SDG NARRATIVE

LAB NAME: Alliance Technical Group, LLC
CASE: 51847
SDG: E28Y6
CONTRACT: 68HERH20D0011
LAB CODE: ACE
LAB ORDER ID: P5265
MODIFICATION REF. NUMBER: NA

Sample ID	EPA Sample ID	Test	pH
P5265-01	E28Y6		
P5265-01ME	E28Y6ME	VOA	
P5265-01RE	E28Y6RE	VOA	
P5265-02	E28Y7		
P5265-02DL	E28Y7DL	SVOA-SIM	
P5265-03	E28Y8		
P5265-03DL	E28Y8DL	SVOA-SIM	
P5265-04	E28Y9		
P5265-04DL	E28Y9DL	SVOA-SIM	
P5265-04ME	E28Y9ME	VOA	
P5265-04RE	E28Y9RE	VOA	
P5265-05	E28Z0		
P5265-06	E28Z1		
P5265-06DL	E28Z1DL	SVOA-SIM	
P5265-07	E28Z2		
P5265-07DL	E28Z2DL	PCB | SVOA-SIM	
P5265-08	E28Z3		
P5265-08DL	E28Z3DL	SVOA-SIM	
P5265-09	E28Z4		
P5265-09DL	E28Z4DL	SVOA-SIM	
P5265-10	E28Z5		
P5265-10DL	E28Z5DL	SVOA-SIM	
P5265-11	E28Z6		
P5265-11DL	E28Z6DL	SVOA-SIM	
P5265-12	E28Z7		
P5265-13	E28Z8		
P5265-13DL	E28Z8DL	SVOA-SIM	

P5265-14	E28Z9		
P5265-14DL	E28Z9DL	SVOA-SIM	
P5265-14RE	E28Z9RE	SVOA-SIM	
P5265-15	E2900		
P5265-16	E2901		
P5265-16DL	E2901DL	SVOA-SIM	
P5265-17	E2902		
P5265-17DL	E2902DL	SVOA-SIM	
P5265-18	E2903		
P5265-18DL	E2903DL	PCB | SVOA	
P5265-18DL2	E2903DL2	PCB	
P5265-18ME	E2903ME	SVOA	
P5265-18MEDL	E2903MEDL	SVOA	
P5265-20MS	E28Y9MS		
P5265-21MSD	E28Y9MSD		

20 Soil 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, and Aroclor by Method SFAM01.1.

The temperature of the samples was measured using an I R Gun. The samples temperature was 2.3, 2.0, degree Celsius for the samples received on 12/12/2024,.

Shipping Discrepancies and/or QC issues:

Insufficient/inappropriate designation of laboratory QC

Issue 1: SDGs E28Y6,E28Y9 and ME28Y6 require Laboratory QC but no sample was designated on the COC. The laboratory selected samples E28Y9 and ME28Y9 for Laboratory QC of ARO, SVOA, SVOA SIM, PEST, ICP-MS, ICP-AES, CN and Hg analysis and confirmed these samples are not blank, rinsate or PT samples.
Resolution 1: Per SFAM01.1 Exhibit A, Section 5.5.4.1., the laboratory will note the issue in the SDG Narrative and proceed with the analysis of the samples.

Insufficient volume
Issue 2: There is no extra volume for soil VOA Laboratory QC and the laboratory would like to proceed without Laboratory QC for soil VOA analysis.
Resolution 2: Per Region 5, the laboratory will note the issue in the SDG Narrative and proceed without Laboratory QC for soil VOA analysis.

