

December 17, 2021

Ms. Joni Sandoval  
On-Scene Coordinator  
U.S. Environmental Protection Agency, Region 8  
1595 Wynkoop Street  
Denver, Colorado 80202

**Subject:       Site Assessment Trip Report  
                  Fluvial San Miguel  
                  Telluride, San Miguel County, Colorado  
                  EPA Contract No. 68-HE-0820-D0001  
                  TD No. 2071-2106-09**

Dear Ms. Sandoval:

The Tetra Tech EM Inc. Superfund Technical Assessment and Response Team (START) is submitting this draft Site Assessment Trip Report generated for the Fluvial San Miguel Site (the Site) in Telluride, San Miguel County, Colorado. This report summarizes field activities conducted during the site assessment. Specific elements of this technical direction included collection of composite soil samples from tailings piles, documenting on-site conditions, collecting global positioning system (GPS) coordinates of the perimeter of the tailings piles, data management activities, and preparing a trip report. Enclosure 1 presents the site figures; Enclosure 2 contains the logbook notes; Enclosure 3 presents the laboratory data package.

## **SITE LOCATION**

The Site is located approximately 3.65 miles west of Telluride, San Miguel County, Colorado (Figure 1) in a semi-developed commercial area. The Site includes the tailings piles on the north and south banks of the San Miguel River (Figure 2). There is a municipal baseball field and several businesses within a half-mile radius of the Site as well as several hiking trails transecting the Site. The area around the Site is also used for recreation activities such as fishing and biking.

The Site is within 100 to 300 meters of a developed commercial area with a school nearby.

## **SITE OBSERVATIONS**

The mine tailings have deposited along the San Miguel riverbank and are visibly distinct from the nearby healthy soil with coloration and grain size being the two most notable features. In some areas, the grain size is so fine it would appear like a recreational beach along the river, which poses an immediate risk to public health. It is worth noting that much of the tailings areas have very limited growth occurring on them as evidenced by stunted tree growth.

The Site is also located along a popular biking and hiking trail which will need to be closed or rerouted for any removal operations to occur. Approximately 3 to 10 individuals frequent the area hourly.

Undercutting of the riverbank was seen in one of the larger tailings areas, NT-3, indicating that mine tailings are very likely eroding into the river. NT-3 is also an area of concern because the results of screening via x-ray fluorescence (XRF) indicated elevated levels of lead in the tailings piles. The highest reading was

13,691 parts per million (ppm). There is riprap installed approximately 100 meters downstream (south) of NT-3.

Tailings pile ST-1 appeared to be of uniform composition; however, due to access issues samples were only collected from approximately 10% of the total ST-1 area. The portion of ST-1 on Genesee Properties Inc.'s parcel was not sampled or accessed.

Tailings pile ST-2 comes within 10 feet of the hiking and biking trail that runs through the Site.

Tailings piles NT-1 and NT-2 are of similar composition and could be combined during excavation operations because of their proximity. Vegetation separates the two tailings areas, but visible tailings may be revealed upon excavation of the boundaries of NT-1 and NT-2. The hiking and biking trail also runs parallel to these areas.

## **SITE ASSESSMENT ACTIVITIES**

START mobilized to the Site on September 13, 2021 to conduct soil sampling of tailings piles, collect GPS locations of the boundaries of the tailings piles, take photographs, and document general site conditions.

START was tasked to collect soil samples from five tailings piles that have accumulated downstream from the Idarado mine (Figure 2). Soil composition was typical for an area located along a river, with a significant amount of rocks. The average depth to clay was approximately 4 feet. Refusal with the hand auger typically occurred around 6 feet below ground surface (bgs). The water table varied, ranging from 4 to 6 feet bgs depending on the height of the bank and tailings area.

At each tailing pile location, a hand auger was used to reach desired depths and collect soil for a 5-point composite sample. The sample was then thoroughly mixed and homogenized using dedicated scoops, stainless-steel bowls, and trowels before being placed in the appropriate sample container.

Soil samples from the tailings piles were returned to the EPA Region 8 warehouse where they were prepared for XRF analysis. The samples were mixed again using dedicated equipment to prevent contamination and placed in a drying oven to remove moisture that could interfere with XRF analysis. After drying, the samples were ground using a mortar and pestle, then sieved through 10-, 60-, and 200-micron sieves to remove any organic matter such as twigs and rocks that may also interfere with XRF analysis.

The dried, ground, and sieved sample material was then placed in laboratory supplied XRF cups for analysis. Samples were analyzed for total metals. Table 1 and Figure 3 summarize XRF sample results for lead and arsenic.

Two soil samples were sent to a third-party laboratory for arsenic and lead analysis. These samples were analyzed by EPA Method SW846 6010C. Laboratory results were compared to XRF results to determine the correlation between laboratory-analyzed results and XRF results. Differences between laboratory and XRF sample results can be attributed to different sample preparation and analytical techniques. Laboratory results confirm elevated levels of arsenic and lead in tailings piles.

START was also tasked with collecting GPS coordinates along the boundary of each tailings pile to delineate the extent of the piles and to estimate the area and volume of contaminated soil. START used a tablet connected to an R-1 GPS unit and walked the boundary of each tailing pile to produce a polygon of the tailings pile area. These polygons are depicted on Figure 2.

Table 1 - Soil Sample Results Summary					
Sample ID	Date Collected	XRF Result (ppm)		Laboratory Result (mg/kg)	
		Arsenic	Lead	Arsenic	Lead
NT-1-0-2	9/15/21	1545	9770	318	2540
NT-1-2-4	9/15/21	1710	10703	N/A	N/A
NT-2-0-2	9/15/21	710	5883	N/A	N/A
NT-2-2-4	9/15/21	544	4275	N/A	N/A
NT-2-2-4-DUP	9/15/21	557	4249	N/A	N/A
NT-3-0-2	9/14/21	884	5986	N/A	N/A
NT-3-2-4	9/14/21	492	6551	N/A	N/A
NT-3-4-5	9/14/21	833	13691	N/A	N/A
ST-1-0-2	9/14/21	548	6684	N/A	N/A
ST-1-2-4	9/14/21	440	9348	N/A	N/A
ST-2-0-2	9/14/21	971	8961	N/A	N/A
ST-2-0-2-DUP	9/14/21	950	8902	N/A	N/A
ST-2-2-4	9/14/21	604	7169	491	6740

**Notes:**

DUP – Field duplicate sample      ID - Identification      mg/kg – Milligrams per kilogram  
N/A - Not analyzed                      ppm – Parts per million      XRF - X-ray fluorescence

## DATA MANAGEMENT

Mobile data was collected by START using ESRI's Survey123 mobile data collection application. This platform allows field personnel to document soil sample information and to collect photographs and site observations.

All soil sampling data and laboratory results were loaded into the Scribe database.

The main reporting method used was map figures created using ESRI's ArcGIS and through ESRI's Story Map.

Map figures were created to show general site information such as the tailings boundary areas and the specific locations within the tailings piles where soil sample aliquots were collected. Other figures show the sample locations along with their corresponding XRF results.

Please contact me at (720) 999-8519 if you have any questions regarding this draft site assessment trip report.

