SDG NARRATIVE

LAB NAME: Alliance Technical Group, LLC
CASE: 51847
SDG: E28W7
CONTRACT: 68HERH20D0011
LAB CODE: ACE
LAB ORDER ID: P5258
MODIFICATION REF. NUMBER: NA

Sample ID	EPA Sample ID	Test	pH
P5258-01	E28W7		
P5258-02	E28W8		
P5258-03	E28W9		
P5258-03DL	E28W9DL	SVOA_SIM	
P5258-04	E28X0		
P5258-04DL	E28X0DL	SVOA_SIM	
P5258-05MS	E28X0MS		
P5258-06MSD	E28X0MSD		
P5258-07	E28X1		
P5258-07DL	E28X1DL	SVOA_SIM	
P5258-08	E28X2		
P5258-08DL	E28X2DL	SVOA_SIM	
P5258-08ME	E28X2ME	VOA	
P5258-08RE	E28X2RE	VOA	
P5258-09	E28X3		
P5258-09DL	E28X3DL	SVOA_SIM	
P5258-10	E28X4		
P5258-10DL	E28X4DL	SVOA_SIM	
P5258-11	E28X5		
P5258-11DL	E28X5DL	SVOA_SIM	
P5258-11ME	E28X5ME	VOA	
P5258-11RE	E28X5RE	VOA	
P5258-12	E28X6		
P5258-12ME	E28X6ME	VOA	
P5258-12RE	E28X6RE	VOA	
P5258-14	E28X7		
P5258-15	E28X8		
P5258-16	E28X9		

P5258-17	E28Y0		
P5258-18	E28Y1		
P5258-19	E28Y2		
P5258-20	E28Y3		
P5258-21	E28Y4		
P5258-22	E28Y5		

12 Water samples were delivered to the laboratory intact on 12/11/2024.
09 Water samples were delivered to the laboratory intact on 12/12/2024.

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

The temperature of the samples was measured using an I R Gun. The samples temperature was 2.2, 2.0 degree Celsius for the samples received on 12/11/2024, 2.4 degree Celsius for the samples received on 12/12/2024.

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 ,
E28W7 [1,2-Dichlorobenzene-d4 - 74%],
E28W8 [1,2-Dichlorobenzene-d4 - 74%],
E28X0MS [1,1,2,2-Tetrachloroethane-d2 - 139%, 2-Butanone-d5 - 139%, 2-Hexanone-d5 - 142%],
E28X2RE [1,2-Dichlorobenzene-d4 - 71%],
E28X5 [1,2-Dichlorobenzene-d4 - 72%],
E28X5RE [1,2-Dichlorobenzene-d4 - 69%],
E28X6 [1,1,2,2-Tetrachloroethane-d2 - 131%, 1,2-Dichlorobenzene-d4 - 73%, 1,2-Dichloropropane-d6 - 134%],
E28X6RE [1,1,2,2-Tetrachloroethane-d2 - 178%, 1,2-Dichloropropane-d6 - 130%, 2-Butanone-d5 - 209%, 2-Hexanone-d5 - 305%],
E28X7 [1,2-Dichlorobenzene-d4 - 66%],
E28X9 [1,2-Dichlorobenzene-d4 - 69%],
E28Y0 [1,1,2,2-Tetrachloroethane-d2 - 126%],

E28Y3 [1,2-Dichlorobenzene-d4 - 71%], As per method, up to three surrogates are allowed to fail. No corrective action was taken except For Sample E28X6RE First analysis was Internal Standard recoveries failed, as corrective action this sample was reanalyzed, however reanalyzed was fail for Surrogate and both run are reported.

The Internal Standards Areas met the acceptable requirements except for E28X2, E28X2RE, E28X5, E28X5RE, E28X6, E28X6RE Samples failed for Internal Standards. as corrective action samples were 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 { E28X0MS} recovery met the requirements for all compounds.
The MSD { E28X0MSD} recovery met the requirements for all compounds.
The RPD { E28X0MSD} RPD met the requirements for all compounds.

The initial Calibration met the requirements for all compounds.

