FINAL

United States Army Corps of Engineers
New England District

2023 Annual Long-Term Monitoring and Maintenance Report

Area of Contamination A7
Former Sudbury Training Annex
Sudbury, Massachusetts

Contract No. W912WJ-19-D-0014

Contract Delivery Order No. W912WJ-23-F-0055

July 2024

2023 Annual Long-Term Monitoring and Maintenance Report

Area of Contamination A7
Former Sudbury Training Annex
Sudbury, Massachusetts

July 2024

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CERTIFICATION

I hereby certify that the enclosed Report, shown and marked in this submittal, is that proposed to be incorporated with Contract Number W912WJ-19-D-0014. This document was prepared in accordance with the United States Army Corps of Engineers (USACE) Scope of Work and is hereby submitted for Government approval.

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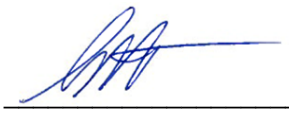

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NOTICE

The United States Department of Defense, Department of Army, funded wholly or in part the preparation of this document and work described herein under Contract No. W912WJ-19-D-0014. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

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Acronyms and Abbreviations

1995 SC ROD	Record of Decision – Source Control Operable Unit, AOC A7, the Old Gravel Pit Landfill, AOC A9, the POL Burn Area
2023 Annual Report	2023 Annual Long-Term Monitoring and Maintenance Report
4,4'-DDD	4,4'-Dichlorodiphenyldichloroethane
4,4'-DDE	4,4'-Dichlorodiphenyldichloroethylene
AOC	area of contamination
ARAR	Applicable or Relevant and Appropriate Requirement
Army	United States Army
BHC	Hexachlorocyclohexane
CCV	continuing calibration verification
COC	contaminant of concern
COD	chemical oxygen demand
DoD	Department of Defense
DOE	Department of Energy
FEMA	Federal Emergency Management Agency
ft/ft	foot per foot
IC	institutional control
KGS	KOMAN Government Solutions, LLC
LOD	limit of detection
LTM	long-term monitoring
LTMM	long-term monitoring and maintenance
LTMMP	Long-Term Monitoring and Maintenance Plan
LUC	land use control
MassDEP	Massachusetts Department of Environmental Protection
MCP	Massachusetts Contingency Plan
mg/L	milligram per liter
MS	matrix spike
MSD	matrix spike duplicate
OU	Operable Unit
QC	quality control
Quality Systems Manual	Department of Defense (DoD) and Department of Energy (DOE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.4
S-A JV	SERES-Arcadis 8(a) JV 2, LLC

SC	Source Control
Sudbury Annex	former United States Army Sudbury Training Annex
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOC	volatile organic compound

1 Introduction

SERES-Arcadis 8(a) JV 2, LLC (hereafter referred to as the S-A JV) prepared this 2023 Annual Long-Term Monitoring and Maintenance Report (2023 Annual Report) to present results of the long-term monitoring and maintenance (LTMM) activities conducted in 2023 for Area of Contamination (AOC) A7, known as the Old Gravel Pit Landfill, located at the former United States Army (Army) Sudbury Training Annex (Sudbury Annex). The report also presents inspection activities conducted at AOCs P31 and P58 (together termed the Sudbury Road Dump). The S-A JV prepared this report on behalf of the United States Army Corps of Engineers (USACE) – New England District, under Contract Number W912WJ-19-D-0014.

The activities discussed in this 2023 Annual Report were conducted in accordance with the Long-Term Monitoring and Maintenance Plan (LTMMP; KOMAN Government Solutions, LLC [KGS] 2020). The LTMM activities were conducted to fulfill the requirements of the Record of Decision – Source Control Operable Unit: AOC A7, the Old Gravel Pit Landfill; AOC A9: the Petroleum, Oil and Lubricants Burn Area (1995 SC ROD; O.H. Materials Remediation Services Corporation 1995). This 2023 Annual Report also includes Institutional Control (IC) verification activities for AOCs P31 and P58.

1.1 Site Background

The Sudbury Annex was listed as a National Priorities List site from February 1990 through January 2002 under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986. The former training annex occupies approximately 4.3 square miles (2,752 acres) in the Massachusetts towns of Hudson, Marlborough, Maynard, Stow, and Sudbury. A site location map indicating the general site location and physical setting is presented as Figure 1. Hudson Road/Sudbury Road divides the installation into a larger northern section and a smaller southern section. The Sudbury Annex became part of the United States Army Garrison Fort Devens in 1982.

The Sudbury Annex was removed from the National Priorities List in January 2002. At that time, 2,205 acres were transferred to the United States Fish & Wildlife Service (USFWS), 4.1 acres were transferred to the United States Air Force, and 71.4 acres were transferred to the United States Department of Homeland Security Federal Emergency Management Agency (FEMA).

AOC A7, the Old Gravel Pit Landfill, is a 10-acre landfill located between Patrol Road and the Assabet River along the northern installation boundary (Figure 2). Access to the AOC A7 landfill is from Patrol Road or the Assabet River Rail Trail via locked gates. The northern edge of the landfill is less than 100 feet from the Assabet River at its closest point. The landfill is located on the northern lower slope and toe of a hill that slopes downward to the Assabet River.

The 1995 SC ROD for the source control (SC) of the operable unit (OU) at AOC A7 (O.H. Materials Remediation Services Corporation 1995) was signed by the Army and the United States Environmental Protection Agency (USEPA) in September 1995. The Massachusetts Department of Environmental Protection (MassDEP) concurred with the 1995 SC ROD. The groundwater at AOC A7 was addressed via a management of migration OU ROD for groundwater at AOCs A7 and A9 (O.H. Materials Remediation Services Corporation 1997), which specified no further action including no land use controls (LUCs).

The selected source remedy included:

- Removal and off-site disposal of chemical waste debris in the laboratory dump area
- Construction of a Resource Conservation and Recovery Act of 1976 Subtitle C landfill cap to contain the remaining site contaminants of concern (COCs)
- Operation and maintenance
- Institutional controls and land use restrictions to limit future use of land at AOC A7
- Long-term groundwater monitoring
- Five-year reviews to assess whether the remedy remains protective of human health and the environment.

The 1995 SC ROD (O.H. Materials Remediation Services Corporation 1995) required LUCs to limit future use of AOC A7. The LUCs for AOC A7 include a perimeter fence around the landfill cap area and the prohibition of use of groundwater as drinking water, which eliminate ingestion of groundwater exposure pathways. The LUCs required by the 1995 SC ROD are described in the Memorandum of Agreement (MOA) between the Army and the current property owner, the USFWS, dated September 28, 2000. Additional information is provided in Section 6.4.

An addendum to the MOA prepared in 1999 included ICs at AOCs P31 and P58. These two AOCs comprise a section of land on the northeast side of Sudbury Road (Figure 3) where dumping occurred at some time before the closure of the Sudbury Annex, possibly even before the land became Army property. The portion known as AOC P31 was the subject of a No Further Action decision in April 1999 following the conclusion of a March 1999 supplementary site investigation that documented sampling and metal debris removal actions (USACE 2001). AOC P58, located northwest of AOC P31, was monitored by the Army through May 2001 for arsenic in groundwater at four wells. Sampling was discontinued at AOC P58 in 2002 and the monitoring wells were decommissioned.

The 1995 SC ROD does not include groundwater remedial action objectives, Applicable or Relevant and Appropriate Requirements (ARARs), or specific cleanup levels. However, the remedial action objectives include eliminating potential risk to human health and the environment associated with exposure to impacted wastes and minimizing off-site migration. The current monitoring program at AOC A7 consists of the following:

- Annual groundwater monitoring for COCs at monitoring well SUDA7-19-01, which was installed in September 2019 as a replacement for abandoned well point SUDWP-A07-01 (KGS 2020)
- Biennial sampling at three wells (OHM-A7-08, SUD-A07-014, and SUD-A07-065) for COCs in even years (2022, 2024, 2026, etc.)
- Annual hydraulic gauging at 13 monitoring wells and two staff gauges
- Annual visual inspection of the landfill cap and surrounding area
- Landfill gas vent monitoring every 5 years, before the 5-year review (in 2025, 2030, etc.)
- Annual mowing of the landfill and maintenance.

2 Long-Term Groundwater Monitoring Activities

This section describes the long-term groundwater monitoring activities conducted at AOC A7 in 2023. The 2023 long-term monitoring (LTM) sampling event at AOC A7 is described in Sections 2.1 through 2.3, and the groundwater gauging event is discussed in Section 2.4. In accordance with the LTMMP (KGS 2020), only one well (SUDA7-19-01) was sampled during the 2023 LTM sampling event.

2.1 Groundwater Sampling

Groundwater sampling activities at AOC A7 were performed with a peristaltic pump and dedicated tubing in accordance with the low-flow procedures documented in Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells (USEPA 2017b). Water quality parameters (temperature, dissolved oxygen, pH, oxidation-reduction potential, specific conductance, and turbidity) were measured during purging and sampling via a water quality meter. The field instruments used to measure water quality parameters were calibrated daily in accordance with the manufacturer's instructions and in accordance with USEPA's Standard Operating Procedure – Calibration of Field Instruments (USEPA 2017a). Details on analytical sample containers and preservation requirements are presented in Table 1. Completed groundwater low-flow sampling forms and equipment calibration records are presented in Appendix A.

Descriptions of the locations, depths, screened intervals, and sampling frequencies at AOC A7 are included in Table 2. Quality control (QC) samples were collected as discussed in Section 4.

2.2 Equipment Decontamination

Non-dedicated sampling and monitoring equipment (limited to water level meters) were decontaminated before and after use. Decontamination was performed in accordance with the LTMMP (KGS 2020).

2.3 Investigation-Derived Waste

Investigation-derived waste generated during groundwater sampling activities consisted of purge water from well sampling, equipment decontamination water, and disposable supplies such as nitrile gloves and paper towels. Purge water and equipment decontamination water were discharged back to the ground at the site of generation after sampling was completed, in accordance with the LTMMP (KGS 2020). Used disposable supplies were bagged and disposed of as general solid waste.

2.4 Groundwater Elevation Measurements

Depth to water was gauged and recorded for the 13 monitoring wells and two staff gauges listed in the LTMMP (KGS 2020) on November 8, 2023. The depth to water was measured at each of the gauged monitoring wells and staff gauges within a 24-hour period. The water level measurements and the corresponding water elevation data (based on surveyed reference elevations) are presented in Table 3. Groundwater elevations and potentiometric surface for the 2023 LTM event are presented on Figure 4.

Figure 4 shows groundwater generally flowing north toward the Assabet River, with the top of the unconfined saturated zone remaining near the surface following site topology. This is consistent with historical groundwater

flow observations. The groundwater elevations across AOC A7 yielded a groundwater gradient between 0.07 to 0.08 foot per foot (ft/ft) horizontally. This is steeper than the previously observed gradient of approximately 0.05 ft/ft in 2022.

A 0.15 ft/ft vertical gradient was observed around the OHM-A7-11 and OHM-A7-10 well pair. This vertical gradient indicates upward flow potential (possibly due to the proximity of Assabet River) and is consistent with historical gradients measured from this well pair. It is unknown whether upward gradients are present throughout the site as a whole, as OHM-A7-10 and OHM-A7-11 are the only shallow/deep overburden well pair. The overall groundwater flow direction at AOC A7 has remained generally consistent throughout the 27 years of monitoring performed to date.

3 Groundwater Monitoring Results

This section describes the methods used for sample analysis and provides results of the laboratory testing and analysis. The laboratory analytical reports are provided in Appendix B.

3.1 Analyses

Per the LTMMP, one well (SUDA7-19-01) was sampled during this event. Two samples were collected from the well: one parent sample and one field duplicate sample for QC purposes.

These samples were submitted to Eurofins TestAmerica of Savannah, Georgia, for analysis for volatile organic compounds (VOCs), organochlorine pesticides, and total cyanide. The chemical oxygen demand (COD) analysis was conducted at Eurofins TestAmerica of Arvada, Colorado. The two Eurofins TestAmerica laboratories are compliant with the United States Department of Defense (DoD) and Department of Energy (DOE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.4 (Quality Systems Manual; DoD and DOE 2021) under the DoD Environmental Laboratory Accreditation Program (ELAP) (Savannah, Georgia certification #L2463, expires September 22, 2024; Arvada, Colorado certification #2907.01, expires October 31, 2024) and hold current accreditation for all applicable analytical methods. The analytical methods and procedures used for the groundwater samples collected at AOC A7 are presented in Table 1.

3.2 Analytical Results

The results of the sample analyses from well SUDA7-19-01 are shown in Table 4. As discussed in Section 1.1, no cleanup concentration requirements are stipulated in the 1995 SC ROD (O.H. Materials Remediation Services Corporation 1995). For comparative purposes and in accordance with the LTMMP (KGS 2020), groundwater analytical results are compared to project action levels, which are derived from the USEPA maximum contaminant levels (MCLs) and the Massachusetts Contingency Plan (MCP) GW-1 and GW-3 standards. Historical results for targeted analytes (defined as analytes with historical detections above the MCLs and/or MCP GW-1 standards [1,1,2,2 trichloroethane, tetrachloroethene, trichloroethene, gamma-BHC (Lindane) and 4,4'-Dichlorodiphenyldichloroethane (4,4'-DDD)] are presented in Appendix C. As described in the LTMMP (KGS 2020), it should be noted that groundwater is not used as a source of drinking water at AOC A7 and groundwater discharges to the Assabet River.

A summary of the 2023 analytical results for the parent and duplicate sample collected from well SUDA7-19-01 is provided below:

- No analytes were detected above laboratory limits of detection (LODs), with the exception of total cyanide in the parent sample at a concentration of 0.0025 J (estimated) milligrams per liter (mg/L). The total cyanide detection is well below the MCP GW-1 and MCP GW-3 standards of 0.20 and 0.030 mg/L, respectively.
- No targeted analyte has been detected at a concentration above MCP GW-3 standards in any monitoring events conducted at AOC A7 since October 2001.

4 Quality Assurance/Quality Control

Eurofins Savannah of Savannah, Georgia, was the primary contract laboratory used for the analysis of groundwater samples for the 2023 monitoring event. This laboratory is compliant with the United States Department of Defense (DoD) and Department of Energy (DOE) Consolidated Quality Systems Manual for Environmental Laboratories, Version 5.4 (Quality Systems Manual; DoD and DOE 2021) under the DoD National Environmental Laboratory Accreditation Program (certification #L2463, expires September 22, 2024) and holds current National Environmental Laboratory Accreditation Program accreditation for all applicable analytical methods.

As a part of the 2023 monitoring event, quality assurance and QC samples were collected and analyzed to evaluate sample collection, transportation, and analysis procedures. A field duplicate sample was collected from well SUDA7-19-01 and analyzed at the laboratory for VOCs, organochlorine pesticides, total cyanide, and COD. The analytical results for this field duplicate sample are shown in Table 4.

Data validation was completed on all laboratory deliverables by Laboratory Data Consultants, Inc. of Carlsbad, California. The analytical results from the 2023 monitoring event were reviewed and evaluated for data acceptability in accordance with the USEPA Region 1 Environmental Data Review Program Guidance (USEPA 2018), the Quality Assurance Project Plan (S-A JV 2020), and the DoD General Data Validation Guidelines (DoD 2019). The method requirements from the Quality Systems Manual Version 5.4 (DoD and DOE 2021) and the USEPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846 (USEPA 2014) were also used as supplemental information.