Low Volatiles:
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 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 except for
E28Y6 [1,1,2,2-Tetrachloroethane-d2 - 132%, 1,1-Dichloroethene-d2 - 167%, 1,2-Dichloroethane-d4 - 158%, 1,2-Dichloropropane-d6 - 231%, 2-Butanone-d5 - 373%, 2-Hexanone-d5 - 263%, Benzene-d6 - 289%, Chloroethane-d5 - 267%, Vinyl Chloride-d3 - 274%],
E28Y6RE [1,1,2,2-Tetrachloroethane-d2 - 231%, 1,2-Dichloropropane-d6 - 206%, 2-Butanone-d5 - 151%, 2-Hexanone-d5 - 272%, Benzene-d6 - 178%],
E28Y7 [1,2-Dichlorobenzene-d4 - 69%, 1,2-Dichloroethane-d4 - 70%, 1,2-Dichloropropane-d6 - 66%],
E28Y8 [1,2-Dichlorobenzene-d4 - 67%, 1,2-Dichloroethane-d4 - 70%, 1,2-Dichloropropane-d6 - 67%],
E28Y9 [1,1-Dichloroethene-d2 - 31%, 1,2-Dichlorobenzene-d4 - 41%, 2-Butanone-d5 - 19%, trans-1,3-Dichloropropene-d4 - 21%],
E28Y9RE [1,2-Dichlorobenzene-d4 - 63%, 1,2-Dichloroethane-d4 - 64%, 1,2-Dichloropropane-d6 - 63%],
E28Z2 [1,2-Dichlorobenzene-d4 - 68%, 1,2-Dichloroethane-d4 - 68%],
E28Z3 [1,2-Dichlorobenzene-d4 - 69%, 1,2-Dichloropropane-d6 - 65%],
E28Z4 [1,2-Dichlorobenzene-d4 - 69%, 1,2-Dichloropropane-d6 - 69%],
E28Z5 [1,2-Dichlorobenzene-d4 - 71%, 1,2-Dichloropropane-d6 - 67%],
E28Z6 [1,2-Dichlorobenzene-d4 - 74%],
E28Z7 [1,2-Dichlorobenzene-d4 - 68%],
E28Z8 [1,2-Dichlorobenzene-d4 - 71%],
E28Z9 [1,2-Dichlorobenzene-d4 - 74%],
E2900 [1,2-Dichlorobenzene-d4 - 70%, 1,2-Dichloropropane-d6 - 66%],
E2902 [1,1,2,2-Tetrachloroethane-d2 - 123%] and
E2903 [1,2-Dichlorobenzene-d4 - 62%].
As per method, up to three surrogates are allowed to fail. No corrective action was taken except For Sample E28Y6 failed for more than three surrogates, as corrective action this sample was reanalyzed.

The Internal Standards Areas met the acceptable requirements except for E28Y6, E28Y6RE, E28Y9 and E28Y9RE. 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 initial Calibration met the requirements for all compounds.

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

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

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 **E28Y6ME** for **Methyl Acetate:**

Ax = 17445

Ais = 213576

Is = 250

S = 83.9/100 = 0.839

$\overline{RRF}$ = 0.404

AV_t = 5.54

Va = 100

Ws = 3.40

DF = 1

Avt = 5 + [3.40 - (3.40 X 83.9/100)] = 5.54

$$\text{Concentration}(\mu g/Kg) = \frac{(17445)(250)(5.54)(1000)(1)}{(213576)(0.404)(100)(3.40)(0.839)}$$

Reported results = 981.62 ug/Kg

Final Reported results = 980 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_G 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 soil sample was extracted by Method SFAM01.1 on 12/18/2024 and 12/20/2024, 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,
E28Z0 [4,6-Dinitro-2-methylphenol-d2 - 4%],
E28Z8 [4,6-Dinitro-2-methylphenol-d2 - 5%],
E28Z9 [4,6-Dinitro-2-methylphenol-d2 - 5%] and
E2903DL [4-Chloroaniline-d4 - 0%, 4-Nitrophenol-d4 - 0%].As per method four surrogates are allowed to fail. The DMC recovery requirements do not apply to samples that have been diluted. 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 {E28Y9MS} recovery met the requirements for all compounds.

The MSD {E28Y9MSD} recovery met the requirements for all compounds.
The RPD {E28Y9MSD} RPD met the requirements for all compounds
The Blank Spike for {PB165707BS} recoveries met the requirements for all compounds.
The Blank Spike for {PB165795BS} 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 (SSTD020579) with File ID BG063791.D met the requirement except for Di-n-butylphthalate (25.1%), As per method up to four target analytes and DMCs with maximum %D requirements of less than 40.0% may fail to meet the maximum %D criteria listed in Exhibit D – SVOA, Table 5, but these compounds must still meet the maximum %D requirement of 40.0%. No further corrective action was taken.

The Sample E28Y6, E28Y7, E28Y9, E28Z3, E28Z4, E28Z7, E28Z8, E28Z9, E2903DL and E2903MEDLhave the concentration of target compound below method detection limits; therefore it is not reported as Hit in Form1.

Samples E2903 and E2903ME were diluted due to high concentrations.

The Sample E2903 as per method analyzed at 1 GM at Medium analysis. Undiluted analysis and medium level analysis reported in hardcopy for this sample.

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.

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

Example calculation of E28Y8 for Phenol:

Ax = 60483
Ais = 315243
Is = 20
Vi = 1
Vt = 500
Wt = 30.1
Df = 1
RRF = 1.634
GPC = 2
D= 0.827

Concentration

$$\text{(dry weight basis) ug/Kg} = \frac{(60483)(20)(500)(1)(2)}{(315243)(1.634)(1)(30.1)(0.827)}$$

= 94 ug/Kg

RRF Calculation of standard 20 ppb for Naphthalene with G instrument for method 12/11/2024.