Sincerely,

Billy Bol  
START 8 Project Manager

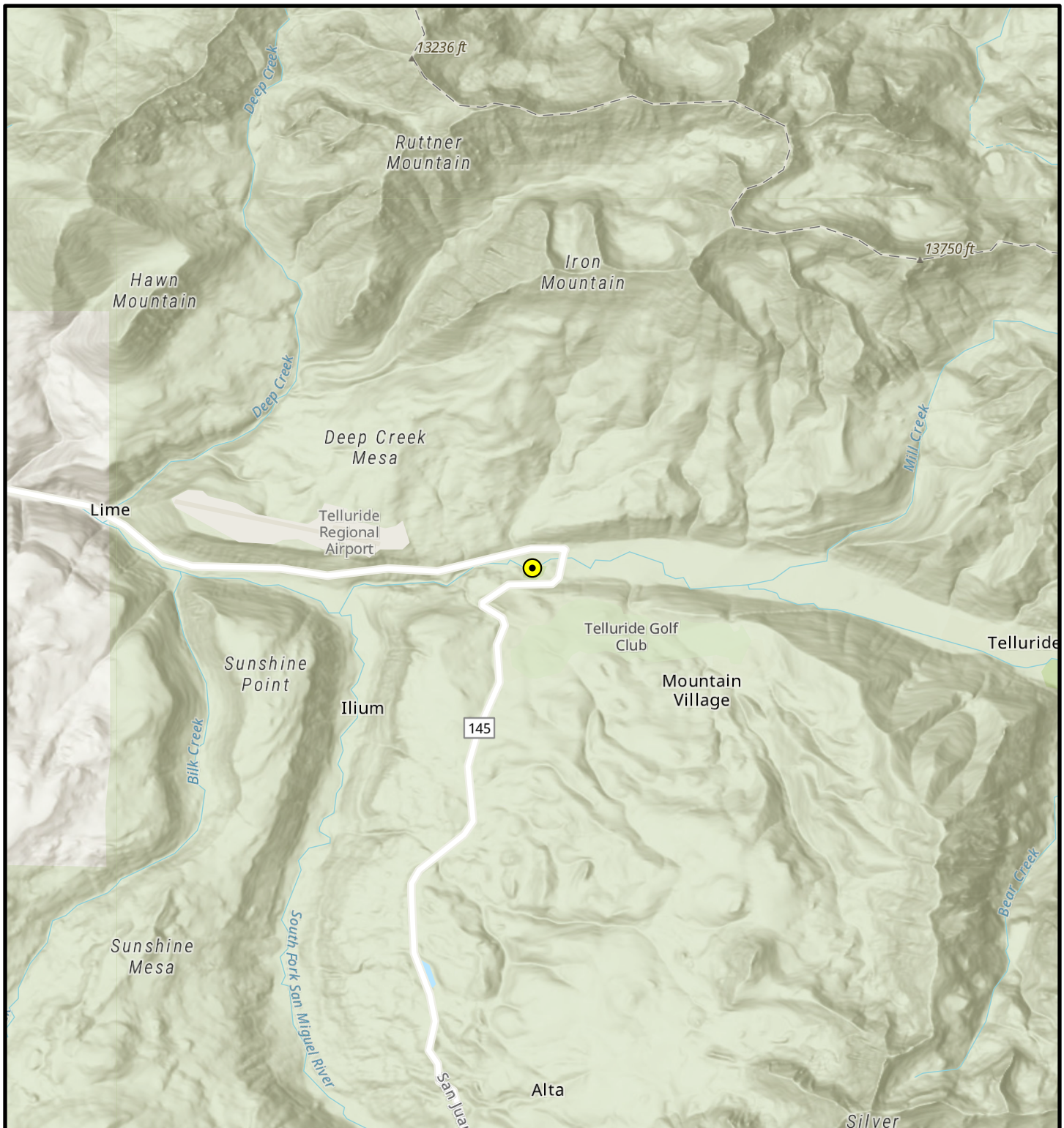
Enclosures (3)

## **ENCLOSURE 1**

### **SITE FIGURES**

(Three Pages)



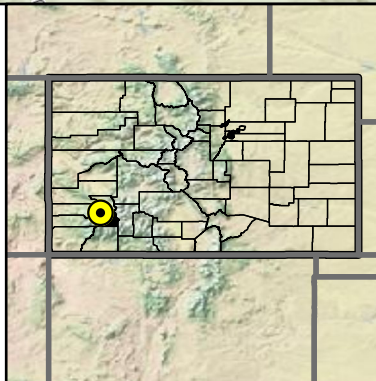


**Legend**

 Site Location

0 0.5 1 2 Miles

Map Source:  
ESRI World Topographic Map (2021)



United States  
Environmental Protection Agency  
Region 8

**FIGURE 1**

**Site Location**

**Site Name:** Fluvial San Miguel Tailings

**TD/TO No.:** 2071-2106-09

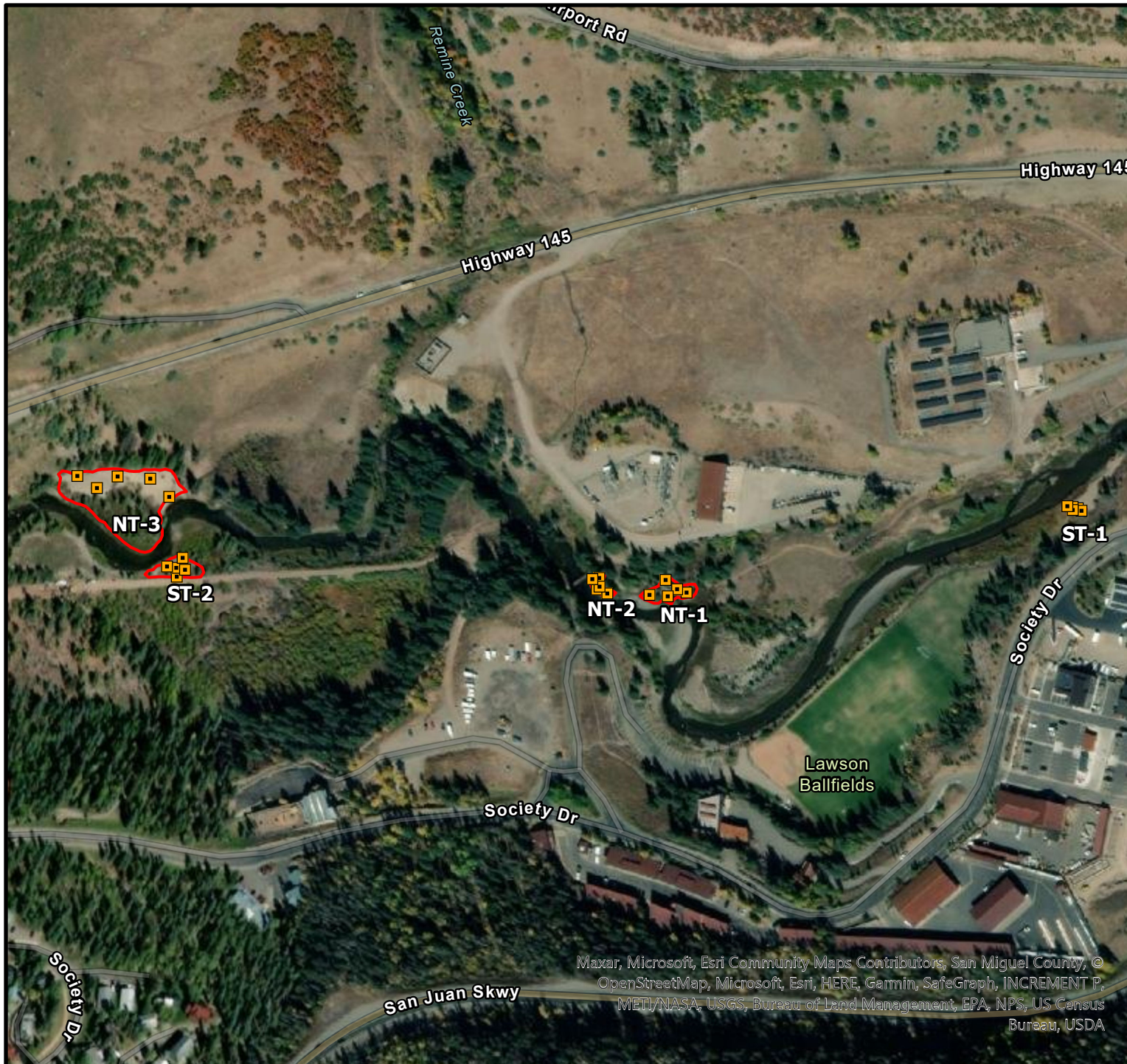
**City:** Telluride      **County:** San Miguel      **State:** Colorado



**TETRA TECH**

**Date:** 11/4/2021  
**Analyst:** SRD





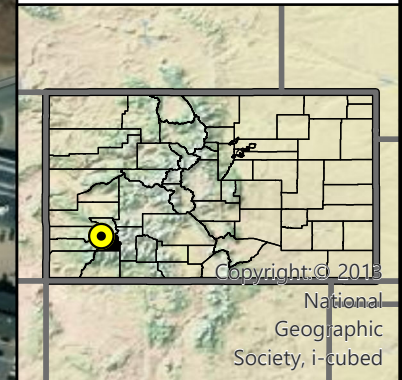
#### Legend

- Tails Area
- Composite Sample Location



0 100 200 400 Feet

Map Source:  
ESRI Hybrid World Imagery (2021)



