SDG NARRATIVE

LAB NAME: Alliance Technical Group, LLC
CASE: 51753
SDG: C0SY1
CONTRACT: 68HERH20D0011
LAB CODE: ACE
LAB ORDER ID: P4670
MODIFICATION REF. NUMBER: 3062.1 & 3063.1

Sample ID	EPA Sample ID	pH
P4670-01	C0SY1	1.0
P4670-02	C0SY3	1.0
P4670-03	C0SY4	1.0
P4670-04	C0SY5	1.0
P4670-05	C0SY7	1.0

05 Water samples were delivered to the laboratory intact on 11/01/2024.

Test requested on the Chain of Custody was Volatile Organic, 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 11/01/2024.

Shipping Discrepancies and/or QC issues:

LAB: “Lab is sending this email with regards to case 51753 and SDG C0SY1

Lab has analyzed low level VOA water analysis for the sample C0SY5 where sample has high concentrations of target analytes. Due to high concentrations of target analytes, undiluted analysis is not plausible to perform. Please see you attached form-1 and raw data for your reference. Therefore, the lab would like to confirm that Lab will report this dilution analysis as first analysis for final electronic deliverables.

“Please see attachment for your reference.”

REGION: “Inform ACE the Region is in agreement with their below written approach; have ACE make note of the issue in their SDG Narrative and proceed with the analysis of the samples.”

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 of VOC-SFAM was based on method SFAM01.1_LOW
using MA 3062.1 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 except for,
C0SY1 [1,2-Dichlorobenzene-d4 - 123%],
C0SY4 [1,1,2,2-Tetrachloroethane-d2 - 125%, 1,2-Dichlorobenzene-d4 - 125% and 2-Butanone-d5 - 136%],
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 were met for all samples.
The Tuning criteria met requirements.

The %RSD met requirement for initial Calibration except for Dibromochloromethane (20.5%) for the initial calibration dated 11/04/2024 with X 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 met the requirements.

The Blank analysis did not indicated the presence of lab Contamination.
The Storage blank analysis did not indicated the presence of lab Contamination.

Lab has received water samples for VOA analysis under MA 3062.1 . As a precautionary step & based on the history of the previous MA samples, lab has analyzed sample C0SY5 with 100x dilution factor. However, sample found positive with high concentration of target analytes detected therefore lab reported 100x dilution analysis as a first analysis for final hard Copy. Please note that there was no any QC failure associated to this analysis. Please see EPA communication after SDG Narrative.

See **Manual Integration report f**or 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 for sample: **C0SY1** for **Acetone**:

Ax= 11630
Is= 250

RRF= 0.162
DF=1
Ais= 232967
Vo.= 5

Concentration in ug/KG = $\frac{(11630)\ (250)\ (1)}{(232967)\ (0.162)\ (5)}$

= 15.41 ug/L

Final Reported Results = 15 ug/L

Relative Response Factor = **Dichlorodifluoromethane**: RUN **VX110424** for **5.0** ppb

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

RRF= $\frac{9818}{318749}$ X $\frac{50}{5.0}$

RRF= 0.301

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 sample for water sample was extracted by Method SFAM01.1 on 11/04/2024, The analysis of SVOCMS Group1 was based on method SFAM01.1_SVOC. using MA 3063.1 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 Blank Spike for {PB164674BS} 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.

Samples C0SY1 has the concentration of target compound below method detection limits; therefore it is not reported as Hit in Form1.

Concentration of Water Sample:

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 = Vin = GPC factor (If no GPC is performed, GPC=1)
Vout = Volume of extract collected after GPC cleanup.

Example calculation of C0SY1 for Nitrobenzene:

Ax = 207400
Ais = 260076
Is = 20
DF = 1
Vo = 1000
Vi = 1
Vt = 1000
RRF = 0.459
GPC = 1

$$\text{Concentration ug/L} = \frac{(207400)\ (20)\ (1000)\ (1)\ (1)}{(260076)\ (0.459)\ (1000)\ (1)}$$

$$= 35 \text{ ug/L}$$

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

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

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

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

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.

