220	301	31.1	None - Values in line with historical data.
401 Gail	EHR-0908-300	9/28/08	590	779	27.6	None - Values in line with historical data.

TDS vs. Field SC: The ratio of TDS to field SC results should lie between 0.55 and 0.75. This ratio is intended to be a check on the accuracy of the TDS and lab SC measurements. In natural waters with high sulfate, the ratio may be much higher and the ratio is less accurate in dilute waters. TDS/SC ratios for this sampling event were from 0.63 to 0.71, which were in line with historical data.

13. HISTORICAL COMPARISON SUMMARY

Data for this sampling event were compared with sampling events for the previous five years (since January 2003). All concentrations were less than three times the standard deviation from the historical mean.

14. DATA QUALITY OBJECTIVES (DQOS)

- The data quality goal was met for precision (90% of the field and laboratory duplicates were within control limits).
  _X_ Yes –see the table on the following page
  ____ No

Precision Objectives

QC Type	Total Results	# of Results Out of Control Limits	# of Results Within Control Limits	% Within Control Limits
Field Duplicates	20	0	20	100.0%
Lab Duplicates	23	0	23	100.0%
Overall	**43**	**0**	**43**	**100.0%**

- The data quality goal was met for accuracy (90% of the LCS and matrix spike results were within control limits).
  _X_ Yes – see the following table
  ___ No

Accuracy Objectives

QC Type	Total Results	# of Results Out of Control Limits	# of Results Within Control Limits	% Within Control Limits
LCS' and LFBs	22	0	22	100.0%
Matrix Spikes	30	0	34	100.0%
Overall	**52**	**0**	**52**	**100.0%**

- DQO target for completeness was met (the number of valid results divided by the number of possible results is 90% or above).
  _X_ Yes – see the following table
  ___ No

Completeness

# of Planned Measurements	Actual # of Measurements	# of Rejected Measurements	# of Valid Measurements	Completeness
112	**112**	**0**	**112**	**100.0%**

- Samples were qualified for QC exceedances and deficiencies.
  ___ Yes
  _X_ No – see the following table

Qualification of Samples

# of Measurements	# of Qualified Measurements	# Not Qualified	% Not Qualified
112	**0**	**112**	**100.0%**

15. CONCLUSION

The data collected in September 2008 for the ASARCO East Helena Post RI/FS Long Term Monitoring Program are deemed acceptable and can be used for the purposes they were intended.

Data Validation Report by: Linda L. Tangen

Client Review by: Jon Nickel

REFERENCES

ASARCO 2002. *Interim Measures Work Plan Addendum, East Helena Facility.* ASARCO Consulting Inc. Revised May.

ASARCO 2007. *Post RI/FS Long-Term Monitoring Program.* ASARCO LLC. April.

EPA 1983. *Methods for Chemical Analysis of Water and Wastes.* United States Environmental Protection Agency. March.

EPA 1986. *Test Method for Evaluating Solid Waste: Physical/Chemical Methods 3rd Ed. 4 Vols.* United States Environmental Protection Agency. November.

EPA 2001. *USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis.* United States Environmental Protection Agency. Document Number ILM05.2. December.

EPA 2002. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* United States Environmental Protection Agency. July.

APPENDIX 1

DATABASE

ANALYSES SUMMARY REPORT

East Helena Private Wells - September 2008

Database: ASARCO, East Helena Plant

Table of Contents by Station Type

Page	Station Type	Station Name
1	Domestic Wells	109Gail
1	Domestic Wells	203Gail
1	Domestic Wells	401Gail
2	Field Quality Control	FieldBlank

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

Run Time: 10/31/2008 2:23:12 PM

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ANALYSES SUMMARY REPORT

East Helena Private Wells - September 2008

Database: ASARCO, East Helena Plant

Table of Contents By Lab Sample ID

Page	Lab Sample ID	Sample ID	Sample Date	Station Name
1	H08090485-001	EHR-0908-300	9/28/2008	401Gail
1	H08090485-002	EHR-0908-301	9/28/2008	401Gail
1	H08090485-003	EHR-0908-302	9/28/2008	203Gail
1	H08090485-004	EHR-0908-303	9/28/2008	109Gail
2	H08090485-005	EHR-0908-304	9/28/2008	FieldBlank

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

Run Time: 10/31/2008 2:23:12 PM

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ANALYSES SUMMARY REPORT

East Helena Private Wells - September 2008

Database: ASARCO, East Helena Plant

Table of Contents by Sample ID

Page	Sample ID	Lab Sample ID	Sample Date	Station Name
1	EHR-0908-300	H08090485-001	9/28/2008	401Gail
1	EHR-0908-301	H08090485-002	9/28/2008	401Gail
1	EHR-0908-302	H08090485-003	9/28/2008	203Gail
1	EHR-0908-303	H08090485-004	9/28/2008	109Gail
2	EHR-0908-304	H08090485-005	9/28/2008	FieldBlank

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

Run Time: 10/31/2008 2:23:12 PM

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ANALYSES SUMMARY REPORT

East Helena Private Wells - September 2008

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	109Gail	203Gail	401Gail	401Gail
Water	SAMPLE DATE	9/28/2008	9/28/2008	9/28/2008	9/28/2008
	SAMPLE TIME	09:40	09:10	08:30	08:40
	LAB	ELI	ELI	ELI	ELI
	LAB NUMBER	H08090485-004	H08090485-003	H08090485-001	H08090485-002
	SAMPLE NUMBER	EHR-0908-303	EHR-0908-302	EHR-0908-300	EHR-0908-301
	TYPE	Domestic Wells	Domestic Wells	Domestic Wells	Domestic Wells
	GROUP	Private Wells	Private Wells	Private Wells	Private Wells
	DESCRIPTION				
	REMARKS				Field Duplicate
Common Ions (mg/L): ppm unless noted					
	Bicarbonate (HCO3)	100	95	150	150
	Calcium (Ca) (DIS)	35	32	102	103
	Chloride (Cl)	6	5	27	27
	Magnesium (Mg) (DIS)	7	6	22	21
	Potassium (K) (DIS)	3	3	6	6
	Sodium (Na) (DIS)	14	14	25	25
	Sulfate (SO4)	55	53	230	230
	Total Alkalinity As CACO3	84	78	120	120
Metals (mg/L): ppm unless noted					
	Arsenic (As) (DIS)	<0.002	<0.002	<0.002	<0.002
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	<0.004	0.015	<0.004	<0.004
	Iron (Fe) (DIS)	<0.02	<0.02	<0.02	<0.02
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.015	<0.015	<0.015	<0.015
	Selenium (Se) (DIS)	<0.005	<0.005	0.017	0.018
	Zinc (Zn) (DIS)	<0.02	<0.02	0.03	<0.02
Physical/Fld-Lab: ppm unless noted					
	Oxygen (O) (DIS) (Fld)	9.53	10.07	12.02	
	pH	7.4	7.4	7.2	7.2
	pH (Fld)	7.41	7.27	6.78	
	SC (umhos/cm at 25 C) (Fld)	230	220	590	
	SC (umhos/cm at 25 C)	319	301	779	784
	Total Suspended Solids	<10	<10	<10	<10
	TDS (Measured at 180 C)	206	191	550	560
	Water Temperature (C) (Fld)	9.9	10.6	11.8	