United States  
Environmental Protection Agency  
Region 8

## FIGURE 2

### Sample Location Map

**Site Name:** Fluvial San Miguel  
Tails

**TO/TD No.:** 2071-2106-09

**City:** Telluride    **County:** San Miguel    **State:** Colorado

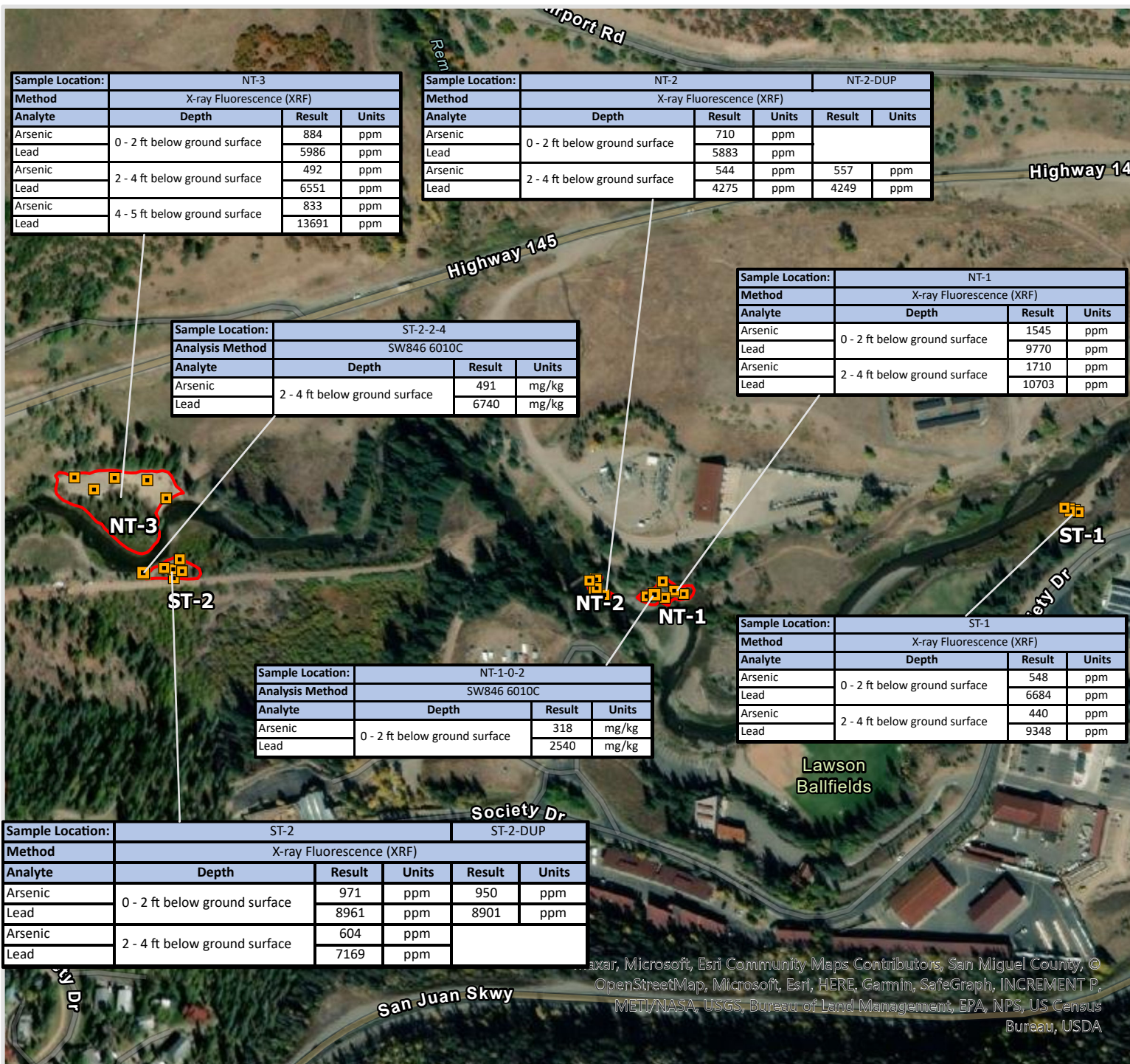


**TETRA TECH**

**Date:**  
11/4/2021  
**Analyst:**  
SRD

Maxar, Microsoft, Esri Community Maps Contributors, San Miguel County, ©  
OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, INCREMENT P,  
METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census  
Bureau, USDA





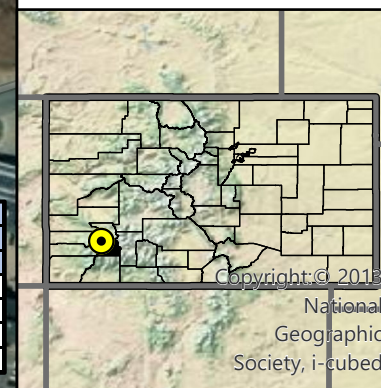
#### Legend

- Tailings Area
- Composite Sample Location
- Sample Location



0 100 200 400 Feet

Map Source:  
ESRI Hybrid World Imagery (2021)



United States  
Environmental Protection Agency  
Region 8

## FIGURE 3

### Sample Results Map

**Site Name:** Fluvial San Miguel  
Tailings

**TO/TD No.:** 2071-2106-09

**City:** Telluride    **County:** San Miguel    **State:** Colorado



**TETRA TECH**

**Date:**  
12/17/2021  
**Analyst:**  
SRD

**ENCLOSURE 2**

**LOGBOOK NOTES**

(Four Sheets)



FLUVIAL  
SAN MIGUEL



*Rite in the Rain.*

ALL-WEATHER  
**UNIVERSAL**

Nº 371FX

1

2

3

4

5

6



## START FIELD LOGBOOK

Logbook Tracking Number LTN027

Site Name FLUVIAL SAN MIGUEL TAILINGS

Issue to BILLY BOL

Date Issued 7/22/2021

TD # 2071-2106-09

Project \_\_\_\_\_



**RiteintheRain.com**

## CONTENTS



2 9/14/21 Pt. Cloudy Mild  
Fluvial San Miguel  
B. Bol & E. Aleksandrov w/  
START on-site.

0630 - HOS tailgate meeting.

0710 - walk site with EPA OSC  
J. Sandwell

0850 - go to tailing pile ST-2 to  
begin assessment / sampling of  
soil.

1030 - collect soil sample ST-2 0-2'

1055 - collect soil sample ST-2 2-4'

1130 - Mobilize to tailing piles  
location NT-3 to begin  
assessment / sampling

1330 - collect sample NT-3 0-2'

1335 - collect sample NT-3 2-4'

1340 - collect sample NT-3 4-6'

1400 - Decon equipment

1420 - collect equipment residue  
sample EB-1 from auger bucket

1440 - Back to truck

1510 - Mobilize to tailing pile ST-1 to  
begin assessment / sampling

1455 - collect sample ST-1 (0-2')

1500 - collect sample ST-1 (2-4')

Scale: 1 square = \_\_\_\_\_

3 9/14/21 (cont) Fluvial San Miguel  
1515 - Pack up and de-con equipment  
1600 - collect Polysar at foot of  
of ST-1.  
1615 - Leave site

Scale: 1 square = \_\_\_\_\_

Rite in the Rain



9/15/21 Fluvial San Miguel

Sunny cool 38°F

STAN B. Bul & E. Aleksandrov  
on-site.

0630 - Mobs tailgate meeting

0715 - Mobs to NT-1 to begin  
assessment / sampling of

tailings piles. Screen area with

WFE to delineate tailing pile also.

0910 - Collect sample NT-1 (0-2')

0915 - Collect sample NT-1 (2-4')

0945 - Mobs to NT-2 to

begin assessment / sampling

1105 - Collect sample NT-2 (0-2')

1110 - Collect sample NT-2 (2-4')

1130 - Pick up equipment and  
load-up vehicle.

1210 - Take site photos.

1330 - Pack-up & leave site

*Stan B. Bul*  
*9/15/21*

### **ENCLOSURE 3**

#### **LABORATORY ANALYTICAL PACKAGE**

(51 Pages)

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

**Tetra Tech EMI**

**Fluvial San Miguel**

**SGS Job Number: DA37597**

**Sampling Date: 09/15/21**

### Report to:

**Tetra Tech EMI  
518 17th Street Suite 900  
Denver, CO 80202  
billy.bol@tetratech.com**

**ATTN: Billy Bol**

**Total number of pages in report: 51**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.



**Jason Savoie**  
**General Manager**

**Client Service contact: Carissa Cumine 303-425-6021**

Certifications: CO (CO00049), NE (NE-OS-06-04), ND (R-027), UT (NELAP CO00049)  
LA (LA150028), TX (T104704511), WY (8TMS-L)

This report shall not be reproduced, except in its entirety, without the written approval of SGS.  
Test results relate only to samples analyzed.



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Sample Summary

Tetra Tech EMI

Job No: DA37597

Fluvial San Miguel

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
DA37597-1	09/15/21	09:10 BB	09/18/21	SO	Soil	NT-1-0-2
DA37597-1D	09/15/21	09:10 BB	09/18/21	SO	Soil Dup/MSD	NT-1-0-2
DA37597-1S	09/15/21	09:10 BB	09/18/21	SO	Soil Matrix Spike	NT-1-0-2
DA37597-2	09/15/21	10:35 BB	09/18/21	SO	Soil	ST-2-2-4
DA37597-3	09/15/21	14:20 BB	09/18/21	AQ	Water	ER-1

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** Tetra Tech EMI

**Job No:** DA37597

**Site:** Fluvial San Miguel

**Report Date** 9/27/2021 1:27:46 PM

On 09/18/2021, 3 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 3.6 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of DA37597 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

### Metals Analysis By Method EPA 245.1

**Matrix:** AQ

**Batch ID:** L:MP22230

- The data for EPA 245.1 meets quality control requirements.
- DA37597-3 for Mercury: Analysis performed at SGS Scott, LA.

