284 Sheffield Street
Mountainside, NJ 07092

SDG NARRATIVE

USEPA
SDG # MJNBZ5
CASE # 51918
CONTRACT # 68HERH20D0011
SOW# SFAM01.1
LAB NAME: Alliance Technical Group, LLC
LAB CODE: ACE
LAB ORDER ID # P5347
MODIFIED ANALYSIS #3157.0, 3106.1

A. Number of Samples and Date of Receipt

01 Soil and 02 Water samples were delivered to the laboratory intact on 12/19/2024.

B. Parameters

Test requested for Metals CLP MS = Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc & Mercury.

Test requested for Metals CLP MS FULL = Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc.

C. Cooler Temp

Indicator Bottle**: Presence/**Absence

Cooler: 2.6^{o}C

D. Detail Documentation (related to Sample Handling Shipping, Analytical Problem, Temp of Cooler etc):

Issue 1 : A "P" or "M" prefix was listed at the beginning of a CLP sample ID.

Issue 2: There is no sample designated on the COC for laboratory QC for ICP-MS Metals and Hg analyses in SDG MJNBZ9. The laboratory has selected water sample MJNBZ9 for ICP-MS Metals, water sample MJNC00 for Hg, and soil sample MJNBZ5 for laboratory QC. The laboratory has confirmed that the samples are not a PT, blank, or rinsates.

284 Sheffield Street
Mountainside, NJ 07092

E. Corrective Action taken for above:

Resolution 1 : To maintain COC integrity, ASB requests no changes to the Sample IDs. The laboratory will note the issue in the SDG Narrative and proceed with the analysis of the samples.

Resolution 2: Per SFAM01.1 Exhibit A, Section 5.5.4.1., the laboratory should note the issue in the SDG Narrative and proceed with analysis of the samples.

F. Analytical Techniques:

All analyses were based on CLP Methodology by method SFAM01.1.

G. Calculation:

Calculation for ICP-MS Soil Sample:

Conversion of Results from µg /L or ppb to mg/kg :

$$\text{Concentration (mg/kg)} = C \times \frac{Vf}{W \times S} \times DF / 1000$$

Where,

C = Instrument value in ppb (The average of all replicate integrations)
Vf = Final digestion volume (mL)
W = Initial aliquot amount (g) (Fraction of Sample amount taken in prep)
S = % Solids / 100 (Fraction of Percent Solids)
DF = Dilution Factor

Example Calculation For Sample MJNBZ5 For Antimony :

If C = 0.13 ppb
Vf = 500 ml
W = 1.31 g
S = 0.625(62.5/100)
DF = 1

$$\text{Concentration (mg/kg)} = 0.13 \times \frac{500}{1.31 \times 0.625} \times 1 / 1000$$

$$= 0.0794 \text{ mg/kg}$$

$$= 0.079 \text{ mg/kg (Reported Result with Signification)}$$

284 Sheffield Street
Mountainside, NJ 07092

Calculation for ICP-MS Water Sample:

$$\text{Concentration or Result } (\mu g/L) = C \times \frac{Vf}{Vi} \times DF$$

Where,

C = Instrument value in ppb (The average of all replicate integrations)
Vf = Final digestion volume (mL)
Vi = Initial aliquot amount (mL) (Sample amount taken in prep)
DF = Dilution Factor

Example Calculation For Sample MJNBZ9 For Antimony:

If C = 0.24 ppb
Vf = 50 ml
Vi = 50 ml
DF = 1

$$\text{Concentration or Result } (\mu g/L) = 0.24 \times \frac{50}{50} \times 1$$

$$= 0.24\ \mu g/L$$

$$= 0.24\ \mu g/L \text{ (Reported Result with Signification)}$$

Calculation for Hg Soil Sample:

Conversion of Results from µg /L or ppb to mg/kg :

$$\text{Concentration } (mg/kg) = C \times \frac{Vf}{W \times S} \times DF / 1000$$

Where,

C = Instrument response in µg/L from the calibration curve.
Vf = Final prepared (absorbing solution) volume (mL)
W = Initial aliquot amount (g) (Fraction of Sample amount taken in prep)
S = % Solids / 100 (Fraction of Percent Solids)
DF = Dilution Factor

Example Calculation For Sample MJNBZ5 :

If C = 0.5977 ppb
Vf = 100 mL
W = 0.56g
S = 0.625(62.5/100)
DF = 1

$$\text{Concentration (mg/kg)} = 0.5977 \times \frac{100}{0.56 \times 0.625} \times 1 / 1000$$

$$= 0.17077 \text{ mg/kg}$$

$$= 0.17 \text{ mg/kg (Reported Result with Signification)}$$

Calculation for Hg Water Sample:

Concentration or Result (µg/L) = C x DF

Where,

C = Instrument response in µg/L from the calibration curve.
DF = Dilution Factor

Example Calculation For Mercury:

If C = 0.1811 ppb
DF = 1
Concentration or Result (µg/L) = 0.1811 x 1

= 0.1811 µg/L

= 0.18 µg/L (Reported Result with Signification)

H. QA/ QC

Calibrations met requirements. Interference check met requirements. Blank analyses did not indicate any presence of contamination. Laboratory Control sample was within control limits. MS Spike sample did meet requirements. Duplicate sample did meet requirements. Serial Dilution did meet requirements.

Collision cell is being used to remove potential interferences. The analytes Na, Mg, Al, K, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, As are being analyzed with collision cell and analytes Be, B, Ca, Ti, Se, Sr, Zr, Mo, Ag, Cd, Sn, Sb, Ba, Tl, Pb, U are being analyzed with Non-Collision Cell. Helium gas is used for the Collision Cell analysis.