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

Run Time: 10/31/2008 2:23:12 PM

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ANALYSES SUMMARY REPORT

East Helena Private Wells - September 2008

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	Field Blank
Water	SAMPLE DATE	9/28/2008
	SAMPLE TIME	10:00
	LAB	ELI
	LAB NUMBER	H08090485-005
	SAMPLE NUMBER	EHR-0908-304
	TYPE	Field QC
	GROUP	Private Wells
	DESCRIPTION	
	REMARKS	Blank

Common Ions (mg/L): ppm unless noted	
Bicarbonate (HCO3)	<1
Calcium (Ca) (DIS)	<1
Chloride (Cl)	<1
Magnesium (Mg) (DIS)	<1
Potassium (K) (DIS)	<1
Sodium (Na) (DIS)	<1
Sulfate (SO4)	<1
Total Alkalinity As CACO3	<1

Metals (mg/L): ppm unless noted	
Arsenic (As) (DIS)	<0.002
Cadmium (Cd) (DIS)	<0.001
Copper (Cu) (DIS)	<0.004
Iron (Fe) (DIS)	<0.02
Lead (Pb) (DIS)	<0.005
Manganese (Mn) (DIS)	<0.015
Selenium (Se) (DIS)	<0.005
Zinc (Zn) (DIS)	<0.02

Physical/Fld-Lab: ppm unless noted	
pH	5.5
SC (umhos/cm at 25 C)	2
Total Suspended Solids	<10
TDS (Measured at 180 C)	<10

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

Run Time: 10/31/2008 2:23:12 PM

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APPENDIX 2

FIELD NOTES

Poor Quality Source Document

The following document images have been scanned from the best available source copy.

To view the actual hard copy, contact the Region VIII Records Center at (303) 312-6473.

SEPTEMBER 28, 2008
MONTHLY LONG-TERM RI/FS RESIDENTIAL
WELL MONITORING

FIELD STANDARDIZATION OF HORIBA

	STANDARD VALUE	METER VALUE
pH	4.00 SU	3.99 SU
CONDUCTIVITY	4480 umhos/cm	4490 umhos/cm
SALINITY	0.23%	0.23%

JENSEN
401 GAIL STREET
EHR-0708-300 ORIGINAL
EHR-0708-301 DUPLICATE
DAVE JENSEN PRESENT DURING SAMPLE
COLLECTION FROM OUTSIDE GARDEN
SPIGOT. WATER HAD BEEN FLOWING
THROUGH SPIGOT FOR ABOUT 1 HOUR
PRIOR TO SAMPLE COLLECTION.

pH	6.78 SU
CONDUCTIVITY	590 umhos/cm
D.O.	12.02 mg/L
TEMP	11.8°C

FOLEY
203 GAIL STREET
EHR-0708-302
SAMPLE COLLECTED FROM NORTH INSIDE
SPIGOT ATTACHED TO HOUSE AFTER 10 MINUTE
PURGE

pH	7.27 SU
CONDUCTIVITY	220 umhos/cm
D.O	10.37 mg/L
TEMP	12.6°C

NORDSTROM
107 GAIL STREET
EHR-0708-303
SAMPLE COLLECTED FROM YARD SPIGOT
NEAR GARAGE AFTER 10 MINUTE PURGE

pH	7.41 SU
CONDUCTIVITY	230 umhos/cm
D.O.	9.53 mg/L
TEMP	7.9°C

FIELD BLANK FROM DEIONIZED WATER
EHR-0708-304

APPENDIX 3

CHAIN OF CUSTODIES

ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

Page _____ of _____

PLEASE PRINT- Provide as much information as possible.

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
ASARCO	[illegible]	State: MT	Yes ☐ No ☐
Report Mail Address: P.O. BOX 1230 EAST HELENA MT [illegible]	Contact Name: [illegible] Phone/Fax: [illegible]	Email:	Sampler: (Please Print)
Invoice Address:	Invoice Contact & Phone:	Purchase Order:	Quote/Bottle Order:

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ A2LA
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids
Vegetation Bioassay Other

ANALYSIS REQUESTED

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: [illegible]
Cooler ID(s):
Receipt Temp 5.6 °C
On Ice: Yes No
Custody Seal Y N
Bottles/Coolers B C
Intact Y N
Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	[illegible]	[illegible]	[illegible]							SEE ATTACHED	Normal Turnaround (TAT)	RUSH	
1	EHR-0908-300 RAIN	7/2[illegible]	[illegible]	[illegible]	X	X								X			
2	EHR-0908-300 METAL		8:30				X										
3	EHR-0908-301 RAIN				X	X											
4	EHR-0908-301 METAL		[illegible]				X										
5	EHR-0908-302 RAIN				X	X											
6	EHR-0908-302 METAL		[illegible]				X										
7	EHR-0908-303 RAIN				X	X											
8	EHR-0908-303 METAL		[illegible]				X										
9	EHR-0908-304 RAIN				X	X											
10	EHR-0908-304 METAL		[illegible]				X										

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time:	Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report. Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

APPENDIX 4

LABORATORY REPORT

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

ANALYTICAL SUMMARY REPORT

October 23 2008

Asarco LLC
PO Box 1230
East Helena, MT 59635

Workorder No H08090485 Quote ID: H330 - Residential Well

Project Name: RI/FS Long Term Monitoring Sept 2008

Energy Laboratories Inc received the following 5 samples from Asarco LLC on 9/30/2008 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H08090485-001	EHR-0908-300	09/28/08 8:30	09/30/08	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Conductivity Anions by Ion Chromatography pH Solids, Total Dissolved Solids, Total Suspended
H08090485-002	EHR-0908-301	09/28/08 8:40	09/30/08	Aqueous	Same As Above
H08090485-003	EHR-0908-302	09/28/08 9:10	09/30/08	Aqueous	Same As Above
H08090485-004	EHR-0908-303	09/28/08 9:40	09/30/08	Aqueous	Same As Above
H08090485-005	EHR-0908-304	09/28/08 10:00	09/30/08	Aqueous	Same As Above

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT, EPA # MT00005
eli-c - Energy Laboratories, Inc. - Casper, WY, EPA# WY00002
eli-g - Energy Laboratories, Inc. - Gillette, WY, EPA# WY00006
eli-h - Energy Laboratories, Inc. - Helena, MT, EPA# MT00945
eli-r - Energy Laboratories, Inc. - Rapid City, SD, EPA# SD00012
eli-t - Energy Laboratories, Inc - College Station, TX, EPA# TX01520

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES, INC. will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories are indicated within the Laboratory Analytical Report.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

ELI appreciates the opportunity to provide you with this analytical service. For additional information, including certifications, and analytical services visit our web page www.energylab.com

Report Approved By: Jonathan D. Hager

Digitally signed by Jonathan D. Hager
DN: cn=Jonathan D. Hager, o=Energy Laboratory-Helena, ou=Assistant Lab Manager, email=jhager@energylab.com, c=US
Date: 2008.10.23 11:06:48 -06'00