### Metals Analysis By Method SW846 6010C

**Matrix:** AQ

**Batch ID:** MP33349

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA19548-1MS, DA19548-1MSD, DA19548-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Antimony, Barium, Cadmium, Calcium, Sodium are outside control limits for sample MP33349-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

**Matrix:** SO

**Batch ID:** MP33354

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA37597-1MS, DA37597-1MSD, DA37597-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Selenium, Antimony, Silver are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- The matrix spike duplicate (MSD) recovery(s) of Antimony, Potassium, Silver are outside control limits. Probable cause due to matrix interference.
- The matrix spike (MS) recovery(s) of Aluminum, Iron, Lead, Zinc are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The RPD(s) for the MS and MSD recoveries of Chromium, Manganese, Selenium are outside control limits for sample MP33354-S2. High RPD due to possible sample nonhomogeneity.
- The serial dilution RPD(s) for Zinc, Antimony, Beryllium, Chromium, Nickel are outside control limits for sample MP33354-SD1. High RPD due to possible sample nonhomogeneity.
- MP33354-SD1 for Chromium: Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP33354-SD1 for Antimony: Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP33354-MB1 for Calcium: All sample results >10x method blank concentration.
- MP33354-SD1 for Beryllium: Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP33354-SD1 for Nickel: Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Monday, September 27, 2021

Page 1 of 2



## Metals Analysis By Method SW846 7471B

**Matrix:** SO**Batch ID:** L:MP22236

- The data for SW846 7471B meets quality control requirements.
- DA37597-1 for Mercury: Analysis performed at SGS Scott, LA.
- DA37597-2 for Mercury: Analysis performed at SGS Scott, LA.

## General Chemistry By Method SM2540G-2011 M

**Matrix:** SO**Batch ID:** GN54155

- The data for SM2540G-2011 M meets quality control requirements.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** SGS Wheat Ridge, CO

**Job No:** DA37597

**Site:** TTCOD: Fluvial San Miguel

**Report Date** 9/26/2021 11:38:28 A

3 samples were collected on 09/15/2021 and were received intact at SGS North America Inc.-Scott (SGS) on 09/18/2021, properly preserved and cool at 1.9 Deg C. These samples received an SGS job number of DA37597. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Metals By Method EPA 245.1

**Matrix:** AQ

**Batch ID:** MP22230

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD73359-1MS, TD73359-1MSD, TD73359-1SDL were used as the QC samples for metals.
- MP22230-SDL for Mercury: Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

### Metals By Method SW846 7471B

**Matrix:** SO

**Batch ID:** MP22236

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA37597-1MS, DA37597-1MSD, DA37597-1SDL were used as the QC samples for metals.
- Matrix Spike Duplicate Recovery(s) for Mercury are outside control limits. Probable cause due to matrix interference.

SGS North America Inc.-Scott (SGS) certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS and as stated on the COC. SGS certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Quality Manual except as noted above. This report is to be used in its entirety. SGS is not responsible for any assumptions of data quality if partial data packages are used

Sunday, September 26, 2021

Page 1 of 1

## Summary of Hits

**Job Number:** DA37597  
**Account:** Tetra Tech EMI  
**Project:** Fluvial San Miguel  
**Collected:** 09/15/21



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

### DA37597-1 NT-1-0-2

Aluminum	4150	10			mg/kg	SW846 6010C
Antimony	5.4	3.1			mg/kg	SW846 6010C
Arsenic	318	2.5			mg/kg	SW846 6010C
Barium	46.7	1.0			mg/kg	SW846 6010C
Cadmium	40.3	1.0			mg/kg	SW846 6010C
Calcium	5950	41			mg/kg	SW846 6010C
Cobalt	20.4	0.51			mg/kg	SW846 6010C
Copper	2200	1.0			mg/kg	SW846 6010C
Iron	25500	7.1			mg/kg	SW846 6010C
Lead	2540	5.1			mg/kg	SW846 6010C
Magnesium	2190	20			mg/kg	SW846 6010C
Manganese	8920	2.5			mg/kg	SW846 6010C
Mercury <sup>a</sup>	0.45	0.086			mg/kg	SW846 7471B
Nickel	3.9	3.1			mg/kg	SW846 6010C
Potassium	1080	200			mg/kg	SW846 6010C
Silver	70.4	3.1			mg/kg	SW846 6010C
Sodium	51.5	41			mg/kg	SW846 6010C
Vanadium	27.8	5.1			mg/kg	SW846 6010C
Zinc	6700	3.1			mg/kg	SW846 6010C

### DA37597-2 ST-2-2-4

Aluminum	10500	14			mg/kg	SW846 6010C
Antimony	6.5	4.2			mg/kg	SW846 6010C
Arsenic	491	3.5			mg/kg	SW846 6010C
Barium	399	1.4			mg/kg	SW846 6010C
Cadmium	60.5	1.4			mg/kg	SW846 6010C
Calcium	12800	56			mg/kg	SW846 6010C
Chromium	8.4	7.0			mg/kg	SW846 6010C
Cobalt	9.8	0.70			mg/kg	SW846 6010C
Copper	911	1.4			mg/kg	SW846 6010C
Iron	26100	9.7			mg/kg	SW846 6010C
Lead	6740	7.0			mg/kg	SW846 6010C
Magnesium	3230	28			mg/kg	SW846 6010C
Manganese	9760	3.5			mg/kg	SW846 6010C
Mercury <sup>a</sup>	7.4	0.51			mg/kg	SW846 7471B
Potassium	4100	280			mg/kg	SW846 6010C
Silver	165	4.2			mg/kg	SW846 6010C
Sodium	69.0	56			mg/kg	SW846 6010C
Vanadium	55.2	7.0			mg/kg	SW846 6010C
Zinc	8590	4.2			mg/kg	SW846 6010C

Summary of Hits

Job Number: DA37597  
Account: Tetra Tech EMI  
Project: Fluvial San Miguel  
Collected: 09/15/21



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Analyte						

DA37597-3      ER-1

Manganese	11.1	5.0	ug/l	SW846 6010C
-----------	------	-----	------	-------------

(a) Analysis performed at SGS Scott, LA.





Wheat Ridge, CO

Section 4

4

Sample Results

Report of Analysis

## Report of Analysis

**Client Sample ID:** NT-1-0-2  
**Lab Sample ID:** DA37597-1  
**Matrix:** SO - Soil

**Date Sampled:** 09/15/21  
**Date Received:** 09/18/21  
**Percent Solids:** 93.5

**Project:** Fluvial San Miguel

## Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	4150	10	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Antimony	5.4	3.1	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Arsenic	318	2.5	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Barium	46.7	1.0	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Beryllium	< 1.0	1.0	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Cadmium	40.3	1.0	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Calcium	5950	41	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Chromium	< 5.1	5.1	mg/kg	5	09/22/21	09/23/21 KP	SW846 6010C <sup>3</sup>	SW846 3050B <sup>5</sup>
Cobalt	20.4	0.51	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Copper	2200	1.0	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Iron	25500	7.1	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Lead	2540	5.1	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Magnesium	2190	20	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Manganese	8920	2.5	mg/kg	5	09/22/21	09/23/21 KP	SW846 6010C <sup>3</sup>	SW846 3050B <sup>5</sup>
Mercury <sup>a</sup>	0.45	0.086	mg/kg	1	09/23/21	09/23/21 ALA	SW846 7471B <sup>1</sup>	SW846 7471B <sup>4</sup>
Nickel	3.9	3.1	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Potassium	1080	200	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Selenium	< 25	25	mg/kg	5	09/22/21	09/23/21 KP	SW846 6010C <sup>3</sup>	SW846 3050B <sup>5</sup>
Silver	70.4	3.1	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Sodium	51.5	41	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Thallium	< 1.0	1.0	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Vanadium	27.8	5.1	mg/kg	5	09/22/21	09/23/21 KP	SW846 6010C <sup>3</sup>	SW846 3050B <sup>5</sup>
Zinc	6700	3.1	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>

(1) Instrument QC Batch: L:MA22262

(2) Instrument QC Batch: MA14196

(3) Instrument QC Batch: MA14198

(4) Prep QC Batch: L:MP22236

(5) Prep QC Batch: MP33354

(a) Analysis performed at SGS Scott, LA.

