

**SDG NARRATIVE****LAB NAME: Alliance Technical Group, LLC****CASE: 51825****SDG: BH9B8****CONTRACT: 68HERH20D0011****LAB CODE: ACE****LAB ORDER ID: P4724****MODIFICATION REF. NUMBER: NA**

Sample ID	EPA Sample ID	Test	pH
P4724-01	BH9B8		
P4724-02MS	BH9B8MS		
P4724-03MSD	BH9B8MSD		
P4724-04	BH9B9		
P4724-05	BH9C0		
P4724-06	BH9D4		
P4724-07	BH9D5		
P4724-08	BH9D6		
P4724-09	BH9F1		
P4724-10	BH9F2		
P4724-11	BH9C2		
P4724-12	BH9C3		
P4724-13	BH9C4		
P4724-15	BH9F0		
P4724-16	BH9G6		
P4724-16ME	BH9G6ME	VOA	
P4724-16MERE	BH9G6MERE	VOA	
P4724-16RE	BH9G6RE	VOA	
P4724-17	BH9G9		1.0
P4724-19	BH9D2		
P4724-19ME	BH9D2ME	VOA	
P4724-19RE	BH9D2RE	VOA	
P4724-20	BH9D8		
P4724-21	BH9D9		
P4724-22	BH9E0		
P4724-23	BH9E2		
P4724-24	BH9E4		
P4724-24ME	BH9E4ME	VOA	

P4724-24RE	BH9E4RE	VOA	
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13 Soil samples were delivered to the laboratory intact on 11/06/2024.

08 Soil samples were delivered to the laboratory intact on 11/07/2024.

01 Water sample was delivered to the laboratory intact on 11/07/2024.

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

The temperature of the samples was measured using an I R Gun. The samples temperature was 3.2, 3.1 degree Celsius for the samples received on 11/06/2024. The samples temperature was 3.0, 2.7 degree Celsius for the samples received on 11/07/2024.

### Shipping Discrepancies and/or QC issues:

**Issue 01:** Lab has received soil samples for VOA analysis. Lab has analyzed undiluted VOA analysis for the samples BH9G6, BH9D2, BH9E4 & BH9E3. Samples had internal standard recoveries outside the QC limits as you can see attached internal standard summary for your reference. As a corrective action, Lab has re-analyzed these samples and there was some technical error in instrument and closing CCV was not injected for the analytical sequence. Therefore, as a further corrective action, Lab has performed the medium level VOA analysis for these samples. In this case, Lab would like to confirm that lab will report all analysis for final electronic deliverables.

**Resolution 01:** It is OK with the region to have all data. Please ensure SOW requirement. Are all analyses within holding time ? Thanks.

### 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 performed on instrument MSVOA\_X 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\_LOW.

The Holding Times were met for all analysis.

The Surrogate recoveries met the acceptable criteria except for  
 BH9G6 [1,1-Dichloroethene-d2 - 116%, 2-Butanone-d5 - 0%, 2-Hexanone-d5 - 0%],  
 BH9G6ME [1,1,2,2-Tetrachloroethane-d2 - 161%, 1,1-Dichloroethene-d2 - 151%, 1,2-Dichlorobenzene-d4 - 173%, 1,2-Dichloroethane-d4 - 167%, 1,2-Dichloropropane-d6 - 168%, 2-Butanone-d5 - 162%, 2-Hexanone-d5 - 170%, Benzene-d6 - 164%, Chloroform-d - 153%, Toluene-d8 - 164%, trans-1,3-Dichloropropene-d4 - 158%],

BH9G6MERE [1,1-Dichloroethene-d2 - 143%, 1,2-Dichloroethane-d4 - 135%, 1,2-Dichloropropane-d6 - 65%, Vinyl Chloride-d3 - 176%],

BH9G9 [1,2-Dichloroethane-d4 - 68%, Toluene-d8 - 75%],

As per method, up to three surrogates are allowed to fail. No corrective action was taken except for, Sample BH9G6ME failed for more than three surrogates, as corrective action this sample was reanalyzed and both the run are reported.

The Internal Standards Areas met the acceptable requirements except for BH9G6, BH9D2 and BH9E4. Samples which failed for Internal Standards. as corrective action samples were reanalyzed at Medium Level and both the run are Reported.

Lab has received soil samples for VOA analysis. Lab has analyzed undiluted VOA analysis for the samples BH9G6, BH9D2 and BH9E4. Samples had internal standard recoveries outside the QC limits. As a corrective action, Lab has re-analyzed these samples and there was some technical error in instrument and closing CCV was not injected for the analytical sequence. Therefore, as a further corrective action, Lab has performed the medium level VOA analysis for these samples, therefore Lab Reported all the Data for final Hard Copy, Please see EPA communication after SDG Narrative.

Instrument Performance Check met requirements.

The Retention Times were met for all samples.

The Tuning criteria met requirements.

The %RSD met requirement for initial Calibration except for Dibromochloromethane (20.5%) for the initial calibration dated 11/04/2024 with X instrument, As per method, the %RSD up to two 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 %RSD met requirement for initial Calibration except for Trichloroethene (21.3%) for the initial calibration dated 11/14/2024 with X instrument, As per method, the %RSD up to two 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 Continuing Calibration (VSTD050781) file ID VX043750.D met the requirements except for Chloroethane (36.0%). 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 End Continuing Calibration (VSTD050790) file ID VX043887.D met the requirements except for Trichloroethene (-52.3%). 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 did not indicated the presence of lab Contamination.

The Storage blank analysis did not indicated the presence of lab Contamination.

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

### Calculation:

#### Low/Med Water Level Calculation

$$\text{Concentration in ug/L} = \frac{(A_x) (I_s) (DF)}{(A_{is}) (RRF) (V_o)}$$

Where,

A<sub>x</sub> = Area of the characteristic ion (EICP) for the compound to be measured.

A<sub>is</sub> = 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.

V<sub>o</sub> = Total volume of water purged, in mL.

DF = Dilution Factor

#### Medium-Level Soil/Sediment Concentration

$$\text{Concentration}(\mu\text{g/Kg}) = \frac{(A_x)(I_{is})(AV_t)(1000)(DF)}{(A_{is})RRF(V_a)(W_s)(S)}$$

Where

A<sub>x</sub> = Area for the compound to be measured

A<sub>is</sub> = Area for the specific internal standard

I<sub>s</sub> = Amount of internal standard added in nanograms (ng)

S = % Solids/100

RRF = Mean Relative Response Factor from the ambient temperature purge of the initial calibration standard

AV<sub>t</sub> = Adjusted total volume of the methanol extract plus soil water in mL determined by:

$$AV_t = V_t + \{W_s - [W_s(S)]\}.$$

Where V<sub>t</sub> = total volume of methanol extract in mL. This volume is typically 5.0 mL, even though only 0.1 mL is transferred to the vial in Section 10.2.3.6. The quantity derived from {W<sub>s</sub> - [W<sub>s</sub>(S)]} is the soil water volume and is expressed in mL.

V<sub>a</sub> = Volume of the aliquot of the sample methanol extract (i.e., sample extract not including the methanol added to equal 100 μL), in μL added to reagent water for purging

W<sub>s</sub> = Weight of soil/sediment extracted, in g

DF = Dilution Factor. The DF for analysis of soil/sediment sample extracts for volatiles by the medium-level method is defined as the ratio of the volume (μL) taken from the

extract used to make the dilution plus the clean solvent added for the dilution ( $\mu\text{L}$ ), to the volume taken from the extract used to make the dilution. For example, if 10  $\mu\text{L}$  of the extract was taken and added to 90  $\mu\text{L}$  of clean solvent, then ratio would be  $(10 \mu\text{L} + 90 \mu\text{L}/10 \mu\text{L}) =$  a DF of 10.

### Low/Med Level Soil/Sediment Calculation

$$\text{Concentration in ug/Kg dry Weight basis) = } \frac{(A_x)(I_s)(D_f)}{(A_{is})(RRF)(W_s)(D)}$$

Where,

$A_x$  = Area for the compound to be measured

$A_{is}$  = Area for the specific internal standard

$I_s$  = Amount of internal standard added in Nano grams (ng)

RRF = Relative response factor of the calibration standard.

$D_f$  = Dilution factor

$W_s$  = Weight of sample

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

Example Calculation for sample: **BH9B9** for **Acetone**:

$$A_x = 12298$$

$$I_s = 250$$

$$RRF = 0.082$$

$$D_f = 1$$

$$A_{is} = 482153$$

$$W_s = 5.52$$

$$D = 0.831$$

$$\begin{aligned} \text{Concentration in ug/KG} &= \frac{(12298)(250)(1)}{(482153)(0.082)(5.52)(0.831)} \\ &= 16.95 \text{ ug/Kg} \end{aligned}$$

Final Reported Results = 17 ug/Kg

Relative Response Factor = **Dichlorodifluoromethane**: RUN **VW110424** for **5.0** ppb

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

$$RRF = \frac{13068}{434671} \times \frac{25}{2.5}$$

$$RRF = 0.301$$

### 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 for water sample was extracted by Method SFAM01.1 on 11/10/2024. for soil sample was extracted by Method SFAM01.1 on 11/08/2024, 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, BH9C3 [4,6-Dinitro-2-methylphenol-d2 - 4%, 4-Nitrophenol-d4 - 7%]. 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 {PB164783BS} recoveries met the requirements for all compounds.

The Blank Spike for {PB164853BS} recoveries met the requirements for all compounds.

The Blank analysis did not indicate the presence of lab contamination.

The Tuning criteria met the requirements.

The Initial Calibration met the requirements.

The Continuous Calibration met the requirements.

Samples BH9B8, BH9D4, BH9F0 and BH9G6 have the concentration of target compound below method detection limits; therefore it is not reported as Hit in Form1.

### Concentration of Water Sample:

$$\text{Concentration ug/L} = \frac{(A_x) (I_s) (V_t) (DF) (GPC)}{(A_{is}) (RRF) (V_o) (V_i)}$$

Where,

A<sub>x</sub> = Area of the characteristic ion for the compound to be measured.

A<sub>is</sub> = Area of the characteristic ion for the internal standard.

I<sub>s</sub> = Amount of internal standard injected in ng.

V<sub>o</sub> = Volume of water extracted in mL.

V<sub>i</sub> = Volume of extract injected in uL.

V<sub>t</sub> = Volume of the concentrated extract in uL

RRF = Mean Relative Response Factor determined from the initial calibration standard.

GPC =  $V_{in}$  = GPC factor (If no GPC is performed, GPC=1)

Vout = Volume of extract collected after GPC cleanup.

### Concentration of SOIL Sample:

Concentration ug/Kg,

$$(\text{dry weight basis}) = \frac{(A_x) (I_s) (V_t) (D_f) (GPC)}{(A_{is}) (RRF) (V_i) (W_t) (D)}$$

Where,

A<sub>x</sub> = Area of the characteristic ion for the compound to be measured.

A<sub>is</sub> = Area of the characteristic ion for the internal standard.

I<sub>s</sub> = Amount of internal standard injected in ng.

V<sub>i</sub> = Volume of extract injected in microliters (uL)

V<sub>t</sub> = Volume of concentrated extract in microliters (uL)

W<sub>t</sub> = Weight of the original sample extracted in g

D<sub>f</sub> = Dilution factor

RRF = Mean Relative Response Factor determined from the initial calibration standard.

GPC =  $V_{in}$  = GPC factor (If no GPC is performed, GPC=1)

Vout = Volume of extract collected after GPC cleanup.

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

### Example calculation of BH9B8 for Phenol:

$$A_x = 7110$$

$$A_{is} = 58742$$

$$I_s = 20$$

$$V_i = 1$$

$$V_t = 500$$

$$W_t = 30.1$$

$$D_f = 1$$

$$RRF = 1.544$$

$$GPC = 2$$

$$D = 0.883$$

Concentration

$$(\text{dry weight basis}) \text{ ug/Kg} = \frac{(7110) (20) (500) (1) (2)}{(58742) (1.544) (1) (30.1) (0.883)}$$

$$= 59 \text{ ug/Kg}$$

RRF Calculation of standard 20 ppb for Naphthalene with P instrument for method 11/08/2024.

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

$$= 211251/205623 \times 20/20$$

$$= 1.027 \text{ (Reported RRF)}$$

### **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 where both columns are reported. Form 1s for the IBLK and PLCS 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 11/08 and 11/10/2024 and analyzed on 11/11, 11/12 and 11/13/2024. The sample was extracted and analyzed within contractual holding time.

The soil sample was subjected to Florisil and GPC Cleanup.

The Surrogate recoveries met the acceptable criteria except for

BH9B8 [Decachlorobiphenyl(2) - 29%],  
BH9B9 [Decachlorobiphenyl(1) - 19%, Decachlorobiphenyl(2) - 22%],  
BH9C2 [Decachlorobiphenyl(1) - 18%, Decachlorobiphenyl(2) - 22%],  
BH9C3 [Decachlorobiphenyl(1) - 18%, Decachlorobiphenyl(2) - 18%],  
BH9C4 [Decachlorobiphenyl(1) - 20%, Decachlorobiphenyl(2) - 22%],  
BH9D4 [Decachlorobiphenyl(1) - 21%, Decachlorobiphenyl(2) - 28%],  
BH9D8 [Decachlorobiphenyl(1) - 15%, Decachlorobiphenyl(2) - 19%],  
BH9E0 [Decachlorobiphenyl(1) - 27%],  
BH9E2 [Decachlorobiphenyl(1) - 23%, Decachlorobiphenyl(2) - 21%],  
BH9E4 [Decachlorobiphenyl(1) - 26%],  
BH9F0 [Decachlorobiphenyl(1) - 21%, Decachlorobiphenyl(2) - 23%],  
BH9F1 [Decachlorobiphenyl(1) - 23%, Decachlorobiphenyl(2) - 28%],  
BH9G6 [Decachlorobiphenyl(1) - 19%, Decachlorobiphenyl(2) - 23%],

The SOW allows one surrogate to fail to meet the criteria per column. ((Please See Section 11.3.6 of Exhibit D Pesticide Analysis).

BH9B8MS met the requirements.  
BH9B8MSD 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 Initial Calibration met the requirements.  
The Individual Mix A met the requirements.  
The Individual Mix B met the requirements.  
The PEM met the requirement.

Samples BH9B8, BH9B8MS, BH9B8MSD, BH9B9, BH9C0, BH9C2, BH9C3, BH9C4, BH9D4, BH9D6, BH9D8, BH9D9, BH9E0, BH9E2, BH9E4, BH9F0, BH9F1, BH9F2, BH9G6 and BH9G9 failed to meet the %D for the results between the two columns Criteria.

Sample BH9B9 have the concentration of target compound - Endrin,  
Sample BH9C0 have the concentration of target compound - Aldrin,  
Sample BH9C3 have the concentration of target compound - gamma-BHC (Lindane),  
Sample BH9D2 have the concentration of target compound - trans-Chlordane,  
Sample BH9D6 have the concentration of target compound - Dieldrin, Methoxychlor,  
Sample BH9E4 have the concentration of target compound - Endrin aldehyde,  
Sample BH9G6 have the concentration of target compound - 4,4'-DDT,  
Sample BH9G9 have the concentration of target compound - Heptachlor epoxide,  
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.

### Calculation for the Concentration in Water Samples

$$\text{Concentration ug/L} = \frac{(A_x) (V_t) (DF) (GPC)}{(CF) (V_o) (V_i)}$$

Where,

A<sub>x</sub> = Response (peak area or height) of the compound to be measured.

CF = Mean Calibration Factor from the initial calibration (area/ng).

V<sub>o</sub> = Volume of water extracted in mL.

V<sub>i</sub> = Volume of extract injected in uL.

V<sub>t</sub> = Volume of the concentrated extract in uL

GPC =  $\frac{V_{in}}{V_{out}}$  = GPC factor (If no GPC is performed, GPC=1)

$V_{in}$  = Volume of extract loaded onto GPC column.

$V_{out}$  = Volume of extract collected after GPC cleanup.

### Calculation for the Concentration in Soil Samples

$$\text{Concentration ug/Kg (Dry weight basis)} = \frac{(A_x) (V_t) (DF) (GPC)}{(CF) (V_i) (W_s) (D)}$$

Where,

$A_x$  = Response (peak area or height) of the compound to be measured.

$CF$  = Mean Calibration Factor from the initial calibration (area/ng).

$V_t$  = Volume of the concentrated extract in uL

$V_i$  = Volume of extract injected (uL). (If a single injection is made onto two columns, use  $\frac{1}{2}$  the volume in the syringe as the volume injected onto each column).

$W_s$  = Weight of sample extracted (g).

$D$  = % dry weight or  $\frac{100 - \% \text{Moisture}}{100}$

$GPC = \frac{V_{in}}{V_{out}}$  = GPC factor (If no GPC is performed,  $GPC=1$ )

$DF$  = Dilution Factor.

### Example of Endosulfan I calculation

Calibration Factor Calculation Endosulfan I in the second column

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

$$= \frac{72492357}{5\text{ng}}$$

$$= 14498500$$

Mean Calibration Factor = average of 5 point calibration factor

$$= 13164800$$

Sample **BH9B8**

$A_x$  = 65446211

$CF$  = 13164800

$W_s$  = 30.1

$V_i$  = 1.0

$V_t$  = 5000

$DF$  = 1.0

$GPC$  = 2.0

D = 0.883

$$\begin{aligned} \text{Concentration ug/Kg (Dry weight basis)} &= \frac{(A_x) (V_t) (DF) (GPC)}{(CF) (V_i) (W_s) (D)} \\ &= \frac{(65446211) (5000) (1.0) (2.0)}{(13164800)(1.0)(30.1)(0.883)} \\ &= 1.87 \end{aligned}$$

Reported Results = 1.9 ug/kg

### Aroclors:

The analyses were performed on instrument GC ECD\_R. 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 where 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 11/09/2024 and 11/10/2024 analyzed on 11/11/2024 and 11/12/2024 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.

BH9B8MS met the requirements.

BH9B8MSD met the requirements.

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:

$$\text{Concentration ug/L} = \frac{(A_x) (V_t) (DF) (GPC)}{(CF) (V_o) (V_i)}$$

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 =  $\frac{V_{in}}{V_{out}}$  = 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.

### Calculation for Concentration in Soil samples:

$$\text{Concentration ug/Kg (Dry weight basis)} = \frac{(Ax) (Vt) (DF) (GPC)}{(CF) (Vi) (Ws) (D)}$$

Where,

Ax = Response (peak area or height) of the compound to be measured.

CF = Mean Calibration Factor from the initial calibration (area/ng).

Vt = Volume of the concentrated extract in uL

Vi = Volume of extract injected (uL). (If a single injection is made onto two columns, use ½ the volume in the syringe as the volume injected onto each column).

Ws = Weight of sample extracted (g).

D = % dry weight or  $\frac{100 - \% \text{Moisture}}{100}$

GPC =  $\frac{V_{in}}{V_{out}}$  = GPC factor (If no GPC is performed, GPC=1)

DF = Dilution Factor

### Example of AR1260 calculation for Peak 1

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

$$= \frac{4574028}{0.100}$$

= 45740280 calibration factor for Peak 1 100ppb

Average of 5 peaks = 39861589

**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.