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0908-300
Project: RI/FS Long Term Monitoring Sept 2008
Matrix: Aqueous

Lab ID: H08090485-001
Collection Date: 09/28/08 08:30
DateReceived: 09/30/08
Report Date: 10/23/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.2	s.u.		0.1		A4500-H B	10/02/08 09:00 / kjw			PH_081002A	5	081002A-PH-W
Conductivity	779	umhos/cm		1		A2510 B	10/02/08 17:04 / jlh			COND_081002A	2	081002A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/30/08 14:18 / kjw			SOLIDS_080930A	3	080930A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	550	mg/L		10		A2540 C	09/30/08 14:12 / kjw			SOLIDS_080930B	23	080930A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	120	mg/L		1		A2320 B	10/01/08 11:35 / abb			TITTR_081001A	3	081001A-ALK-W
Bicarbonate as HCO3	150	mg/L		1		A2320 B	10/01/08 11:35 / abb			TITTR_081001A	3	081001A-ALK-W
Chloride	27	mg/L		1		E300.0	10/06/08 15:33 / abb			IC101-H_081006A	18	R48946
Sulfate	230	mg/L		1		E300.0	10/06/08 15:33 / abb			IC101-H_081006A	18	R48946
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728
Cadmium	ND	mg/L		0.001		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728
Calcium	102	mg/L		1		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Copper	ND	mg/L		0.004		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728
Iron	ND	mg/L		0.02		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Lead	ND	mg/L		0.005		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728
Magnesium	22	mg/L		1		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Manganese	ND	mg/L		0.02		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Potassium	6	mg/L		1		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Selenium	0.017	mg/L		0.005		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728
Sodium	25	mg/L		1		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Zinc	0.03	mg/L		0.02		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0908-301
Project: RI/FS Long Term Monitoring Sept 2008
Matrix: Aqueous

Lab ID: H08090485-002
Collection Date: 09/28/08 08 40
DateReceived: 09/30/08
Report Date: 10/23/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7 2	s.u.		0.1		A4500-H B	10/02/08 09 01 / kjw			PH_081002A	6	081002A-PH-W
Conductivity	784	umhos/cm		1		A2510 B	10/02/08 17:05 / jth			COND_081002A	3	081002A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/30/08 14.18 / kjw			SOLIDS_080930A	4	080930A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	560	mg/L		10		A2540 C	09/30/08 14:13 / kjw			SOLIDS_080930B	24	080930A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	120	mg/L		1		A2320 B	10/01/08 11:56 / abb			TITTR_081001A	4	081001A-ALK-W
Bicarbonate as HCO3	150	mg/L		1		A2320 B	10/01/08 11:56 / abb			TITTR_081001A	4	081001A-ALK-W
Chloride	27	mg/L		1		E300.0	10/06/08 15 52 / abb			IC101-H_081006A	19	R48946
Sulfate	230	mg/L		1		E300.0	10/06/08 15:52 / abb			IC101-H_081006A	19	R48946
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	10/08/08 04:42 / eli-b			SUB-B118767	1	B_R118767
Cadmium	ND	mg/L		0 001		E200.8	10/08/08 04 42 / eli-b			SUB-B118767	1	B_R118767
Calcium	103	mg/L		1		E200.7	10/02/08 12.57 / eli-b			SUB-B118590	2	B_R118590
Copper	ND	mg/L		0.004		E200.8	10/08/08 04:42 / eli-b			SUB-B118767	1	B_R118767
Iron	ND	mg/L		0.02		E200.7	10/02/08 12:57 / eli-b			SUB-B118590	2	B_R118590
Lead	ND	mg/L		0.005		E200.8	10/08/08 04:42 / eli-b			SUB-B118767	1	B_R118767
Magnesium	21	mg/L		1		E200.7	10/02/08 12 57 / eli-b			SUB-B118590	2	B_R118590
Manganese	ND	mg/L		0.02		E200.7	10/02/08 12:57 / eli-b			SUB-B118590	2	B_R118590
Potassium	6	mg/L		1		E200.7	10/02/08 12:57 / eli-b			SUB-B118590	2	B_R118590
Selenium	0.018	mg/L		0.005		E200.8	10/08/08 04:42 / eli-b			SUB-B118767	1	B_R118767
Sodium	25	mg/L		1		E200.7	10/02/08 12 57 / eli-b			SUB-B118590	2	B_R118590
Zinc	ND	mg/L		0.02		E200.8	10/08/08 04 42 / eli-b			SUB-B118767	1	B_R118767

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0908-302
Project: RI/FS Long Term Monitoring Sept 2008
Matrix: Aqueous

Lab ID: H08090485-003
Collection Date: 09/28/08 09:10
DateReceived: 09/30/08
Report Date: 10/23/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.4	s.u.		0.1		A4500-H B	10/02/08 09:03 / kjw			PH_081002A	8	081002A-PH-W
Conductivity	301	umhos/cm		1		A2510 B	10/02/08 17:09 / jlh			COND_081002A	4	081002A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/30/08 14:18 / kjw			SOLIDS_080930A	5	080930A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	191	mg/L		10		A2540 C	09/30/08 14:13 / kjw			SOLIDS_080930B	25	080930A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	78	mg/L		1		A2320 B	10/01/08 12:39 / abb			TITTR_081001A	5	081001A-ALK-W
Bicarbonate as HCO3	95	mg/L		1		A2320 B	10/01/08 12:39 / abb			TITTR_081001A	5	081001A-ALK-W
Chloride	5	mg/L		1		E300.0	10/06/08 16:12 / abb			IC101-H_081006A	20	R48946
Sulfate	53	mg/L		1		E300.0	10/06/08 16:12 / abb			IC101-H_081006A	20	R48946
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Cadmium	ND	mg/L		0.001		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Calcium	32	mg/L		1		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Copper	0.015	mg/L		0.004		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Iron	ND	mg/L		0.02		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Lead	ND	mg/L		0.005		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Magnesium	6	mg/L		1		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Manganese	ND	mg/L		0.02		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Potassium	3	mg/L		1		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Selenium	ND	mg/L		0.005		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Sodium	14	mg/L		1		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Zinc	ND	mg/L		0.02		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0908-303
Project: RI/FS Long Term Monitoring Sept 2008
Matrix: Aqueous