The data validation report for the 2023 monitoring event is presented in Appendix D; QC exceedances noted during data validation are noted below:

- Recoveries of the pesticides aldrin, alpha-Hexachlorocyclohexane (BHC), alpha-endosulfan, dieldrin, endosulfan sulfate, endrin, gamma-BHC, heptachlor epoxide, and 4,4'-Dichlorodiphenyldichloroethylene (4,4'-DDE) were less than the control limit in the laboratory control sample analyzed in association with the analysis of sample SUDA7-19-01-FAL23 and field duplicate sample SUD-DUP01-FAL23. In addition, the matrix spike (MS) and/or matrix spike duplicate (MSD) analysis performed on sample SUDA7-19-01-FAL23 exhibited recoveries of aldrin, alpha-BHC, alpha-endosulfan, dieldrin, endosulfan sulfate, endrin, gamma-BHC, heptachlor, heptachlor epoxide, 4,4'-DDD, and 4,4'-DDE less than the lower control limits. The associated non-detect results were qualified as estimated (UJ) with a potential for low bias in samples SUDA7-19-01-FAL23 and SUD-DUP01-FAL23.
- Recovery of the pesticides surrogate compound 2,4,5,6-tetrachloro-meta-xylene was greater than the control limit in field duplicate sample SUD-DUP01-FAL23. The results for all pesticides reported in sample SUD-DUP01-FAL23 were qualified as estimated (UJ) with a potential for low bias in the reported results.
- The continuing calibration verification (CCV) associated with VOC analysis exhibited results for bromomethane and chloroethane less than the acceptance criteria. In addition, the closing CCV was less than the acceptance criteria for bromomethane. The non-detect results for bromomethane and chloroethane in sample SUDA7-19-01-FAL23 and field duplicate sample SUD-DUP01-FAL23 were qualified as estimated (UJ).
- The MS and/or MSD analysis performed on sample SUDA7-19-01-FAL23 exhibited recoveries of the VOCs 1,2-dichlorobenzene and bromomethane less than the lower control limits. The associated non-detect results

were qualified as estimated (UJ) with a potential for low bias in samples SUDA7-19-01-FAL23 and SUD-DUP01-FAL23.

- The MS/MSD analysis performed on sample SUDA7-19-01-FAL23 exhibited recoveries of cyanide less than the lower control limits. The cyanide results were qualified as estimated (J/UJ) with a potential for low bias in samples SUDA7-19-01-FAL23 and SUD-DUP01-FAL23.

Appropriate qualifiers, if needed, have been added to the 2023 analytical data in the project database and are included in Table 4 and Appendix D. Some values were J-qualified (analyte detected at estimated concentration) or UJ-qualified (analyte not detected, laboratory reporting limit is estimated) due to quality control exceedances. Sample results that were qualified as estimated (UJ/J) are usable with caution. The data from the 2023 monitoring event are acceptable for use with no data being rejected.

5 Landfill Maintenance and Inspection Activities

This section summarizes the landfill maintenance and inspection activities performed at AOC A7 in 2023. A detailed discussion of the 2023 landfill inspection and recommendations is presented in the Geotechnical Engineering Annual Inspection Report (Appendix E).

5.1 Summary of Maintenance Activity and Findings

The following maintenance activity was conducted at AOC A7 during 2023:

- The cap and adjacent area vegetation were mowed from October 17 to 26, 2023, by Tantara Corporation (Tantara) of Worcester, Massachusetts.

The following is a summary of findings regarding the vegetative cover, vegetation types, erosion, settlement, and general condition of the various landfill features (based on an inspection completed on November 3, 2023):

- The landfill cap was in good condition with no significant erosion or settlement. In general, the cap vegetation appears healthy, dense, and provides good coverage of the landfill cap, with grass and clover predominating.
- Minimal/superficial rutting was observed adjacent to one of the monitoring wells (OHM-A7-08) located at the cap.
- No encroachment of wetland species on the cap was observed.
- The security perimeter fence is in good overall condition. Some branches have fallen on the eastern portion of the fence, but no damage to the fence was observed. Most of the trees were removed by hand and the remaining branches will be removed during the next landfill mowing event.
- The cap drainage system was in good condition. Drainage channels are free of sediment and debris. The grass on drainage channel bottoms was in good condition and the vegetation on the side slopes was healthy and dense.
- The toe drain appeared to be functioning properly, and no slope stability or erosion problems were observed. Sections of geotextile that were repaired in 2017 remain in good condition.
- The culvert pipe at the southeast corner of the landfill (under the fence line by the road) appeared to be in good working condition.
- The gas vent system is in good condition. Each of the four vent pipes was intact, properly identified, and appeared to be functioning as intended. The installed bird/insect screens remain in good condition. As described in the 2020 inspection report (S-A JV 2021), three of the four gas vents are slightly tilted. It is unclear whether the tilts are due to settlement of the landfill, or if they were present at their original construction. The slight tilts are not expected to affect the functioning of the gas vents and no other indications of settlement or erosion were observed; therefore, no action is required at this time.
- The stormwater culverts along the western/southwestern cap line appear to be in good condition.
- The groundwater monitoring wells were in generally good condition.

5.2 Summary of Recommendations

The following is a summary of recommendations for future maintenance of the landfill:

- Continue mowing the landfill cap annually to control vegetative growth, as well as the adjacent fields to prevent woody and wetland plant species from encroaching onto the cap. Mowing should not take place until September when ground-nesting songbirds are mature enough to avoid being harmed.
- Continue annual inspections of the landfill cap components. The inspection should continue to be performed in the fall, soon after mowing (i.e., within 1 to 2 weeks), and preferably within 48 hours after a precipitation event to aid in inspecting the effectiveness of surface runoff in the drainage swales.
- Continue general landfill maintenance, such as clearing moss and debris from toe drain areas and clearing large/woody vegetative growth from the cap and drainage channels. Also continue to clear vegetation from the fence line during the annual monitoring and maintenance program to prevent damage to the fence and gates.
- Continue to monitor the angle of tilt of the gas vents as part of the annual inspection to check for possible settlement over time.
- Since the cap was installed in 1996, post-closure inspection and monitoring have been performed for more than 27 years. In accordance with Resource Conservation and Recovery Act of 1976 Subtitle C landfill cap regulations for post-closure monitoring periods of performance, planning will commence to reduce long-term monitoring and sampling activities (or to perform them at a reduced frequency) after 30 years of monitoring has been completed.

6 Institutional Controls

The 1995 SC ROD (O.H. Materials Remediation Services Corporation 1995) included ICs in the selected remedy for AOC A7 to restrict changes in land use at that AOC. The LTMMP (KGS 2020) includes IC inspection criteria to be performed annually at AOCs A7, P31, and P58 to monitor for significant changes in site use and increases in exposure potential. The IC criteria are described below and include document reviews, interviews, and physical on-site inspections, each to be completed and reported with checklists.

6.1 Document Reviews

The following documents were reviewed in accordance with the LTMMP (KGS 2020):

- 2020 Final Annual Operations, Maintenance, and Monitoring Report, AOC A7, Former Sudbury Training Annex, Sudbury, Massachusetts (S-A JV 2021)
- Protectiveness Assessment for AOC P31/P58, Former Sudbury Training Annex, Stow, Massachusetts, Concord, Massachusetts (USACE 2007).

In accordance with the LTMMP (KGS 2020), a “Checklist for Review of Sudbury Annex (AOC A7) Annual Report” was prepared to illustrate how the documents were used to evaluate the ICs at AOCs A7, P31, and P58; the results of the completed review of this 2023 Annual Report are summarized in Appendix F.

6.2 Institutional Control Interviews

IC interviews are conducted annually to monitor the status of ICs at AOC A7. Property owners contacted are the USFWS (for the Assabet River National Wildlife Refuge, the layout of which is shown on Appendix F, Figure F.1) and FEMA (which owns six small parcels of the former training annex in close proximity to AOC A7).

An interview was conducted by email with representatives from the USFWS who are familiar with day-to-day activities. The interview included discussions of the following (Appendix F):

- Status of past redevelopment or other construction or demolition activities
- Review of approved conditional exemptions, amendments, and/or releases
- Review of any unauthorized uses and activities
- Review of corrective action to resolve unauthorized uses and activities
- Overall effectiveness of the ICs
- Status of anticipated future redevelopment or other construction or demolition activities.

Summaries of the USFWS and FEMA interviews are presented in Appendix F. The IC interviews indicated that no significant changes in site use or evidence of increased exposure potential were apparent for the 2023 reporting period at AOC A7.

6.3 Physical On-Site Inspections

Annual physical on-site inspections are conducted at AOCs A7, P31, and P58 in accordance with the LTMMP (KGS 2020). The physical on-site inspections address the following items:

- Land use conditions (presence of buildings and level of recreational use)
- Evidence of any changes to the use of AOCs A7, P31, or P58
- Evidence of any disturbance to the integrity of the landfill containment system or to the function of the monitoring system in place at AOC A7
- Evidence of any significant excavation or surface or subsurface soil disturbance at AOC A7
- Evidence of any activities that have disrupted or otherwise negatively impacted the subsurface soil at the AOCs A7, P31, or P58 below the depth of 4 feet
- Other such conditions that the Army, USEPA, and MassDEP Project Managers may deem necessary to evaluate to continue the protectiveness of the ICs. The party conducting the inspection notes all observations, including observation of any known or suspected violations, on an inspection checklist.

Inspections of the AOC A7 landfill and the surrounding area were conducted by the S-A JV and USACE on November 3, 2023. The landfill cap, drainage features, and surrounding area were found to be in good condition, and there was no evidence of excavation or damage. A summary of the inspection findings is presented in Section 5, and specific details of the inspections and future planned activities are included in Appendix E.

Inspections of AOCs P31 and P58 were conducted on November 27, 2023, and indicated no evidence of changes to the use of these AOCs. The sites were observed to be vegetated and there was no evidence of dumping or excavation. An inspection checklist is included in Appendix F.

6.4 Institutional Control Summary

The LUCs required by the 1995 SC ROD (O.H. Materials Remediation Services Corporation 1995) are described in the MOA between the Army and the current property owner, the USFWS, dated September 28, 2000 (Appendix G). Document reviews, IC interviews, and physical on-site inspections completed during the 2023 reporting period revealed no significant changes in site use or evidence of increased exposure potential for AOCs A7, P31, and P58. Land transfer agreements with the USFWS, FEMA, and United States Air Force are also provided in Appendix G. Interviews with USFWS and FEMA who currently use, own, and maintain the land are included in Appendix G.

7 Conclusions

- One well (SUDA7-19-01) was sampled during the fall 2023 monitoring event conducted on November 8, 2023. No analytes were detected above LODs, with the exception of total cyanide detected at a trace level of 0.0025 J mg/L. No analytes were detected above the MCP GW-1 or MCP GW-3 comparison criteria.
- The groundwater elevation contours were consistent with historical gauging events, with a slightly steeper gradient (0.07 to 0.08 ft/ft) than previously observed in 2022 (0.05 ft/ft).
- The AOC A7 landfill cap remains in good condition based on the November 3, 2023, inspection. The drainage system and gas vent monitoring system are in good condition and functioning as intended. The fence is in good overall condition and no damage was observed.
- No significant changes in site use or evidence of increased exposure potential were observed at AOCs A7, P31, and P58 based on document reviews, the IC interviews, and on-site inspections.
- The next Annual Report, which will present the results of fall 2024 monitoring and maintenance activities, will be submitted for regulatory agency review in May 2025.
- Based on the results of the fall 2023 groundwater sampling event at the site and the interviews and inspections conducted, the current monitoring and inspection schedule is appropriate for maintaining protectiveness. The Army is planning to request reduction of sampling in the next Annual Report. As indicated above, the cap is 27 years old and monitoring has been completed for the past 27 years and concentrations over the period of the biennially sampling remain the same (as shown in Appendix C).

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Tables

Table 1
Sample Analysis Methods, Containers, Holding Times, and Preservatives
Former Sudbury Training Annex
Sudbury, Massachusetts

Parameter	Analysis Method[1]	Sample Container[2]	Preservative	Holding Time
VOCs	SW8260C	3 x 40 mL vials with Teflon septa screw caps	Hydrochloric acid (HCl) to pH < 2 (no headspace); 4 ± 2°C	14 days
Pesticides	SW8081B	2 x 1-liter amber glass	4 ± 2°C	7 days to extract; 40 days to analyze
COD	E410.4	1 x 500 mL amber glass	Sulfuric acid (H_2SO_4) to pH < 2; 4 ± 2°C	28 days
Cyanide	SW9012B	1 x 250 mL HDPE	Sodium hydroxide (NaOH) to pH > 12; 4 ± 2°C	14 days

Notes:

[1] "Methods for Chemical Analysis of Water and Wastes," Cincinnati, OH. July 2014, EPA 600-4-79-020. "Test Methods for Evaluating Solid Waste, Physical and Chemical Methods," USEPA SW-846, 5th Edition.

[2] Additional sample containers/volume are required for matrix quality control samples.

Acronyms and Abbreviations:
°C = degrees Celsius
COD = chemical oxygen demand
HDPE = high-density polyethylene
mL = milliliter
USEPA = United States Environmental Protection Agency
VOC = volatile organic compound

Table 2
AOC A7 Groundwater Monitoring Locations
Former Sudbury Training Annex
Sudbury, Massachusetts

Location	Current Sampling Frequency	Northing (ft NAD83)	Easting (ft NAD83)	Screen Length (ft)	Screened Interval Depth (ft below TOC)	Elevation (ft NAVD88)			
						Ground Surface	Top of PVC Riser	Top of Well Screen	Bottom of Well Screen
Monitoring Wells									
JO-A07-M61	N/A - gauged only	2977583.8535	660885.7957	5	1.0 - 6.0	180.43	180.10	179.10	174.10
OHM-A7-08	Biennial	2977358.2301	661043.0108	15	20.6 - 35.6	216.65	219.04	198.44	183.44
OHM-A7-09	N/A - gauged only	2977602.8875	661129.0809	8	6.9 - 14.9	183.41	185.41	178.51	170.51
OHM-A7-10	N/A - gauged only	2977679.1663	661269.0955	8	3.6 - 11.6	178.84	180.40	176.80	168.80
OHM-A7-11	N/A - gauged only	2977674.7354	661261.5028	10	20.9 - 30.9	179.04	180.93	160.03	150.03
OHM-A7-12	N/A - gauged only	2977663.4705	661392.2324	15	5.8 - 20.8	184.29	186.29	180.49	165.49
OHM-A7-45	N/A - gauged only	2977318.0231	660886.6097	15	7.2 - 22.2	207.24	209.21	202.01	187.01
OHM-A7-46	N/A - gauged only	2977307.2923	660974.2810	6.5	13.1 - 19.6	215.25	217.07	203.97	197.47
OHM-A7-51	N/A - gauged only	2977531.2001	660976.5204	15	7.6 - 22.6	186.60	188.42	180.82	165.82
OHM-A7-52	N/A - gauged only	2977492.1060	660885.5278	15	6.7 - 21.7	186.66	187.31	180.61	165.61
SUD-A07-014	Biennial	2977122.6180	661162.4454	10	12.0 - 22.0	222.56	225.57	213.57	203.57
SUD-A07-065	Biennial	2977656.2636	660955.3573	5	4.5 - 9.5	177.79	177.82	173.32	168.32
SUDA7-19-01	Annual	2977653.700	661047.7000	10	2.0 - 10.0	181.30	180.79	179.30	171.30
Staff Gauges									
Northern Staff Gauge	N/A - gauged only	2977741.548	661027.2003	N/A	N/A	176.54	179.52[(1)]	N/A	N/A
Eastern Staff Gauge	N/A - gauged only	2977696.924	661513.0199	N/A	N/A	175.64	181.99[(2)]	N/A	N/A

Notes:
Horizontal datum is Massachusetts State Plane Coordinate System (Mainland 2001), North America Datum of 1983 (NAD83).
Vertical elevation datum is National Geodetic Vertical Datum of 1929 (NGVD29) converted to North American Vertical Datum of 1988 (NAVD88) in 2019.
Depth and screened interval are in feet below the top of casing (e.g., the top of the PVC riser) based on the November 2006 survey.
(1) Surveyed elevation of nail in the tree.
(2) Surveyed elevation of 180-foot mark on the Eastern Staff Gauge.

Acronyms and Abbreviations:
AOC = Area of Contamination
ft = feet
N/A = not applicable
PVC = polyvinyl chloride
TOC = top of casing

Table 3
AOC A7 Groundwater Elevations, Fall 2023
Former Sudbury Training Annex
Sudbury, Massachusetts

Location	Date	Depth to Water (ft bmp)	Measuring Point Elevation (ft NAVD88)	Water Table Elevation (ft NAVD88)
Monitoring Wells				
JO-A07-M61	11/08/2023	1.97	180.10	178.13
OHM-A7-08	11/08/2023	24.01	219.04	195.03
OHM-A7-09	11/08/2023	7.66	185.41	177.75
OHM-A7-10	11/08/2023	3.31	180.40	177.09
OHM-A7-11	11/08/2023	1.13	180.93	179.80
OHM-A7-12	11/08/2023	8.58	186.29	177.71
OHM-A7-45	11/08/2023	13.18	209.21	196.03
OHM-A7-46	11/08/2023	15.33	217.07	201.74
OHM-A7-51	11/08/2023	8.26	188.42	180.16
OHM-A7-52	11/08/2023	4.08	187.31	183.23
SUD-A07-014	11/08/2023	7.58	225.57	217.99
SUD-A07-065	11/08/2023	1.91	177.82	175.91
SUDA7-19-01	11/08/2023	4.51	180.79	176.28
Staff Gauges				
Northern Staff Gauge	11/08/2023	6.25	179.52[(1)]	173.27
Eastern Staff Gauge	11/08/2023	5.29	181.99[(2)]	176.70

Notes:

Vertical elevation datum is National Geodetic Vertical Datum of 1929 (NGVD29) converted to North American Vertical Datum of 1988 (NAVD88) in 2019.

