SDG NARRATIVE

LAB NAME: CHEMTECH CONSULTING GROUP
CASE: 50251
SDG: CB8P5
CONTRACT: 68HERH20D0011
LAB CODE: CHM
CHEMTECH PROJECT: N4847
MODIFICATION REF. NUMBER: NA

Sample ID	EPA Sample ID	pH
N4847-01	CB8P5	
N4847-02MS	CB8P5MS	
N4847-03MSD	CB8P5MSD	
N4847-04	CB8P7	
N4847-05	CB8Q5	
N4847-06	CB8Q9	
N4847-07	CB8R1	
N4847-08	CB8R4	
N4847-09	CB8S5	

04 Water sample was delivered to the laboratory intact on 09/27/2022.
05 Water sample was delivered to the laboratory intact on 09/29/2022.

Test requested on the Chain of Custody was Semivolatile Organic, Semivolatile Organic SIM, Pesticide and Aroclor by Method SFAM01.1.

Sample Tags were received with the samples.

The temperature of the samples was measured using an I R Gun. The samples temperature was 2.3, 2.6, 2.4 degree Celsius for the samples received on 09/27/2022, 2.3, 2.6, 2.1, 2.4, 2.0 degree Celsius for the samples received on 09/29/2022.

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 09/30/2022. 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
CB8R4 [4-Nitrophenol-d4 - 9%] and

CB8S5 [4-Nitrophenol-d4 - 5%,],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 {PB148012BS} recoveries met the requirements for all compounds.
The Blank Spike for {PB148042BS} recoveries met the requirements for all compounds.
The Blank analysis did not indicate the presence of lab contamination.
The Initial Calibration met the requirements.
The Tuning criteria met requirements.
The Continuous Calibration met the requirements .

The Initial Calibration verification (SICV623) File ID BP011850.D met the requirements except for Phenol (-21.1) As per method up to four target analyze in ICV are allowed to exceed the %D values . therefore no corrective action was taken.

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 = $\frac{Vin}{}$ = GPC factor (If no GPC is performed, GPC=1)
Vout = Volume of extract collected after GPC cleanup.

Example calculation of CB8R4 for Benzaldehyde:

Ax = 16832
Ais = 201921
Is = 20
Vo = 1000
Vi = 1
Vt = 1000
RRF = 0.756
GPC = 1

Concentration ug/L = (16832) (20) (1000) (1) (1)

(201921) (0.756) (1000) (1)

Reported Result = 2.2 ug/L

RRF Calculation of standard 20 ppb for **Naphthalene** with P instrument for method 09/30/2022.

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

= 1308500/1099376 X 20/20

= 1.190 (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 samples for Water were extracted by Method SFAM01.1 on 09/30/2022 the analysis of SVOC-SIM-SFAM was based on Method SFAM01.1_SVOC- SIM.

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 {PB148013BS} recoveries met the requirements for all compounds.
The Blank Spike for {PB148043BS} 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 the requirements.
The Continuous Calibration met the requirements.

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

Concentration of Water Sample:

Concentration ug/L = (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

$\overline{RRF}$ = 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 **CB8R1** for **Phenanthrene:**

Ax = 1629
Ais = 23131
Is = 0.4
Vo = 1000
Vi = 1
Vt = 1000
RRF = 1.277
GPC = 1

$$\text{Concentration ug/L} = \frac{(1629)\,(0.4)\,(1000)\,(1)\,(1)}{(23131)\,(1.277)\,(1000)\,(1)}$$

$$= 0.020 \text{ ug/L}$$

RRF Calculation of standard 0.4 ppb Naphthalene with instrument M for method 10/06/2022.

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

Area of Internal Standard Conc. of Compound

= 20989/18515 X 0.4/0.4

= 1.134 (Reported RRF)

Pesticides:
The analyses for Pesticides were performed on instrument ECD D & L. 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 ALCS are referenced as IBLK(1)/IBLK(2), MS(1)/MS(2), MSD(1)/MSD(2) and PLCS01(1)/PLCS01(2) respectively.

