SDG NARRATIVE

LAB NAME: Alliance Technical Group, LLC
CASE: 51878
SDG: E2A11
CONTRACT: 68HERH20D0011
LAB CODE: ACE
LAB ORDER ID: P4895
MODIFICATION REF. NUMBER: 3064.0

Sample ID	EPA Sample ID	Test	pH
P4895-01	E2A11		
P4895-01DL	E2A11DL	SVOA-SIM	
P4895-02	E2A12		
P4895-02DL	E2A12DL	SVOA-SIM	
P4895-04MS	E2A12MS		
P4895-05MSD	E2A12MSD		

04 Soil samples were delivered to the laboratory intact on 11/16/2024.

Test requested on the Chain of Custody was Volatile Organic, Semivolatile Organic, Semivolatile Organic-SIM, Pesticide 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 11/16/2024.

Shipping Discrepancies and/or QC issues:

Issue 1: SDGs E2A11, E2A12 and E29Y8 require laboratory QC. The laboratory would like to use sample E2A12 for Laboratory QC of PEST, ARO, SVOA, SVOA SIM, ICP-MS, ICP-AES and Hg analysis. The sample listed on the COC for Laboratory QC has already been used in another SDG and sample E2A12 is not a blank, rinsate or PT sample.

Resolution 1: Per Region 5, the laboratory will proceed sample E2A12 for Laboratory QC of Metals and organic analyses. Please note the issue in the SDG Narrative and proceed with the analysis of the samples.

Issue 2: SDGs E2A11, E2A12 and E29Y8 require laboratory QC and there is no extra volume for Laboratory QC of soil VOA. The laboratory would like to proceed without Laboratory QC.

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_W 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.
The Internal Standards Areas met the acceptable requirements.
Instrument Performance Check met requirements.
The Retention Times were met for all samples.
The Tuning criteria met requirements.

The Initial Calibration met the requirements.
The Continuing Calibration met the requirements.

The blank analysis did not indicate the presence of lab contamination.
The storage blank did not indicate 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) = $\frac{(Ax)(Is)(Df)}{(Ais)(RRF)(Ws)(D)}$

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

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

Example Calculation for sample: **E2A12** for **Acetone**:

Ax= 86479
Is= 250
RRF= 0.082

DF=1
Ais= 487516
Ws= 6.14
D= 0.826

$$\text{Concentration in ug/KG} = \frac{(86479)\ (250)\ (1)}{(487516)\ (0.082)\ (6.14)\ (0.826)}$$

$$= 106.63 \text{ ug//Kg}$$

Final Reported Results = 110 ug/Kg

Relative Response Factor = **Dichlorodifluoromethane**: RUN **VW110424** for **2.5** ppb

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

$$\text{RRF} = \frac{13068}{434671} \text{ X } \frac{25}{2.5}$$

RRF= 0.301

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.

Semis volatile Organic for soil sample was extracted by Method SFAM01.1 on 11/22/2024, 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 {E2A12MS} recovery met the requirements for all compounds.
The MSD {E2A12MSD} recovery met the requirements for all compounds.
The RPD {E2A12MSD} RPD met the requirements for all compounds
The Blank Spike for {PB165212BS} 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.

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 E2A12 for Pyrene:

Ax = 238817
Ais = 808682
Is = 20
Vi = 1
Vt = 500
Wt = 30.0
Df = 1
RRF = 1.188
GPC = 2
D= 0.826

Concentration

$$\text{(dry weight basis) ug/Kg} = \frac{(238817)\ (20)\ (500)\ (1)\ (2)}{(808682)\ (1.188)\ (1)\ (30.0)\ (0.826)}$$

$$= 200 \text{ ug/Kg}$$

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

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

= 473946/423472 X 20/20

= 1.119 (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 11/22/2024. The analysis of SVOCMS Group2 was based on method SFAM01.1_SVOC. using MA 3064.0 See the MA instructions at the end of the Case Narrative.

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 {E2A12MS} recovery met the requirements for all compounds.
The MSD {E2A12MSD} recovery met the requirements for all compounds.
The RPD {E2A12MSD} RPD met the requirements for all compounds
The Blank Spike for {PB165213BS} 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 (SSTD0.4354) with File ID BN035334.D met the requirements except for Fluoranthene (32.3%). 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 E2A11 and E2A12 were diluted due to high concentrations.