[(1)] Surveyed elevation of nail in the tree.

[(2)] Surveyed elevation of 180-foot mark on the Eastern Staff Gauge.

Acronyms and Abbreviations:

AOC = Area of Contamination
bmp = below measuring point
ft = feet

Table 4
AOC A7 Groundwater Analytical Results, Fall 2023
Former Sudbury Training Annex
Sudbury, Massachusetts

			Location	SUDA7-19-01			
			Sample ID	SUDA7-19-01-FAL23		SUD-DUP01-FAL23	
			Date	11/8/2023		11/8/2023	
Analyte/Method	Unit	MCP GW-1	MCP GW-3				
Volatile Organic Compounds							
1,1,1,2-Tetrachloroethane	µg/L	5.0	50,000	1	U	1	U
1,1,1-Trichloroethane	µg/L	200	20,000	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	µg/L	2.0	50,000	1	U	1	U
1,1,2-Trichloroethane	µg/L	5.0	50,000	1	U	1	U
1,1-Dichloroethane	µg/L	70	20,000	1	U	1	U
1,1-Dichloroethene	µg/L	7.0	30,000	1	U	1	U
1,1-Dichloropropene	µg/L	--	--	1	U	1	U
1,2,3-Trichlorobenzene	µg/L	--	--	2	U	2	U
1,2,3-Trichloropropane	µg/L	--	--	1	U	1	U
1,2,4-Trichlorobenzene	µg/L	70	50,000	2	U	2	U
1,2,4-Trimethylbenzene	µg/L	--	--	1	U	1	U
1,2-Dibromo-3-chloropropane	µg/L	--	--	5	U	5	U
1,2-Dibromoethane (EDB)	µg/L	0.02	50,000	1	U	1	U
1,2-Dichlorobenzene	µg/L	--	--	1	UJ	1	UJ
1,2-Dichloroethane	µg/L	5.0	20,000	1	U	1	U
1,2-Dichloroethene	µg/L	--	--	1	U	1	U
1,2-Dichloropropane	µg/L	5.0	50,000	0.5	U	0.5	U
1,3,5-Trimethylbenzene	µg/L	--	--	1	U	1	U
1,3-Dichlorobenzene	µg/L	100	50,000	1	U	1	U
1,3-Dichloropropane	µg/L	--	--	1	U	1	U
1,4-Dichlorobenzene	µg/L	5.0	8,000	1	U	1	U
2,2-Dichloropropane	µg/L	--	--	1	U	1	U
2-Butanone (MEK)	µg/L	4,000	50,000	20	U	20	U
2-Chlorotoluene	µg/L	--	--	0.5	U	0.5	U
2-Hexanone	µg/L	--	--	10	U	10	U
4-Chlorotoluene	µg/L	--	--	1	U	1	U
4-Methyl-2-pentanone (MIBK)	µg/L	350	50,000	10	U	10	U
Acetone	µg/L	6,300	50,000	10	U	10	U
Benzene	µg/L	5.0	10,000	1	U	1	U
Bromobenzene	µg/L	--	--	0.5	U	0.5	U
Bromochloromethane	µg/L	--	--	1	U	1	U
Bromodichloromethane	µg/L	--	--	1	U	1	U
Bromoform	µg/L	4.0	50,000	2	U	2	U
Bromomethane	µg/L	10	800	10	UJ	10	UJ
Carbon disulfide	µg/L	--	--	1	U	1	U
Carbon Tetrachloride	µg/L	5.0	5,000	1	U	1	U
Chlorobenzene	µg/L	100	1,000	0.5	U	0.5	U
Chloroethane	µg/L	--	--	10	UJ	10	UJ
Chloroform	µg/L	70	20,000	1	U	1	U
Chloromethane	µg/L	--	--	2	U	2	U
cis-1,2-Dichloroethene	µg/L	70	50,000	1	U	1	U
cis-1,3-Dichloropropene	µg/L	0.40	200	1	U	1	U
Cumene	µg/L	--	--	1	U	1	U
Dibromochloromethane	µg/L	2.0	50,000	1	U	1	U
Dibromomethane	µg/L	--	--	1	U	1	U
Dichlorodifluoromethane	µg/L	--	--	1	U	1	U
Ethylbenzene	µg/L	700	5,000	0.5	U	0.5	U
Hexachlorobutadiene	µg/L	0.6	3,000	1	U	1	U
m,p-Xylene	µg/L	10,000	5,000	1	U	1	U
Methyl tert-butyl ether (MTBE)	µg/L	70	50,000	2	U	2	U
Methylene chloride	µg/L	--	--	10	U	10	U
n-Butylbenzene	µg/L	--	--	2	U	2	U
n-Propylbenzene	µg/L	--	--	1	U	1	U
Naphthalene	µg/L	140	20,000	5	U	5	U
o-Xylene	µg/L	10,000	5,000	1	U	1	U
p-Cymene (p-Isopropyltoluene)	µg/L	--	--	1	U	1	U
sec-Butylbenzene	µg/L	--	--	2	U	2	U
Styrene	µg/L	100	6,000	1	U	1	U
tert-Butylbenzene	µg/L	--	--	1	U	1	U
Tetrachloroethene (PCE)	µg/L	5.0	30,000	1	U	1	U
Toluene	µg/L	1,000	40,000	1	U	1	U
trans-1,2-Dichloroethene	µg/L	100	5,000	1	U	1	U
trans-1,3-Dichloropropene	µg/L	--	--	1	U	1	U
Trichloroethene (TCE)	µg/L	5.0	5,000	0.5	U	0.5	U
Trichlorofluoromethane	µg/L	--	--	1	U	1	U
Vinyl acetate	µg/L	--	--	2	U	2	U
Vinyl chloride	µg/L	2.0	50,000	1	U	1	U
Xylenes, Total	µg/L	--	--	1	U	1	U

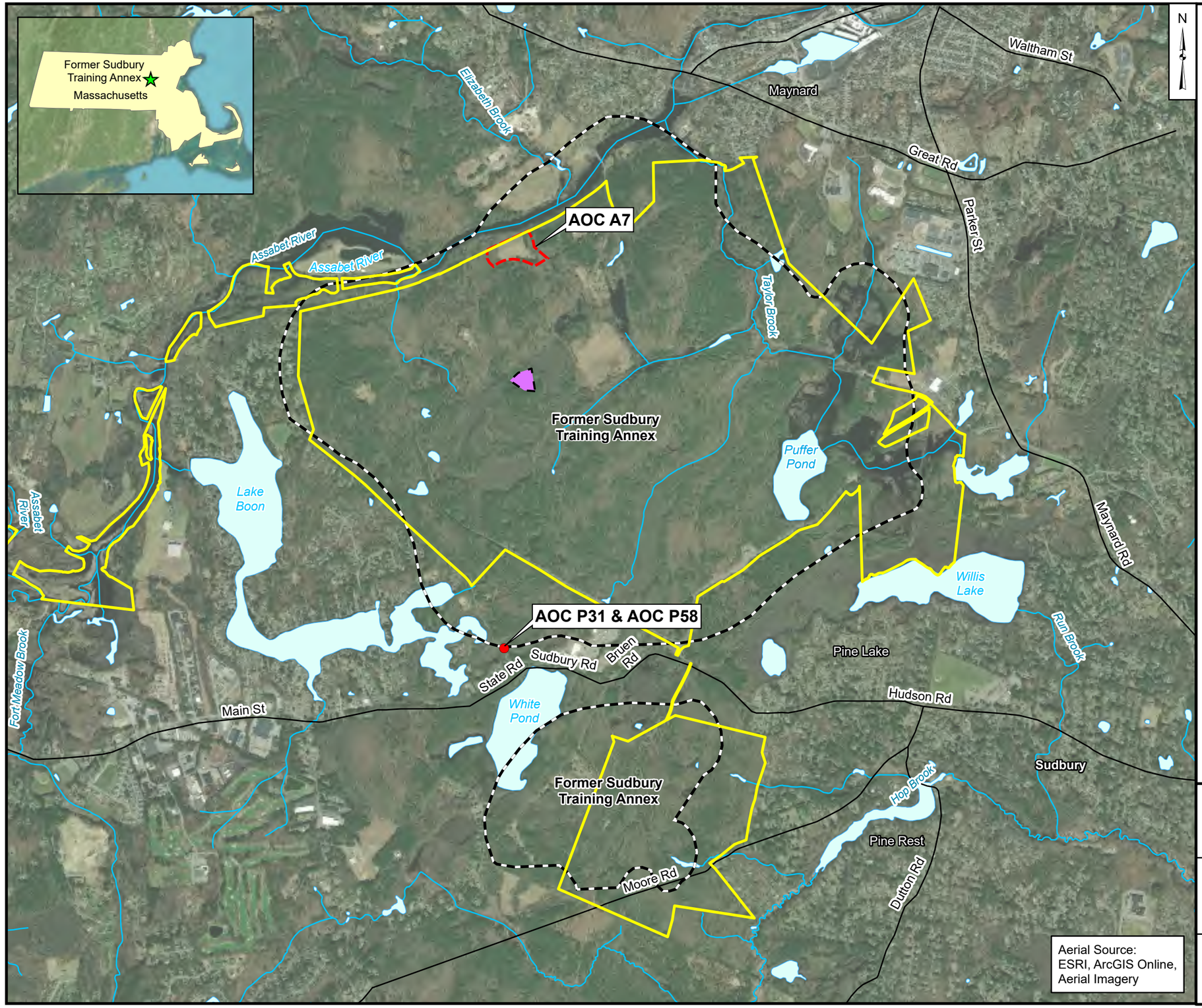
Table 4
AOC A7 Groundwater Analytical Results, Fall 2023
Former Sudbury Training Annex
Sudbury, Massachusetts

			Location	SUDA7-19-01			
			Sample ID	SUDA7-19-01-FAL23		SUD-DUP01-FAL23	
			Date	11/8/2023		11/8/2023	
Analyte/Method	**Unit**	**MCP GW-1**	**MCP GW-3**				
Pesticides							
4,4'-DDD (4,4'-Dichlorodiphenyldichloroethane)	µg/L	0.20	50	0.0042	UJ	0.0042	UJ
4,4'-DDE (4,4'-Dichlorodiphenyldichloroethylene)	µg/L	0.05	400	0.0042	UJ	0.0042	UJ
4,4'-DDT (4,4'-Dichlorodiphenyltrichloroethane)	µg/L	0.30	1.0	0.0042	U	0.0042	UJ
Aldrin	µg/L	0.50	30	0.0042	UJ	0.0042	UJ
alpha-BHC (alpha-Hexachlorocyclohexane)	µg/L	--	--	0.0042	UJ	0.0042	UJ
alpha-Endosulfan	µg/L	10	2.0	0.0042	UJ	0.0042	UJ
beta-BHC (beta-Hexachlorocyclohexane)	µg/L	--	--	0.0042	U	0.0042	UJ
beta-Endosulfan	µg/L	10	2.0	0.0042	U	0.0042	UJ
Chlordane	µg/L	2.0	2.0	0.42	U	0.42	UJ
delta-BHC (delta-Hexachlorocyclohexane)	µg/L	--	--	0.0042	U	0.0042	UJ
Dieldrin	µg/L	0.10	0.5	0.0042	UJ	0.0042	UJ
Endosulfan sulfate	µg/L	--	--	0.0042	UJ	0.0042	UJ
Endrin	µg/L	2.0	5.0	0.0042	UJ	0.0042	UJ
Endrin aldehyde	µg/L	--	--	0.017	U	0.017	UJ
Endrin ketone	µg/L	--	--	0.017	U	0.017	UJ
gamma-BHC (Lindane)	µg/L	0.20	4.0	0.0042	UJ	0.0042	UJ
Heptachlor	µg/L	0.40	1.0	0.0042	UJ	0.0042	UJ
Heptachlor epoxide	µg/L	0.20	2.0	0.0042	UJ	0.0042	UJ
Methoxychlor	µg/L	40	10	0.0042	U	0.0042	UJ
Toxaphene	µg/L	--	--	0.84	U	0.85	UJ
Other							
Chemical Oxygen Demand	mg/L	--	--	20	U	20	U
Cyanide, Total	mg/L	0.20	0.030	0.0025	J	0.005	UJ
Field Parameters							
pH	SU	--	--	5.02		---	
Specific Conductance	mS/cm	--	--	0.04		---	
Turbidity	NTU	--	--	0.64		---	
Dissolved Oxygen	mg/L	--	--	1.49		---	
Temperature	° C	--	--	12.6		---	
ORP	mV	--	--	220		---	

Notes:
1. -- = not available/not analyzed
2. Target compounds in this table are compounds that have been detected above MCP GW-1 standards historically; no cleanup concentration requirements are stipulated for the site and MCP GW standards are included for comparative purposes.

Abbreviations:
°C = degrees Celsius
µg/L = microgram per liter
AOC = Area of Contamination
FD = field duplicate
J = estimated concentration
MCP GW = Massachusetts Contingency Plan Method 1 groundwater standard
mg/L = milligram per liter
U = The analyte was not detected above the limit of detection.
UJ = The analyte was not detected above the limit of detection. However, the associated numerical value is approximate.

Figures



Legend

- Former Sudbury Training Annex
- Area of Contamination (AOC)
- Area of Contamination Perimeter
- Major Road
- Federal Emergency Management Agency (FEMA) Parcel
- Assabet River National Wildlife Refuge Boundary
- River/Stream
- Water Body

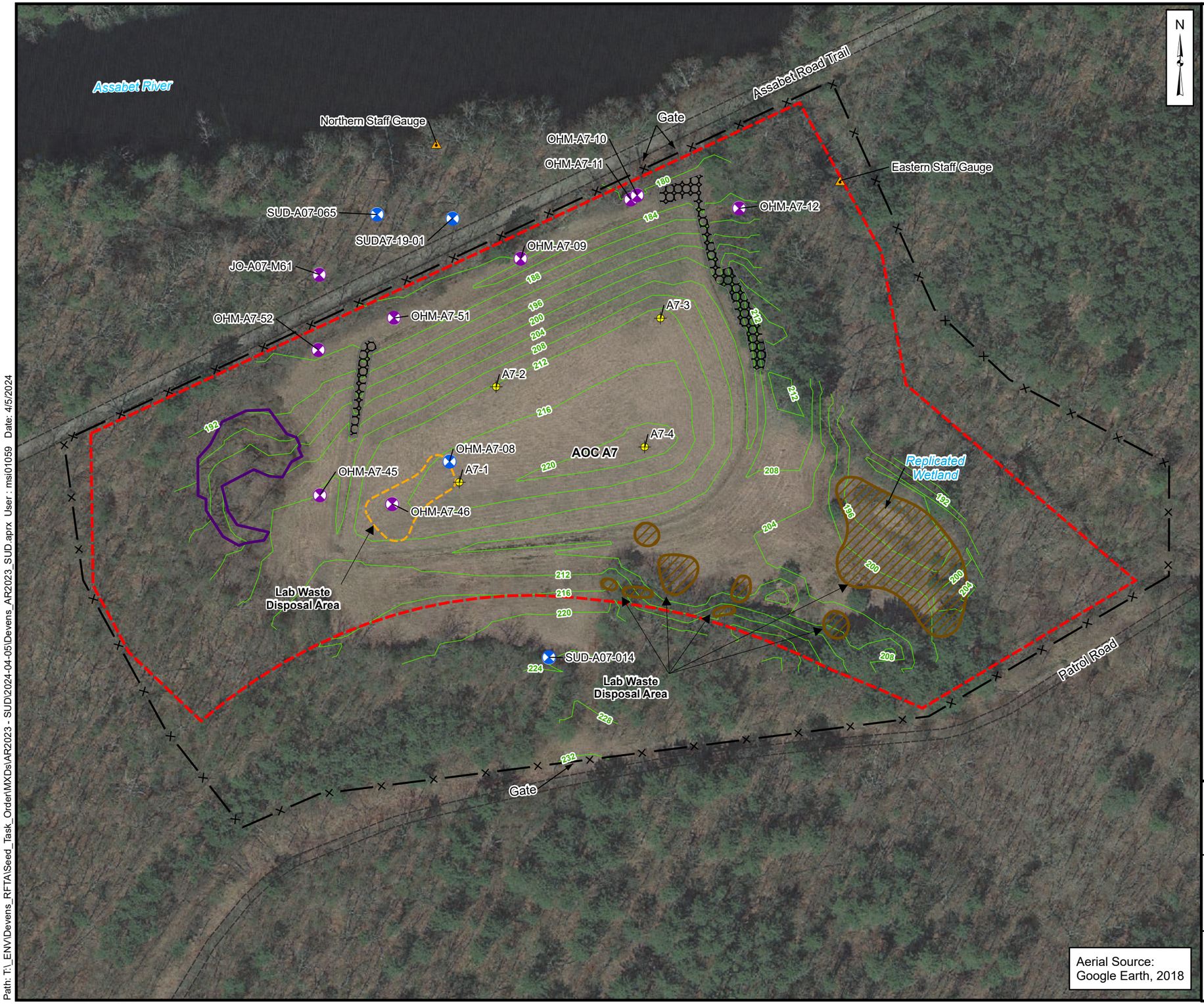
0 0.5 1
Miles

2023 Annual Long-Term Monitoring and Maintenance Report
Area of Contamination A7
Former Sudbury Training Annex
Sudbury, Massachusetts

Site Location
Former Sudbury Training Annex

SERES Engineering & Services, LLC
ARCADIS
a joint venture

Figure
1



Legend

- Area of Contamination (AOC)
- Stump Pile Area
- Rip Rap
- Lab Waste Disposal Area
- Approximate Areas of Soil Removal
- LTM Sample Well*
- LTM Well - Gauge Only
- Staff Gauge
- Gas Vent
- Fence
- Road
- Topographic Contour (ft AMSL)

Notes:
ft AMSL = feet above mean sea level
LTM = long-term monitoring
* Annual sampling is conducted at well SUDA7-19-01. Biennial sampling is conducted at wells OHM-A7-08, SUD-A07-014, and SUD-A07-065 in even years (2022, 2024, 2026, etc.). Only SUDA7-19-01 was sampled in 2023.