Lab ID: H08090485-004
Collection Date: 09/28/08 09.40
DateReceived: 09/30/08
Report Date: 10/23/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	7.4	s.u.		0.1		A4500-H B	10/02/08 09 04 / kjw			PH_081002A	9	081002A-PH-W
Conductivity	319	umhos/cm		1		A2510 B	10/02/08 17 15 / jlh			COND_081002A	6	081002A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/30/08 14 19 / kjw			SOLIDS_080930A	6	080930A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	206	mg/L		10		A2540 C	09/30/08 14 14 / kjw			SOLIDS_080930B	26	080930A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	84	mg/L		1		A2320 B	10/01/08 12:42 / abb			TITTR_081001A	6	081001A-ALK-W
Bicarbonate as HCO3	100	mg/L		1		A2320 B	10/01/08 12.42 / abb			TITTR_081001A	6	081001A-ALK-W
Chloride	6	mg/L		1		E300.0	10/06/08 17:10 / abb			IC101-H_081006A	23	R48946
Sulfate	55	mg/L		1		E300.0	10/06/08 17:10 / abb			IC101-H_081006A	23	R48946
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767
Cadmium	ND	mg/L		0.001		E200.8	10/08/08 04 50 / eli-b			SUB-B118767	2	B_R118767
Calcium	35	mg/L		1		E200.7	10/02/08 13 16 / eli-b			SUB-B118590	4	S_R118590
Copper	ND	mg/L		0 004		E200.8	10/08/08 04 50 / eli-b			SUB-B118767	2	B_R118767
Iron	ND	mg/L		0.02		E200.7	10/02/08 13.16 / eli-b			SUB-B118590	4	B_R118590
Lead	ND	mg/L		0.005		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767
Magnesium	7	mg/L		1		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Manganese	ND	mg/L		0.02		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Potassium	3	mg/L		1		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Selenium	ND	mg/L		0.005		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767
Sodium	14	mg/L		1		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Zinc	ND	mg/L		0 02		E200.8	10/08/08 04 50 / eli-b			SUB-B118767	2	B_R118767

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Client Sample ID: EHR-0908-304
Project: RI/FS Long Term Monitoring Sept 2008
Matrix: Aqueous

Lab ID: H08090485-005
Collection Date: 09/28/08 10 00
DateReceived: 09/30/08
Report Date: 10/23/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
PHYSICAL PROPERTIES												
pH	5.5	s u		0 1		A4500-H B	10/02/08 09 07 / kjw			PH_081002A	10	081002A-PH-W
Conductivity	2	umhos/cm		1		A2510 B	10/02/08 17 17 / jlh			COND_081002A	7	081002A-COND-PROBE W
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/30/08 14:19 / kjw			SOLIDS_080930A	8	080930A-SLDS-TSS-W
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	09/30/08 14:14 / kjw			SOLIDS_080930B	28	080930A-SLDS-TDS-W
INORGANICS												
Alkalinity, Total as CaCO3	ND	mg/L		1		A2320 B	10/01/08 12:53 / abb			TITTR_081001A	9	081001A-ALK-W
Bicarbonate as HCO3	ND	mg/L		1		A2320 B	10/01/08 12:53 / abb			TITTR_081001A	9	081001A-ALK-W
Chloride	ND	mg/L		1		E300.0	10/06/08 17 29 / abb			IC101-H_081006A	24	R48946
Sulfate	ND	mg/L		1		E300.0	10/06/08 17 29 / abb			IC101-H_081006A	24	R48946
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	10/08/08 04:57 / eli-b			SUB-B118767	3	B_R118767
Cadmium	ND	mg/L		0.001		E200.8	10/08/08 04:57 / eli-b			SUB-B118767	3	B_R118767
Calcium	ND	mg/L		1		E200.7	10/02/08 13:20 / eli-b			SUB-B118590	5	B_R118590
Copper	ND	mg/L		0.004		E200.8	10/08/08 04:57 / eli-b			SUB-B118767	3	B_R118767
Iron	ND	mg/L		0.02		E200.7	10/02/08 13:20 / eli-b			SUB-B118590	5	B_R118590
Lead	ND	mg/L		0 005		E200 8	10/08/08 04 57 / eli-b			SUB-B118767	3	B_R118767
Magnesium	ND	mg/L		1		E200 7	10/02/08 13 20 / eli-b			SUB-B118590	5	B_R118590
Manganese	ND	mg/L		0.02		E200.7	10/02/08 13:20 / eli-b			SUB-B118590	5	B_R118590
Potassium	ND	mg/L		1		E200.7	10/02/08 13:20 / eli-b			SUB-B118590	5	B_R118590
Selenium	ND	mg/L		0.005		E200.8	10/08/08 04:57 / eli-b			SUB-B118767	3	B_R118767
Sodium	ND	mg/L		1		E200.7	10/02/08 13.20 / eli-b			SUB-B118590	5	B_R118590
Zinc	ND	mg/L		0 02		E200.8	10/08/08 04:57 / eli-b			SUB-B118767	3	B_R118767

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

LABORATORY ANALYTICAL REPORT

Revision

Client: Asarco LLC
Client Sample ID: EHR-0908-300
Project: RI/FS Long Term Monitoring Sept 2008
Matrix: Aqueous

Lab ID: H08090485-001
Collection Date: 09/28/08 08 30
DateReceived: 09/30/08
Report Date: 10/23/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728
Cadmium	ND	mg/L		0.001		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728
Calcium	102.5	mg/L		1.0		E200.7	10/02/08 12 46 / eli-b			SUB-B118590	1	B_R118590
Copper	ND	mg/L		0.004		E200.8	10/06/08 16.38 / eli-b			SUB-B118728	1	B_R118728
Iron	ND	mg/L		0.020		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Lead	ND	mg/L		0.005		E200 8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728
Magnesium	21.6	mg/L		1.0		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Manganese	ND	mg/L		0.015		E200.7	10/02/08 12 46 / eli-b			SUB-B118590	1	B_R118590
Potassium	5.9	mg/L		1 0		E200 7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Selenium	0.017	mg/L		0.005		E200.8	10/06/08 16.38 / eli-b			SUB-B118728	1	B_R118728
Sodium	25.0	mg/L		1.0		E200.7	10/02/08 12:46 / eli-b			SUB-B118590	1	B_R118590
Zinc	0.03	mg/L		0.02		E200.8	10/06/08 16:38 / eli-b			SUB-B118728	1	B_R118728

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Revision

Client: Asarco LLC
Client Sample ID: EHR-0908-301
Project: RI/FS Long Term Monitoring Sept 2008
Matrix: Aqueous

Lab ID: H08090485-002
Collection Date: 09/28/08 08:40
DateReceived: 09/30/08
Report Date: 10/23/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	10/08/08 04 42 / eli-b			SUB-B118767	1	B_R118767
Cadmium	ND	mg/L		0.001		E200.8	10/08/08 04 42 / eli-b			SUB-B118767	1	B_R118767
Calcium	102.6	mg/L		1 0		E200 7	10/02/08 12 57 / eli-b			SUB-B118590	2	B_R118590
Copper	ND	mg/L		0.004		E200.8	10/08/08 04 42 / eli-b			SUB-B118767	1	B_R118767
Iron	ND	mg/L		0 020		E200.7	10/02/08 12 57 / eli-b			SUB-B118590	2	B_R118590
Lead	ND	mg/L		0.005		E200 8	10/08/08 04:42 / eli-b			SUB-B118767	1	B_R118767
Magnesium	21.4	mg/L		1.0		E200 7	10/02/08 12:57 / eli-b			SUB-B118590	2	B_R118590
Manganese	ND	mg/L		0.015		E200.7	10/02/08 12:57 / eli-b			SUB-B118590	2	B_R118590
Potassium	6.0	mg/L		1.0		E200.7	10/02/08 12:57 / eli-b			SUB-B118590	2	B_R118590
Selenium	0.018	mg/L		0 005		E200.8	10/08/08 04:42 / eli-b			SUB-B118767	1	B_R118767
Sodium	25.2	mg/L		1.0		E200.7	10/02/08 12:57 / eli-b			SUB-B118590	2	B_R118590
Zinc	ND	mg/L		0.02		E200.8	10/08/08 04:42 / eli-b			SUB-B118767	1	B_R118767