RL = Reporting Limit

## Report of Analysis

Client Sample ID: ST-2-2-4

Lab Sample ID: DA37597-2

Matrix: SO - Soil

Date Sampled: 09/15/21

Date Received: 09/18/21

Percent Solids: 69.8

Project: Fluvial San Miguel

## Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analized By	Method	Prep Method
Aluminum	10500	14	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Antimony	6.5	4.2	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Arsenic	491	3.5	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Barium	399	1.4	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Beryllium	< 1.4	1.4	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Cadmium	60.5	1.4	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Calcium	12800	56	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Chromium	8.4	7.0	mg/kg	5	09/22/21	09/23/21 KP	SW846 6010C <sup>3</sup>	SW846 3050B <sup>5</sup>
Cobalt	9.8	0.70	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Copper	911	1.4	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Iron	26100	9.7	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Lead	6740	7.0	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Magnesium	3230	28	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Manganese	9760	3.5	mg/kg	5	09/22/21	09/23/21 KP	SW846 6010C <sup>3</sup>	SW846 3050B <sup>5</sup>
Mercury <sup>a</sup>	7.4	0.51	mg/kg	5	09/23/21	09/23/21 ALA	SW846 7471B <sup>1</sup>	SW846 7471B <sup>4</sup>
Nickel	< 4.2	4.2	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Potassium	4100	280	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Selenium	< 35	35	mg/kg	5	09/22/21	09/23/21 KP	SW846 6010C <sup>3</sup>	SW846 3050B <sup>5</sup>
Silver	165	4.2	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Sodium	69.0	56	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>
Thallium	< 7.0	7.0	mg/kg	5	09/22/21	09/23/21 KP	SW846 6010C <sup>3</sup>	SW846 3050B <sup>5</sup>
Vanadium	55.2	7.0	mg/kg	5	09/22/21	09/23/21 KP	SW846 6010C <sup>3</sup>	SW846 3050B <sup>5</sup>
Zinc	8590	4.2	mg/kg	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3050B <sup>5</sup>

(1) Instrument QC Batch: L:MA22262

(2) Instrument QC Batch: MA14196

(3) Instrument QC Batch: MA14198

(4) Prep QC Batch: L:MP22236

(5) Prep QC Batch: MP33354

(a) Analysis performed at SGS Scott, LA.

RL = Reporting Limit

## Report of Analysis

**Client Sample ID:** ER-1  
**Lab Sample ID:** DA37597-3  
**Matrix:** AQ - Water

**Date Sampled:** 09/15/21  
**Date Received:** 09/18/21  
**Percent Solids:** n/a

**Project:** Fluvial San Miguel

## Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	< 100	100	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Antimony	< 30	30	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Arsenic	< 25	25	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Barium	< 10	10	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Beryllium	< 10	10	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Cadmium	< 10	10	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Calcium	< 400	400	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Chromium	< 10	10	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Cobalt	< 5.0	5.0	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Copper	< 10	10	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Iron	< 70	70	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Lead	< 50	50	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Magnesium	< 200	200	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Manganese	11.1	5.0	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Mercury <sup>a</sup>	< 0.20	0.20	ug/l	1	09/22/21	09/22/21 ALA	EPA 245.1 <sup>1</sup>	EPA 245.1 <sup>5</sup>
Nickel	< 30	30	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Potassium	< 1000	1000	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Selenium	< 50	50	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Silver	< 30	30	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Sodium	< 400	400	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>
Thallium	< 10	10	ug/l	1	09/22/21	09/25/21 JS	SW846 6010C <sup>4</sup>	SW846 3010A <sup>6</sup>
Vanadium	< 10	10	ug/l	1	09/22/21	09/23/21 KP	SW846 6010C <sup>3</sup>	SW846 3010A <sup>6</sup>
Zinc	< 30	30	ug/l	1	09/22/21	09/22/21 JS	SW846 6010C <sup>2</sup>	SW846 3010A <sup>6</sup>

(1) Instrument QC Batch: L:MA22254

(2) Instrument QC Batch: MA14196

(3) Instrument QC Batch: MA14198

(4) Instrument QC Batch: MA14202

(5) Prep QC Batch: L:MP22230

(6) Prep QC Batch: MP33349

(a) Analysis performed at SGS Scott, LA.

RL = Reporting Limit



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody

**SGS North America Inc. - Wheat Ridge**  
4036 Youngfield Street, Wheat Ridge, CO 80033  
TEL: 303-425-6021 FAX: 303-425-6854  
[www.sgs.com/ehsusa](http://www.sgs.com/ehsusa)

Bottle Order Control #				FED-EX Tracking #			
SGS Quote #				SGS Job # <b>DA37597</b>			
Requested Analysis (see TEST CODE sheet)							Matrix Codes
Metals							DW - Drinking Water
							GW - Ground Water
							WW - Water
							SW - Surface Water
							SO - Soil
							SL - Sludge
							SED-Sediment
							OI - Oil
							LIQ - Other Liquid
							AIR - Air
						SOL - Other Solid	
						WP - Wipe	
						FB - Field Blank	
						EB-Equipment Blank	
						RB - Rinse Blank	
						TB - Trip Blank	
							LAB USE ONLY
							01
							02
							03
Comments / Special Instructions							
DYN MS/MSD ON							
NT-1-02							
including courier delivery.							
Date/Time:		Received By:					
2		2					
Date/Time:		Received By:					
4		4					
Therm. ID: <b>7134</b>		On Ice <input checked="" type="checkbox"/>					
<a href="http://www.sgs.com/en/terms-and-conditions">http://www.sgs.com/en/terms-and-conditions</a>							

FHSA-QAC-0027-00-FORM-Wheat Ridge - DW COC: Rev. Date: 4/10/18

## DA37597: Chain of Custody

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## SGS Sample Receipt Summary

**Job Number:** DA37597

**Client:** TETRA TECH

**Project:** FLUCIAL SAN MIGUEL

**Date / Time Received:** 9/18/2021 9:45:00 AM

**Delivery Method:**

**Airbill #'s:** HD

**Cooler Temps (Initial/Adjusted):** #1: (3.6/3.6):

### Cooler Security

Y or N

1. Custody Seals Present: ☒ ☐
2. Custody Seals Intact: ☒ ☐

3. COC Present: ☒ ☐
4. Smpl Dates/Time OK: ☒ ☐

### Cooler Temperature

Y or N

1. Temp criteria achieved: ☒ ☐
2. Cooler temp verification: Bar Therm;
3. Cooler media: Ice (Bag)
4. No. Coolers: 1

### Quality Control Preservation

Y or N N/A

1. Trip Blank present / cooler: ☐ ☐ ☒
2. Trip Blank listed on COC: ☐ ☐ ☒
3. Samples preserved properly: ☒ ☐
4. VOCs headspace free: ☐ ☐ ☒

Comments

### Sample Integrity - Documentation

Y or N

1. Sample labels present on bottles: ☒ ☐
2. Container labeling complete: ☒ ☐
3. Sample container label / COC agree: ☒ ☐

### Sample Integrity - Condition

Y or N

1. Sample recvd within HT: ☒ ☐
2. All containers accounted for: ☒ ☐
3. Condition of sample: Intact

### Sample Integrity - Instructions

Y or N N/A

1. Analysis requested is clear: ☒ ☐
2. Bottles received for unspecified tests: ☐ ☒
3. Sufficient volume recvd for analysis: ☒ ☐
4. Compositing instructions clear: ☐ ☐ ☒
5. Filtering instructions clear: ☐ ☐ ☒

5.1

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DA37597: Chain of Custody

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## Metals Analysis

### QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries



BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: DA37597  
Account: TTCOD - Tetra Tech EMI  
Project: Fluvial San Miguel

QC Batch ID: MP33349  
Matrix Type: AQUEOUS

Methods: SW846 6010C  
Units: ug/l

Prep Date: 09/22/21

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	46	15	25.1	<100
Antimony	30	14	6.8	4.1	<30
Arsenic	25	22	4.6	-10	<25
Barium	10	.3	1.3	0.60	<10
Beryllium	10	1	1.3	0.0	<10
Boron	50	3.3	6.3		
Cadmium	10	1.9	1.3	1.4	<10
Calcium	400	6.6	50	71.1	<400
Chromium	10	1.1	1.3	0.10	<10
Cobalt	5.0	2.7	.63	0.70	<5.0
Copper	10	4.6	1.3	1.4	<10
Iron	70	8.9	12	8.8	<70
Lead	50	13	6.3	8.8	<50
Lithium	5.0	.6	1.3		
Magnesium	200	50	25	20.1	<200
Manganese	5.0	.5	.63	0.80	<5.0
Molybdenum	10	8.5	2.8		
Nickel	30	6.2	3.8	1.0	<30
Phosphorus	100	91	16		
Potassium	1000	84	130	60.3	<1000
Selenium	50	30	22	-3.3	<50
Silicon	50	41	15		
Silver	30	.6	3.8	0.60	<30
Sodium	400	13	50	54.7	<400
Strontium	5.0	.1	.63		
Thallium	10	17	4.3	-12	<10
Tin	60	41	51		
Titanium	10	.5	1.3		
Uranium	50	3.9	8.5		
Vanadium	10	.9	1.3	-0.30	<10
Zinc	30	9	3.8	2.4	<30

Associated samples MP33349: DA37597-3

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: DA37597  
Account: TTCOD - Tetra Tech EMI  
Project: Fluvial San Miguel

QC Batch ID: MP33349  
Matrix Type: AQUEOUS

Methods: SW846 6010C  
Units: ug/l

Prep Date: 09/22/21

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA37597  
Account: TTCOD - Tetra Tech EMI  
Project: Fluvial San Miguel