0 100 200
Feet

2023 Annual Long-Term Monitoring and Maintenance Report
Area of Contamination A7
Former Sudbury Training Annex
Sudbury, Massachusetts

Site Layout
AOC A7

SERES Engineering & Services, LLC
ARCADIS a joint venture

Figure
2

Path: T:_ENV\Devens_RFTA\Seed_Task_Order\MXDs\AR2023 - SUD\2024-04-05\Devens_AR2023_SUD.aprx User : msi01059 Date: 4/5/2024

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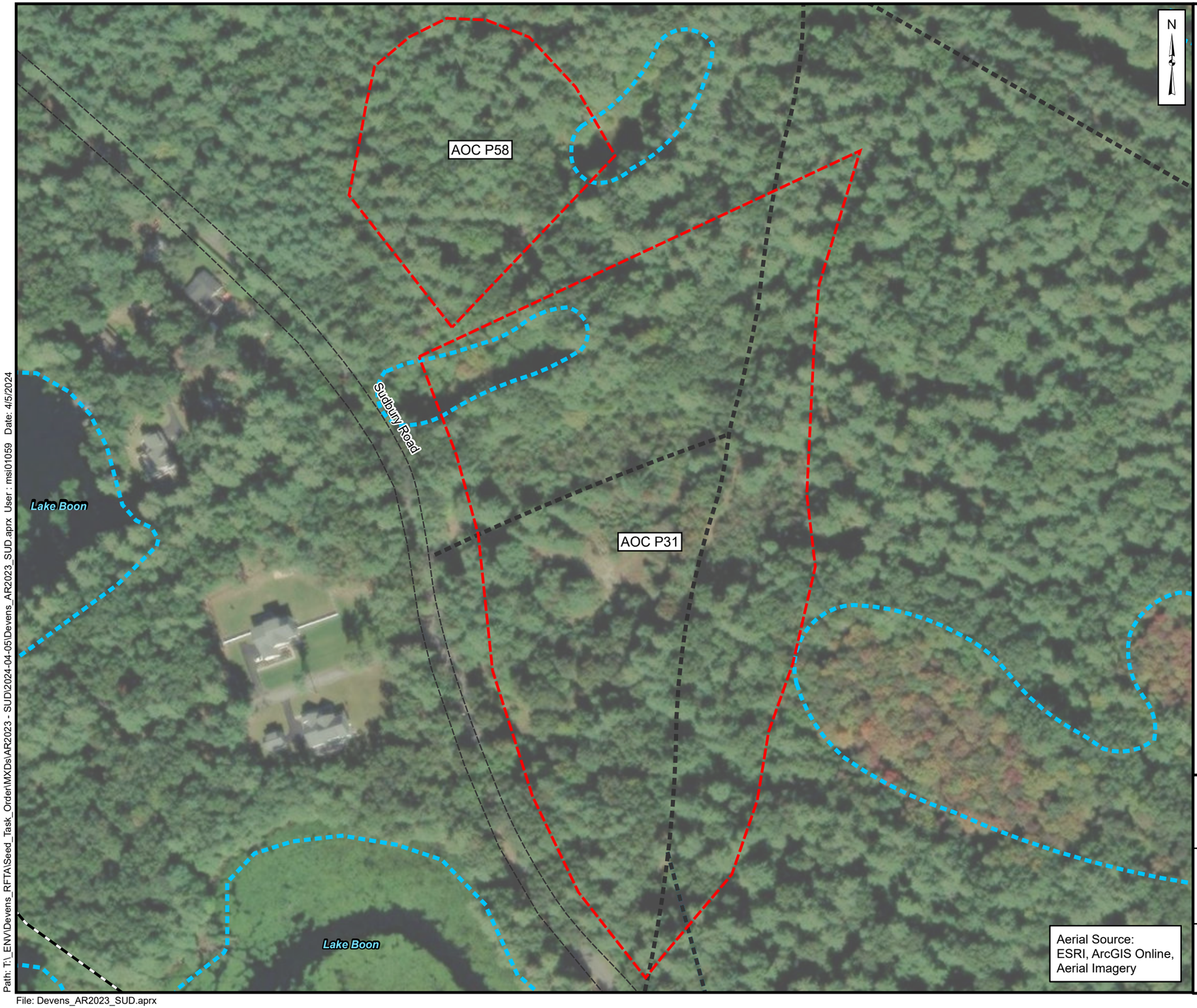


Legend

- Area of Concern
- Former Sudbury Training Annex
- Road
- Trail
- Surface Water Body

Note: Figure base map, including the trail and surface water bodiies are from the Town of Stow WebGIS database (https://experience.arcgis.com/experience/8fa6b097404d4de286f4fc6c2d42fa1f/page/Public-WebGIS/)

0 100 200
Feet

2023 Annual Long-Term Monitoring and Maintenance Report
Area of Contamination A7
Former Sudbury Training Annex
Sudbury, Massachusetts

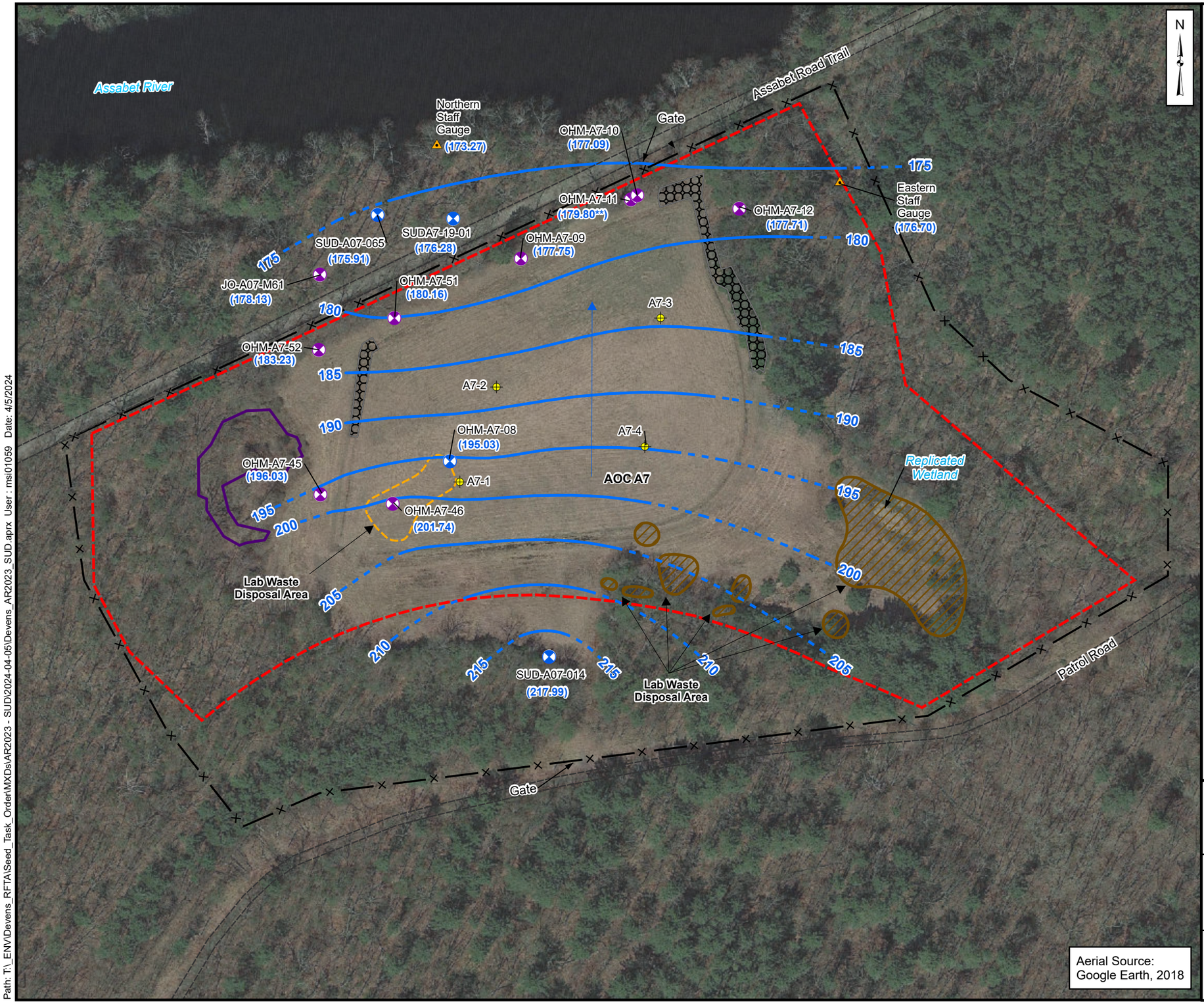
Site Layout
AOC P31 and AOC P58

SERES Engineering & Services, LLC
ARCADIS a joint venture

Figure
3

Path: T:_ENV\Devens_RFTA\Seed_Task_Order\MXDs\AR2023 - SUD\2024-04-05\Devens_AR2023_SUD.aprx User : msi01059 Date: 4/5/2024

File: Devens_AR2023_SUD.aprx



Legend

- Area of Contamination (AOC)
- Stump Pile Area
- Rip Rap
- Lab Waste Disposal Area
- Approximate Areas of Soil Removal
- LTM Sample Well*
- LTM Well - Gauge Only
- Staff Gauge
- Gas Vent
- Road
- Estimated Groundwater Flow
- Groundwater Contour (ft NAVD88) (Interval = 5 ft)
- Inferred Groundwater Contour (ft NAVD88) (Interval = 5 ft)
- Fence

Notes:
ft = feet
LTM = long-term monitoring
NAVD88 = North American Vertical Datum of 1988

* Annual sampling is conducted at well SUDA7-19-01. Biennial sampling is conducted at wells OHM-A7-08, SUD-A07-014, and SUD-A07-065 in even years (2022, 2024, 2026, etc.). Only SUDA7-19-01 was sampled in 2023.
** Well OHM-A7-11 was not used in contouring.

0 100 200
Feet

2023 Annual Long-Term Monitoring and Maintenance Report
Area of Contamination A7
Former Sudbury Training Annex
Sudbury, Massachusetts

Interpretive Water Table Elevation
Sudbury Annex - AOC A7
Fall 2023

SERES Engineering & Services, LLC
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Figure 4

Path: T:_ENV\Devens_RFTA\Seed_Task_Order\MXDs\AR2023 - SUD\2024-04-05\Devens_AR2023_SUD.aprx User : msi01059 Date: 4/5/2024

File: Devens_AR2023_SUD.aprx

Appendix A

Groundwater Field Sampling Forms

Groundwater Gauging Log

Client:	USACE	**Date(s):**	11-08-2023 to 11-08-2023
Facility:	Former Fort Devens	**Work Order(s):**	2023 Fall LTM
Facility Location:	Devens, MA, USA Updated	**Area:**	Sudbury Annex
Field Technician:	Michael Spaulding	**Equipment:**	Water Level Meter

Location	Date	Time	Scope of Work Completed?	Depth to Water(ft bmp)	Total Depth (ft bmp)	Comments
Eastern Staff Gauge	11-08-2023	09:34	Yes	5.29	--	
JO-07-M61	11-08-2023	09:52	Yes	1.97	5.3	
Northern Staff Gauge	11-08-2023	09:06	Yes	6.25	--	
OHM-A7-08	11-08-2023	08:07	Yes	24.01	35.81	Dedicated tubing
OHM-A7-09	11-08-2023	08:40	Yes	7.66	15.12	Dedicated tubing
OHM-A7-10	11-08-2023	09:20	Yes	3.31	11.66	
OHM-A7-11	11-08-2023	09:16	Yes	1.13	31.84	Dedicated tubing
OHM-A7-12	11-08-2023	09:32	Yes	8.58	9.98	Soft bottom
OHM-A7-45	11-08-2023	08:12	Yes	13.18	22.45	
OHM-A7-46	11-08-2023	07:59	Yes	15.33	19.5	Dedicated tubing
OHM-A7-51	11-08-2023	08:35	Yes	8.26	22.8	Dedicated tubing
OHM-A7-52	11-08-2023	08:24	Yes	4.08	22.05	
SUD-A07-014	11-08-2023	07:47	Yes	7.58	21.83	Dedicated tubing
SUD-A07-065	11-08-2023	09:46	Yes	1.91	10.09	
SUD-A7-19-01	11-08-2023	09:02	Yes	4.51	8.94	Dedicated tubing

ft-bmp = feet below measuring point

Groundwater Sampling Form

Location ID:	SUD-A7-19-01	**Date(s):**	2023-11-08	**Work Order(s):**		2023 Fall LTM Sampling	
Client:	USACE	**Facility:**	Former Fort Devens	**Facility Location:**	Devens, MA	**Area:**	Sudbury Annex
Weather(°F):	CLOUDS, T:37.51 °F, rH:56%, Clouds: 40%, Wind:17.27mph NW			**Field Technician:**		Frank Martinez	
Measuring Pt. Description:	Top of Inner Casing	**Screen Setting (ft-bgs):**	2.00-10.00	**Casing Diameter (in):**	2.00	**Well Casing Material:**	PVC
Static Water Level (ft-bmp):	4.51	**Total Depth (ft-bmp):**	8.94	**Water Column(ft):**	4.43	**Gallons in Well:**	0.72
Depth to Product (ft-bmp):	NA	**Pump Intake Depth(ft-bmp):**	NA	**Purge Method:**	Low Flow	**Purging Equipment:**	Peristaltic Pump
Purge Start Time:	09:15	**Total Volume Purged (gallons):**	2	**Sample ID:**	SUDA7-19-01-FAL23	**Sample Time:**	10:10
Purge End Time:	10:09	**Well Volumes Purged (total):**	2.78	**Replicate Type / Replicate ID:**	NA / NA	**Water Quality Meter/ ID:**	YSI Pro DSS / NA
Scope of work completed?	Yes						