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Revision

Client: Asarco LLC
Client Sample ID: EHR-0908-302
Project: RI/FS Long Term Monitoring Sept 2008
Matrix: Aqueous

Lab ID: H08090485-003
Collection Date: 09/28/08 09:10
DateReceived: 09/30/08
Report Date: 10/23/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Cadmium	ND	mg/L		0.001		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Calcium	31.9	mg/L		1.0		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Copper	0.015	mg/L		0.004		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Iron	ND	mg/L		0.020		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Lead	ND	mg/L		0.005		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Magnesium	6.4	mg/L		1.0		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Manganese	ND	mg/L		0.015		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Potassium	2.5	mg/L		1.0		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Selenium	ND	mg/L		0.005		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728
Sodium	13.8	mg/L		1.0		E200.7	10/02/08 13:12 / eli-b			SUB-B118590	3	B_R118590
Zinc	ND	mg/L		0.02		E200.8	10/06/08 17:16 / eli-b			SUB-B118728	2	B_R118728

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Revision

Client: Asarco LLC
Client Sample ID: EHR-0908-303
Project: RI/FS Long Term Monitoring Sept 2008
Matrix: Aqueous

Lab ID: H08090485-004
Collection Date: 09/28/08 09:40
DateReceived: 09/30/08
Report Date: 10/23/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767
Cadmium	ND	mg/L		0.001		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767
Calcium	35.2	mg/L		1.0		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Copper	ND	mg/L		0.004		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767
Iron	ND	mg/L		0.020		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Lead	ND	mg/L		0.005		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767
Magnesium	7.0	mg/L		1.0		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Manganese	ND	mg/L		0.015		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Potassium	2.7	mg/L		1.0		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Selenium	ND	mg/L		0.005		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767
Sodium	14.1	mg/L		1.0		E200.7	10/02/08 13:16 / eli-b			SUB-B118590	4	B_R118590
Zinc	ND	mg/L		0.02		E200.8	10/08/08 04:50 / eli-b			SUB-B118767	2	B_R118767

Report Definitions: RL - Analyte reporting limit MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Revision

Client: Asarco LLC
Client Sample ID: EHR-0908-304
Project: RI/FS Long Term Monitoring Sept 2008
Matrix: Aqueous

Lab ID: H08090485-005
Collection Date: 09/28/08 10 00
DateReceived: 09/30/08
Report Date: 10/23/08

Analyses	Result	Units	QUAL	RL	MCL	Method	Analysis Date / By	Prep Date	Prep Method	RunID	Run Order	BatchID
METALS, DISSOLVED												
Arsenic	ND	mg/L		0.002		E200 8	10/08/08 04 57 / eli-b			SUB-B118767	3	B_R118767
Cadmium	ND	mg/L		0.001		E200.8	10/08/08 04:57 / eli-b			SUB-B118767	3	B_R118767
Calcium	ND	mg/L		1.0		E200.7	10/02/08 13.20 / eli-b			SUB-B118590	5	B_R118590
Copper	ND	mg/L		0.004		E200.8	10/08/08 04 57 / eli-b			SUB-B118767	3	B_R118767
Iron	ND	mg/L		0.020		E200.7	10/02/08 13 20 / eli-b			SUB-B118590	5	B_R118590
Lead	ND	mg/L		0.005		E200.8	10/08/08 04:57 / eli-b			SUB-B118767	3	B_R118767
Magnesium	ND	mg/L		1.0		E200.7	10/02/08 13:20 / eli-b			SUB-B118590	5	B_R118590
Manganese	ND	mg/L		0.015		E200.7	10/02/08 13 20 / eli-b			SUB-B118590	5	B_R118590
Potassium	ND	mg/L		1.0		E200.7	10/02/08 13:20 / eli-b			SUB-B118590	5	B_R118590
Selenium	ND	mg/L		0.005		E200 8	10/08/08 04.57 / eli-b			SUB-B118767	3	B_R118767
Sodium	ND	mg/L		1 0		E200.7	10/02/08 13:20 / eli-b			SUB-B118590	5	B_R118590
Zinc	ND	mg/L		0.02		E200.8	10/08/08 04.57 / eli-b			SUB-B118767	3	B_R118767

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

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Client: Asarco LLC
Work Order: H08090485
Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

BatchID: 080930A-SLDS-TDS-W

Date: 23-Oct-08

Run ID :Run Order: **SOLIDS_080930B: 1** SampType: **Method Blank** Sample ID: **MBLK1_080930A** Method: **A2540 C**
Analysis Date: **09/30/08 14:05** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	1.0	1.0									

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **SOLIDS_080930B: 2** SampType: **Laboratory Control Sample** Sample ID: **LCS1_080930A** Method: **A2540 C**
Analysis Date: **09/30/08 14:05** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	995	10	1000	1	99	90	110				

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **SOLIDS_080930B: 16** SampType: **Sample Matrix Spike** Sample ID: **H08090479-007AMS** Method: **A2540 C**
Analysis Date: **09/30/08 14:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	2760	10	2000	739	101	80	120				

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **SOLIDS_080930B: 17** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08090479-007AMSD** Method: **A2540 C**
Analysis Date: **09/30/08 14:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	2760	10	2000	739	101	80	120	2760	0.1	10	

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **SOLIDS_080930B: 27** SampType: **Sample Duplicate** Sample ID: **H08090485-004ADUP** Method: **A2540 C**
Analysis Date: **09/30/08 14:14** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	204	10						206	1	20	

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC
Work Order: H08090485
Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

BatchID: 080930A-SLDS-TSS-W

Date: 23-Oct-08

Run ID :Run Order: **SOLIDS_080930A: 1** SampType: **Method Blank** Sample ID: **MBLK1_080930A** Method: **A2540 D**
Analysis Date: **09/30/08 14:17** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	ND	1									

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **SOLIDS_080930A: 2** SampType: **Laboratory Control Sample** Sample ID: **LCS1_080930A** Method: **A2540 D**
Analysis Date: **09/30/08 14:18** Units: **mg/L** **Prep Info:** Prep Date: Prep Method

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	1950	10	2000		97	70	130				

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **SOLIDS_080930A: 7** SampType: **Sample Duplicate** Sample ID: **H08090485-004ADUP** Method: **A2540 D**
Analysis Date: **09/30/08 14:19** Units: **mg/L** **Prep Info:** Prep Date: Prep Method

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	4.00	10						4	0	10	

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco LLC
Work Order: H08090485
Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

Date: 23-Oct-08

BatchID: 081001A-ALK-W

Run ID :Run Order: **TITTR_081001A: 1** SampType: **Method Blank** Sample ID: **MBLK1_081001A** Method: **A2320 B**
Analysis Date: **10/01/08 11:24** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	1									
Bicarbonate as HCO3	ND	1									