The Continuing Calibration (VSTD025590) file ID VW031281.D met the requirements except for 1,1,2,2-Tetrachloroethane (27.1%). 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 (VSTD025598) file ID VW031394.D met the requirements except for Carbon disulfide (-33.5%) and Cyclohexane (-26.6%). 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 (VSTD025601) file ID VW031437.D met the requirements except for 1,1,2,2-Tetrachloroethane-d2 (25.4%) and 1,1,2,2-Tetrachloroethane (32.0%). 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 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 f**or the manual integration information at the end of the case narrative.

Calculation:

Low/Med Level Soil/Sediment Calculation

Concentration in ug/Kg dry Weight basis) = $\frac{(A_x)(I_s)(D_f)}{(Ais)(RRF)(Ws)(D)}$ ____

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

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

Medium-Level Soil/Sediment Concentration

$$Concentration(\mu g/Kg = \frac{(Ax)(Iis)(AVt)(1000)(DF)}{(Ais)\overline{RRF}(Va)(Ws)(S)}$$

Where

Ax = Area for the compound to be measured

Ais = Area for the specific internal standard

Is = 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 Vt = 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 {Ws - [Ws(S)]} is the soil water volume and is expressed in mL.

Va = 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

Ws = 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 (µL), to the volume taken from the extract used to make the dilution. For example, if 10 µL of the extract was taken and added to 90 µL of clean solvent, then ration would be (10 µL + 90 µL/10 µL)= a DF of 10.

Example sample **E28X5ME** for **Methyl Acetate:**

Ax	=	8936
Ais	=	216025
Is	=	250
S	=	78.8/100 = 0.788
$\overline{RRF}$	=	0.404
AV_t	=	5.99
Va	=	100
Ws	=	4.65
DF	=	1
Avt	=	5 + [4.65 (4.65 X 78.8/100)] = 5.99

$$\text{Concentration}(\mu g/Kg) = \frac{(8936)(250)(5.99)(1000)(1)}{(216025)(0.404)(100)(4.65)(0.788)}$$

Reported results = 418. 452 ug/Kg

Final Reported results = 420 ug/Kg

Relative Response Factor = **Dichlorodifluoromethane**: RUN **VX120524** for **5.0** ppb

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

$$RRF = \frac{8793}{234557} \times \frac{50}{5.0}$$

RRF= 0.375

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 soil sample was extracted by Method SFAM01.1 on 12/13/2024, 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.

The Internal Standards Areas met the acceptable requirements.
The Retention Times were acceptable for all samples.
The MS {E28X0MS} recovery met the requirements for all compounds.
The MSD {E28X0MSD} recovery met the requirements for all compounds.
The RPD {E28X0MSD} RPD met the requirements for all compounds
The Blank Spike for {PB165621BS} 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.

The Sample E28W7, E28X3, E28Y0, E28Y1 and E28Y2have the concentration of target compound below method detection limits; therefore it is not reported as Hit in Form1.

Concentration of SOIL Sample:

Concentration ug/Kg,

$$\text{(dry weight basis)} = \frac{(Ax)\,(Is)\,(Vt)\,(DF)\,(GPC)}{(Ais)\,(RRF)\,(Vi)\,(Wt)\,(D)}$$

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.
Vi = Volume of extract injected in microliters (uL)
Vt = Volume of concentrated extract in microliters (uL)
Wt = Weight of the original sample extracted in g
Df = Dilution factor
RRF = Mean Relative Response Factor determined from the initial calibration standard.
GPC = Vin = 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 E28W7 for Phenol:

Ax = 36083
Ais = 345235
Is = 20
Vi = 1
Vt = 500
Wt = 30.0
Df = 1
RRF = 1.634
GPC = 2
D= 0.792

Concentration

$$\text{(dry weight basis) ug/Kg} = \frac{(36083)\,(20)\,(500)\,(1)\,(2)}{(345235)\,(1.634)\,(1)\,(30.1)\,(0.792)}$$

= 54 ug/Kg

RRF Calculation of standard 20 ppb for Naphthalene with P instrument for method 11/26/2024.