QC Batch ID: MP33349  
Matrix Type: AQUEOUS

Methods: SW846 6010C  
Units: ug/l

Prep Date: 09/22/21

Metal	DA19548-1 Original MS		SpikeLot ICPALL4	% Rec	QC Limits
Aluminum	0.0	4530	5000	90.6	75-125
Antimony	0.0	507	500	98.6	75-125
Arsenic	0.0	960	1000	96.0	75-125
Barium	0.40	1870	2000	93.5	75-125
Beryllium	0.0	497	500	99.4	75-125
Boron					
Cadmium	0.0	502	500	99.9	75-125
Calcium	0.0	21700	25000	86.7	75-125
Chromium	0.0	481	500	96.2	75-125
Cobalt	0.0	465	500	93.0	75-125
Copper	0.0	489	500	97.8	75-125
Iron	0.0	4680	5000	93.6	75-125
Lead	0.0	923	1000	92.3	75-125
Lithium					
Magnesium	0.0	21800	25000	87.2	75-125
Manganese	0.0	517	500	103.4	75-125
Molybdenum					
Nickel	0.0	469	500	93.8	75-125
Phosphorus					
Potassium	0.00	21800	25000	87.2	75-125
Selenium	0.00	1000	1000	100.0	75-125
Silicon					
Silver	0.0	189	200	94.5	75-125
Sodium	56.9	21900	25000	87.4	75-125
Strontium					
Thallium	0.0	844	1000	84.4	75-125
Tin					
Titanium					
Uranium					
Vanadium	0.0	538	500	107.6	75-125
Zinc	0.0	485	500	97.0	75-125

Associated samples MP33349: DA37597-3

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA37597  
 Account: TTCOD - Tetra Tech EMI  
 Project: Fluvial San Miguel

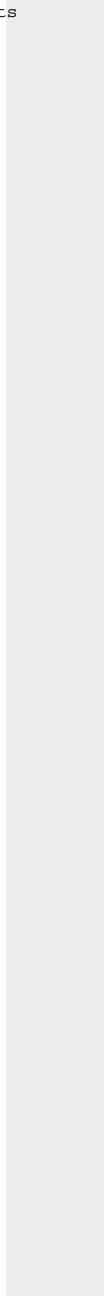
QC Batch ID: MP33349  
 Matrix Type: AQUEOUS

Methods: SW846 6010C  
 Units: ug/l

Prep Date: 09/22/21

Metal	DA19548-1 Original MS	Spikelot ICPALL4 % Rec	QC Limits
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(N) Matrix Spike Rec. outside of QC limits  
 (anr) Analyte not requested





MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA37597  
Account: TTCOD - Tetra Tech EMI  
Project: Fluvial San Miguel

QC Batch ID: MP33349  
Matrix Type: AQUEOUS

Methods: SW846 6010C  
Units: ug/l

Prep Date: 09/22/21

Metal	DA19548-1 Original MSD		Spikelet ICPALL4	% Rec	MSD RPD	QC Limit
Aluminum	0.0	4690	5000	93.8	3.5	20
Antimony	0.0	509	500	99.0	0.4	20
Arsenic	0.0	996	1000	99.6	3.7	20
Barium	0.40	1990	2000	99.5	6.2	20
Beryllium	0.0	512	500	102.4	3.0	20
Boron						
Cadmium	0.0	513	500	102.1	2.2	20
Calcium	0.0	22300	25000	89.1	2.7	20
Chromium	0.0	498	500	99.6	3.5	20
Cobalt	0.0	473	500	94.6	1.7	20
Copper	0.0	502	500	100.4	2.6	20
Iron	0.0	4810	5000	96.2	2.7	20
Lead	0.0	951	1000	95.1	3.0	20
Lithium						
Magnesium	0.0	22700	25000	90.8	4.0	20
Manganese	0.0	532	500	106.4	2.9	20
Molybdenum						
Nickel	0.0	484	500	96.8	3.1	20
Phosphorus						
Potassium	0.00	22700	25000	90.8	4.0	20
Selenium	0.00	1040	1000	104.0	3.9	20
Silicon						
Silver	0.0	195	200	97.5	3.1	20
Sodium	56.9	23000	25000	91.8	4.9	20
Strontium						
Thallium	0.0	872	1000	87.2	3.3	20
Tin						
Titanium						
Uranium						
Vanadium	0.0	557	500	111.4	3.5	20
Zinc	0.0	499	500	99.8	2.8	20

Associated samples MP33349: DA37597-3

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

## 6.1.2

QC Batch ID: MP33349  
Matrix Type: AQUEOUS

Methods: SW846 6010C  
Units: ug/l

Prep Date:

09/22/21

	DA19548-1	Spikelot	MSD	QC
Metal	Original MSD	ICPALL4 % Rec	RPD	Limit

(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA37597  
 Account: TTCOD - Tetra Tech EMI  
 Project: Fluvial San Miguel

QC Batch ID: MP33349  
 Matrix Type: AQUEOUS

Methods: SW846 6010C  
 Units: ug/l

Prep Date: 09/22/21

Metal	BSP Result	Spikelot ICPALL4	% Rec	QC Limits
Aluminum	4610	5000	92.2	80-120
Antimony	500	500	100.0	80-120
Arsenic	966	1000	96.6	80-120
Barium	1900	2000	95.0	80-120
Beryllium	497	500	99.4	80-120
Boron				
Cadmium	501	500	100.2	80-120
Calcium	21700	25000	86.8	80-120
Chromium	480	500	96.0	80-120
Cobalt	463	500	92.6	80-120
Copper	486	500	97.2	80-120
Iron	4720	5000	94.4	80-120
Lead	933	1000	93.3	80-120
Lithium				
Magnesium	22300	25000	89.2	80-120
Manganese	516	500	103.2	80-120
Molybdenum				
Nickel	467	500	93.4	80-120
Phosphorus				
Potassium	22000	25000	88.0	80-120
Selenium	1010	1000	101.0	80-120
Silicon				
Silver	189	200	94.5	80-120
Sodium	22300	25000	89.2	80-120
Strontium				
Thallium	842	1000	84.2	80-120
Tin				
Titanium				
Uranium				
Vanadium	580	500	116.0	80-120
Zinc	489	500	97.8	80-120

Associated samples MP33349: DA37597-3

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA37597  
Account: TTCOD - Tetra Tech EMI  
Project: Fluvial San Miguel

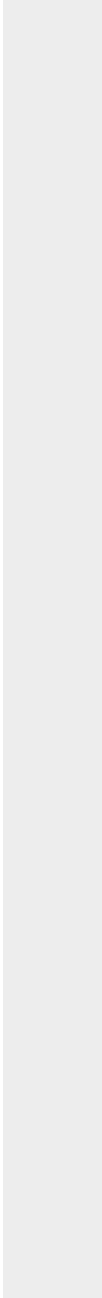
QC Batch ID: MP33349  
Matrix Type: AQUEOUS

Methods: SW846 6010C  
Units: ug/l

Prep Date: 09/22/21

Metal	BSP Result	Spikelot ICPALL4	% Rec	QC Limits
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(anr) Analyte not requested



6.1.3  
6



SERIAL DILUTION RESULTS SUMMARY

Login Number: DA37597  
Account: TTCOD - Tetra Tech EMI  
Project: Fluvial San Miguel

QC Batch ID: MP33349  
Matrix Type: AQUEOUS

Methods: SW846 6010C  
Units: ug/l

Prep Date: 09/22/21

Metal	DA19548-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	0.00	0.00	NC	0-10
Antimony	0.00	0.00	NC (a)	0-10
Arsenic	0.00	0.00	NC	0-10
Barium	0.400	0.00	100.0(a)	0-10
Beryllium	0.00	0.00	NC	0-10
Boron				
Cadmium	0.00	0.00	NC (a)	0-10
Calcium	0.00	0.00	NC (a)	0-10
Chromium	0.00	0.00	NC	0-10
Cobalt	0.00	0.00	NC	0-10
Copper	0.00	0.00	NC	0-10
Iron	0.00	0.00	NC	0-10
Lead	0.00	135	NC	0-10
Lithium				
Magnesium	0.00	0.00	NC	0-10
Manganese	0.00	0.00	NC	0-10
Molybdenum				
Nickel	0.00	0.00	NC	0-10
Phosphorus				
Potassium	0.00	0.00	NC	0-10
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium	56.9	0.00	100.0(a)	0-10
Strontium				
Thallium	0.00	0.00	NC	0-10
Tin				
Titanium				
Uranium				
Vanadium	0.00	0.00	NC	0-10
Zinc	0.00	0.00	NC	0-10

Associated samples MP33349: DA37597-3

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: DA37597  
Account: TTCOD - Tetra Tech EMI  
Project: Fluvial San Miguel

QC Batch ID: MP33349  
Matrix Type: AQUEOUS

Methods: SW846 6010C  
Units: ug/l

Prep Date: 09/22/21

	DA19548-1		QC
Metal	Original SDL 1:5	%DIF	Limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