Time	Total Elapsed (min)	Flow Rate	Flow Rate Unit	Depth to Water (ft)	pH (S.U.)	Specific Conductivity (mS/cm[c])	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	Redox (mV)	Appearance	
											Color	Odor
09:20	0	165	mL/min	4.54	5.46	0.046	23.7	3.18	12.1	114.9	Clear	No Odor
09:25	5	165	mL/min	4.54	5.19	0.042	17.3	2.24	12.3	148.5	Clear	No Odor
09:30	10	165	mL/min	4.56	5.11	0.039	5.2	1.8	12.3	163.9	Clear	No Odor
09:35	15	165	mL/min	4.56	5.06	0.037	0.82	1.7	12.3	180.5	Clear	No Odor
09:40	20	165	mL/min	4.58	5.04	0.036	0.15	1.6	12.5	194.4	Clear	No Odor
09:45	25	165	mL/min	4.58	5.02	0.035	0.3	1.57	12.5	204.4	Clear	No Odor
09:50	30	165	mL/min	4.58	5.02	0.035	0.4	1.53	12.5	211.1	Clear	No Odor
09:55	35	165	mL/min	4.59	5.02	0.035	0.5	1.54	12.4	216.4	Clear	No Odor
10:00	40	165	mL/min	4.58	5.02	0.035	0.64	1.49	12.6	220.1	Clear	No Odor

Constituent Sampled	Container	Number	Preservative
VOCs (SW8260)	Clear Glass	3	HCL
OC Pest (SW8081B)	Amber Glass	2	none
GenChem (SW9012)	Plastic	1	NAOH
GenChem (E410.4)	Plastic	1	none

Comments: Sampled at 10:10

Well Information:

Well Labeled Properly: yes

Is Well in Good Condition? good

Well Inspection Comments: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
uS/cm = microSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
S.U = standard units
mS/cm = milli

WATER QUALITY METER CALIBRATION LOG

PROJECT NAME	NE Devens TO LTM RAO SJV
PROJECT NUMBER	30167457
MODEL	YSI ProDSS
SERIAL NUMBER	N/A
SAMPLER	Frank Martinez
DATE	11/08/2023

TURBIDITY CALIBRATION

CALIBRATION READING			
LOT NUMBER	N/A		
PRE-CALIBRATION	POST-CALIBRATION	TURBIDITY CALIBRATION WITHIN RANGE	TIME
1.03	1	yes	08:00
9.9	10	yes	07:59

SINGLE POINT CALIBRATION

LOT NUMBER	N/A			
EXPIRATION DATE	N/A			
PARAMETERS	PRE-CALIBRATION	POST-CALIBRATION	SINGLE POINT CALIBRATION WITHIN RANGE	TIME
pH	7.05	7	yes	07:59
pH	4.06	4	yes	08:02
pH	10.13	10	yes	08:06
Conductivity	1.586	1.413	yes	08:14
ORP	246.6	231	yes	08:23
DO	99.2	99.9	yes	08:26

[1] CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE QUALITY METER

NOTES:

SIGNED

11/8/2023
DATE

Appendix B

Laboratory Analytical Report

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12

ANALYTICAL REPORT

PREPARED FOR

Attn: Heather Levesque
Seres Engineering & Services LLC
669 Marina Drive
Suite B7
Charleston, South Carolina 29492

Generated 11/30/2023 1:38:44 AM

JOB DESCRIPTION

Fort Devens, Sudbury Training Annex

JOB NUMBER

680-242926-1

Eurofins Savannah
5102 LaRoche Avenue
Savannah GA 31404

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Southeast, LLC Project Manager.

Authorization

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11/30/2023 1:38:44 AM

Authorized for release by
Jerry Lanier, Project Manager I
Jerry.Lanier@et.eurofinsus.com
(912)250-0281

Definitions/Glossary

Client: Seres Engineering & Services LLC
Job ID: 680-242926-1
Project/Site: Fort Devens, Sudbury Training Annex

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

GC Semi VOA

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: Seres Engineering & Services LLC
Job ID: 680-242926-1
Project/Site: Fort Devens, Sudbury Training Annex

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-242926-1	SUD-DUP01-FAL23	Water	11/08/23 10:10	11/14/23 10:05
680-242926-2	SUDA7-19-01-FAL23	Water	11/08/23 10:10	11/14/23 10:05

Job ID: 680-242926-1

Laboratory: Eurofins Savannah

Narrative

Job Narrative
680-242926-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 11/14/2023 10:05 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.3°C

GC/MS VOA
Method 8260D_DOD5: The continuing calibration verification (CCV) associated with batch 680-809615 recovered outside acceptance criteria, low biased, for Bromomethane and Chloroethane. A reporting limit (RL) standard was analyzed, and the target analytes are detected. Since the associated samples were non-detect for the analyte(s), the data are reported.

Method 8260D_DOD5: The continuing calibration verification (CCV) associated with batch 680-809615 recovered above the upper control limit for Trichlorofluoromethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: SUD-DUP01-FAL23 (680-242926-1), SUDA7-19-01-FAL23 (680-242926-2) and (CCVIS 680-809615/3).

Method 8260D_DOD5: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for analytical batch 680-809615 recovered outside control limits for the following analytes: Trichlorofluoromethane. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8260D_DOD5: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 680-809615 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Method 8260D_DOD5: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 680-809615 were outside control limits for one or more analytes. See QC Sample Results for detail. Analytes failed high and were non-detect in the samples.

Method 8260D_DOD5: Surrogate recovery was outside acceptance limits for the following matrix spike/matrix spike duplicate (MS/MSD) sample: SUDA7-19-01-FAL23 (680-242926-2[MS]). The parent sample's surrogate recovery was within limits. The MS/MSD sample has been qualified and reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Pesticides/PCBs
Method 8081B_8082A_D5: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 680-808343 and analytical batch 680-809299 were outside control limits. Sample matrix interference is suspected.

Method 8081B_8082A_D5: The laboratory control sample (LCS) for preparation batch 680-808343 and analytical batch 680-809299 recovered outside control limits for the following analytes: 4,4'-DDE, Aldrin, alpha-BHC, Dieldrin, Endosulfan I, Endosulfan sulfate, Endrin, gamma-BHC (Lindane) and Heptachlor epoxide. The associated sample(s) was re-prepared and/or re-analyzed outside holding time. Both sets of data have been reported.

Job ID: 680-242926-1 (Continued)

Laboratory: Eurofins Savannah (Continued)

Method 8081B_8082A_D5: The closing continuing calibration verification (CCV) standard associated with batch 680-809299 failed to meet acceptance limits. The associated samples were re-analyzed following a successful CCV resulting in repeated failure of the closing CCV , indicating that the sample matrix is adversely affecting the instrument and causing the failures.

Method 8081B_8082A_D5: The laboratory control sample (LCS) for preparation batch 680-809981 and analytical batch 680-810244 recovered outside control limits for the following analytes: 4,4'-DDD, Aldrin, alpha-BHC, beta-BHC, delta-BHC, Dieldrin, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin ketone, gamma-BHC (Lindane), Heptachlor and Heptachlor epoxide. The associated samples were re-prepared and/or re-analyzed outside holding time. Both sets of data have been reported.

Method 8081B_8082A_D5: Surrogate recovery for the following sample was outside control limits: SUD-DUP01-FAL23 (680-242926-1). Re-extraction and/or re-analysis was performed and surrogate recovery was outside control limits. Both sets of data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry

Method 410.4: The laboratory did not receive a preserved container for the following sample: SUD-DUP01-FAL23 (680-242926-1). Therefore, an unpreserved sample was used and preservative was added to the aliquot at the bench top prior to analysis. The desired pH was achieved.

Method 9012B_DOD5: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 680-808769 and analytical batch 680-808843 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens, Sudbury Training Annex

Job ID: 680-242926-1

Client Sample ID: SUD-DUP01-FAL23
Date Collected: 11/08/23 10:10
Date Received: 11/14/23 10:05

Lab Sample ID: 680-242926-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	10	U	25	10	3.7	ug/L		11/22/23 11:32	1
Benzene	1.0	U	2.0	1.0	0.27	ug/L		11/22/23 11:32	1
Bromobenzene	0.50	U	1.0	0.50	0.24	ug/L		11/22/23 11:32	1
Chlorobromomethane	1.0	U	2.0	1.0	0.34	ug/L		11/22/23 11:32	1
Dichlorobromomethane	1.0	U	2.0	1.0	0.25	ug/L		11/22/23 11:32	1
Bromoform	2.0	U	2.5	2.0	0.59	ug/L		11/22/23 11:32	1
Bromomethane	10	U Q	20	10	3.7	ug/L		11/22/23 11:32	1
2-Butanone (MEK)	20	U	25	20	6.4	ug/L		11/22/23 11:32	1
n-Butylbenzene	2.0	U	2.5	2.0	0.52	ug/L		11/22/23 11:32	1
sec-Butylbenzene	2.0	U	2.5	2.0	0.53	ug/L		11/22/23 11:32	1
tert-Butylbenzene	1.0	U	2.0	1.0	0.43	ug/L		11/22/23 11:32	1
Carbon disulfide	1.0	U	2.0	1.0	0.43	ug/L		11/22/23 11:32	1
Carbon tetrachloride	1.0	U	2.0	1.0	0.30	ug/L		11/22/23 11:32	1
Chlorobenzene	0.50	U	1.0	0.50	0.15	ug/L		11/22/23 11:32	1
Chloroethane	10	U Q	20	10	4.6	ug/L		11/22/23 11:32	1
Chloroform	1.0	U	2.0	1.0	0.27	ug/L		11/22/23 11:32	1
Chloromethane	2.0	U	2.5	2.0	0.54	ug/L		11/22/23 11:32	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.25	ug/L		11/22/23 11:32	1
4-Chlorotoluene	1.0	U	2.0	1.0	0.41	ug/L		11/22/23 11:32	1
Chlorodibromomethane	1.0	U	2.0	1.0	0.39	ug/L		11/22/23 11:32	1
1,2-Dibromo-3-Chloropropane	5.0	U	10	5.0	1.8	ug/L		11/22/23 11:32	1
Ethylene Dibromide	1.0	U	2.0	1.0	0.33	ug/L		11/22/23 11:32	1
Dibromomethane	1.0	U	2.0	1.0	0.34	ug/L		11/22/23 11:32	1
1,2-Dichlorobenzene	1.0	U	2.0	1.0	0.31	ug/L		11/22/23 11:32	1
1,3-Dichlorobenzene	1.0	U	2.0	1.0	0.31	ug/L		11/22/23 11:32	1
1,4-Dichlorobenzene	1.0	U	2.0	1.0	0.31	ug/L		11/22/23 11:32	1
Dichlorodifluoromethane	1.0	U	2.0	1.0	0.36	ug/L		11/22/23 11:32	1
1,1-Dichloroethane	1.0	U	2.0	1.0	0.33	ug/L		11/22/23 11:32	1
1,2-Dichloroethane	1.0	U M	2.0	1.0	0.25	ug/L		11/22/23 11:32	1
cis-1,2-Dichloroethene	1.0	U	2.0	1.0	0.25	ug/L		11/22/23 11:32	1
trans-1,2-Dichloroethene	1.0	U	2.0	1.0	0.34	ug/L		11/22/23 11:32	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.37	ug/L		11/22/23 11:32	1
1,1-Dichloroethene	1.0	U	2.0	1.0	0.33	ug/L		11/22/23 11:32	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.22	ug/L		11/22/23 11:32	1
1,3-Dichloropropane	1.0	U	2.0	1.0	0.36	ug/L		11/22/23 11:32	1
2,2-Dichloropropane	1.0	U	2.0	1.0	0.35	ug/L		11/22/23 11:32	1
1,1-Dichloropropene	1.0	U	2.0	1.0	0.28	ug/L		11/22/23 11:32	1
cis-1,3-Dichloropropene	1.0	U	2.0	1.0	0.26	ug/L		11/22/23 11:32	1
trans-1,3-Dichloropropene	1.0	U	2.0	1.0	0.23	ug/L		11/22/23 11:32	1
Ethylbenzene	0.50	U	1.0	0.50	0.20	ug/L		11/22/23 11:32	1
Hexachlorobutadiene	1.0	U	5.0	1.0	0.22	ug/L		11/22/23 11:32	1
2-Hexanone	10	U	20	10	3.2	ug/L		11/22/23 11:32	1
Isopropylbenzene	1.0	U	2.0	1.0	0.26	ug/L		11/22/23 11:32	1
4-Isopropyltoluene	1.0	U	2.0	1.0	0.44	ug/L		11/22/23 11:32	1
Methylene Chloride	10	U	20	10	3.2	ug/L		11/22/23 11:32	1
4-Methyl-2-pentanone (MIBK)	10	U	20	10	2.7	ug/L		11/22/23 11:32	1
Methyl tert-butyl ether	2.0	U	5.0	2.0	0.81	ug/L		11/22/23 11:32	1
Naphthalene	5.0	U	10	5.0	2.4	ug/L		11/22/23 11:32	1
N-Propylbenzene	1.0	U M	2.0	1.0	0.41	ug/L		11/22/23 11:32	1

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens, Sudbury Training Annex

Job ID: 680-242926-1

Client Sample ID: SUD-DUP01-FAL23
Date Collected: 11/08/23 10:10
Date Received: 11/14/23 10:05

Lab Sample ID: 680-242926-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Styrene	1.0	U	2.0	1.0	0.27	ug/L		11/22/23 11:32	1
1,1,1,2-Tetrachloroethane	1.0	U	2.0	1.0	0.36	ug/L		11/22/23 11:32	1
1,1,2,2-Tetrachloroethane	1.0	U	2.0	1.0	0.40	ug/L		11/22/23 11:32	1
Tetrachloroethene	1.0	U	2.0	1.0	0.35	ug/L		11/22/23 11:32	1
Toluene	1.0	U	2.0	1.0	0.25	ug/L		11/22/23 11:32	1
1,2,3-Trichlorobenzene	2.0	U	5.0	2.0	0.81	ug/L		11/22/23 11:32	1
1,2,4-Trichlorobenzene	2.0	U	5.0	2.0	0.53	ug/L		11/22/23 11:32	1
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.21	ug/L		11/22/23 11:32	1
1,1,2-Trichloroethane	1.0	U	2.0	1.0	0.32	ug/L		11/22/23 11:32	1
Trichloroethene	0.50	U	1.0	0.50	0.20	ug/L		11/22/23 11:32	1
Trichlorofluoromethane	1.0	U Q	2.0	1.0	0.33	ug/L		11/22/23 11:32	1
1,2,3-Trichloropropane	1.0	U	2.0	1.0	0.48	ug/L		11/22/23 11:32	1
1,2,4-Trimethylbenzene	1.0	U	2.0	1.0	0.43	ug/L		11/22/23 11:32	1
1,3,5-Trimethylbenzene	1.0	U	2.0	1.0	0.28	ug/L		11/22/23 11:32	1
Vinyl acetate	2.0	U	2.5	2.0	0.69	ug/L		11/22/23 11:32	1
Vinyl chloride	1.0	U	2.0	1.0	0.40	ug/L		11/22/23 11:32	1
o-Xylene	1.0	U	2.0	1.0	0.26	ug/L		11/22/23 11:32	1
m-Xylene & p-Xylene	1.0	U	2.0	1.0	0.49	ug/L		11/22/23 11:32	1
Xylenes, Total	1.0	U	2.0	1.0	0.49	ug/L		11/22/23 11:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*92*		*89 - 112*		*11/22/23 11:32*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*81 - 118*		*11/22/23 11:32*	*1*
4-Bromofluorobenzene (Surr)	*94*		*85 - 114*		*11/22/23 11:32*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 119*		*11/22/23 11:32*	*1*

Method: SW846 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.0042	U M	0.053	0.0042	0.0021	ug/L		11/20/23 20:23	1
4,4'-DDE	0.0042	U Q M	0.053	0.0042	0.0011	ug/L		11/20/23 20:23	1
4,4'-DDT	0.0042	U	0.053	0.0042	0.0011	ug/L		11/20/23 20:23	1
Aldrin	0.0042	U Q	0.053	0.0042	0.0021	ug/L		11/20/23 20:23	1
alpha-BHC	0.0042	U Q	0.053	0.0042	0.0011	ug/L		11/20/23 20:23	1
beta-BHC	0.0042	U	0.053	0.0042	0.0021	ug/L		11/20/23 20:23	1
delta-BHC	0.0042	U	0.053	0.0042	0.0021	ug/L		11/20/23 20:23	1
Dieldrin	0.0042	U Q	0.053	0.0042	0.0021	ug/L		11/20/23 20:23	1
Endosulfan I	0.0042	U Q	0.053	0.0042	0.0021	ug/L		11/20/23 20:23	1
Endosulfan II	0.0042	U M	0.053	0.0042	0.0021	ug/L		11/20/23 20:23	1
Endosulfan sulfate	0.0042	U Q M	0.053	0.0042	0.0021	ug/L		11/20/23 20:23	1
Endrin	0.0042	U Q	0.053	0.0042	0.0011	ug/L		11/20/23 20:23	1
Endrin aldehyde	0.017	U	0.053	0.017	0.0042	ug/L		11/20/23 20:23	1
Endrin ketone	0.017	U M	0.053	0.017	0.0042	ug/L		11/20/23 20:23	1
gamma-BHC (Lindane)	0.0042	U Q	0.053	0.0042	0.0011	ug/L		11/20/23 20:23	1
Heptachlor	0.0042	U	0.053	0.0042	0.0011	ug/L		11/20/23 20:23	1
Heptachlor epoxide	0.0042	U Q	0.053	0.0042	0.0021	ug/L		11/20/23 20:23	1
Methoxychlor	0.0042	U M	0.053	0.0042	0.0021	ug/L		11/20/23 20:23	1
Chlordane (technical)	0.42	U M	0.53	0.42	0.17	ug/L		11/20/23 20:23	1
Toxaphene	0.85	U Q M	5.3	0.85	0.33	ug/L		11/20/23 20:23	1

