



**284 Sheffield Street
Mountainside, NJ 07092**

SDG NARRATIVE

USEPA

SDG # YE8G3

CASE # 51955

CONTRACT # 68HERH20D0011

SOW# SFAM01.1

LAB NAME: Alliance Technical Group, LLC

LAB CODE: ACE

LAB ORDER ID # Q1105

MODIFIED ANALYSIS # 3152.0

A. Number of Samples and Date of Receipt

20 Soil samples were delivered to the laboratory intact on 01/16/2025, 01/18/2025

B. Parameters

Test requested for Metals CLP12= Aluminum, Calcium, Iron, Magnesium, Potassium, Sodium & Mercury.

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

C. Cooler Temp

Indicator Bottle: **Presence**/Absence

Cooler: 2.1°C, 2.0°C, 1.9°C, 2.5°C, 1.8°C

D. Analytical Techniques:

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

Inter Element correction factors (IECs) are determined annually and correction factor are applied during ICP-AES analysis.

E. Calculation:

Calculation for ICP-AES Soil Sample:

Conversion of Results from mg/L or ppm to mg/kg (Dry Weight Basis):



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

Where,

C = Instrument value in ppm (The average of all replicate exposures)

V_f = Final digestion volume (mL)

W = Initial aliquot amount (g) (Sample amount taken in prep)

S = % Solids / 100 (Fraction of Percent Solids)

DF = Dilution Factor

Example Calculation For Sample YE8G3 For Aluminum:

If C = 120.6874 ppm

V_f = 100 ml

W = 1.15 g

S = 0.649(64.9/100)

DF = 1

$$\text{Concentration (mg/kg)} = 120.6874 \times \frac{100}{1.15 \times 0.649} \times 1$$

$$= 16170.3490 \text{ mg/kg}$$

$$= 16000 \text{ mg/kg (Reported Result with Signification)}$$

Calculation for ICP-MS Soil Sample:

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

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

Where,

C = Instrument value in ppb (The average of all replicate integrations)

V_f = 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



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Example Calculation For Sample YE8G3 For Arsenic :

If C = 70.89 ppb
Vf = 500 ml
W = 1.19 g
S = 0.649(64.9/100)
DF = 1

$$\begin{aligned}\text{Concentration (mg/kg)} &= 70.89 \times \frac{500}{1.19 \times 0.649} \times 1 / 1000 \\ &= 45.8947 \text{ mg/kg} \\ &= 46 \text{ mg/kg (Reported Result with Signification)}\end{aligned}$$

Calculation for Hg Soil Sample:

Conversion of Results from $\mu\text{g/L}$ or ppb to mg/kg :

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

Where,

C = Instrument response in $\mu\text{g/L}$ 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 YE8G6 :

If C = 0.1183 ppb
Vf = 100 mL
W = 0.57g
S = 0.768(76.8/100)
DF = 1

$$\begin{aligned}\text{Concentration (mg/kg)} &= 0.1183 \times \frac{100}{0.57 \times 0.768} \times 1 / 1000 \\ &= 0.027023 \text{ mg/kg} \\ &= 0.027 \text{ mg/kg (Reported Result with Signification)}\end{aligned}$$



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F. 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. Spike sample did meet requirements except for Manganese. Duplicate sample did meet requirements. Serial Dilution did meet requirements.

As per scheduling, pH analysis is required for soil samples and the pH analysis data is provided with hardcopy.

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
Antimony	159Tb
Arsenic	89Y
Barium	159Tb
Beryllium	6Li
Cadmium	159Tb
Chromium	45Sc
Cobalt	45Sc
Copper	45Sc
Lead	209Bi
Manganese	45Sc
Molybdenum	89Y
Nickel	45Sc
Selenium	89Y
Silver	159Tb



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Strontium	89Y
Thallium	209Bi
Vanadium	45Sc
Zinc	45Sc

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: 04/13/2022	MA: 3152.0	Title: ICP-MS Analysis Plus Molybdenum and Strontium			
Method Source: SFAM01.1	Method: ICP-MS				
Matrix: Aqueous/Water and Soil/Sediment					
Summary of Modification					
The purpose of this modified analysis is to analyze aqueous/water and soil/sediment samples by ICP-MS with the addition of the non-routine analytes Molybdenum (Mo) and Strontium (Sr). 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 <input type="checkbox"/>
Analyte	CAS Number	CRQL (µg/L)	CRQL (mg/kg)	Spike Added (µg/L)	Spike Added (mg/kg)
Molybdenum (Mo)	7439-98-7	10.0	2.0	200	50
Strontium (Sr)	7440-24-6	2.0	96.0	100	1000
II. Calibration and QC Requirements					Not applicable <input type="checkbox"/>
The Laboratory shall: <ul style="list-style-type: none"> • Ensure Method Detection Limits have been determined for Molybdenum and Strontium in aqueous/water and soil/sediment matrices by the preparation methods used for the samples that meet all applicable SOW requirements. • Perform the Initial Calibration with at least one non-blank standard at or below the modified CRQLs, converted to µg/L as necessary. • Add Mo and Sr to the ICV and CCV at appropriate mid-range concentrations. • Evaluate the ICB and CCB against the modified CRQLs converted to µg/L as necessary. • Evaluate the Preparation Blanks using the modified CRQLs. • Perform the Matrix Spike at the levels specified above. Post-digestion spike requirements are per the SOW. • Flag the Duplicates based on the modified CRQLs. • Add Mo and Sr to the LCS at 2 times the appropriate modified CRQLs. • Not add Sr to the ICS. Use a true value of 0 (zero) and acceptance windows of ±2x the aqueous CRQL, unless a non-zero concentration for Sr has been determined. • If mass 97 is monitored for Mo, ensure that isobaric interference correction is applied if necessary for levels of Calcium found in samples. 					
III. Preparation and Method Modifications					Not applicable <input checked="" type="checkbox"/>
IV. Special Reporting Requirements					Not applicable <input type="checkbox"/>
The Laboratory shall: <ul style="list-style-type: none"> • Add Molybdenum and Strontium 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 CRQLs. • 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 					

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.