SDG NARRATIVE

LAB NAME: Alliance Technical Group, LLC
CASE: 51880
SDG: E29R8
CONTRACT: 68HERH20D0011
LAB CODE: ACE
LAB ORDER ID: P4829
MODIFICATION REF. NUMBER: 3064.0

Sample ID	EPA Sample ID	Test	pH
P4829-01	E29R8		1.0
P4829-02	E29S4		1.0
P4829-03MS	E29S4MS		1.0
P4829-04MSD	E29S4MSD		1.0
P4829-05	E29T2		1.0
P4829-06	E29T4		1.0
P4829-07	E29T8		1.0
P4829-08	E29W0		1.0
P4829-09	E29W1		1.0
P4829-10	E29W4		1.0
P4829-11	E29W5		1.0
P4829-13	E29R6		1.0
P4829-14	E29S0		1.0
P4829-15	E29S2		1.0
P4829-16	E29S6		1.0
P4829-17	E29S8		1.0
P4829-17DL	E29S8DL	Trace-VOA	1.0
P4829-18	E29T0		1.0
P4829-18DL	E29T0DL	Trace-VOA	1.0
P4829-19	E29T6		1.0
P4829-20	E29T9		1.0
P4829-21	E29W2		1.0
P4829-22	E29W6		1.0

11 Water samples were delivered to the laboratory intact on 11/13/2024.
10 Water samples were delivered to the laboratory intact on 11/14/2024.

Test requested on the Chain of Custody was Trace 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, 2.6, 2.1, 2.4, 2.0 degree Celsius for the samples received on 11/13/2024, 2.1, 2.4, 2.0, 2.1, 2.3 degree Celsius for the samples received on 11/14/2024.

Shipping Discrepancies and/or QC issues:

Issue: The COC lists the Case number 51701 and the sample containers list Case number 51880.

Resolution: Per Region 5, The correct Case number is 51880 and a revised COC has been provided. Please note the issue in the SDG Narrative and proceed with the analysis of the samples.

Trace Volatiles:

The analysis performed on instrument MSVOA_U 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_Trace.

The Surrogate recoveries met the acceptable criteria except for,
E29W0 [Toluene-d8 - 69%],
E29S6 [1,2-Dichlorobenzene-d4 - 77%],
E29T0DL [Chloroethane-d5 - 37%],
As per method, up to three surrogates are allowed to fail. No corrective action was taken.

The Internal Standards Areas met the acceptable requirements.
Instrument Performance Check met requirements.
The Retention Times met requirements.
The Tuning criteria met requirements.

The MS {E29S4MS} recovery met the requirements for all compounds.
The MSD {E29S4MSD} recovery met the requirements for all compounds.
The RPD {E29S4MSD} RPD met the requirements for all compounds.

The %RSD met requirement for initial Calibration except for 1,1,2,2-Tetrachloroethane (20.9%) for the initial calibration dated 11/20/2024 with U 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 (VSTD005144) file ID VU061779.D met the requirements except for Carbon disulfide (-30.5%). 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 analysis did not indicate the presence of lab contamination.

Samples E29S8, E29T0 were diluted due to high concentrations.

The sample E29T0 was analyzed following the analysis of E29S8. Both samples had common hit of compound with concentration above calibration levels for Tetrachloroethene, It was reanalyzed at a diluted. As per method, no instrument blank was required and not analyzed.

The sample E29T6 was analyzed following the analysis of E29T0. Samples E29T0 had hit of compound Tetrachloroethene with concentration above calibration levels. Sample E29T6 have not detected of the compound Tetrachloroethene. Therefore, as per method no instrument blank was required.

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

Calculation:

Low/Med Water Level Calculation

$$\text{Concentration in ug/L} = \frac{(Ax)\,(Is)\,(DF)}{(Ais)\,(RRF)\,(Vo)}$$

Where,
Ax = Area of the characteristic ion (EICP) for the compound to be measured.
Ais = 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.
Vo = Total volume of water purged, in mL.
DF = Dilution Factor

Example calculation of **E29S2** for **Methylene chloride**:

Ax= 6455
Is = 125
RRF= 0.348
DF= 1
Ais= 169556
Vo. = 25

$$\text{Concentration in ug/L} = \frac{(6455)\,(125)\,(1)}{(169556)(0.348)(25)}$$

Reported Result = 0.55 ug/L

Final Reported Result = 0.55 ug/L

Relative Response Factor = **Dichlorodifluoromethane**: RUN **VU111324** for **0.5** ppb

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

$$\text{RRF} = \frac{6608}{195642} \times \frac{5.0}{0.5}$$

RRF= 0.338

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 sample for water sample was extracted by Method SFAM01.1 on 11/15/2024 and 11/16/2024, 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,
E29S4 [Anthracene-d10 - 136%, Benzo(a)pyrene-d12 - 139%, Pyrene-d10 - 142%],
E29S4MS [4-Nitrophenol-d4 - 9%] and
E29S4MSD [4-Nitrophenol-d4 - 8%]. 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 {E29S4MS} recovery met the requirements for all compounds.
The MSD {E29S4MSD} recovery met the requirements for all compounds.
The RPD {E29S4MSD} RPD met the requirements for all compounds
The Blank Spike for {PB164999BS} recoveries met the requirements for all compounds.
The Blank Spike for {PB165020BS} recoveries met the requirements for all compounds.
The Blank Spike for {PB165023BS} recoveries met the requirements for all compounds.
The Blank Spike for {PB165030BS} recoveries met the requirements for all compounds.
The Blank Spike for {PB165035BS} 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 Water Sample:

$$\text{Concentration ug/L} = \frac{(Ax)\ (Is)\ (Vt)\ (DF)\ (GPC)}{(Ais)\ (\overline{RRF})\ (Vo)\ (Vi)}$$