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **TITTR_081001A: 2** SampType: **Laboratory Control Sample** Sample ID: **LCS1_081001A** Method: **A2320 B**
Analysis Date: **10/01/08 11:30** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	600	4.0	600		100	90	110				

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **TITTR_081001A: 7** SampType: **Sample Matrix Spike** Sample ID: **H08090485-004AMS** Method: **A2320 B**
Analysis Date: **10/01/08 12:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	650	4.0	600	83.58	95	90	110				

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **TITTR_081001A: 8** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08090485-004AMSD** Method: **A2320 B**
Analysis Date: **10/01/08 12:52** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	660	4.0	600	83.58	96	90	110	654.7	0.6	20	

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **TITTR_081001A: 18** SampType: **Sample Duplicate** Sample ID: **H08090512-006ADUP** Method: **A2320 B**
Analysis Date: **10/01/08 14:26** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	130	4.0						127.4	1.6	20	
Bicarbonate as HCO3	160	4.0						155.4	1.6	20	

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC
Work Order: H08090485
Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

BatchID: 081002A-COND-PROBE

Date: 23-Oct-08

Run ID :Run Order: **COND_081002A: 1** SampType: **Laboratory Control Sample** Sample ID: **LCS1_081002A** Method: **A2510 B**
Analysis Date: **10/02/08 16:49** Units: **umhos/cm** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	1400	1.0	1412		99	90	110				

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **COND_081002A: 5** SampType: **Sample Duplicate** Sample ID **H08090485-003ADUP** Method **A2510 B**
Analysis Date: **10/02/08 17:13** Units: **umhos/cm** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Conductivity	300	1.0						301.2	0.4	10	

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco LLC
Work Order: H08090485
Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

BatchID: 081002A-PH-W

Date: 23-Oct-08

Run ID Run Order **PH_081002A: 1** SampType **Laboratory Control Sample** Sample ID: **LCS1_081002A** Method **A4500-H B**

Analysis Date: **10/02/08 08:50** Units: **s.u.** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.00	0.10	7		100	99	101				

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID Run Order: **PH_081002A: 7** SampType: **Sample Duplicate** Sample ID: **H08090485-002ADUP** Method: **A4500-H B**

Analysis Date: **10/02/08 09:01** Units: **s.u.** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.27	0.10						7.24	0.4	2	

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC
Work Order: H08090485
Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

BatchID: B_R118590

Date: 23-Oct-08

Run ID :Run Order: **SUB-B118590: 6** SampType: **Continuing Calibration Verification Standard** Sample ID: **ICV** Method: **E200.7**

Analysis Date: **10/02/08 12:01** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	24.4	1.0	25		98	95	105				
Iron	2.55	0.030	2.5		102	95	105				
Magnesium	24.5	1.0	25		98	95	105				
Manganese	2.53	0.010	2.5		101	95	105				
Potassium	24.5	1.0	25		98	95	105				
Sodium	24.1	1.0	25		97	95	105				

Associated samples: H08090485-001B; H08090485-002B; H08090485-003B; H08090485-004B; H08090485-005B

Run ID :Run Order: **SUB-B118590: 7** SampType: **Method Blank** Sample ID: **MB-TJADIS081002A** Method: **E200.7**

Analysis Date: **10/02/08 12:27** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	0.05	0.02									
Iron	ND	0.005									
Magnesium	ND	0.1									
Manganese	ND	0.001									
Potassium	ND	0.07									
Sodium	ND	0.04									

Associated samples: H08090485-001B; H08090485-002B; H08090485-003B; H08090485-004B; H08090485-005B

Run ID :Run Order: **SUB-B118590: 8** SampType: **Laboratory Fortified Blank** Sample ID: **LFB-TJADIS081002A** Method: **E200.7**

Analysis Date: **10/02/08 12:31** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	51.2	1.0	50	0.05369	102	85	115				
Iron	5.07	0.030	5		101	85	115				
Magnesium	51.5	1.0	50		103	85	115				
Manganese	4.95	0.010	5		99	85	115				
Potassium	50.3	1.0	50		101	85	115				
Sodium	50.3	1.0	50		101	85	115				

Associated samples: H08090485-001B; H08090485-002B; H08090485-003B; H08090485-004B; H08090485-005B

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC
Work Order: H08090485
Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

Date: 23-Oct-08

BatchID: B_R118590

Run ID :Run Order: **SUB-B118590: 9** SampType: **Sample Matrix Spike** Sample ID: **H08090485-001B** Method: **E200.7**
Analysis Date: **10/02/08 12:50** Units: **mg/L** Prep Info: Prep Date Prep Method

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	202.4	1.0	100	102.5	100	70	130				
Iron	10.39	0.030	10	0.01048	104	70	130				
Magnesium	124.9	1.0	100	21.56	103	70	130				
Manganese	10.11	0.010	10		101	70	130				
Potassium	104.9	1.0	100	5.902	99	70	130				
Sodium	126.4	1.0	100	24.96	101	70	130				

Associated samples: H08090485-001B; H08090485-002B; H08090485-003B; H08090485-004B; H08090485-005B

Run ID :Run Order: **SUB-B118590: 10** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08090485-001B** Method: **E200.7**
Analysis Date: **10/02/08 12:53** Units: **mg/L** Prep Info: Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	203.7	1.0	100	102.5	101	70	130	202.4	0.6	20	
Iron	10.16	0.030	10	0.01048	102	70	130	10.39	2.2	20	
Magnesium	125.3	1.0	100	21.56	104	70	130	124.9	0.3	20	
Manganese	9.892	0.010	10		99	70	130	10.11	2.2	20	
Potassium	105.3	1.0	100	5.902	99	70	130	104.9	0.5	20	
Sodium	124.5	1.0	100	24.96	100	70	130	126.4	1.5	20	

Associated samples: H08090485-001B; H08090485-002B; H08090485-003B; H08090485-004B; H08090485-005B

Run ID :Run Order: **SUB-B118590: 11** SampType: **Sample Matrix Spike** Sample ID: **B08100095-006FMS2** Method: **E200.7**
Analysis Date: **10/02/08 13:46** Units: **mg/L** Prep Info: Prep Date Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	265.1	1.0	100	166.2	99	70	130				
Iron	10.52	0.030	10	0.01918	105	70	130				
Magnesium	171.2	1.0	100	67.27	104	70	130				
Manganese	10.15	0.010	10	0.01034	101	70	130				
Potassium	109.5	1.0	100	4.756	105	70	130				
Sodium	125.5	1.0	100	20.51	105	70	130				

Associated samples: H08090485-001B; H08090485-002B; H08090485-003B; H08090485-004B; H08090485-005B

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC
Work Order: H08090485
Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

BatchID: B_R118590

Date: 23-Oct-08

Run ID :Run Order: **SUB-B118590: 12** SampType: **Sample Matrix Spike Duplicate** Sample ID: **B08100095-006FMSD2** Method: **E200.7**