Client Sample ID: SUD-DUP01-FAL23
Lab Sample ID: 680-242926-1
Date Collected: 11/08/23 10:10
Matrix: Water
Date Received: 11/14/23 10:05

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*78*		*14 - 130*	*11/15/23 10:07*	*11/20/23 20:23*	*1*
Tetrachloro-m-xylene	*42*	*Q*	*44 - 124*	*11/15/23 10:07*	*11/20/23 20:23*	*1*

Method: SW846 8081B 8082A - Organochlorine Pesticides & PCBs (GC) - RE

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.0042	U H Q	0.053	0.0042	0.0021	ug/L		11/28/23 18:16	1
4,4'-DDE	0.0042	U H Q	0.053	0.0042	0.0011	ug/L		11/28/23 18:16	1
4,4'-DDT	0.0042	U H	0.053	0.0042	0.0011	ug/L		11/28/23 18:16	1
Aldrin	0.0042	U H Q	0.053	0.0042	0.0021	ug/L		11/28/23 18:16	1
alpha-BHC	0.0042	U H Q	0.053	0.0042	0.0011	ug/L		11/28/23 18:16	1
beta-BHC	0.0042	U H M Q	0.053	0.0042	0.0021	ug/L		11/28/23 18:16	1
delta-BHC	0.0042	U H Q	0.053	0.0042	0.0021	ug/L		11/28/23 18:16	1
Dieldrin	0.0042	U H Q	0.053	0.0042	0.0021	ug/L		11/28/23 18:16	1
Endosulfan I	0.0042	U H Q	0.053	0.0042	0.0021	ug/L		11/28/23 18:16	1
Endosulfan II	0.0042	U H Q	0.053	0.0042	0.0021	ug/L		11/28/23 18:16	1
Endosulfan sulfate	0.0042	U H Q	0.053	0.0042	0.0021	ug/L		11/28/23 18:16	1
Endrin	0.0042	U H Q	0.053	0.0042	0.0011	ug/L		11/28/23 18:16	1
Endrin aldehyde	0.017	U H	0.053	0.017	0.0042	ug/L		11/28/23 18:16	1
Endrin ketone	0.017	U H Q	0.053	0.017	0.0042	ug/L		11/28/23 18:16	1
gamma-BHC (Lindane)	0.0042	U H Q	0.053	0.0042	0.0011	ug/L		11/28/23 18:16	1
Heptachlor	0.0042	U H M Q	0.053	0.0042	0.0011	ug/L		11/28/23 18:16	1
Heptachlor epoxide	0.0042	U H Q	0.053	0.0042	0.0021	ug/L		11/28/23 18:16	1
Methoxychlor	0.0042	U H	0.053	0.0042	0.0021	ug/L		11/28/23 18:16	1
Chlordane (technical)	0.42	U H M	0.53	0.42	0.17	ug/L		11/28/23 18:16	1
Toxaphene	0.84	U H M	5.3	0.84	0.33	ug/L		11/28/23 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*57*		*14 - 130*	*11/27/23 07:51*	*11/28/23 18:16*	*1*
Tetrachloro-m-xylene	*35*	*Q*	*44 - 124*	*11/27/23 07:51*	*11/28/23 18:16*	*1*

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chemical Oxygen Demand (EPA 410.4)	20	U	20	20	8.7	mg/L		11/17/23 11:07	1
Cyanide, Total (EPA 9012B)	0.0050	U	0.010	0.0050	0.0025	mg/L		11/17/23 10:20	1

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens, Sudbury Training Annex

Job ID: 680-242926-1

Client Sample ID: SUDA7-19-01-FAL23
Date Collected: 11/08/23 10:10
Date Received: 11/14/23 10:05

Lab Sample ID: 680-242926-2
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	10	U	25	10	3.7	ug/L		11/22/23 11:55	1
Benzene	1.0	U	2.0	1.0	0.27	ug/L		11/22/23 11:55	1
Bromobenzene	0.50	U	1.0	0.50	0.24	ug/L		11/22/23 11:55	1
Chlorobromomethane	1.0	U	2.0	1.0	0.34	ug/L		11/22/23 11:55	1
Dichlorobromomethane	1.0	U	2.0	1.0	0.25	ug/L		11/22/23 11:55	1
Bromoform	2.0	U	2.5	2.0	0.59	ug/L		11/22/23 11:55	1
Bromomethane	10	U Q J1	20	10	3.7	ug/L		11/22/23 11:55	1
2-Butanone (MEK)	20	U	25	20	6.4	ug/L		11/22/23 11:55	1
n-Butylbenzene	2.0	U	2.5	2.0	0.52	ug/L		11/22/23 11:55	1
sec-Butylbenzene	2.0	U	2.5	2.0	0.53	ug/L		11/22/23 11:55	1
tert-Butylbenzene	1.0	U	2.0	1.0	0.43	ug/L		11/22/23 11:55	1
Carbon disulfide	1.0	U	2.0	1.0	0.43	ug/L		11/22/23 11:55	1
Carbon tetrachloride	1.0	U	2.0	1.0	0.30	ug/L		11/22/23 11:55	1
Chlorobenzene	0.50	U	1.0	0.50	0.15	ug/L		11/22/23 11:55	1
Chloroethane	10	U Q	20	10	4.6	ug/L		11/22/23 11:55	1
Chloroform	1.0	U	2.0	1.0	0.27	ug/L		11/22/23 11:55	1
Chloromethane	2.0	U	2.5	2.0	0.54	ug/L		11/22/23 11:55	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.25	ug/L		11/22/23 11:55	1
4-Chlorotoluene	1.0	U	2.0	1.0	0.41	ug/L		11/22/23 11:55	1
Chlorodibromomethane	1.0	U	2.0	1.0	0.39	ug/L		11/22/23 11:55	1
1,2-Dibromo-3-Chloropropane	5.0	U	10	5.0	1.8	ug/L		11/22/23 11:55	1
Ethylene Dibromide	1.0	U	2.0	1.0	0.33	ug/L		11/22/23 11:55	1
Dibromomethane	1.0	U	2.0	1.0	0.34	ug/L		11/22/23 11:55	1
1,2-Dichlorobenzene	1.0	U J1	2.0	1.0	0.31	ug/L		11/22/23 11:55	1
1,3-Dichlorobenzene	1.0	U	2.0	1.0	0.31	ug/L		11/22/23 11:55	1
1,4-Dichlorobenzene	1.0	U	2.0	1.0	0.31	ug/L		11/22/23 11:55	1
Dichlorodifluoromethane	1.0	U	2.0	1.0	0.36	ug/L		11/22/23 11:55	1
1,1-Dichloroethane	1.0	U	2.0	1.0	0.33	ug/L		11/22/23 11:55	1
1,2-Dichloroethane	1.0	U	2.0	1.0	0.25	ug/L		11/22/23 11:55	1
cis-1,2-Dichloroethene	1.0	U	2.0	1.0	0.25	ug/L		11/22/23 11:55	1
trans-1,2-Dichloroethene	1.0	U	2.0	1.0	0.34	ug/L		11/22/23 11:55	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.37	ug/L		11/22/23 11:55	1
1,1-Dichloroethene	1.0	U	2.0	1.0	0.33	ug/L		11/22/23 11:55	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.22	ug/L		11/22/23 11:55	1
1,3-Dichloropropane	1.0	U	2.0	1.0	0.36	ug/L		11/22/23 11:55	1
2,2-Dichloropropane	1.0	U	2.0	1.0	0.35	ug/L		11/22/23 11:55	1
1,1-Dichloropropene	1.0	U	2.0	1.0	0.28	ug/L		11/22/23 11:55	1
cis-1,3-Dichloropropene	1.0	U	2.0	1.0	0.26	ug/L		11/22/23 11:55	1
trans-1,3-Dichloropropene	1.0	U	2.0	1.0	0.23	ug/L		11/22/23 11:55	1
Ethylbenzene	0.50	U	1.0	0.50	0.20	ug/L		11/22/23 11:55	1
Hexachlorobutadiene	1.0	U	5.0	1.0	0.22	ug/L		11/22/23 11:55	1
2-Hexanone	10	U	20	10	3.2	ug/L		11/22/23 11:55	1
Isopropylbenzene	1.0	U	2.0	1.0	0.26	ug/L		11/22/23 11:55	1
4-Isopropyltoluene	1.0	U	2.0	1.0	0.44	ug/L		11/22/23 11:55	1
Methylene Chloride	10	U	20	10	3.2	ug/L		11/22/23 11:55	1
4-Methyl-2-pentanone (MIBK)	10	U	20	10	2.7	ug/L		11/22/23 11:55	1
Methyl tert-butyl ether	2.0	U	5.0	2.0	0.81	ug/L		11/22/23 11:55	1
Naphthalene	5.0	U	10	5.0	2.4	ug/L		11/22/23 11:55	1
N-Propylbenzene	1.0	U	2.0	1.0	0.41	ug/L		11/22/23 11:55	1

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens, Sudbury Training Annex

Job ID: 680-242926-1

Client Sample ID: SUDA7-19-01-FAL23
Date Collected: 11/08/23 10:10
Date Received: 11/14/23 10:05

Lab Sample ID: 680-242926-2
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Styrene	1.0	U	2.0	1.0	0.27	ug/L		11/22/23 11:55	1
1,1,1,2-Tetrachloroethane	1.0	U	2.0	1.0	0.36	ug/L		11/22/23 11:55	1
1,1,2,2-Tetrachloroethane	1.0	U	2.0	1.0	0.40	ug/L		11/22/23 11:55	1
Tetrachloroethene	1.0	U	2.0	1.0	0.35	ug/L		11/22/23 11:55	1
Toluene	1.0	U	2.0	1.0	0.25	ug/L		11/22/23 11:55	1
1,2,3-Trichlorobenzene	2.0	U	5.0	2.0	0.81	ug/L		11/22/23 11:55	1
1,2,4-Trichlorobenzene	2.0	U	5.0	2.0	0.53	ug/L		11/22/23 11:55	1
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.21	ug/L		11/22/23 11:55	1
1,1,2-Trichloroethane	1.0	U	2.0	1.0	0.32	ug/L		11/22/23 11:55	1
Trichloroethene	0.50	U	1.0	0.50	0.20	ug/L		11/22/23 11:55	1
Trichlorofluoromethane	1.0	U Q J1	2.0	1.0	0.33	ug/L		11/22/23 11:55	1
1,2,3-Trichloropropane	1.0	U	2.0	1.0	0.48	ug/L		11/22/23 11:55	1
1,2,4-Trimethylbenzene	1.0	U	2.0	1.0	0.43	ug/L		11/22/23 11:55	1
1,3,5-Trimethylbenzene	1.0	U	2.0	1.0	0.28	ug/L		11/22/23 11:55	1
Vinyl acetate	2.0	U	2.5	2.0	0.69	ug/L		11/22/23 11:55	1
Vinyl chloride	1.0	U	2.0	1.0	0.40	ug/L		11/22/23 11:55	1
o-Xylene	1.0	U	2.0	1.0	0.26	ug/L		11/22/23 11:55	1
m-Xylene & p-Xylene	1.0	U	2.0	1.0	0.49	ug/L		11/22/23 11:55	1
Xylenes, Total	1.0	U	2.0	1.0	0.49	ug/L		11/22/23 11:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*96*		*89 - 112*		*11/22/23 11:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*81 - 118*		*11/22/23 11:55*	*1*
4-Bromofluorobenzene (Surr)	*96*		*85 - 114*		*11/22/23 11:55*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 119*		*11/22/23 11:55*	*1*

Method: SW846 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.0042	U J1	0.052	0.0042	0.0021	ug/L		11/20/23 18:48	1
4,4'-DDE	0.0042	U J1 Q M	0.052	0.0042	0.0010	ug/L		11/20/23 18:48	1
4,4'-DDT	0.0042	U	0.052	0.0042	0.0010	ug/L		11/20/23 18:48	1
Aldrin	0.0042	U J1 Q	0.052	0.0042	0.0021	ug/L		11/20/23 18:48	1
alpha-BHC	0.0042	U J1 Q	0.052	0.0042	0.0010	ug/L		11/20/23 18:48	1
beta-BHC	0.0042	U	0.052	0.0042	0.0021	ug/L		11/20/23 18:48	1
delta-BHC	0.0042	U	0.052	0.0042	0.0021	ug/L		11/20/23 18:48	1
Dieldrin	0.0042	U J1 Q M	0.052	0.0042	0.0021	ug/L		11/20/23 18:48	1
Endosulfan I	0.0042	U J1 Q	0.052	0.0042	0.0021	ug/L		11/20/23 18:48	1
Endosulfan II	0.0042	U M	0.052	0.0042	0.0021	ug/L		11/20/23 18:48	1
Endosulfan sulfate	0.0042	U J1 Q M	0.052	0.0042	0.0021	ug/L		11/20/23 18:48	1
Endrin	0.0042	U J1 Q	0.052	0.0042	0.0010	ug/L		11/20/23 18:48	1
Endrin aldehyde	0.017	U	0.052	0.017	0.0042	ug/L		11/20/23 18:48	1
Endrin ketone	0.017	U J1	0.052	0.017	0.0042	ug/L		11/20/23 18:48	1
gamma-BHC (Lindane)	0.0042	U J1 Q	0.052	0.0042	0.0010	ug/L		11/20/23 18:48	1
Heptachlor	0.0042	U J1 M	0.052	0.0042	0.0010	ug/L		11/20/23 18:48	1
Heptachlor epoxide	0.0042	U J1 Q	0.052	0.0042	0.0021	ug/L		11/20/23 18:48	1
Methoxychlor	0.0042	U M	0.052	0.0042	0.0021	ug/L		11/20/23 18:48	1
Chlordane (technical)	0.42	U M	0.52	0.42	0.17	ug/L		11/20/23 18:48	1
Toxaphene	0.84	U Q M	5.2	0.84	0.33	ug/L		11/20/23 18:48	1

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens, Sudbury Training Annex

Job ID: 680-242926-1

Client Sample ID: SUDA7-19-01-FAL23
Date Collected: 11/08/23 10:10
Date Received: 11/14/23 10:05

Lab Sample ID: 680-242926-2
Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	88		14 - 130	11/15/23 10:07	11/20/23 18:48	1
Tetrachloro-m-xylene	48		44 - 124	11/15/23 10:07	11/20/23 18:48	1

