SDG NARRATIVE

LAB NAME: CHEMTECH CONSULTING GROUP
CASE: 50876
SDG: A46F9
CONTRACT: 68HERH20D0011
LAB CODE: CHM
CHEMTECH PROJECT: O3423
MODIFICATION REF. NUMBER: NA

Sample ID	EPA Sample ID	pH
O3423-03	A46J0	1.0
O3423-04	A46J5	1.0
O3423-06	A46F9	
O3423-07	A46H3	
O3423-09	A46R9	
O3423-10	A46T3	
O3423-11	A46T2	
O3423-12	A46X9	

02 Soil samples were delivered to the laboratory intact on 06/26/2023.
02 Water samples were delivered to the laboratory intact on 06/26/2023.
04 Water samples were delivered to the laboratory intact on 06/30/2023.

Test requested on the Chain of Custody was Trace-Volatile Organic, Volatile Organic, Semivolatile Organic, Semivolatile Organic_SIM and Pesticide by Method SFAM01.1.

The temperature of the samples was measured using an I R Gun. The samples temperature was 2.5, 2.4 degree Celsius for the samples received on 06/26/2023, 2.6, 2.5 degree Celsius for the samples received on 06/30/2023

Shipping Discrepancies and/or QC issues:
Issue1: The laboratory received samples A46H3 and A46F9 with only empty vial sets with preservative (H2O and MeOH) on 6/26/2023. These samples are listed as water samples on the COC. However, these samples cannot be analyzed as water as 40mL water samples are required to be analyzed. The laboratory would like to confirm that they can proceed with analyzing the field blank samples of soil samples with a soil matrix?

Resolution1: Per Region 1, proceed with analyzing the field blank samples of soil samples with a soil matrix. The laboratory should note the issue in the SDG Narrative and proceed with the analysis of the samples.

Issue2: The laboratory received water samples on 6/30/2023. The laboratory would like to know if all of the water samples are field blank samples. If the water samples are not field blanks then the laboratory doesn’t have any samples with extra volume to perform the Laboratory QC for

SVOA and PEST analysis. The laboratory would like to proceed without Laboratory QC for SDGs A46F9 & A46J0 to save the holding time if the water samples are not field blanks.

Resolution2: Per Region 1, the water samples are field blanks and the laboratory can proceed without QC to save the holding time. The laboratory should note the issue in the SDG Narrative and proceed with the analysis of the samples.

Issue3: The laboratory has an open SDG (A46R9) without Laboratory QC. Laboratory QC is scheduled for water TVOA analysis, however, a sample was not designated on the COC for QC and no extra volume was received. The laboratory would like to proceed without Laboratory QC.

Resolution3: Per Region 1, proceed without Laboratory QC. The laboratory should note the issue in the SDG Narrative and proceed with the analysis of the samples.

Issue4: The laboratory received the COC on 6/26/2023 which lists VOA analysis for water samples. However, the laboratory is only scheduled for water TVOA analysis. The laboratory would like to know how to proceed with analysis.

Resolution4: Per Region 1, proceed with TVOA analysis. The laboratory should note the issue in the SDG Narrative and proceed with the analysis of the samples.

Issue5: The laboratory has an open SDG without Laboratory QC. Laboratory QC is scheduled for soil VOA analysis, however, a sample was not designated on the COC for QC and no extra volume was received. The laboratory would like to proceed without Laboratory QC.

Resolution5: Per Region 1, proceeding without Laboratory QC is acceptable. Additional QC at the QAPP designated frequency will be collected for future samples. The laboratory should note the issue in the SDG Narrative and proceed with the analysis of the samples.

Trace Volatiles:

The analysis performed on instrument MSVOA_U were done using GC column DB-624UI 20m 0.18mm 1.0 um. Cat#121-1324UI.

The analysis of VOC-SFAM was based on method SFAM01.1_Trace.

Holding Times were met requirement.

The Surrogate recoveries met the acceptable criteria.
The Internal Standards Areas met the acceptable requirements.
Instrument Performance Check met requirements.
The Retention Times met requirements.
The Tuning criteria met requirements.

The Initial Calibration met the requirements.
The Continuing Calibration met the requirements.