Pesticide sample was extracted by method SFAM01.1 on 10/01/2022 and analyzed on 10/05/2022. The sample was extracted and analyzed within contractual holding time.

The Surrogate recoveries met the acceptable criteria.
CB8P5MS met the requirements.
CB8P5MSD met the requirements.
The RPD met the requirements.

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 %RSD met requirement for initial Calibration except for beta-BHC (27.87%) in second column for the initial calibration dated 07/14/2022 with ECD_D instrument. As per SOW, Exhibit D, Section 9.3.5.9, the %RSD up to two single component target analytes per column may exceed the maximum %RSD of 20.0% but must have a % RSD of less than or equal to 30%. Therefore, no further corrective action was taken.
The Individual Mix A met the requirements.
The Individual Mix B met the requirements.
The PEM met the requirement.
Samples CB8Q5, CB8Q9 and CB8R1 failed to meet the %D for the results between the two columns Criteria.

Sample CB8Q5 have the concentration of target compound - delta-BHC below Method detection limits, therefore it is not reported as hit in Form1.

Calculation for the Concentration in Water Samples

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

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

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

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 first column

Calibration factor (CF) = peak area / Mass injected in ng

= 19024106 / 10ng

= 1902410

Mean Calibration Factor = average of 5 point calibration factor

= 1859970

Sample **CB8P7**
Ax = 25338928
CF = 1859970
Ws = 1000
Vi = 1
Vt = 10000
DF = 1
GPC = 1

Concentration ug/L (Dry weight basis) = (Ax) (Vt) (DF) (GPC) / (CF) (Vi) (Ws)

= (25338928) (10000) (1.0) (1.0) / (1859970)(1.0)(1000)

= 0.136

Reported Results (ug/L) = 0.14

Aroclors:

The analyses were performed on instrument GCECD_Q. The front column is ZB-MR1 which is 30 meters, 0.32 mm ID, 0.5 um df, Catalogue # 7HM-G016-17. The rear column is ZB-MR2 which is 30 meters, 0.32 mm ID, 0.25 µm; Catalogue # 7HM-G017-11.

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 ALCS are referenced as IBLK(1)/IBLK(2), MS(1)/MS(2), MSD(1)/MSD(2), and ALCS01(1)/ALCS01(2) respectively.

Aroclor sample was extracted by Method SFAM01.1 on 10/01/2022 and analyzed on 10/05/2022. All the samples were subjected to a Sulfuric acid cleanup. The sample was extracted and analyzed within contractual holding time.

The Surrogate recoveries met the acceptable criteria.
CB8P5MS met the requirements except for AR1016 and AR1260 on both columns due to sample matrix interference. No corrective action is required for failure to meet the MS/MSD criteria by the SOW. (Section 12.2.5.5 of Exhibit D Aroclor Analysis).
CB8P5MSD met the requirements except for AR1016 and AR1260 on both columns due to sample matrix interference. No corrective action is required for failure to meet the MS/MSD criteria by the SOW. (Section 12.2.5.5 of Exhibit D Aroclor Analysis).
The RPD met the requirements.
The Laboratory Control Sample met requirements.
The Blank analysis did not indicate the presence of lab contamination.
The Initial Calibration met the requirements.
The Continuing Calibrations met the requirements.
The Retention Times were acceptable for all samples.

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

Calculation for Concentration in Water Samples:

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

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
GPC = $\frac{Vin}{Vout}$ = 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.
DF = Dilution Factor.

Example of AR1260 calculation for Peak 1

Calibration factor Peak 1 100ppb ISTD= $\frac{\text{peak area}}{\text{Mass injected ng}}$
Column2

$$= \frac{50017603}{0.100}$$

= 500176030 calibration factor for Peak 1 100ppb

Average of 5 peaks = 450563051

No target **Aroclors** 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.