Date: 01/21/2022	**MA:** 3062.1	**Title:** Volatile Analysis with Additional Analyte 1,3,5-Trichlorobenzene for Remedial Process
Method Source: SFAM01.1	**Method:** Volatile Organics	
Matrix: Soil, Sediment and Water		

Summary of Modification

The purpose of this modified analysis is to analyze soil/sediment and water samples for the complete Volatiles Low/Medium Target Analyte List (TAL) at the CRQLs specified in the Exhibit C, Section 1.0, with the addition of 1,3,5-Trichlorobenzene at CRQLs specified in Section I below. An MDL study for the analyte in Section I is required. 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** ☐

Analyte	CAS Number	Water CRQL (ug/L)	Medium Soil CRQL (ug/kg)
1,3,5-Trichlorobenzene	108-70-3	5.0	250

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

The Laboratory shall:

- Analyze ICAL standards by adding the target analyte in Section I to the original VOA Low/Medium ICAL standards specified in the SOW, or analyze the separate ICAL standards containing only the additional target analyte in Section I.
- Add the target analyte in Section I to the original ICAL standards specified for the VOA Low/Medium analysis in the SOW, at the concentrations of 5.0, 10, 50, 100 and 200 ug/L.
- Add the additional analyte in Section I from an alternate source or a different lot than that used in the ICAL standards, to the original Initial Calibration Verification (ICV) standard specified for the VOA Low/Medium analysis in the SOW, at or near the mid-point ICAL standard CS3 concentration of 50 ug/L.
- Analyze the Continuing Calibration Verification (CCV) standard consisting of all SOW target analytes and the additional analyte in Section I, at the mid-point ICAL standard CS3 concentration, at the same frequency and sequence as specified in the SOW.
- Optionally, analyze the separate ICAL, ICV and CCV standards containing only the target analyte in Section I.
    - Perform a five-point initial calibration for the target analyte in Section I only at 5.0, 10, 50, 100 and 200 ug/L concentrations.
    - Add the same non-ketone DMC solution specified for the VOA Low/Medium analysis in the SOW to the ICAL standards at the same target analyte concentrations in the ICAL standards above.
    - Prepare the ICV standard containing only the additional target analyte in Section I from an alternate source or a different lot than that used in the ICAL standards at, or near, the mid-point ICAL concentration of 50 ug/L; analyze the ICV at the same frequency and sequence as specified in the SOW.

- Analyze the CCV standard containing only the target analyte in Section I at the mid-point ICAL standard CS3 concentration of 50 ug/L and at the same frequency and sequence as specified in the SOW.
- Add the same non-ketone DMC solution specified for the VOA Low/Medium analysis in the SOW to the ICV and CCV standards at 50 ug/L concentration.
- Add the same IS solution specified for the VOA Low/Medium analysis in the SOW to the ICAL, ICV, and CCV standards at 50 ug/L concentration.

- Note that the technical acceptance criteria for the ICAL, ICV, and CCV RRF for the target analyte in Section I shall be 0.400 or greater. ICAL %RSD shall not exceed 25.0%. %D shall not exceed ±30.0% for the ICV and the opening CCV, and ±50.0% for the closing CCV.
- Use IS 1,4-Dichlorobenzene-d4 for quantitation of the target analyte in Section I. The associated DMC shall be 1,2-Dichlorobenzene-d4. Prepare and analyze method blanks at the same frequency and sequence as specified in the SOW. The concentration of the target analyte in Section I in the method blank shall not exceed the CRQL listed in Section I.
- Note that, if the Matrix Spike and the Matrix Spike Duplicate analyses are requested, the target analyte in Section I shall be spiked into the MS/MSD samples at the same concentration as the SOW MS/MSD spiking analytes. The %R for the spiking analyte in Section I shall be within 50-150 and the RPD shall be 0-50, advisory.