The blank analysis indicate the presence of Tetrachloroethene [0.40ug/L] File ID: VU054711.D {VU0630WBL02} (VBLK013) lab contamination. As per method, less than the respective CRQL is allowed to fail for Tetrachloroethene. Therefore, no further corrective action was taken.

The Storage blank indicate the presence of Methylene chloride [0.37ug/L] and Tetrachloroethene [0.28ug/L] File ID: VU054719.D {VHBLK001} lab contamination. As per method, less than 2 times the respective CRQL is allowed to fail for Methylene chloride and Respective CRQL is allowed to fail for Tetrachloroethene . Therefore, no further corrective action was taken.

See **Manual Integration report** for the manual integration information at the end of the case narrative.

Calculation:

Low/Med Water Level Calculation

$$\text{Concentration in ug/L} = \frac{(Ax)\,(Is)\,(DF)}{(Ais)\,(RRF)\,(Vo)}$$

Where,
Ax = Area of the characteristic ion (EICP) for the compound to be measured.
Ais = Area of the characteristic ion (EICP) for the internal standard.
Amount of internal standard added in ng.
RRF = Mean Relative Response Factor from the initial calibration standard.
Vo = Total volume of water purged, in mL.
DF = Dilution Factor

Example calculation of **A46J0** for **Acetone:**

Ax= 151063
Is = 125
RRF=0.084
DF= 1
Ais= 316660
Vo. = 25

$$\text{Concentration in ug/L} = \frac{(151063)\,(125)\,(1)}{(316660)(0.084)(25)}$$

Reported Result = 28 ug/L

Relative Response Factor = **Dichlorodifluoromethane**: RUN **VU060723** for **5.0** ppb

$$\text{RRF} = \frac{\text{Area of compound}}{\text{Area of Internal Standard}} \times \frac{\text{Conc. of Internal Standard}}{\text{Conc. of Compound}}$$

$$\text{RRF} = \frac{12927}{298959} \times \frac{50}{5.0}$$

RRF= 0.432

Low Volatiles:
The analysis performed on instrument MSVOA_W were done using GC column RXI-624SIL MS 30m 0.25mm 1.4 um. Cat#13868.
The analysis of VOC-SFAM was based on method SFAM01.1_LOW.

The Holding Times were met for all analysis.

The Surrogate recoveries met the acceptable criteria.
The Internal Standards Areas met the acceptable requirements.
Instrument Performance Check met requirements.
The Retention Times were met for all samples.
The Tuning criteria met requirements.

The Initial Calibration met the requirements.

The Continuing Calibration (VSTD025545) file ID VW026462.D met the requirements except for Methylene chloride (-36.5%) and 1,2-Dichlorobenzene (-20.4).As per method, up to two target analyte in opening and closing CCV are allowed to exceed the %D values. Therefore no further corrective action was taken.

The blank analysis indicate the presence of Methylene chloride [3.4ug/Kg] File ID: VW026387.D {VW0628SBL01} (VBLK528) lab contamination. As per method, less than 2 times the respective CRQL is allowed to fail for Methylene chloride. Therefore, no further corrective action was taken.

The Storage blank did not indicate the presence of lab contamination.

See **Manual Integration report f**or the manual integration information at the end of the case narrative.

Calculation:

Low/Med Level Soil/Sediment Calculation

$$\text{Concentration in ug/Kg dry Weight basis)} = \frac{(Ax)(Is)(Df)}{(Ais)(RRF)(Ws)(D)}$$

Where,
Ax = Area for the compound to be measured
Ais = Area for the specific internal standard
Is = Amount of internal standard added in Nano grams (ng)
RRF = Relative response factor of the calibration standard.
Df = Dilution factor
Ws= Weight of sample

$$D = \frac{100 - \%moisture}{100}$$

Example Calculation for sample: **A46F9** for **Acetone**:

Ax= 7122
Is= 250
RRF= 0.091
DF=1
Ais= 644143
Ws= 5.00
D= 1.0

$$\text{Concentration in ug/KG} = \frac{(7122)\ (250)\ (1)}{(644143)\ (0.091)\ (5.00)\ (1.0)}$$

$$= 6.08 \text{ ug//Kg}$$

Reported Results = 6.1 ug/Kg

Relative Response Factor = **Dichlorodifluoromethane**: RUN **VW062623** for **2.5** ppb

$$\text{RRF} = \frac{\text{Area of compound}}{\text{Area of Internal Standard}} \times \frac{\text{Conc. of Internal Standard}}{\text{Conc. of Compound}}$$

$$\text{RRF} = \frac{19041}{646242} \times \frac{25}{2.5}$$

RRF= 0295

Semivolatiles :

The samples were analyzed on instrument BNA_P using GC Column ZB-GR Semi Volatiles Guardian which is 30 meters, 0.25 mm ID, 0.5 um df, Catalog # 7HG-G027-17-GGA.