Method: SW846 8081B 8082A - Organochlorine Pesticides & PCBs (GC) - RE

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.0043	U H J1 Q	0.054	0.0043	0.0021	ug/L		11/28/23 17:59	1
4,4'-DDE	0.0043	U H Q	0.054	0.0043	0.0011	ug/L		11/28/23 17:59	1
4,4'-DDT	0.0043	U H	0.054	0.0043	0.0011	ug/L		11/28/23 17:59	1
Aldrin	0.0043	U H J1 Q	0.054	0.0043	0.0021	ug/L		11/28/23 17:59	1
alpha-BHC	0.0043	U H J1 Q	0.054	0.0043	0.0011	ug/L		11/28/23 17:59	1
beta-BHC	0.0043	U H M J1 Q	0.054	0.0043	0.0021	ug/L		11/28/23 17:59	1
delta-BHC	0.0043	U H M J1 Q	0.054	0.0043	0.0021	ug/L		11/28/23 17:59	1
Dieldrin	0.0043	U H J1 Q	0.054	0.0043	0.0021	ug/L		11/28/23 17:59	1
Endosulfan I	0.0043	U H J1 Q	0.054	0.0043	0.0021	ug/L		11/28/23 17:59	1
Endosulfan II	0.0043	U H J1 Q	0.054	0.0043	0.0021	ug/L		11/28/23 17:59	1
Endosulfan sulfate	0.0043	U H J1 Q	0.054	0.0043	0.0021	ug/L		11/28/23 17:59	1
Endrin	0.0043	U H J1 Q	0.054	0.0043	0.0011	ug/L		11/28/23 17:59	1
Endrin aldehyde	0.017	U H	0.054	0.017	0.0043	ug/L		11/28/23 17:59	1
Endrin ketone	0.017	U H J1 Q	0.054	0.017	0.0043	ug/L		11/28/23 17:59	1
gamma-BHC (Lindane)	0.0043	U H J1 Q	0.054	0.0043	0.0011	ug/L		11/28/23 17:59	1
Heptachlor	0.0043	U H M J1 Q	0.054	0.0043	0.0011	ug/L		11/28/23 17:59	1
Heptachlor epoxide	0.0043	U H J1 Q	0.054	0.0043	0.0021	ug/L		11/28/23 17:59	1
Methoxychlor	0.0043	U H J1	0.054	0.0043	0.0021	ug/L		11/28/23 17:59	1
Chlordane (technical)	0.43	U H M	0.54	0.43	0.17	ug/L		11/28/23 17:59	1
Toxaphene	0.86	U H M	5.4	0.86	0.33	ug/L		11/28/23 17:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	33		14 - 130	11/27/23 07:51	11/28/23 17:59	1
Tetrachloro-m-xylene	20	Q	44 - 124	11/27/23 07:51	11/28/23 17:59	1

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chemical Oxygen Demand (EPA 410.4)	20	U	20	20	8.7	mg/L		11/20/23 10:26	1
Cyanide, Total (EPA 9012B)	**0.0025**	**J J1**	0.010	0.0050	0.0025	mg/L		11/17/23 10:20	1

Method: 8260D - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 680-809615/8
Matrix: Water
Analysis Batch: 809615

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Acetone	10	U	25	10	3.7	ug/L		11/22/23 10:57	1
Benzene	1.0	U	2.0	1.0	0.27	ug/L		11/22/23 10:57	1
Bromobenzene	0.50	U	1.0	0.50	0.24	ug/L		11/22/23 10:57	1
Chlorobromomethane	1.0	U	2.0	1.0	0.34	ug/L		11/22/23 10:57	1
Dichlorobromomethane	1.0	U	2.0	1.0	0.25	ug/L		11/22/23 10:57	1
Bromoform	2.0	U	2.5	2.0	0.59	ug/L		11/22/23 10:57	1
Bromomethane	10	U	20	10	3.7	ug/L		11/22/23 10:57	1
2-Butanone (MEK)	20	U	25	20	6.4	ug/L		11/22/23 10:57	1
n-Butylbenzene	2.0	U M	2.5	2.0	0.52	ug/L		11/22/23 10:57	1
sec-Butylbenzene	2.0	U	2.5	2.0	0.53	ug/L		11/22/23 10:57	1
tert-Butylbenzene	1.0	U	2.0	1.0	0.43	ug/L		11/22/23 10:57	1
Carbon disulfide	1.0	U	2.0	1.0	0.43	ug/L		11/22/23 10:57	1
Carbon tetrachloride	1.0	U	2.0	1.0	0.30	ug/L		11/22/23 10:57	1
Chlorobenzene	0.50	U	1.0	0.50	0.15	ug/L		11/22/23 10:57	1
Chloroethane	10	U	20	10	4.6	ug/L		11/22/23 10:57	1
Chloroform	1.0	U	2.0	1.0	0.27	ug/L		11/22/23 10:57	1
Chloromethane	2.0	U	2.5	2.0	0.54	ug/L		11/22/23 10:57	1
2-Chlorotoluene	0.50	U	1.0	0.50	0.25	ug/L		11/22/23 10:57	1
4-Chlorotoluene	1.0	U M	2.0	1.0	0.41	ug/L		11/22/23 10:57	1
Chlorodibromomethane	1.0	U	2.0	1.0	0.39	ug/L		11/22/23 10:57	1
1,2-Dibromo-3-Chloropropane	5.0	U	10	5.0	1.8	ug/L		11/22/23 10:57	1
Ethylene Dibromide	1.0	U	2.0	1.0	0.33	ug/L		11/22/23 10:57	1
Dibromomethane	1.0	U	2.0	1.0	0.34	ug/L		11/22/23 10:57	1
1,2-Dichlorobenzene	1.0	U	2.0	1.0	0.31	ug/L		11/22/23 10:57	1
1,3-Dichlorobenzene	1.0	U	2.0	1.0	0.31	ug/L		11/22/23 10:57	1
1,4-Dichlorobenzene	1.0	U	2.0	1.0	0.31	ug/L		11/22/23 10:57	1
Dichlorodifluoromethane	1.0	U	2.0	1.0	0.36	ug/L		11/22/23 10:57	1
1,1-Dichloroethane	1.0	U	2.0	1.0	0.33	ug/L		11/22/23 10:57	1
1,2-Dichloroethane	1.0	U M	2.0	1.0	0.25	ug/L		11/22/23 10:57	1
cis-1,2-Dichloroethene	1.0	U	2.0	1.0	0.25	ug/L		11/22/23 10:57	1
trans-1,2-Dichloroethene	1.0	U	2.0	1.0	0.34	ug/L		11/22/23 10:57	1
1,2-Dichloroethene, Total	1.0	U	2.0	1.0	0.37	ug/L		11/22/23 10:57	1
1,1-Dichloroethene	1.0	U	2.0	1.0	0.33	ug/L		11/22/23 10:57	1
1,2-Dichloropropane	0.50	U	1.0	0.50	0.22	ug/L		11/22/23 10:57	1
1,3-Dichloropropane	1.0	U	2.0	1.0	0.36	ug/L		11/22/23 10:57	1
2,2-Dichloropropane	1.0	U	2.0	1.0	0.35	ug/L		11/22/23 10:57	1
1,1-Dichloropropene	1.0	U	2.0	1.0	0.28	ug/L		11/22/23 10:57	1
cis-1,3-Dichloropropene	1.0	U	2.0	1.0	0.26	ug/L		11/22/23 10:57	1
trans-1,3-Dichloropropene	1.0	U	2.0	1.0	0.23	ug/L		11/22/23 10:57	1
Ethylbenzene	0.50	U M	1.0	0.50	0.20	ug/L		11/22/23 10:57	1
Hexachlorobutadiene	1.0	U	5.0	1.0	0.22	ug/L		11/22/23 10:57	1
2-Hexanone	10	U	20	10	3.2	ug/L		11/22/23 10:57	1
Isopropylbenzene	1.0	U	2.0	1.0	0.26	ug/L		11/22/23 10:57	1
4-Isopropyltoluene	1.0	U M	2.0	1.0	0.44	ug/L		11/22/23 10:57	1
Methylene Chloride	10	U	20	10	3.2	ug/L		11/22/23 10:57	1
4-Methyl-2-pentanone (MIBK)	10	U	20	10	2.7	ug/L		11/22/23 10:57	1
Methyl tert-butyl ether	2.0	U	5.0	2.0	0.81	ug/L		11/22/23 10:57	1
Naphthalene	5.0	U	10	5.0	2.4	ug/L		11/22/23 10:57	1

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 680-809615/8
Matrix: Water
Analysis Batch: 809615

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
N-Propylbenzene	1.0	U M	2.0	1.0	0.41	ug/L		11/22/23 10:57	1
Styrene	1.0	U M	2.0	1.0	0.27	ug/L		11/22/23 10:57	1
1,1,1,2-Tetrachloroethane	1.0	U	2.0	1.0	0.36	ug/L		11/22/23 10:57	1
1,1,2,2-Tetrachloroethane	1.0	U	2.0	1.0	0.40	ug/L		11/22/23 10:57	1
Tetrachloroethene	1.0	U	2.0	1.0	0.35	ug/L		11/22/23 10:57	1
Toluene	1.0	U	2.0	1.0	0.25	ug/L		11/22/23 10:57	1
1,2,3-Trichlorobenzene	2.0	U	5.0	2.0	0.81	ug/L		11/22/23 10:57	1
1,2,4-Trichlorobenzene	2.0	U M	5.0	2.0	0.53	ug/L		11/22/23 10:57	1
1,1,1-Trichloroethane	0.50	U	1.0	0.50	0.21	ug/L		11/22/23 10:57	1
1,1,2-Trichloroethane	1.0	U	2.0	1.0	0.32	ug/L		11/22/23 10:57	1
Trichloroethene	0.50	U	1.0	0.50	0.20	ug/L		11/22/23 10:57	1
Trichlorofluoromethane	1.0	U	2.0	1.0	0.33	ug/L		11/22/23 10:57	1
1,2,3-Trichloropropane	1.0	U	2.0	1.0	0.48	ug/L		11/22/23 10:57	1
1,2,4-Trimethylbenzene	1.0	U	2.0	1.0	0.43	ug/L		11/22/23 10:57	1
1,3,5-Trimethylbenzene	1.0	U	2.0	1.0	0.28	ug/L		11/22/23 10:57	1
Vinyl acetate	2.0	U	2.5	2.0	0.69	ug/L		11/22/23 10:57	1
Vinyl chloride	1.0	U	2.0	1.0	0.40	ug/L		11/22/23 10:57	1
o-Xylene	1.0	U	2.0	1.0	0.26	ug/L		11/22/23 10:57	1
m-Xylene & p-Xylene	1.0	U	2.0	1.0	0.49	ug/L		11/22/23 10:57	1
Xylenes, Total	1.0	U	2.0	1.0	0.49	ug/L		11/22/23 10:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*94*		*89 - 112*		*11/22/23 10:57*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*81 - 118*		*11/22/23 10:57*	*1*
4-Bromofluorobenzene (Surr)	*95*		*85 - 114*		*11/22/23 10:57*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 119*		*11/22/23 10:57*	*1*

Lab Sample ID: LCS 680-809615/4
Matrix: Water
Analysis Batch: 809615

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	250	267		ug/L		107	39 - 160
Benzene	50.0	48.6		ug/L		97	79 - 120
Bromobenzene	50.0	47.0		ug/L		94	80 - 120
Chlorobromomethane	50.0	49.1		ug/L		98	78 - 123
Dichlorobromomethane	50.0	49.7		ug/L		99	79 - 125
Bromoform	50.0	52.3		ug/L		105	66 - 130
Bromomethane	50.0	27.7		ug/L		55	53 - 141
2-Butanone (MEK)	250	266		ug/L		106	56 - 143
n-Butylbenzene	50.0	47.2		ug/L		94	75 - 128
sec-Butylbenzene	50.0	50.0		ug/L		100	77 - 126
tert-Butylbenzene	50.0	49.0		ug/L		98	78 - 124
Carbon disulfide	50.0	54.1		ug/L		108	64 - 133
Carbon tetrachloride	50.0	50.5		ug/L		101	72 - 136
Chlorobenzene	50.0	45.5		ug/L		91	82 - 118
Chloroethane	50.0	35.6		ug/L		71	60 - 138
Chloroform	50.0	47.8		ug/L		96	79 - 124

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-809615/4
Matrix: Water
Analysis Batch: 809615

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloromethane	50.0	39.5		ug/L		79	50 - 139
2-Chlorotoluene	50.0	51.5		ug/L		103	79 - 122
4-Chlorotoluene	50.0	48.6		ug/L		97	78 - 122
Chlorodibromomethane	50.0	52.4		ug/L		105	74 - 126
1,2-Dibromo-3-Chloropropane	50.0	43.5		ug/L		87	62 - 128
Ethylene Dibromide	50.0	51.3		ug/L		103	75 - 127
Dibromomethane	50.0	49.2		ug/L		98	79 - 123
1,2-Dichlorobenzene	50.0	44.7		ug/L		89	80 - 119
1,3-Dichlorobenzene	50.0	48.4		ug/L		97	80 - 119
1,4-Dichlorobenzene	50.0	47.9		ug/L		96	79 - 118
Dichlorodifluoromethane	50.0	36.7		ug/L		73	32 - 152
1,1-Dichloroethane	50.0	48.7		ug/L		97	77 - 125
1,2-Dichloroethane	50.0	48.7		ug/L		97	73 - 128
cis-1,2-Dichloroethene	50.0	48.4		ug/L		97	78 - 123
trans-1,2-Dichloroethene	50.0	49.6		ug/L		99	75 - 124
1,2-Dichloroethene, Total	100	98.0		ug/L		98	79 - 121
1,1-Dichloroethene	50.0	53.2		ug/L		106	71 - 131
1,2-Dichloropropane	50.0	48.4		ug/L		97	78 - 122
1,3-Dichloropropane	50.0	50.2		ug/L		100	80 - 119
2,2-Dichloropropane	50.0	52.0		ug/L		104	60 - 139
1,1-Dichloropropene	50.0	50.4		ug/L		101	79 - 125
cis-1,3-Dichloropropene	50.0	51.2		ug/L		102	75 - 124
trans-1,3-Dichloropropene	50.0	52.3		ug/L		105	73 - 127
Ethylbenzene	50.0	46.3		ug/L		93	79 - 121
Hexachlorobutadiene	50.0	47.4		ug/L		95	66 - 134
2-Hexanone	250	273		ug/L		109	57 - 139
Isopropylbenzene	50.0	48.6		ug/L		97	72 - 131
4-Isopropyltoluene	50.0	50.0		ug/L		100	77 - 127
Methylene Chloride	50.0	51.8		ug/L		104	74 - 124
4-Methyl-2-pentanone (MIBK)	250	270		ug/L		108	67 - 130
Methyl tert-butyl ether	50.0	50.1		ug/L		100	71 - 124
Naphthalene	50.0	50.4		ug/L		101	61 - 128
N-Propylbenzene	50.0	49.1		ug/L		98	76 - 126
Styrene	50.0	49.5		ug/L		99	78 - 123
1,1,1,2-Tetrachloroethane	50.0	46.3		ug/L		93	78 - 124
1,1,2,2-Tetrachloroethane	50.0	49.1		ug/L		98	71 - 121
Tetrachloroethene	50.0	48.9		ug/L		98	74 - 129
Toluene	50.0	49.5		ug/L		99	80 - 121
1,2,3-Trichlorobenzene	50.0	46.9		ug/L		94	69 - 129
1,2,4-Trichlorobenzene	50.0	46.4		ug/L		93	69 - 130
1,1,1-Trichloroethane	50.0	48.9		ug/L		98	74 - 131
1,1,2-Trichloroethane	50.0	50.4		ug/L		101	80 - 119
Trichloroethene	50.0	48.4		ug/L		97	79 - 123
Trichlorofluoromethane	50.0	73.6	Q	ug/L		147	65 - 141
1,2,3-Trichloropropane	50.0	48.2		ug/L		96	73 - 122
1,2,4-Trimethylbenzene	50.0	47.0		ug/L		94	76 - 124
1,3,5-Trimethylbenzene	50.0	48.9		ug/L		98	75 - 124
Vinyl acetate	100	107		ug/L		107	54 - 146
Vinyl chloride	50.0	52.9		ug/L		106	58 - 137

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 680-809615/4
Matrix: Water
Analysis Batch: 809615

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
o-Xylene			50.0	47.9		ug/L		96	78 - 122		
m-Xylene & p-Xylene			50.0	46.7		ug/L		93	80 - 121		
Xylenes, Total			100	94.6		ug/L		95	79 - 121		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*90*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*96*		*81 - 118*
4-Bromofluorobenzene (Surr)	*108*		*85 - 114*
Dibromofluoromethane (Surr)	*97*		*80 - 119*