6.1.4

6

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: DA37597  
Account: TTCOD - Tetra Tech EMI  
Project: Fluvial San Miguel

QC Batch ID: MP33354  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 09/22/21

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	4.6	1.7	-0.23	<10
Antimony	3.0	1.4	.82	-0.38	<3.0
Arsenic	2.5	2.2	1	-0.68	<2.5
Barium	1.0	.03	.16	0.070	<1.0
Beryllium	1.0	.1	.16	0.0	<1.0
Boron	5.0	.33	.29		
Cadmium	1.0	.19	.1	0.080	<1.0
Calcium	40	.66	9.6	25.2	* (a)
Chromium	1.0	.11	.19	0.020	<1.0
Cobalt	0.50	.27	.12	0.17	<0.50
Copper	1.0	.46	.48	-0.060	<1.0
Iron	7.0	.89	.69	3.1	<7.0
Lead	5.0	1.3	.6	0.26	<5.0
Lithium	0.50	.06	.07		
Magnesium	20	5	3.9	5.8	<20
Manganese	0.50	.05	.07	0.060	<0.50
Molybdenum	1.0	.85	.36		
Nickel	3.0	.62	.24	0.080	<3.0
Phosphorus	10	9.1	4.3		
Potassium	200	8.4	6	11.4	<200
Selenium	5.0	3	1	1.4	<5.0
Silicon	5.0	4.1	.91		
Silver	3.0	.06	.05	0.080	<3.0
Sodium	40	1.3	1.5	18.6	<40
Strontium	5.0	.01	.03		
Thallium	1.0	1.7	.86	-1.8	<1.0
Tin	5.0	4.1	1.2		
Titanium	1.0	.05	.27		
Uranium	5.0	.39	.44		
Vanadium	1.0	.09	.07	-0.050	<1.0
Zinc	3.0	.9	.35	0.22	<3.0

Associated samples MP33354: DA37597-1, DA37597-2

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: DA37597  
Account: TTCOD - Tetra Tech EMI  
Project: Fluvial San Miguel

QC Batch ID: MP33354  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 09/22/21

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested

(a) All sample results >10x method blank concentration.



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA37597  
Account: TTCOD - Tetra Tech EMI  
Project: Fluvial San Miguel

QC Batch ID: MP33354  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 09/22/21

Metal	DA37597-1 Original MS		Spikelot ICPALL4	% Rec	QC Limits
Aluminum	4150	5070	486	189.2(a)	75-125
Antimony	5.4	26.2	48.6	42.8N(b)	75-125
Arsenic	318	397	97.2	81.3	75-125
Barium	49.6	239	194	98.9	75-125
Beryllium	0.21	45.3	48.6	92.8	75-125
Boron					
Cadmium	42.1	83.6	48.6	89.1	75-125
Calcium	6620	7780	2430	75.3	75-125
Chromium	2.5	50.1	48.6	97.9	75-125
Cobalt	23.1	60.4	48.6	82.3	75-125
Copper	2310	2250	48.6	102.9	75-125
Iron	25500	26300	486	164.6(a)	75-125
Lead	2540	2470	97.2	-72.0(a)	75-125
Lithium					
Magnesium	2190	4320	2430	87.6	75-125
Manganese	8920	8970	48.6	102.9	75-125
Molybdenum					
Nickel	3.7	45.4	48.6	85.4	75-125
Phosphorus					
Potassium	1080	3050	2430	81.0	75-125
Selenium	0.0	72.1	97.2	74.2N	75-125
Silicon					
Silver	73.7	72.7	19.4	11.8N(b)	75-125
Sodium	30.2	2220	2430	89.2	75-125
Strontium					
Thallium	0.0	74.4	97.2	76.5	75-125
Tin					
Titanium					
Uranium					
Vanadium	27.8	81.3	48.6	110.0	75-125
Zinc	6700	6410	48.6	-596.5(a)	75-125

Associated samples MP33354: DA37597-1, DA37597-2

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA37597  
 Account: TTCOD - Tetra Tech EMI  
 Project: Fluvial San Miguel

QC Batch ID: MP33354  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: mg/kg

Prep Date: 09/22/21

Metal	DA37597-1 Original MS	Spikelot ICPALL4 % Rec	QC Limits
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- (N) Matrix Spike Rec. outside of QC limits  
 (anr) Analyte not requested  
 (a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.  
 (b) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

6.2.2

6

## MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA37597  
 Account: TTCOD - Tetra Tech EMI  
 Project: Fluvial San Miguel

QC Batch ID: MP33354  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: mg/kg

Prep Date: 09/22/21

Metal	DA37597-1 Original MSD		Spikelot ICPALL4	% Rec	MSD RPD	QC Limit
Aluminum	4150	4650	500	100.0	8.6	20
Antimony	5.4	24.8	50	38.8N(a)	5.5	20
Arsenic	318	399	100	81.0	0.5	20
Barium	49.6	224	200	88.7	6.5	20
Beryllium	0.21	46.5	50	92.6	2.6	20
Boron						
Cadmium	42.1	81.8	50	83.0	2.2	20
Calcium	6620	8100	2500	86.0	4.0	20
Chromium	2.5	56.6	50	108.2	21.3 (b)	20
Cobalt	23.1	61.6	50	82.4	2.0	20
Copper	2310	1850	50	-700.3(c)	19.5	20
Iron	25500	23700	500	-360.2(c)	10.4	20
Lead	2540	2540	100	0.0 (c)	2.8	20
Lithium						
Magnesium	2190	4080	2500	75.6	5.7	20
Manganese	8920	10100	50	2361.1(c)	38.9 (b)	20
Molybdenum						
Nickel	3.7	46.5	50	85.2	2.4	20
Phosphorus						
Potassium	1080	2880	2500	72.0N(a)	5.7	20
Selenium	0.0	90.6	100	90.6	22.2 (b)	20
Silicon						
Silver	73.7	70.8	20	2.0N (a)	2.6	20
Sodium	30.2	2090	2500	81.6	6.0	20
Strontium						
Thallium	0.0	77.2	100	77.2	3.7	20
Tin						
Titanium						
Uranium						
Vanadium	27.8	89.9	50	124.3	19.7	20
Zinc	6700	5750	50	-1900.9c	10.9	20

Associated samples MP33354: DA37597-1, DA37597-2

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA37597  
 Account: TTCOD - Tetra Tech EMI  
 Project: Fluvial San Miguel

QC Batch ID: MP33354  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: mg/kg

Prep Date: 09/22/21

Metal	DA37597-1 Original MSD	Spielot ICPALL4 % Rec	MSD RPD	QC Limit
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- (N) Matrix Spike Rec. outside of QC limits  
 (anr) Analyte not requested  
 (a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.  
 (b) High RPD due to possible sample nonhomogeneity.  
 (c) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

6.2.2

6

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA37597  
 Account: TTCOD - Tetra Tech EMI  
 Project: Fluvial San Miguel

QC Batch ID: MP33354  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: mg/kg

Prep Date: 09/22/21

Metal	BSP Result	Spikelot ICPALL4	% Rec	QC Limits
Aluminum	463	500	92.6	80-120
Antimony	50.8	50	101.6	80-120
Arsenic	98.5	100	98.5	80-120
Barium	195	200	97.5	80-120
Beryllium	51.1	50	102.2	80-120
Boron				
Cadmium	50.6	50	101.2	80-120
Calcium	2230	2500	89.2	80-120
Chromium	50.1	50	100.2	80-120
Cobalt	46.6	50	93.2	80-120
Copper	49.9	50	99.8	80-120
Iron	476	500	95.2	80-120
Lead	93.7	100	93.7	80-120
Lithium				
Magnesium	2230	2500	89.2	80-120
Manganese	52.4	50	104.8	80-120
Molybdenum				
Nickel	47.3	50	94.6	80-120
Phosphorus				
Potassium	2250	2500	90.0	80-120
Selenium	102	100	102.0	80-120
Silicon				
Silver	18.7	20	93.5	80-120
Sodium	2280	2500	91.2	80-120
Strontium				
Thallium	87.4	100	87.4	80-120
Tin				
Titanium				
Uranium				
Vanadium	54.2	50	108.4	80-120
Zinc	48.9	50	97.8	80-120

Associated samples MP33354: DA37597-1, DA37597-2

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

## 6.2.3





SERIAL DILUTION RESULTS SUMMARY

Login Number: DA37597  
Account: TTCOD - Tetra Tech EMI  
Project: Fluvial San Miguel

QC Batch ID: MP33354  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date: 09/22/21

Metal	DA37597-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	45000	41900	2.9	0-10
Antimony	0.00	89.0	69.2 (a)	0-10
Arsenic	3120	3170	1.7	0-10
Barium	487	480	4.7	0-10
Beryllium	0.00	0.00	NC (a)	0-10
Boron				
Cadmium	396	414	4.7	0-10
Calcium	58400	59700	2.1	0-10
Chromium	24.5	0.00	100.0(a)	0-10
Cobalt	227	209	4.2	0-10
Copper	22700	22200	2.7	0-10
Iron	286000	271000	8.1	0-10
Lead	25000	26500	6.3	0-10
Lithium				
Magnesium	24100	22200	3.1	0-10
Manganese	67600	88500	1.1	0-10
Molybdenum				
Nickel	38.5	0.00	100.0(a)	0-10
Phosphorus				
Potassium	11000	10900	2.7	0-10
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	724	713	3.1	0-10
Sodium	506	536	5.9	0-10
Strontium				
Thallium	0.00	0.00	NC	0-10
Tin				
Titanium				
Uranium				
Vanadium	273	278	1.8	0-10
Zinc	65700	74300	13.0*(b)	0-10

Associated samples MP33354: DA37597-1, DA37597-2

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: DA37597  
 Account: TTCOD - Tetra Tech EMI  
 Project: Fluvial San Miguel

QC Batch ID: MP33354  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: ug/l

Prep Date: 09/22/21

	DA37597-1		QC
Metal	Original SDL 1:5	%DIF	Limits

(anr) Analyte not requested  
 (a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).  
 (b) High RPD due to possible sample nonhomogeneity.