Semis volatile Organic sample for water sample was extracted by Method SFAM01.1 on 06/30/2023. The analysis of SVOC-SFAM was based on method SFAM01.1_SVOC.

The Holding Times were met for all analysis.

The Surrogate recoveries met the acceptable criteria except for,
A46J0 [4-Nitrophenol-d4 - 6%],
A46R9 [4-Nitrophenol-d4 - 4%, Phenol-d5 - 9%],
A46T3 [4-Nitrophenol-d4 - 5%, Phenol-d5 - 9%],
A46T2 [4-Nitrophenol-d4 - 6%],
A46X9 [4-Nitrophenol-d4 - 6%]. As per method four surrogates are allowed to fail. Therefore no further corrective action was taken.

The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.

The Blank Spike for {PB153934BS} recoveries met the requirements for all compounds.
The Blank analysis did not indicate the presence of lab contamination.
The Tuning criteria met requirements.

The Initial Calibration BP071223 met the requirements except for Nitrobenzene-d5 (20.1%). As per method, the %RSD up to four Compounds are allowed to fail to meet the minimum criteria as long as the compound meets the maximum of 40% RSD. No further corrective action was taken.

The Continuous Calibration met the requirement.

The Sample A46J0, A46T2 and A46T3 have the concentration of target compound below method detection limits; therefore it is not reported as Hit in Form1.

See **Manual Integration report** for the manual integration information at the end of the case narrative.

Concentration of Water Sample:

$$\text{Concentration ug/L} = \frac{(Ax)\,(Is)\,(Vt)\,(DF)\,(GPC)}{(Ais)\,(\overline{RRF})\,(Vo)\,(Vi)}$$

Where,
Ax = Area of the characteristic ion for the compound to be measured.
Ais = Area of the characteristic ion for the internal standard.
Is = Amount of internal standard injected in ng.
Vo = Volume of water extracted in mL.
Vi = Volume of extract injected in uL.
Vt = Volume of the concentrated extract in uL
RRF = Mean Relative Response Factor determined from the initial calibration standard.
GPC = $\underline{Vin}$ = GPC factor (If no GPC is performed, GPC=1)
Vout = Volume of extract collected after GPC cleanup.

Example calculation of A46X9 for Acetophenone:

Ax = 34486
Ais = 154211
Is = 20
Vo = 1000
Vi = 1
Vt = 1000
RRF = 2.400
GPC = 1

$$\text{Concentration ug/L} = \frac{(34486)\,(20)\,(1000)\,(1)\,(1)}{(154211)\,(2.400)\,(1000)\,(1)}$$

= 1.9 ug/L

RRF Calculation of standard 20 ppb for **Naphthalene** with P instrument for method 07/12/2023.

$$\text{RRF} = \frac{\text{Area of compound}}{\text{Area of Internal Standard}} \times \frac{\text{Conc. of Internal Standard}}{\text{Conc. of Compound}}$$

= 860799/781264 X 20/20

= 1.102 (Reported RRF)

Semivolatiles SIM:

The samples were analyzed on instrument BNA_M using GC Column ZB-GR Semi Volatiles Guardian which is 30 meters, 0.25 mm ID, 0.5 um df, Catalog # 7HG-G027-17-GGA.

Semis volatile Organic sample for Water sample was extracted by Method SFAM01.1 on 06/30/2023, The analysis of SVOC-SIM-SFAM was based on method SFAM01.1_SVOC.

The Holding Times were met for all analysis.
The Surrogate recoveries met the acceptable criteria.
The Internal Standards Areas met the acceptable requirements .
The Retention Times were acceptable for all samples.
The Blank Spike for {PB153935BS} recoveries met the requirements for all compounds.
The Blank analysis did not indicate the presence of lab contamination.
The Tuning criteria met requirements.
The Initial Calibration met requirements.
The Continuous Calibration met the requirements.