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.
Vo = Volume of water extracted in mL.
Vi = Volume of extract injected in uL.
Vt = Volume of the concentrated extract in uL
RRF = Mean Relative Response Factor determined from the initial calibration standard.
GPC = $\underline{Vin}$ = GPC factor (If no GPC is performed, GPC=1)
Vout = Volume of extract collected after GPC cleanup.

Example calculation of E29W0 for Acetophenone:

Ax = 21195
Ais = 79920
Is = 20
DF = 1
Vo = 980
Vi = 1
Vt = 1000
RRF = 2.463
GPC = 1

$$\text{Concentration ug/L} = \frac{(21195)\ (20)\ (1000)\ (1)\ (1)}{(79920)\ (2.463)\ (980)\ (1)}$$

$$= 2.2 \text{ ug/L}$$

RRF Calculation of standard 20 ppb for **Naphthalene** with G instrument for method 11/06/2024.

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

$$= 267121/252685 \times 20/20$$

$$= 1.057 \text{ (Reported RRF)}$$

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 Water sample was extracted by Method SFAM01.1 on 11/15/2024 and 11/16/2024. 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 {E29S4MS} recovery met the requirements for all compounds.
The MSD {E29S4MSD} recovery met the requirements for all compounds.
The RPD {E29S4MSD} RPD met the requirements for all compounds
The Blank Spike for {PB165000BS} recoveries met the requirements for all compounds.
The Blank Spike for {PB165021BS} recoveries met the requirements for all compounds.
The Blank Spike for {PB165025BS} recoveries met the requirements for all compounds.
The Blank Spike for {PB165031BS} recoveries met the requirements for all compounds.
The Blank Spike for {PB165036BS} 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.

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

Concentration of Water Sample:

$$\text{Concentration ug/L} = \frac{(Ax)\,(Is)\,(Vt)\,(DF)\,(GPC)}{(Ais)\,(\overline{RRF})\,(Vo)\,(Vi)}$$

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.
Vo = Volume of water extracted in mL.
Vi = Volume of extract injected in uL.
Vt = Volume of the concentrated extract in uL
RRF = Mean Relative Response Factor determined from the initial calibration standard.
GPC = $\frac{Vin}{Vout}$ = GPC factor (If no GPC is performed, GPC=1)

Example calculation of E29S6 for Naphthalene:

Ax = 764
Ais = 8720
Is = 0.4
DF = 1
Vo = 980
Vi = 1
Vt = 1000
RRF = 1.002
GPC = 1

$$\text{Concentration ug/L} = \frac{(764)\,(0.4)\,(1000)\,(1)\,(1)}{(8720)\,(1.002)\,(980)\,(1)}$$

$$= 0.040 \text{ ug/L}$$

RRF Calculation of standard 0.4 ppb for **Naphthalene** with M instrument for method 11/06/2024.

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

= 11768/11347 X 0.4/0.4

= 1.037 (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 11/14/2024 and analyzed on 11/14 and 11/15/2024. The sample was extracted and analyzed within contractual holding time.

The Surrogate recoveries met the acceptable criteria.

E29S4MS met the requirements.
E29S4MSD 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 E29S4MS and E29S6 failed to meet the %D for the results between the two columns Criteria.

Sample E29S6 have the concentration of target compound - Heptachlor, Aldrin and 4,4'-DDE, 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

$$\text{Concentration ug/L} = \frac{(Ax)\,(Vt)\,(DF)\,(GPC)}{(CF)\,(Vo)\,(Vi)}$$

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

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

Vin = Volume of extract loaded onto GPC column.

Vout = Volume of extract collected after GPC cleanup.

Example of Methoxychlor calculation

Calibration Factor Calculation Methoxychlor in the first column

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

$$= \frac{58120620}{50\text{ng}}$$

= 1162410

Mean Calibration Factor = average of 5 point calibration factor

= 1136890

Sample **E29S6**
Ax = 1723403
CF = 1136890
Ws = 1000
Vi = 1
Vt = 10000
DF = 1
GPC = 1

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

$$= \frac{(1723403)\ (10000)\ (1.0)\ (1.0)}{(1136890)(1.0)(1000)}$$

= 0.0151

Reported Results (ug/L) = 0.015

Aroclors:

The analyses were performed on instrument GCECD_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 11/14/2024 and analyzed on 11/14/2024, 11/15/2024. 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.
E29S4MS met the requirements.

E29S4MSD 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:

$$\text{Concentration ug/L} = \frac{(Ax)\ (Vt)\ (DF)\ (GPC)}{(CF)\ (Vo)\ (Vi)}$$

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 = $\frac{Vin}{Vout}$ = 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.

Example of AR1260 calculation for Peak 1

$$\text{Calibration factor Peak 1 100ppb ISTD Column1} = \frac{\text{peak area}}{\text{Mass injected ng}}$$

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

= 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.

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** ☒