Analysis Date: **10/02/08 13:57** Units **mg/L** *Prep Info:* *Prep Date* *Prep Method:*

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	267.4	1.0	100	166.2	101	70	130	265.1	0.8	20	
Iron	10.31	0.030	10	0.01918	103	70	130	10.52	2.1	20	
Magnesium	173.7	1.0	100	67.27	106	70	130	171.2	1.5	20	
Manganese	9.954	0.010	10	0.01034	99	70	130	10.15	2	20	
Potassium	110.5	1.0	100	4.756	106	70	130	109.5	1	20	
Sodium	126.3	1.0	100	20.51	106	70	130	125.5	0.7	20	

Associated samples: H08090485-001B; H08090485-002B; H08090485-003B; H08090485-004B; H08090485-005B

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco LLC
Work Order: H08090485
Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

BatchID: B_R118728

Date: 23-Oct-08

Run ID :Run Order: **SUB-B118728: 3** SampType **Initial Calibration Verification Standard** Sample ID: **QCS - ME080514B, ME080514A, ME080225B** Method **E200.8**

Analysis Date: **10/06/08 11:46** Units: **mg/L** Prep Info: Prep Date Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.049	0.0050	0.05		99	90	110				
Cadmium	0.025	0.0010	0.025		98	90	110				
Copper	0.050	0.010	0.05		100	90	110				
Lead	0.050	0.010	0.05		99	90	110				
Selenium	0.049	0.0050	0.05		99	90	110				
Zinc	0.050	0.010	0.05		100	90	110				

Associated samples: H08090485-001B; H08090485-003B

Run ID :Run Order: **SUB-B118728: 4** SampType: **Method Blank** Sample ID: **LRB** Method: **E200.8**

Analysis Date: **10/06/08 12:25** Units: **mg/L** Prep Info: Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	4E-05									
Cadmium	1E-05	9E-06									
Copper	ND	7E-05									
Lead	ND	8E-06									
Selenium	ND	0.0001									
Zinc	0.001	3E-05									

Associated samples: H08090485-001B; H08090485-003B

Run ID :Run Order: **SUB-B118728: 5** SampType: **Laboratory Fortified Blank** Sample ID: **LFB** Method: **E200.8**

Analysis Date: **10/06/08 12:33** Units: **mg/L** Prep Info: Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.052	0.0050	0.05		104	85	115				
Cadmium	0.051	0.0010	0.05	0.00001	102	85	115				
Copper	0.054	0.010	0.05		108	85	115				
Lead	0.053	0.010	0.05		106	85	115				
Selenium	0.051	0.0050	0.05		102	85	115				
Zinc	0.053	0.010	0.05	0.00147	104	85	115				

Associated samples H08090485-001B; H08090485-003B

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC
Work Order: H08090485
Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

Date: 23-Oct-08

BatchID: B_R118728

Run ID :Run Order: **SUB-B118728: 6** SampType: **Sample Matrix Spike** Sample ID: **H08090485-001B** Method: **E200.8**

Analysis Date: **10/06/08 16:45** Units: **mg/L** **Prep Info:** Prep Date Prep Method

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.2480	0.0050	0.25	0.00185	98	70	130				
Cadmium	0.2374	0.0010	0.25	0.00075	95	70	130				
Copper	0.2358	0.010	0.25	0.00345	93	70	130				
Lead	0.2472	0.010	0.25	0.0001	99	70	130				
Selenium	0.2557	0.0050	0.25	0.01745	95	70	130				
Zinc	0.2466	0.010	0.25	0.03425	85	70	130				

Associated samples: H08090485-001B; H08090485-003B

Run ID :Run Order: **SUB-B118728: 7** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08090485-001B** Method: **E200.8**

Analysis Date: **10/06/08 16:53** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.2441	0.0050	0.25	0.00185	97	70	130	0.248	1.6	20	
Cadmium	0.2345	0.0010	0.25	0.00075	94	70	130	0.2374	1.2	20	
Copper	0.2356	0.010	0.25	0.00345	93	70	130	0.2358	0.1	20	
Lead	0.2466	0.010	0.25	0.0001	99	70	130	0.2472	0.2	20	
Selenium	0.2510	0.0050	0.25	0.01745	93	70	130	0.2557	1.9	20	
Zinc	0.2460	0.010	0.25	0.03425	85	70	130	0.2466	0.3	20	

Associated samples: H08090485-001B; H08090485-003B

Run ID :Run Order: **SUB-B118728: 8** SampType: **Initial Calibration Verification Standard** Sample ID: **QCS - ME080514B, ME080514A, ME080225B** Method: **E200.8**

Analysis Date: **10/06/08 23:05** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.050	0.0050	0.05		100	90	110				
Cadmium	0.024	0.0010	0.025		97	90	110				
Copper	0.051	0.010	0.05		101	90	110				
Lead	0.050	0.010	0.05		100	90	110				
Selenium	0.052	0.0050	0.05		103	90	110				
Zinc	0.051	0.010	0.05		102	90	110				

Associated samples: H08090485-001B; H08090485-003B

Qualifiers:
ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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ANALYTICAL QC SUMMARY REPORT

BatchID: B_R118728

Date: 23-Oct-08

Run ID Run Order: **SUB-B118728: 9** SampType: **Initial Calibration Verification Standard** Sample ID: **QCS - ME080514B, ME080514A, ME080225B** Method: **E200.8**

Analysis Date: **10/07/08 08:37** Units: **mg/L** **Prep Info:** Prep Date Prep Method

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.050	0.0050	0.05		100	90	110				
Cadmium	0.025	0.0010	0.025		99	90	110				
Copper	0.051	0.010	0.05		102	90	110				
Lead	0.049	0.010	0.05		98	90	110				
Selenium	0.050	0.0050	0.05		101	90	110				
Zinc	0.050	0.010	0.05		100	90	110				

Associated samples: H08090485-001B; H08090485-003B

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
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R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Client: Asarco LLC
Work Order: H08090485
Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

BatchID: B_R118767

Date: 23-Oct-08

Run ID :Run Order: **SUB-B118767: 4** SampType: **Initial Calibration Verification Standard** Sample ID: **QCS - ME080514B, ME080514A, ME080225B** Method: **E200.8**

Analysis Date: **10/07/08 11:23** Units: **mg/L** Prep Info: Prep Date Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.050	0.0050	0.05		100	90	110				
Cadmium	0.025	0.0010	0.025		99	90	110				
Copper	0.051	0.010	0.05		101	90	110				
Lead	0.050	0.010	0.05		100	90	110				
Selenium	0.050	0.0050	0.05		101	90	110				
Zinc	0.050	0.010	0.05		100	90	110				

Associated samples: H08090485-002B; H08090485-004B; H08090485-005B

Run ID :Run Order: **SUB-B118767: 5** SampType: **Method Blank** Sample ID: **LRB** Method: **E200.8**

Analysis Date: **10/07/08 12:10** Units: **mg/L** Prep Info: Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	4E-05									
Cadmium	ND	9E-06									
Copper	ND	7E-05									
Lead	ND	8E-06									
Selenium	ND	0.0001									
Zinc	0.0010	3E-05									