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

= 345753/344754 X 20/20

= 1.003 (Reported RRF)

Semivolatiles SIM:

The samples were analyzed on instrument BNA_N 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 Soil sample was extracted by Method SFAM01.1 on 12/13/2024. 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 MS {E28X0MS} recovery met the requirements for all compounds.
The MSD {E28X0MSD} recovery met the requirements for all compounds.
The RPD {E28X0MSD} RPD met the requirements for all compounds

The Blank Spike for {PB165622BS} 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 (SSTD0.4373) with File ID BN035696.D met the requirements except for Indeno(1,2,3-cd)pyrene (31.1%), Dibenzo(a,h)anthracene (36.8%).As per method, the %D up to two Compounds are allowed to fail to meet the minimum criteria as long as the compound meets the maximum of 40 %D. No further corrective action was taken..

Samples E28W9, E28X0, E28X1, E28X2, E28X3, E28X4 and E28X5 were diluted due to high concentrations.

Samples E28W9DL, E28X1DL, E28X2DL and E28X4DL were reported with compounds exceeding calibration range. This sample is not further diluted because this sample compounds results are greater than highest calibration range of SIM but less than Total SVOC CRQL.

Samples E28X4DL has 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 SOIL Sample:

Concentration ug/Kg,

$$\text{(dry weight basis)} = \frac{(Ax)\,(Is)\,(Vt)\,(DF)\,(GPC)}{(Ais)\,(\overline{RRF})\,(Vi)\,(Wt)\,(D)}$$

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.
Vi = Volume of extract injected in microliters (uL)
Vt = Volume of concentrated extract in microliters (uL)
Wt = Weight of the original sample extracted in g
Df = Dilution factor
RRF = Mean Relative Response Factor determined from the initial calibration standard.
GPC = Vin = 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 E28W7 for Naphthalene:

Ax = 1353
Ais = 8134
Is = 0.4
Vi = 1
Vt = 500
Wt = 30.0
Df = 1
RRF = 0.981
GPC = 2
D= 0.792

Concentration

$$\text{(dry weight basis) ug/Kg} = \frac{(1353)\,(0.4)\,(500)\,(1)\,(2)}{(8134)\,(0.981)\,(1)\,(30.0)\,(0.792)}$$

$$= 2.9 \text{ ug/Kg}$$

RRF Calculation of standard 0.4 ppb for **Naphthalene** with N instrument for method 12/16/2024.

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

$$= 5971/5515 \times 0.4/0.4$$

$$= 1.083 \text{ (Reported RRF)}$$

Aroclors:

The analyses were performed on instrument GC ECD_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 12/13/2024 and analyzed on 12/13/2024 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 except for
E28W8 [Decachlorobiphenyl(1) – 24%, Decachlorobiphenyl(2) – 23%],
E28X3 [Decachlorobiphenyl(2) – 29%],
E28X5 [Decachlorobiphenyl(1) – 28%, Decachlorobiphenyl(2) – 27%],
E28X9 [Decachlorobiphenyl(1) – 29%],
E28Y3 [Tetrachloro-m-xylene(1) – 325%],
The SOW allows one surrogate to fail to meet the criteria per column. ((Please See Section 11.3.6 of Exhibit D Aroclor Analysis).
.
E28X0MS met the requirements.
E28X0MSD 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 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).

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

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

DF = Dilution Factor

Example of AR1260 calculation for Peak 1

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

$$= \frac{41826643}{0.100}$$

= 418266430 calibration factor for Peak 1 100ppb

Average of 5 peaks = 357089143

Sample **E28Y0**
Ax = 25144566
CF = 357089143
Vt = 10000
Vi = 1.0
Ws = 30.1
D = 0.793
GPC = 1.0
DF = 1.0

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

$$= \frac{(25144566)\ (10000)\ (1.0)\ (1.0)}{(357089143)\ (1.0)\ (30.1)\ (0.793)}$$

Peak 1 = 29.5

Average of 5 peaks = 32.27

Reported results = 32 ug/kg

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.