The Sample A46T2, A46T3, have the concentration of target compound below method detection limits; therefore it is not reported as Hit in Form1.

See **Manual Integration report** for the manual integration information at the end of the case narrative.

Concentration of Water Sample:

$$\text{Concentration ug/L} = \frac{(Ax)\,(Is)\,(Vt)\,(DF)\,(GPC)}{(Ais)\,(\overline{RRF})\,(Vo)\,(Vi)}$$

Where,

Ax = Area of the characteristic ion for the compound to be measured.
Ais = Area of the characteristic ion for the internal standard.
Is = Amount of internal standard injected in ng.
Vo = Volume of water extracted in mL.
Vi = Volume of extract injected in uL.

Vt = Volume of the concentrated extract in uL
RRF = Mean Relative Response Factor determined from the initial calibration standard.
GPC = $\frac{Vin}{Vout}$ = GPC factor (If no GPC is performed, GPC=1)

Example calculation of A46J0 for Naphthalene:

Ax = 1582
Ais = 13983
Is = 0.4
Vo = 1000
Vi = 1
Vt = 1000
RRF = 1.103
GPC = 1

$$\text{Concentration ug/L} = \frac{(1582)\,(0.4)\,(1000)\,(1)\,(1)}{(13983)\,(1.103)\,(1000)\,(1)}$$

$$= 0.040 \text{ ug/L}$$

RRF Calculation of standard 0.4 ppb for **Naphthalene** with M instrument for method 06/22/2023.

RRF= Area of compound / Area of Internal Standard X Conc. of Internal Standard / Conc. of Compound

= 23343/21183 X 0.4/0.4

= 1.102 (Reported RRF)

Pesticides:

The analyses for Pesticides were performed on instrument ECD_D. The front column is ZB-Multi-Residue-2 which is 30 meters, 0.32 mm ID, 0.2 um df. The rear column ZB-Multi-Residue-1 which is 30 meters, 0.32 mm ID, 0.50 um df.

The sample was analyzed on a single injection dual column system. To distinguish the second column analysis from the first column a -2 suffix was added to the file id on the form 1. These refer to forms were both columns are reported. Form 1s for the IBLK and PLCS are referenced as IBLK(1)/IBLK(2) and PLCS01(1) / PLCS01(2) respectively.

Pesticide sample was extracted by method SFAM01.1 on 06/30/2023 and analyzed on 06/30, 07/01/2023. The sample was extracted and analyzed within contractual holding time.

The Surrogate recoveries met the acceptable criteria.
The Blank analysis did not indicate the presence of lab contamination.
Blank and Laboratory Control Sample met the requirements.
Retention Times met the requirements.

Florisil check met the requirements.
Resolution Check met the requirements.
The Retention Times were acceptable for all samples.
The Initial Calibration met the requirements.
The Individual Mix A met the requirements.
The Individual Mix B met the requirements
The PEM met the requirement.

See **Manual Integration report** for the manual integration information at the end of the case narrative.

Calculation for the Concentration in Water Samples

$$\text{Concentration ug/L} = \frac{(\text{Ax})\,(\text{Vt})\,(\text{DF})\,(\text{GPC})}{(\text{CF})\,(\text{Vo})\,(\text{Vi})}$$

Where,
Ax = Response (peak area or height) of the compound to be measured.
CF = Mean Calibration Factor from the initial calibration (area/ng).
Vo = Volume of water extracted in mL.
Vi = Volume of extract injected in uL.
Vt = Volume of the concentrated extract in uL

$$\text{GPC} = \frac{\text{Vin}}{\text{Vout}} = \text{GPC factor (If no GPC is performed, GPC=1)}$$

Vin = Volume of extract loaded onto GPC column.

Vout = Volume of extract collected after GPC cleanup.

Example of Dieldrin calculation

Calibration Factor Calculation Dieldrin in the second column

$$\text{Calibration factor (CF)} = \frac{\text{peak area}}{\text{Mass injected in ng}}$$

$$= \frac{13248165}{10\text{ng}}$$

$$= 1324820$$

Mean Calibration Factor = average of 5 point calibration factor

$$= 1394070$$

No target **Pesticides** were detected in the samples.

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. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature ________________________ Name: Nimisha Pandya.

Date: ___________________________ Title: Document Control Officer.