Internal Standard Association for ICP-MS analysis.

Target Analyte	Associated Internal Standard
Aluminum	45Sc
Antimony	159Tb

284 Sheffield Street
Mountainside, NJ 07092

Arsenic	89Y
Barium	159Tb
Beryllium	6Li
Cadmium	159Tb
Calcium	45Sc
Chromium	45Sc
Cobalt	45Sc
Copper	45Sc
Iron	45Sc
Lead	209Bi
Magnesium	45Sc
Manganese	45Sc
Molybdenum	89Y
Nickel	45Sc
Potassium	45Sc
Selenium	89Y
Silver	159Tb
Sodium	45Sc
Thallium	209Bi
Vanadium	45Sc
Zinc	45Sc

284 Sheffield Street
Mountainside, NJ 07092

I certify that the data package is in compliance with the terms and conditions of the contract both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Signature_____ Name: Nimisha Pandya

Date _____ Title: Document Control Officer

Date: 12/04/2024	**MA:** 3106.1	**Title:** ICP-MS Analysis Plus Mo
Method Source: SFAM01.1	**Method:** ICP-MS	
Matrix: Aqueous/Water		

Summary of Modification

The purpose of this modified analysis is to analyze aqueous/water samples for the Target Analytes plus the specified additional analyte by ICP-MS. Unless specifically modified by this modification, all analyses, Quality Control (QC), and reporting requirements specified in the SOW listed in your current EPA agreement remain unchanged and in full force and effect.

I. Analyte Modifications — Not applicable ☐

Analyte	CAS Number	CRQL (µg/L)	MDL (µg/L)	Spike (µg/L)
Molybdenum (Mo)	7439-98-7	5.0	<5.0	50

II. Calibration and QC Requirements — Not applicable ☐

The Laboratory shall:

- Ensure that the Method Detection Limit has been determined for Mo in aqueous/water matrix by the preparation and analysis methods used for the samples.
- Ensure that the MDL is less than the CRQL for Mo.
- Perform the Initial Calibration with a blank and at least one non-blank standard at or below the modified CRQL for Mo.
- Add Mo to the ICV and CCV at appropriate mid-point concentration.
- Evaluate the ICB and CCB against the modified CRQL for Mo.
- Evaluate the Preparation Blanks using the modified CRQL for Mo.
- Prepare the Matrix Spike at the modified level. Post-Digestion Spike requirements are per the SOW.
- Flag the Duplicates based on the modified CRQL for Mo.
- Add Mo to the LCS at 2 times the modified CRQL.

III. Preparation and Method Modifications — Not applicable ☒

IV. Special Reporting Requirements — Not applicable ☐

The Laboratory shall:

- Report the "J" and "U" qualifiers in accordance with the requirements in Exhibit B, Section 3.4.3.2.4.2, using the modified CRQLs.
- Add Mo to Form 1.
- Ensure that the SDG Narrative is updated as stated in the SOW, including any technical and administrative problems encountered and the corrective action taken. These problems may include interference problems encountered during analysis, dilutions, re-analyses or re-preparations performed, and problems with the analysis of samples. Also include a discussion of any SOW Modified Analysis including a copy of the approved modification with the SDG Narrative.

Date: 05/11/2017	**MA:** 3157.0	**Title:** ICP-MS Analysis Plus Molybdenum
Method Source: SFAM01.1	**Method:** ICP-MS	
Matrix: Soil/Sediment		

Summary of Modification

The purpose of this modified analysis is to analyze soil/sediment samples by ICP-MS with the addition of the non-routine analyte Molybdenum (Mo). Unless specifically modified by this modification, all analyses, Quality Control (QC), and reporting requirements specified in the SOW listed in your current EPA agreement remain unchanged and in full force and effect.

I. Analyte Modifications **Not applicable** ☐

Analyte	CAS Number	CRQL (mg/kg)	Spike Added (mg/kg)
Molybdenum (Mo)	7439-98-7	2.0	100

II. Calibration and QC Requirements **Not applicable** ☐

The Laboratory shall:

- Ensure that a Method Detection Limit has been determined for Mo in soil/sediment matrix by the preparation method used for the samples that meets all applicable SOW requirements.
- Perform the Initial Calibration with at least one non-blank standard at or below the modified CRQL, converted to µg/L.
- Add Mo to the ICV and CCV at appropriate mid-range concentrations.
- Evaluate the ICB and CCB against the modified CRQL converted to µg/L.
- Evaluate the Preparation Blanks using the modified CRQL.
- Perform the Matrix Spike at the level specified above. Post-digestion spike requirements are per the SOW.
- Flag the Duplicates based on the modified CRQL.
- Prepare the LCS at 2 times the modified CRQL.

III. Preparation and Method Modifications **Not applicable** ☒

IV. Special Reporting Requirements **Not applicable** ☐

The Laboratory shall:

- Add Molybdenum to Form 1.
- Report the "J" and "U" qualifiers in accordance with the requirements in Exhibit B, Section 3.4.3.2.4.2, using the modified CRQL.
- Ensure that the SDG Narrative is updated as stated in the SOW, including any technical and administrative problems encountered and the corrective action taken. These problems may include interference problems encountered during analysis, dilutions, re-analyses or re-preparations performed, and problems with the analysis of samples. Also include a discussion of any SOW Modified Analysis including a copy of the approved modification with the SDG Narrative.