6.2.4

6

## Misc. Forms

### Custody Documents and Other Forms

(SGS Scott, LA)

---

Includes the following where applicable:

- Chain of Custody



Date / Time: 9/21/2021 9:24:16 AM  
CSR: JEREMYD  
Job #: DA37597  
Client Project: Fluvial San Miguel  
Deliverable: COMMBN  
TAT: Due 9/23/2021

Sub Lab: SGS - Scott, LA  
Address: 500 Ambassador Caffery Parkway  
City: Scott  
State: LA Zip: 70583  
Contact: Sample Management  
Phone: (337) 237-4775

Sample #	Client Sample Description	Analysis	Location	Sampled By	Date Sampled	Time Sampled	Aliquot
<u>DA37597-1</u>	<u>NT-1-0-2</u>	<u>HG</u>	<u>W3</u>	<u>BB</u>	<u>9/15/2021</u>	<u>9:10:00 AM</u>	
<u>DA37597-1D</u>	<u>NT-1-0-2</u>	<u>HG</u>		<u>BB</u>	<u>9/15/2021</u>	<u>9:10:00 AM</u>	
<u>DA37597-1S</u>	<u>NT-1-0-2</u>	<u>HG</u>		<u>BB</u>	<u>9/15/2021</u>	<u>9:10:00 AM</u>	
<u>DA37597-2</u>	<u>ST-2-2-4</u>	<u>HG</u>	<u>W3</u>	<u>BB</u>	<u>9/15/2021</u>	<u>10:35:00 AM</u>	
<u>DA37597-3</u>	<u>ER-1</u>	<u>HG</u>	<u>W3</u>	<u>BB</u>	<u>9/15/2021</u>	<u>2:20:00 PM</u>	

Comments:

Sample Management Receipt: \_\_\_\_\_

Date: \_\_\_\_\_

DA37597: Chain of Custody

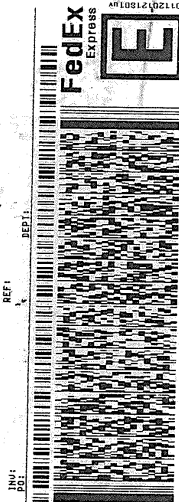
Page 2 of 3

ORIGIN ID#0594 (303) 425-6021  
 SAMPLE RECEIVING  
 965 NORTH AMERICA INC.  
 4036 JOHNSFIELD ST  
 HEAT RIDGE, CO 800338862  
 UNITED STATES US

BILL SENDER

TO SAMPLE RECEIVING  
 ACCUTEST LOUISIANA  
 500 AMBASSADOR CAFFERY DRIVE

SCOTT LA 70583



WED - 22 SEP 10:30A  
 PRIORITY OVERNIGHT

TRK# 1724 4212 5738

XH LFTA

70583  
 -LA-US LFT



#1,2

1 = 402 unp (YR-22<sup>3wz</sup>)

#3

1 = 125ml w/nitric (3wz)

3  
 1

DA37597: Chain of Custody

Page 3 of 3



## Metals Analysis

### QC Data Summaries

(SGS Scott, LA)

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: DA37597  
Account: ALMS - SGS Wheat Ridge, CO  
Project: TTCOD: Fluvial San Miguel

QC Batch ID: MP22230  
Matrix Type: AQUEOUS

Methods: EPA 245.1  
Units: ug/l

Prep Date: 09/22/21

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.20	.022	.096	-0.030	<0.20

Associated samples MP22230: DA37597-3

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA37597  
 Account: ALMS - SGS Wheat Ridge, CO  
 Project: TTCOD: Fluvial San Miguel

QC Batch ID: MP22230  
 Matrix Type: AQUEOUS

Methods: EPA 245.1  
 Units: ug/l

Prep Date: 09/22/21

Metal	TD73359-1		SpikeLot		QC	
	Original MS		HGSPiKE1 % Rec		Limits	
Mercury	0.11	4.8	5	93.8	70-130	

Associated samples MP22230: DA37597-3

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits  
 (N) Matrix Spike Rec. outside of QC limits  
 (anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA37597  
 Account: ALMS - SGS Wheat Ridge, CO  
 Project: TTCOD: Fluvial San Miguel

QC Batch ID: MP22230  
 Matrix Type: AQUEOUS

Methods: EPA 245.1  
 Units: ug/l

Prep Date: 09/22/21

Metal	TD73359-1 Original MSD	Spikelot HGSPIKE1	% Rec	MSD RPD	QC Limit
Mercury	0.11	4.8	5	93.8	0.0 20

Associated samples MP22230: DA37597-3

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits  
 (N) Matrix Spike Rec. outside of QC limits  
 (anr) Analyte not requested

### SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA37597

Account: ALMS - SGS Wheat Ridge, CO

Project: TTCOD: Fluvial San Miguel

QC Batch ID: MP22230

Methods: EPA 245.1

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

09/22/21

Metal	BSP Result	Spikelot HGSPKEL % Rec	QC Limits
Mercury	4.7	5	94.0 85-115

Associated samples MP22230: DA37597-3

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: DA37597  
 Account: ALMS - SGS Wheat Ridge, CO  
 Project: TTCOD: Fluvial San Miguel

QC Batch ID: MP22230  
 Matrix Type: AQUEOUS

Methods: EPA 245.1  
 Units: ug/l

Prep Date: 09/22/21

Metal	TD73359-1		QC	
	Original	SDL 1:5	%DIF	Limits

Mercury 0.106 0.00 100.0(a) 0-

Associated samples MP22230: DA37597-3

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

8.1.4

8



BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: DA37597  
Account: ALMS - SGS Wheat Ridge, CO  
Project: TTCOD: Fluvial San Miguel

QC Batch ID: MP22236  
Matrix Type: SOLID

Methods: SW846 7471B  
Units: mg/kg

Prep Date: 09/23/21

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.080	.0026	.0042	-0.0021	<0.080

Associated samples MP22236: DA37597-1, DA37597-2

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA37597  
 Account: ALMS - SGS Wheat Ridge, CO  
 Project: TTCOD: Fluvial San Miguel

QC Batch ID: MP22236  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 09/23/21

Metal	DA37597-1 Original MS	Spikelot HGSPIKE1 % Rec	QC Limits
-------	--------------------------	----------------------------	--------------

Mercury 0.45 1.1 0.594 109.4 75-125

Associated samples MP22236: DA37597-1, DA37597-2

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits  
 (N) Matrix Spike Rec. outside of QC limits  
 (anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA37597  
 Account: ALMS - SGS Wheat Ridge, CO  
 Project: TTCOD: Fluvial San Miguel

QC Batch ID: MP22236  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 09/23/21

Metal	DA37597-1 Original MSD	Spikelot HGSPIKE1	% Rec	MSD RPD	QC Limit
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Mercury	0.45	1.2	0.594	126.2N(a	8.7	20
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Associated samples MP22236: DA37597-1, DA37597-2

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike recovery indicates possible matrix interference or sample non-homogeneity.

8.2.2

8

Login Number: DA37597  
Account: ALMS - SGS Wheat Ridge, CO  
Project: TTCOD: Fluvial San Miguel

Methods: SW846 7471B  
Units: mg/kg

Metal	LCS Result	Spikelot LCSHG17E % Rec	QC Limits
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Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: DA37597  
Account: ALMS - SGS Wheat Ridge, CO  
Project: TTCOD: Fluvial San Miguel

QC Batch ID: MP22236  
Matrix Type: SOLID

Methods: SW846 7471B  
Units: ug/l

Prep Date: 09/23/21

Metal	DA37597-1		QC	
	Original	SDL 1:5	%DIF	Limits

Mercury	3.47	3.36	3.3	0-
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Associated samples MP22236: DA37597-1, DA37597-2

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested