

**SDG NARRATIVE****LAB NAME: Alliance Technical Group, LLC****CASE: 51736****SDG: A4F31****CONTRACT: 68HERH20D0011****LAB CODE: ACE****LAB ORDER ID: P4493****MODIFICATION REF. NUMBER: NA**

Sample ID	EPA Sample ID	Test	pH
P4493-01	A4F31		
P4493-02MS	A4F31MS		
P4493-03MSD	A4F31MSD		
P4493-04	A4F33		
P4493-05	A4F34		
P4493-07	A4EA0		
P4493-07DL	A4EA0DL	VOA	
P4493-08	A4EA1		
P4493-08DL	A4EA1DL		
P4493-09	A4EC1		1.0
P4493-10	A4F05		
P4493-11	A4F16		
P4493-12	A4F17		
P4493-13	A4F20		
P4493-13ME	A4F20ME	VOA	
P4493-13RE	A4F20RE	VOA	
P4493-14	A4F25		
P4493-15	A4F27		
P4493-15DL	A4F27DL	SVOA	
P4493-16	A4F28		

05 Soil samples were delivered to the laboratory intact on 10/23/2024.

01 Water sample was delivered to the laboratory intact on 10/24/2024.

09 Soil samples were delivered to the laboratory intact on 10/24/2024.

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



The temperature of the samples was measured using an I R Gun. The samples temperature was 2.4 degree Celsius for the samples received on 10/23/2024, 3.2 degree Celsius for the samples received on 10/24/2024.

Low Volatiles:

The analysis performed on instrument MSVOA_U were done using GC column RXI-624SIL MS 30m 0.18mm 1.4 um. Cat#13868.

The analysis performed on instrument MSVOA_W were done using GC column RXI-624SIL MS 30m 0.18mm 1.4 um. Cat#13868.

The analysis performed on instrument MSVOA_X were done using GC column RXI-624SIL MS 30m 0.18mm 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 except for
A4F31 [1,1-Dichloroethene-d2 - 42%],
A4F31MS [2-Hexanone-d5 - 140%],
A4EA0 [1,2-Dichlorobenzene-d4 - 67%],
A4EA0DL [1,2-Dichlorobenzene-d4 - 66%, 1,2-Dichloropropane-d6 - 70%],
A4EC1 [Chloroethane-d5 - 61%],
A4F05 [1,1-Dichloroethene-d2 - 45%],
A4F17 [1,1,2,2-Tetrachloroethane-d2 - 124%, 1,2-Dichlorobenzene-d4 - 124%],
A4F20ME [Chloroethane-d5 - 28%],
A4F20RE [1,1,2,2-Tetrachloroethane-d2 - 124%] and
A4F28 [1,1-Dichloroethene-d2 - 43%].

As per method, up to three surrogates are allowed to fail. No corrective action was taken.

The Internal Standards Areas met the acceptable requirements except for A4F20, A4F20RE, which failed for Internal Standards as corrective action sample was reanalyzed and analyzed Medium Level all analysis reported.

Instrument Performance Check met requirements.

The Retention Times were met for all samples.

The Tuning criteria met requirements.

The MS {A4F31MS} recovery met the requirements for all compounds.

The MSD {A4F31MSD} recovery met the requirements for all compounds.

The RPD {A4F31MSD} RPD met the requirements for all compounds.

The Initial Calibration met the requirements.

The Continuing Calibration (VSTD050539) file ID VW030781.D met the requirements except for Toluene-d8 (20.3%). 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 Continuing Calibration (VSTD025541) file ID VW030801.D met the requirements except for Carbon disulfide (-36.1%). 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 Continuing Calibration (VSTD025543) file ID VW030828.D met the requirements except for 1,1-Dichloroethene-d2 (-27.4%). 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 did not indicate the presence of lab contamination.
The storage blank did not indicate the presence of lab contamination.

Sample A4EA0 was diluted due to high concentration.

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_x = Area of the characteristic ion (EICP) for the compound to be measured.