Associated samples: H08090485-002B; H08090485-004B; H08090485-005B

Run ID :Run Order: **SUB-B118767: 6** SampType: **Laboratory Fortified Blank** Sample ID: **LFB** Method: **E200.8**

Analysis Date: **10/07/08 12:17** Units: **mg/L** Prep Info: Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.052	0.0050	0.05		104	85	115				
Cadmium	0.051	0.0010	0.05		102	85	115				
Copper	0.053	0.010	0.05		106	85	115				
Lead	0.052	0.010	0.05		103	85	115				
Selenium	0.052	0.0050	0.05		105	85	115				
Zinc	0.052	0.010	0.05	0.00098	103	85	115				

Associated samples: H08090485-002B; H08090485-004B; H08090485-005B

Qualifiers: ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC
Work Order: H08090485
Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

BatchID: B_R118767

Date: 23-Oct-08

Run ID Run Order: **SUB-B118767: 7** SampType: **Initial Calibration Verification Standard** Sample ID: **QCS - ME080514B, ME080514A, ME080225B** Method: **E200.8**

Analysis Date **10/07/08 14:41** Units: **mg/L** Prep Info: Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.050	0.0050	0.05		101	90	110				
Cadmium	0.025	0.0010	0.025		99	90	110				
Copper	0.050	0.010	0.05		101	90	110				
Lead	0.050	0.010	0.05		100	90	110				
Selenium	0.051	0.0050	0.05		102	90	110				
Zinc	0.050	0.010	0.05		100	90	110				

Associated samples: H08090485-002B; H08090485-004B; H08090485-005B

Run ID :Run Order: **SUB-B118767: 8** SampType: **Sample Matrix Spike** Sample ID: **B08100108-004AMS** Method: **E200.8**

Analysis Date: **10/08/08 05:44** Units: **mg/L** Prep Info: Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.051	0.0010	0.05	0.00034	101	70	130				
Cadmium	0.052	0.0010	0.05	0.00037	103	70	130				
Copper	0.11	0.010	0.05	0.06308	96	70	130				
Lead	0.052	0.0010	0.05	0.00131	101	70	130				
Selenium	0.051	0.0050	0.05	0.00095	100	70	130				
Zinc	0.13	0.010	0.05	0.088	86	70	130				

Associated samples: H08090485-002B; H08090485-004B; H08090485-005B

Run ID :Run Order: **SUB-B118767: 9** SampType: **Sample Matrix Spike Duplicate** Sample ID: **B08100108-004AMSD** Method: **E200.8**

Analysis Date: **10/08/08 05:52** Units: **mg/L** Prep Info: Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.051	0.0010	0.05	0.00034	102	70	130	0.05079	0.7	20	
Cadmium	0.049	0.0010	0.05	0.00037	97	70	130	0.0519	6.3	20	
Copper	0.11	0.010	0.05	0.06308	99	70	130	0.1113	1.3	20	
Lead	0.052	0.0010	0.05	0.00131	101	70	130	0.05203	0.5	20	
Selenium	0.051	0.0050	0.05	0.00095	100	70	130	0.05103	0	20	
Zinc	0.14	0.010	0.05	0.088	100	70	130	0.131	6.3	20	

Associated samples: H08090485-002B; H08090485-004B; H08090485-005B

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC
Work Order: H08090485
Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

BatchID: B_R118767

Date: 23-Oct-08

Run ID :Run Order: **SUB-B118767: 10** SampType: **Initial Calibration Verification Standard** Sample ID: **QCS - ME080514B, ME080514A, ME080225B** Method **E200.8**

Analysis Date: **10/08/08 07:09** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.050	0.0050	0.05		100	90	110				
Cadmium	0.026	0.0010	0.025		104	90	110				
Copper	0.051	0.010	0.05		102	90	110				
Lead	0.052	0.010	0.05		103	90	110				
Selenium	0.051	0.0050	0.05		101	90	110				
Zinc	0.050	0.010	0.05		101	90	110				

Associated samples: H08090485-002B; H08090485-004B; H08090485-005B

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
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R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

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Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC
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Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

BatchID: R48946

Date: 23-Oct-08

Run ID :Run Order: **IC101-H_081006A: 11** SampType: **Continuing Calibration Verification Standard** Sample ID: **CCV** Method: **E300.0**
Analysis Date: **10/06/08 13:17** Units: **mg/L** **Prep Info:** Prep Date: Prep Method

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25	1.0	25		101	90	110				
Sulfate	100	1.0	100		102	90	110				

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **IC101-H_081006A: 12** SampType: **Initial Calibration Verification Standard** Sample ID: **ICV** Method: **E300.0**
Analysis Date: **10/06/08 13:36** Units: **mg/L** **Prep Info:** Prep Date: Prep Method.

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	25	1.0	25		99	90	110				
Sulfate	100	1.0	100		102	90	110				

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **IC101-H_081006A: 13** SampType: **Laboratory Fortified Blank** Sample ID: **LFB** Method: **E300.0**
Analysis Date: **10/06/08 13:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	9.4	1.0	10		94	90	110				
Sulfate	38	1.0	40		95	90	110				

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **IC101-H_081006A: 14** SampType: **Method Blank** Sample ID: **MBLK** Method: **E300.0**
Analysis Date: **10/06/08 14:15** Units: **mg/L** **Prep Info:** Prep Date: Prep Method.

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND										
Sulfate	ND										

Associated samples: H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A

Run ID :Run Order: **IC101-H_081006A: 21** SampType: **Sample Matrix Spike** Sample ID: **H08090485-003A MS** Method: **E300.0**
Analysis Date: **10/06/08 16:31** Units: **mg/L** **Prep Info:** Prep Date: Prep Method

Analytes 2	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	30	1.0	25	4.601	[illegible]	90	110				
Sulfate	160	1.0	100	53.02	[illegible]	90	110				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount

ENERGY LABORATORIES, INC. * 3161 E Lyndale (59604) * PO Box 5688 * Helena, MT 59601
Toll Free 877.472.0711 * 406.442.0711 * FAX 406.442.0712 * helena@energylab.com

Client: Asarco LLC
Work Order: H08090485
Project: RI/FS Long Term Monitoring Sept 2008

ANALYTICAL QC SUMMARY REPORT

Date: 23-Oct-08

BatchID: R48946

Run ID Run Order: **IC101-H_081006A: 21** SampType: **Sample Matrix Spike** Sample ID. **H08090485-003A MS** Method: **E300.0**

Analysis Date: **10/06/08 16:31** Units **mg/L** **Prep Info:** Prep Date Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A**

Run ID :Run Order: **IC101-H_081006A: 22** SampType: **Sample Matrix Spike Duplicate** Sample ID: **H08090485-003A MSD** Method: **E300.0**

Analysis Date: **10/06/08 16:51** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	29	1.0	25	4.601	99	90	110	30.37	3.2	20	
Sulfate	160	1.0	100	53.02	103	90	110	161	2.9	20	

Associated samples: **H08090485-001A; H08090485-002A; H08090485-003A; H08090485-004A; H08090485-005A**

Qualifiers:
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than three times the spike amount