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

The Laboratory shall:

- Perform an MDL study for the additional target analyte in Section I. Use the current MDL study results to report data for the target analytes in the SOW.
- Ensure that the analyte MDL values meet the SOW requirement of less than the CRQLs listed in Exhibit C for the soil medium levels.
- Note that VOA sediment samples will be collected in Encore samplers. These samples are from areas of active remediation (via in-situ chemical oxidation).
- Consider historical sample data from past station locations to determine maximum expected concentration ranges and may perform a single dilution that brings the highest target analyte concentration within the linear calibration range.
- Use the “STATION LOCATION” information from USEPA Traffic Reports to match previous analyses. These samples have the “STATION LOCATION” identified as follows: ‘MC_OX01A_010907’ through ‘MC_OX***_01907’, where *** are alpha numeric characters. Samples from “Station Locations” OX13 through OX23 generally ranged in the 10,000 to 60,000 mg/kg of site contaminants, “Station Locations” OX24 through OX33 were in the 5,000 to 40,000 mg/kg range, “Station Locations” OX01 through OX12 were in the 500 to 10,000 mg/kg range, and the remaining “Station Locations” ranged from non-detected (ND) to 2,000 mg/kg. Please note that these numbers are approximate.

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

The Laboratory shall:

- **Report the CRQLs listed in Section I and the SOW adjusted according to the equation listed in Exhibit G, even if the level of the corresponding target analyte in the low-point calibration standard is below the CRQLs listed in Section I and the SOW.**
- Submit the MDL study results for all SOW target analytes and the target analyte in Section I as specified in the SOW. If the Laboratory has not previously submitted MDL results during the current contract year, compliant MDL study results shall be submitted concurrently with the deliverables for this MA to the recipients specified in SOW Exhibit B, Table 1, Row G.
- Ensure the SDG Narrative is updated as stated in the SOW, including any technical and administrative problems encountered and the resolution or corrective actions taken. These problems may include interference problems encountered during analysis, dilutions and reanalyses performed, and problems with the analysis of samples. Also include a discussion of any SOW Modified Analyses including a copy of the approved modification form to the SDG Narrative.
- Modify the Form 1 to include the additional target analyte in Section I.
- Include the original and background-subtracted spectra of the associated peaks for the target analyte in Section I from the low point ICAL standard in the data deliverable.

Date: 01/05/2022	**MA:** 3063.1	**Title:** Semivolatile Analysis with Two Additional Analytes for Remedial Process
Method Source: SFAM01.1	**Method:** Semivolatiles	
Matrix: Soil, Sediment and Water		

Summary of Modification

The purpose of this modified analysis is to analyze soil/sediment and water samples for the complete Semivolatiles Target Analyte List (TAL) analytes at CRQLs specified in the Exhibit C, Section 2.0, with two additional analytes, 1,2,3,4-Tetrachlorobenzene and Pentachlorobenzene, at the requested CRQLs in Section I below. An MDL study for analytes in Section I is required. 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** ☐

Analyte	CAS Number	Water CRQL (ug/L)	Low Soil CRQL (ug/kg)	Medium Soil CRQL (ug/kg)
1,2,3,4-Tetrachlorobenzene	634-66-2	5.0	170	5000
Pentachlorobenzene	608-93-5	5.0	170	5000

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

The Laboratory shall:

- Analyze ICAL standards by adding the target analytes in Section I to the original SVOA ICAL standards specified in the SOW, or analyze the separate ICAL standards containing only the additional target analytes in Section I.
- Add the target analytes in Section I to the original ICAL standards specified for the SVOA analysis in the SOW at the concentrations of 5.0, 10, 20, 40 and 80 ng/uL.
- Add the additional analytes in Section I from an alternate source or a different lot than that used in the ICAL standards to the original Initial Calibration Verification (ICV) standard specified for the SVOA analysis in the SOW at or near the mid-point ICAL standard CS3 concentration of 20 ng/uL.
- Analyze the Continuing Calibration Verification (CCV) standard, consisting of all SOW target analytes and the additional analytes in Section I, at the mid-point ICAL standard CS3 concentration.
- Optionally, analyze the separate ICAL, ICV, and CCV standards containing only the target analytes in Section I.
    - Perform a five-point initial calibration for the target analytes in Section I only at 5.0, 10, 20, 40 and 80 ng/uL concentrations.
    - Add the same DMC solution specified for the SVOA analysis in the SOW to the separate ICAL standards at the same target analyte concentrations above.
    - Prepare the ICV standard containing only target analytes in Section I from an alternate source or a different lot than that used in the separate ICAL standards, at or near the mid-point ICAL concentration of 20 ng/uL; and analyze the ICV at the same frequency and sequence as specified in the SOW.