A_{is} = 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_o = 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_x = Area for the compound to be measured

- A_{is} = Area for the specific internal standard
 I_s = Amount of internal standard added in nanograms (ng)
 S = % Solids/100
 \overline{RRF} = Mean Relative Response Factor from the ambient temperature purge of the initial calibration standard
 AV_t = 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_t = 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 $\{W_s - [W_s(S)]\}$ is the soil water volume and is expressed in mL.
 V_a = Volume of the aliquot of the sample methanol extract (i.e., sample extract not including the methanol added to equal 100 μ L), in μ L added to reagent water for purging
 W_s = 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 (μ L) taken from the extract used to make the dilution plus the clean solvent added for the dilution (μ L), to the volume taken from the extract used to make the dilution. For example, if 10 μ L of the extract was taken and added to 90 μ L of clean solvent, then ratio would be (10 μ L + 90 μ L)/10 μ L)= a DF of 10.

Low/Med Level Soil/Sediment Calculation

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

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.

Df = Dilution factor

W_s = Weight of sample

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

Example Calculation for sample: **A4EA0** for **Methylene chloride**:

$$A_x = 320572$$

$$I_s = 250$$

$$RRF = 0.378$$

$$DF = 1$$

Ais= 223568

Ws= 5.00

D= 1

$$\begin{aligned} \text{Concentration in ug/KG} &= \frac{(320572) (250) (1)}{(223568) (0.378) (5.00) (1)} \\ &= 189.66 \text{ ug/Kg} \end{aligned}$$

Final Reported Results = 190 ug/Kg

Relative Response Factor = **Dichlorodifluoromethane**: RUN **VW100924** for **2.5** ppb

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

$$\text{RRF} = \frac{11869}{356470} \times \frac{25}{2.5}$$

$$\text{RRF} = 0.333$$

Semivolatiles:

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.

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 10/24/2024 and for soil sample was extracted by Method SFAM01.1 on 10/25/2024, The analysis of SVO-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, A4F34 [4,6-Dinitro-2-methylphenol-d2 - 8%] and A4F27DL [4,6-Dinitro-2-methylphenol-d2 - 8%, 4-Nitrophenol-d4 - 6%]. The DMC recovery requirements do not apply to samples that have been diluted. 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 MS {A4F31MS} recovery met the requirements for all compounds.

The MSD {A4F31MSD} recovery met the requirements for all compounds.

The RPD {A4F31MSD} RPD met the requirements for all compounds
The Blank Spike for {PB164417BS} recoveries met the requirements for all compounds.
The Blank Spike for {PB164419BS} 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 (SSTD020692) with File ID BP022768.D met the requirements except for Hexachlorocyclopentadiene (-41.2%), under this Continuous Calibration none of the samples were analyzed, therefore no further corrective action was required.

Samples A4EA1, A4F27 were diluted due to high concentrations.

Samples A4F17, A4F20, A4F27 and A4F28 have the concentration of target compound below method detection limits; therefore it is not reported as Hit in Form1.

PB164419BL analyzed twice in different instrument, first time in BNA_P and Second time in BNA_M. However our sample associated with this BL run in BNA_P, so BNA_M instrument raw data reported as Screening Data in the package.

Concentration of Water Sample:

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

Where,

A_x = Area of the characteristic ion for the compound to be measured.

A_{is} = Area of the characteristic ion for the internal standard.

I_s = Amount of internal standard injected in ng.

V_o = Volume of water extracted in mL.

V_i = Volume of extract injected in uL.

V_t = Volume of the concentrated extract in uL

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

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

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

Concentration of SOIL Sample:

Concentration ug/Kg,

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

Where,

A_x = Area of the characteristic ion for the compound to be measured.

A_{is} = Area of the characteristic ion for the internal standard.

I_s = Amount of internal standard injected in ng.

V_i = Volume of extract injected in microliters (uL)

V_t = Volume of concentrated extract in microliters (uL)

W_t = Weight of the original sample extracted in g

D_f = 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)

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

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

Example calculation of A4F27 for Phenol:

$$A_x = 25867$$

$$A_{is} = 162953$$

$$I_s = 20$$

$$V_i = 1$$

$$V_t = 500$$

$$W_t = 30.1$$

$$D_f = 1$$

$$RRF = 1.789$$

$$GPC = 2$$

$$D = 0.677$$

Concentration

$$(\text{dry weight basis}) \text{ ug/Kg} = \frac{(25867) (20) (500) (1) (2)}{(162953) (1.789) (1) (30.1) (0.677)}$$

$$= 87 \text{ ug/Kg}$$

RRF Calculation of standard 20 ppb for Naphthalene with P instrument for method 10/07/2024.

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

$$= 326983/315808 \times 20/20$$

$$= 1.035 \text{ (Reported RRF)}$$



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.