Samples E2A12DL was 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.

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.

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

Vout = Volume of extract collected after GPC cleanup.

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

Example calculation of E2A11 for Pyrene:

Ax = 48423
Ais = 7993
Is = 0.4
Vi = 1
Vt = 500
Wt = 30.1
Df = 1
RRF = 1.449
GPC = 2
D= 0.793

Concentration

$$\text{(dry weight basis) ug/Kg} = \frac{(48423)\,(0.4)\,(500)\,(1)\,(2)}{(7993)\,(1.449)\,(1)\,(30.1)\,(0.793)}$$

$$= 70 \text{ ug/Kg}$$

RRF Calculation of standard 0.4 ppb for **Naphthalene** with N instrument for method 11/16/2024.

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

= 6250/5912 X 0.4/0.4

= 1.057 (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 were 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 11/22/2024 and analyzed on 11/25/2024. 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
E2A11 [Decachlorobiphenyl(1) - 23%, Decachlorobiphenyl(2) - 19%],
The SOW allows one surrogate to fail to meet the criteria per column. ((Please See Section 11.3.6 of Exhibit D Pesticide Analysis).

E2A12MS met the requirements.
E2A12MSD 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 E2A12MS and E2A12MSD failed to meet the %D for the results between the two columns Criteria.

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

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

DF = Dilution Factor.

Example of 4,4'-DDD calculation
Calibration Factor Calculation 4,4'-DDD in the first column

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

$$= \frac{22946384}{10\text{ng}}$$

$$= 2294640$$

Mean Calibration Factor = average of 5 point calibration factor

$$= 2372370$$

No target **Pesticides** were detected in the samples.

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 11/22/2024 and analyzed on 11/25/2024, 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.
E2A12MS met the requirements.
E2A12MSD 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 = $\frac{Vin}{Vout}$ = 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= $\frac{\text{peak area}}{\text{Mass injected ng}}$
Column1

$$= \frac{33773685}{0.100}$$

= 337736850 calibration factor for Peak 1 100ppb

Average of 5 peaks = 306476823

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.

Date: 03/18/2021	**MA:** 3064.0	**Title:** Semivolatiles by Selected Ion Monitoring (SIM) Analysis
Method Source: SFAM01.1	**Method:** Semivolatiles by SIM	
Matrix: Water, Soil and Sediment		

Summary of Modification

The purpose of this modified analysis is to analyze samples for the complete Semivolatiles Target Analyte List (TAL) analytes at the CRQLs specified in Exhibit C, Section 2.0 of the SOW. The Laboratory shall proceed to the SVOA analysis by the Selected Ion Monitoring (SIM) procedure for Polynuclear Aromatic Hydrocarbon (PAH) and Pentachlorophenol (PCP) analytes that are either not detected or detected at concentrations below the sample adjusted CRQLs (with either “U” or “J” lab qualifier) in any sample analyzed by the full scan analysis. SVOA SIM analysis is required for a sample even if one or more PAH or PCP analytes with concentrations exceeding the initial calibration range (with “E” lab qualifier) are observed in the full scan analysis. Unless specified by this modification, all analyses, Quality Control (QC), and reporting requirements specified in the SOW listed in your current EPA agreement remain unchanged and in full force and effect.

I. Analyte Modifications **Not applicable** ☒

II. Calibration and QC Requirements **Not applicable** ☒

III. Preparation and Method Modifications **Not applicable** ☐

The Laboratory shall:

- Proceed to the SVOA analysis by the SIM procedure for PAH and PCP analytes that are either not detected or detected at the concentrations below the sample adjusted CRQLs (with either “U” or “J” lab qualifier) in any sample analyzed by the full scan analysis.
- Proceed to the SVOA SIM analysis for a sample even if one or more PAH or PCP analytes with concentrations exceeding the initial calibration range (with “E” lab qualifier) are observed in the full scan analysis. This supersedes the requirement included in Section 1.2 in Exhibit D of the SOW.

IV. Special Reporting Requirements **Not applicable** ☒