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

= 652991/591107 X 20/20

= 1.105 (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 Soil sample was extracted by Method SFAM01.1 on 12/18/2024. 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 except for,
E28Z3DL [Fluoranthene-d10 - 24%] and

E28Z4DL [Fluoranthene-d10 - 29%].The DMC recovery requirements do not apply to samples that have been diluted..

The Internal Standards Areas met the acceptable requirements except for,
Sample E28Z9 and E28R0RE, Sample was re analyzed to confirm Internal standard fail, Both the analysis reported for Hardcopy.

The Retention Times were acceptable for all samples.
The MS {E28Y9MS} recovery met the requirements for all compounds.
The MSD {E28Y9MSD} recovery met the requirements for all compounds.
The RPD {E28Y9MSD} RPD met the requirements for all compounds
The Blank Spike for {PB165708BS} 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 requirements.

Samples E28Y7, E28Y8, E28Y9, E28Z1, E28Z2, E28Z3, E28Z4, E28Z5, E28Z6 E28Z8, E28Z9, E2901 and E2902 were diluted due to high concentrations.

Samples E28Y8DL, E28Z1DL, E28Z6DL and E2902DL 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 E28Y6 has the concentration of target compound below method detection limits; therefore it is not reported as Hit in Form1.

AS per SOW Exhibit D section 10.4.1“if any single PAH analyte or PCP exceeds the calibration range, do not proceed with the SIM method for any of the target analyte scheduled for SIM analysis.”, so sample E2903 not analyzed for SIM.

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.

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

Example calculation of E28Y6 for Pyrene:

Ax = 3466
Ais = 26686
Is = 0.4
Vi = 1
Vt = 500
Wt = 30.1
Df = 1
RRF = 1.542
GPC = 2
D= 0.839

Concentration

$$\text{(dry weight basis) ug/Kg} = \frac{(3466)\,(0.4)\,(500)\,(1)\,(2)}{(26686)\,(1.542)\,(1)\,(30.1)\,(0.839)}$$

= 1.3 ug/Kg

RRF Calculation of standard 0.4 ppb for **Naphthalene** with M instrument for method 12/18/2024.

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

= 16284/14312 X 0.4/0.4

= 1.138 (Reported RRF)

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 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 12/17/2024 and analyzed on 12/17, 12/18 and 12/24/2024, 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
E28Y9 [Decachlorobiphenyl(1) - 26%, Decachlorobiphenyl(2) - 24%],
E28Z0 [Decachlorobiphenyl(1) - 23%, Decachlorobiphenyl(2) - 21%],
E28Z1 [Decachlorobiphenyl(1) - 26%, Decachlorobiphenyl(2) - 24%],
E28Z3 [Decachlorobiphenyl(2) - 27%],
E28Z4 [Decachlorobiphenyl(2) - 28%],
E28Z5 [Decachlorobiphenyl(2) - 26%],
E2903DL2 [Tetrachloro-m-xylene(1) - 0% ,Decachlorobiphenyl(1) - 0%,
Decachlorobiphenyl(1) - 0% ,Decachlorobiphenyl(2) - 0%],
The SOW allows one surrogate to fail to meet the criteria per column. ((Please See Section 11.3.6 of Exhibit D Aroclor Analysis).

E28Y9MS met the requirements.
E28Y9MSD 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.

Samples E28Y8, E28Z0, E28Z1, E28Z3, E28Z5, E28Z7, E28Z8, E28Z9, E2900, E2903, E2903DL and E2903DL2 failed to meet the %D for the results between the two columns Criteria.

Sample E28Z2, E2903, E2903DL were diluted due to high concentration.

Samples E2903 GC/MS confirmation run performed and raw data reported in hard copy.

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).

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

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

DF = Dilution Factor

Example of AR1260 calculation for Peak 1

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

$$= \frac{28412934}{0.100}$$

= 284129340 calibration factor for Peak 1 100ppb

Average of 5 peaks = 253340942

Sample **E28Y8**
Ax = 22860784
CF = 253340942
Vt = 10000
Vi = 1.0
Ws = 30.1
D = 0.827
GPC = 1.0
DF = 1.0

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

$= \frac{(22860784)\ (10000)\ (1.0)\ (1.0)}{(253340942)\ (1.0)\ (30.1)\ (0.827)}$

Peak 1 = 36.25

Average of 5 peaks = 42.47

Reported results = 43 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.