- Analyze the CCV standard containing only the target analytes in Section I, at mid-point ICAL standard CS3 concentration of 20 ng/uL, at the same frequency and sequence as specified in the SOW.
- Add the same DMC solution specified for the SVOA analysis in the SOW to the ICV and CCV standards at 20 ng/uL concentration.
- Add the same IS solution specified for the SVOA analysis in the SOW to ICAL, ICV, and CCV standards at 20 ng/uL concentration.

- Note that the ICAL, ICV, and CCV RRF for the target analytes in Section I shall be 0.050 or greater. ICAL %RSD shall not exceed 20.0%. %D shall not exceed ±20.0% for the ICV and opening CCV, and ±25.0% for the closing CCV.
- Use Internal Standard (IS) Phenathrene-d10 for quantitation of the target analytes in Section I. The associated DMC shall be Anthracene-d10. Prepare and analyze method blanks at the same frequency and sequence as specified in the SOW. The concentrations of the target analytes in Section I in the method blank shall not exceed the CRQLs listed in Section I.
- Note that the target analytes in Section I shall be spiked in the LCS sample at the same concentrations as the SOW LCS spiking analytes. The %R for the spiking analytes in Section I shall be within 50-150, advisory.
- Note that, if the Matrix Spike and the Matrix Spike Duplicate analyses are requested, the target analytes in Section I shall be spiked in the MS/MSD samples at the same concentrations as the SOW MS/MSD spiking analytes. The %R for the spiking analytes in Section I shall be within 50-150 and the RPD shall be between 0-50, advisory.

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

The Laboratory shall:

- Perform an MDL study for the additional target analytes in Section I. Use the current MDL study results to report data for the target analytes in the SOW.
- Note that these samples are from areas of active remediation (via in-situ chemical oxidation).
- Consider historical sample data from past station locations to determine maximum expected concentration ranges and may perform a single dilution that brings the highest target analyte concentration within the linear calibration range.
- Use the "STATION LOCATION" information from USEPA Traffic Reports to match previous analyses. These samples have the "STATION LOCATION" identified as follows: 'MC_OX01A_010907' through 'MC_OX***_01907', where *** are alpha numeric characters. Samples from "Station Locations" OX13 through OX23 generally ranged in the 10,000 to 60,000 mg/kg of site contaminants, "Station Locations" OX24 through OX33 were in the 5,000 to 40,000 mg/kg range, "Station Locations" OX01 through OX12 were in the 500 and 10,000 mg/kg range, and the remaining "Station Locations" ranged from non-detected (ND) to 2,000 mg/kg. Please note that these numbers are approximate.

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

The Laboratory shall:

- **Report the CRQLs listed in Section I and the SOW, adjusted according to the equation listed in Exhibit G, even if the level of the corresponding target analyte in the low-point**

calibration standard is below the CRQLs listed in Section I and the SOW.

- Submit the MDL study results for all SOW target analytes and the target analytes in Section I as specified in the SOW. If the Laboratory has not previously submitted MDL results during the current contract year, compliant MDL study results shall be submitted concurrently with the deliverables for this MA to the recipients specified in SOW Exhibit B, Table 1, Row G.
- Ensure the SDG Narrative is updated as stated in the SOW, including any technical and administrative problems encountered and the resolution or corrective actions taken. These problems may include interference problems encountered during analysis, dilutions, reanalyses and/or re-extractions performed, and problems with the analysis of samples. Also include a discussion of any SOW Modified Analyses including a copy of the approved modification form to the SDG Narrative.
- Modify the Form 1 to include the additional target analytes in Section I.
- Include the original and background-subtracted spectra of the associated peaks for the target analytes in Section I from the low point ICAL standard in the data deliverable.