

# **CHEMTECH**

**284 Sheffield Street  
Mountainside, NJ 07092**

## **SDG NARRATIVE**

**USEPA**

**SDG # GBJ42**

**CASE # 50148**

**CONTRACT # 68HERH20D0011**

**SOW# SFAM01.1**

**LAB NAME: CHEMTECH CONSULTING GROUP**

**LAB CODE: CHM**

**CHEMTECH PROJECT #N3901**

**MODIFIED ANALYSIS # 3146.0**

### **A. Number of Samples and Date of Receipt**

01 Water and 01 Soil sample was delivered to the laboratory intact on 07/26/2022.

### **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 & HG.

Test requested for Metals CLP4 = Calcium, Magnesium

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

### **C. Cooler Temp**

Indicator Bottle: Presence/Absence

Cooler: 3.6°C

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

Issue: Sample tags were not received at the laboratory. Sample tag numbers may or may not be listed on the COC.

### **E. Corrective Action taken for above:**

Resolution: The laboratory will note the samples with the missing tags in the SDG Narrative and proceed with the analysis of the samples. The resolution will be applied to all samples received for this Case.

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**F. 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.

**G. Calculation:**

**Calculation for ICP-AES Water Sample:**

$$\text{Concentration or Result } (\mu\text{g/L}) = \frac{C \times V_f}{V_i} \times \text{DF} \times 1000$$

Where,

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

V<sub>f</sub> = Final digestion volume (mL)

V<sub>i</sub> = Initial aliquot amount (mL) (Sample amount taken in prep)

DF = Dilution Factor

**Example Calculation For Sample GBJ43 For Magnesium:**

If C = 3.731678 ppm

V<sub>f</sub> = 50 ml

V<sub>i</sub> = 50 ml

DF = 1

$$\text{Concentration or Result } (\mu\text{g/L}) = \frac{3.731678 \times 50}{50} \times 1 \times 1000$$

$$= 3731.678 \mu\text{g/L}$$

$$= 3700 \mu\text{g/L} \text{ (Reported Result with Signification)}$$

**Calculation for ICP-MS Water Sample:**

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

Where,

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

V<sub>f</sub> = Final digestion volume (mL)

V<sub>i</sub> = Initial aliquot amount (mL) (Sample amount taken in prep)

DF = Dilution Factor

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**Example Calculation for Sample GBJ43 for Aluminum:**

If C = 68.42 ppb

Vf = 50 ml

Vi = 50 ml

DF = 1

$$\text{Concentration or Result } (\mu\text{g/L}) = 68.42 \times \frac{50}{50} \times 1$$

$$= 68.42 \mu\text{g/L}$$

$$= 68 \mu\text{g/L (Reported Result with Signification)}$$

**Calculation for Hg Water Sample:**

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

Where,

C = Instrument response in  $\mu\text{g/L}$  from the calibration curve.

DF = Dilution Factor

**Example Calculation for Sample GBJ43 for Mercury:**

If C = 0.0276 ppb

DF = 1

$$\text{Concentration or Result } (\mu\text{g/L}) = 0.0276 \times 1$$

$$= 0.0276 \mu\text{g/L}$$

$$= 0.028 \mu\text{g/L (Reported Result with Signification)}$$

***Calculation for ICP-AES Soil Sample:***

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

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

Where,

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

Vf = Final digestion volume (mL)

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

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$$S = \% \text{ Solids} / 100 \text{ (Fraction of Percent Solids)}$$

DF = Dilution Factor

### **Example Calculation For Sample GBJ42 For Arsenic:**

$$\text{If } C = 0.0112704 \text{ ppm}$$

$$V_f = 100 \text{ ml}$$

$$W = 1.12 \text{ g}$$

$$S = 0.827(82.7/100)$$

$$DF = 1$$

$$\text{Concentration (mg/kg)} = 0.0112704 \times \frac{100}{1.12 \times 0.827} \times 1$$

$$= 1.2167 \text{ mg/kg}$$

$$= 1.2 \text{ mg/kg (Reported Result with Signification)}$$

### **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 GBJ42:**

$$\text{If } C = 0.087 \text{ ppb}$$

$$V_f = 100 \text{ mL}$$

$$W = 0.55 \text{ g}$$

$$S = 0.827(82.7/100)$$

$$DF = 1$$

$$\text{Concentration (mg/kg)} = 0.087 \times \frac{100}{0.55 \times 0.827} \times 1 / 1000$$

$$= 0.019127 \text{ mg/kg}$$

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= 0.019 mg/kg (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. 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
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

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Potassium	45Sc
Selenium	89Y
Silver	159Tb
Sodium	45Sc
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