Lab Sample ID: LCSD 680-809615/5
Matrix: Water
Analysis Batch: 809615

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acetone			250	269		ug/L		108	39 - 160	1	20
Benzene			50.0	48.9		ug/L		98	79 - 120	1	20
Bromobenzene			50.0	47.0		ug/L		94	80 - 120	0	20
Chlorobromomethane			50.0	48.4		ug/L		97	78 - 123	1	20
Dichlorobromomethane			50.0	50.1		ug/L		100	79 - 125	1	20
Bromoform			50.0	52.3		ug/L		105	66 - 130	0	20
Bromomethane			50.0	27.4		ug/L		55	53 - 141	1	20
2-Butanone (MEK)			250	271		ug/L		108	56 - 143	2	20
n-Butylbenzene			50.0	47.5		ug/L		95	75 - 128	1	20
sec-Butylbenzene			50.0	49.9		ug/L		100	77 - 126	0	20
tert-Butylbenzene			50.0	49.3		ug/L		99	78 - 124	1	20
Carbon disulfide			50.0	54.1		ug/L		108	64 - 133	0	20
Carbon tetrachloride			50.0	50.2		ug/L		100	72 - 136	1	20
Chlorobenzene			50.0	45.8		ug/L		92	82 - 118	1	20
Chloroethane			50.0	34.8		ug/L		70	60 - 138	2	20
Chloroform			50.0	47.7		ug/L		95	79 - 124	0	20
Chloromethane			50.0	39.7		ug/L		79	50 - 139	1	20
2-Chlorotoluene			50.0	51.6		ug/L		103	79 - 122	0	20
4-Chlorotoluene			50.0	48.7		ug/L		97	78 - 122	0	20
Chlorodibromomethane			50.0	52.5		ug/L		105	74 - 126	0	20
1,2-Dibromo-3-Chloropropane			50.0	44.3		ug/L		89	62 - 128	2	20
Ethylene Dibromide			50.0	51.0		ug/L		102	75 - 127	1	20
Dibromomethane			50.0	49.2		ug/L		98	79 - 123	0	20
1,2-Dichlorobenzene			50.0	45.2		ug/L		90	80 - 119	1	20
1,3-Dichlorobenzene			50.0	49.1		ug/L		98	80 - 119	1	20
1,4-Dichlorobenzene			50.0	47.8		ug/L		96	79 - 118	0	20
Dichlorodifluoromethane			50.0	44.0	M	ug/L		88	32 - 152	18	20
1,1-Dichloroethane			50.0	48.6		ug/L		97	77 - 125	0	20
1,2-Dichloroethane			50.0	48.9		ug/L		98	73 - 128	0	20
cis-1,2-Dichloroethene			50.0	48.6		ug/L		97	78 - 123	0	20
trans-1,2-Dichloroethene			50.0	49.2		ug/L		98	75 - 124	1	20
1,2-Dichloroethene, Total			100	97.8		ug/L		98	79 - 121	0	20
1,1-Dichloroethene			50.0	53.2		ug/L		106	71 - 131	0	20

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 680-809615/5
Matrix: Water
Analysis Batch: 809615

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2-Dichloropropane	50.0	48.6		ug/L		97	78 - 122	0	20
1,3-Dichloropropane	50.0	50.2		ug/L		100	80 - 119	0	20
2,2-Dichloropropane	50.0	51.8		ug/L		104	60 - 139	1	20
1,1-Dichloropropene	50.0	50.4		ug/L		101	79 - 125	0	20
cis-1,3-Dichloropropene	50.0	51.2		ug/L		102	75 - 124	0	20
trans-1,3-Dichloropropene	50.0	51.8		ug/L		104	73 - 127	1	20
Ethylbenzene	50.0	46.1		ug/L		92	79 - 121	1	20
Hexachlorobutadiene	50.0	47.4		ug/L		95	66 - 134	0	20
2-Hexanone	250	276		ug/L		110	57 - 139	1	20
Isopropylbenzene	50.0	48.4		ug/L		97	72 - 131	0	20
4-Isopropyltoluene	50.0	50.7		ug/L		101	77 - 127	1	20
Methylene Chloride	50.0	50.6		ug/L		101	74 - 124	2	20
4-Methyl-2-pentanone (MIBK)	250	269		ug/L		107	67 - 130	1	20
Methyl tert-butyl ether	50.0	50.8		ug/L		102	71 - 124	1	20
Naphthalene	50.0	50.4		ug/L		101	61 - 128	0	20
N-Propylbenzene	50.0	49.2		ug/L		98	76 - 126	0	20
Styrene	50.0	49.6		ug/L		99	78 - 123	0	20
1,1,1,2-Tetrachloroethane	50.0	46.6		ug/L		93	78 - 124	1	20
1,1,2,2-Tetrachloroethane	50.0	49.6		ug/L		99	71 - 121	1	20
Tetrachloroethene	50.0	49.4		ug/L		99	74 - 129	1	20
Toluene	50.0	49.5		ug/L		99	80 - 121	0	20
1,2,3-Trichlorobenzene	50.0	47.1		ug/L		94	69 - 129	0	20
1,2,4-Trichlorobenzene	50.0	46.0		ug/L		92	69 - 130	1	20
1,1,1-Trichloroethane	50.0	49.0		ug/L		98	74 - 131	0	20
1,1,2-Trichloroethane	50.0	50.4		ug/L		101	80 - 119	0	20
Trichloroethene	50.0	48.8		ug/L		98	79 - 123	1	20
Trichlorofluoromethane	50.0	74.6	Q	ug/L		149	65 - 141	1	20
1,2,3-Trichloropropane	50.0	47.9		ug/L		96	73 - 122	1	20
1,2,4-Trimethylbenzene	50.0	48.3		ug/L		97	76 - 124	3	20
1,3,5-Trimethylbenzene	50.0	49.7		ug/L		99	75 - 124	2	20
Vinyl acetate	100	105		ug/L		105	54 - 146	2	20
Vinyl chloride	50.0	52.9		ug/L		106	58 - 137	0	20
o-Xylene	50.0	48.1		ug/L		96	78 - 122	0	20
m-Xylene & p-Xylene	50.0	46.9		ug/L		94	80 - 121	0	20
Xylenes, Total	100	95.0		ug/L		95	79 - 121	0	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*90*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*97*		*81 - 118*
4-Bromofluorobenzene (Surr)	*110*		*85 - 114*
Dibromofluoromethane (Surr)	*96*		*80 - 119*

Lab Sample ID: 680-242926-2 MS
Matrix: Water
Analysis Batch: 809615

Client Sample ID: SUDA7-19-01-FAL23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	10	U	250	265		ug/L		106	39 - 160

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 680-242926-2 MS
Matrix: Water
Analysis Batch: 809615

Client Sample ID: SUDA7-19-01-FAL23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	1.0	U	50.0	45.9		ug/L		92	79 - 120
Bromobenzene	0.50	U	50.0	51.8		ug/L		104	80 - 120
Chlorobromomethane	1.0	U	50.0	44.3		ug/L		89	78 - 123
Dichlorobromomethane	1.0	U	50.0	46.1		ug/L		92	79 - 125
Bromoform	2.0	U	50.0	53.1		ug/L		106	66 - 130
Bromomethane	10	U Q J1	50.0	21.7	J1	ug/L		43	53 - 141
2-Butanone (MEK)	20	U	250	248		ug/L		99	56 - 143
n-Butylbenzene	2.0	U	50.0	48.4		ug/L		97	75 - 128
sec-Butylbenzene	2.0	U	50.0	56.9		ug/L		114	77 - 126
tert-Butylbenzene	1.0	U	50.0	55.5		ug/L		111	78 - 124
Carbon disulfide	1.0	U	50.0	51.4		ug/L		103	64 - 133
Carbon tetrachloride	1.0	U	50.0	50.7		ug/L		101	72 - 136
Chlorobenzene	0.50	U	50.0	44.6		ug/L		89	82 - 118
Chloroethane	10	U Q	50.0	43.9		ug/L		88	60 - 138
Chloroform	1.0	U	50.0	43.9		ug/L		88	79 - 124
Chloromethane	2.0	U	50.0	42.5		ug/L		85	50 - 139
2-Chlorotoluene	0.50	U	50.0	57.9		ug/L		116	79 - 122
4-Chlorotoluene	1.0	U	50.0	56.5		ug/L		113	78 - 122
Chlorodibromomethane	1.0	U	50.0	49.4		ug/L		99	74 - 126
1,2-Dibromo-3-Chloropropane	5.0	U	50.0	32.9		ug/L		66	62 - 128
Ethylene Dibromide	1.0	U	50.0	46.0		ug/L		92	75 - 127
Dibromomethane	1.0	U	50.0	43.3		ug/L		87	79 - 123
1,2-Dichlorobenzene	1.0	U J1	50.0	39.5	J1	ug/L		79	80 - 119
1,3-Dichlorobenzene	1.0	U	50.0	47.8		ug/L		96	80 - 119
1,4-Dichlorobenzene	1.0	U	50.0	46.2		ug/L		92	79 - 118
Dichlorodifluoromethane	1.0	U	50.0	43.1		ug/L		86	32 - 152
1,1-Dichloroethane	1.0	U	50.0	45.4		ug/L		91	77 - 125
1,2-Dichloroethane	1.0	U	50.0	43.1		ug/L		86	73 - 128
cis-1,2-Dichloroethene	1.0	U	50.0	45.6		ug/L		91	78 - 123
trans-1,2-Dichloroethene	1.0	U	50.0	47.6		ug/L		95	75 - 124
1,2-Dichloroethene, Total	1.0	U	100	93.2		ug/L		93	79 - 121
1,1-Dichloroethene	1.0	U	50.0	53.1		ug/L		106	71 - 131
1,2-Dichloropropane	0.50	U	50.0	43.5		ug/L		87	78 - 122
1,3-Dichloropropane	1.0	U	50.0	45.2		ug/L		90	80 - 119
2,2-Dichloropropane	1.0	U	50.0	51.4		ug/L		103	60 - 139
1,1-Dichloropropene	1.0	U	50.0	49.1		ug/L		98	79 - 125
cis-1,3-Dichloropropene	1.0	U	50.0	46.3		ug/L		93	75 - 124
trans-1,3-Dichloropropene	1.0	U	50.0	47.2		ug/L		94	73 - 127
Ethylbenzene	0.50	U	50.0	45.0		ug/L		90	79 - 121
Hexachlorobutadiene	1.0	U	50.0	38.8		ug/L		78	66 - 134
2-Hexanone	10	U	250	272		ug/L		109	57 - 139
Isopropylbenzene	1.0	U	50.0	49.3		ug/L		99	72 - 131
4-Isopropyltoluene	1.0	U	50.0	50.5		ug/L		101	77 - 127
Methylene Chloride	10	U	50.0	48.2		ug/L		96	74 - 124
4-Methyl-2-pentanone (MIBK)	10	U	250	261		ug/L		104	67 - 130
Methyl tert-butyl ether	2.0	U	50.0	44.5		ug/L		89	71 - 124
Naphthalene	5.0	U	50.0	39.1		ug/L		78	61 - 128
N-Propylbenzene	1.0	U	50.0	52.3		ug/L		105	76 - 126
Styrene	1.0	U	50.0	52.3		ug/L		105	78 - 123

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 680-242926-2 MS
Matrix: Water
Analysis Batch: 809615

Client Sample ID: SUDA7-19-01-FAL23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	1.0	U	50.0	44.9		ug/L		90	78 - 124
1,1,2,2-Tetrachloroethane	1.0	U	50.0	40.4		ug/L		81	71 - 121
Tetrachloroethene	1.0	U	50.0	48.1		ug/L		96	74 - 129
Toluene	1.0	U	50.0	46.5		ug/L		93	80 - 121
1,2,3-Trichlorobenzene	2.0	U	50.0	37.5		ug/L		75	69 - 129
1,2,4-Trichlorobenzene	2.0	U	50.0	35.5		ug/L		71	69 - 130
1,1,1-Trichloroethane	0.50	U	50.0	47.9		ug/L		96	74 - 131
1,1,2-Trichloroethane	1.0	U	50.0	45.7		ug/L		91	80 - 119
Trichloroethene	0.50	U	50.0	46.7		ug/L		93	79 - 123
Trichlorofluoromethane	1.0	U Q J1	50.0	77.1	J1	ug/L		154	65 - 141
1,2,3-Trichloropropane	1.0	U	50.0	47.8		ug/L		96	73 - 122
1,2,4-Trimethylbenzene	1.0	U	50.0	57.3		ug/L		115	76 - 124
1,3,5-Trimethylbenzene	1.0	U	50.0	56.3		ug/L		113	75 - 124
Vinyl acetate	2.0	U	100	95.0		ug/L		95	54 - 146
Vinyl chloride	1.0	U	50.0	48.5		ug/L		97	58 - 137
o-Xylene	1.0	U	50.0	48.6		ug/L		97	78 - 122
m-Xylene & p-Xylene	1.0	U	50.0	47.3		ug/L		95	80 - 121
Xylenes, Total	1.0	U	100	95.9		ug/L		96	79 - 121

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Toluene-d8 (Surr)	*88*	*Q*	*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*87*		*81 - 118*
4-Bromofluorobenzene (Surr)	*103*		*85 - 114*
Dibromofluoromethane (Surr)	*91*		*80 - 119*

Lab Sample ID: 680-242926-2 MSD
Matrix: Water
Analysis Batch: 809615

Client Sample ID: SUDA7-19-01-FAL23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Acetone	10	U	250	310		ug/L		124	39 - 160	16	20
Benzene	1.0	U	50.0	48.3		ug/L		97	79 - 120	5	20
Bromobenzene	0.50	U	50.0	53.2		ug/L		106	80 - 120	3	20
Chlorobromomethane	1.0	U	50.0	48.2		ug/L		96	78 - 123	8	20
Dichlorobromomethane	1.0	U	50.0	49.6		ug/L		99	79 - 125	7	20
Bromoform	2.0	U	50.0	57.3		ug/L		115	66 - 130	8	20
Bromomethane	10	U Q J1	50.0	24.3	J1	ug/L		49	53 - 141	11	20
2-Butanone (MEK)	20	U	250	287		ug/L		115	56 - 143	15	20
n-Butylbenzene	2.0	U	50.0	49.8		ug/L		100	75 - 128	3	20
sec-Butylbenzene	2.0	U	50.0	56.9		ug/L		114	77 - 126	0	20
tert-Butylbenzene	1.0	U	50.0	56.0		ug/L		112	78 - 124	1	20
Carbon disulfide	1.0	U	50.0	52.9		ug/L		106	64 - 133	3	20
Carbon tetrachloride	1.0	U	50.0	52.1		ug/L		104	72 - 136	3	20
Chlorobenzene	0.50	U	50.0	46.3		ug/L		93	82 - 118	4	20
Chloroethane	10	U Q	50.0	43.6		ug/L		87	60 - 138	1	20
Chloroform	1.0	U	50.0	46.5		ug/L		93	79 - 124	6	20
Chloromethane	2.0	U	50.0	42.4		ug/L		85	50 - 139	0	20
2-Chlorotoluene	0.50	U	50.0	58.9		ug/L		118	79 - 122	2	20

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 680-242926-2 MSD
Client Sample ID: SUDA7-19-01-FAL23
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 809615

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
4-Chlorotoluene	1.0	U	50.0	57.4		ug/L		115	78 - 122	2	20
Chlorodibromomethane	1.0	U	50.0	53.7		ug/L		107	74 - 126	8	20
1,2-Dibromo-3-Chloropropane	5.0	U	50.0	39.7		ug/L		79	62 - 128	19	20
Ethylene Dibromide	1.0	U	50.0	50.9		ug/L		102	75 - 127	10	20
Dibromomethane	1.0	U	50.0	48.2		ug/L		96	79 - 123	11	20
1,2-Dichlorobenzene	1.0	U J1	50.0	42.0		ug/L		84	80 - 119	6	20
1,3-Dichlorobenzene	1.0	U	50.0	50.4		ug/L		101	80 - 119	5	20
1,4-Dichlorobenzene	1.0	U	50.0	48.7		ug/L		97	79 - 118	5	20
Dichlorodifluoromethane	1.0	U	50.0	42.7		ug/L		85	32 - 152	1	20
1,1-Dichloroethane	1.0	U	50.0	47.7		ug/L		95	77 - 125	5	20
1,2-Dichloroethane	1.0	U	50.0	47.0		ug/L		94	73 - 128	9	20
cis-1,2-Dichloroethene	1.0	U	50.0	47.4		ug/L		95	78 - 123	4	20
trans-1,2-Dichloroethene	1.0	U	50.0	49.4		ug/L		99	75 - 124	4	20
1,2-Dichloroethene, Total	1.0	U	100	96.8		ug/L		97	79 - 121	4	20
1,1-Dichloroethene	1.0	U	50.0	54.6		ug/L		109	71 - 131	3	20
1,2-Dichloropropane	0.50	U	50.0	47.0		ug/L		94	78 - 122	8	20
1,3-Dichloropropane	1.0	U	50.0	49.8		ug/L		100	80 - 119	10	20
2,2-Dichloropropane	1.0	U	50.0	52.6		ug/L		105	60 - 139	2	20
1,1-Dichloropropene	1.0	U	50.0	50.6		ug/L		101	79 - 125	3	20
cis-1,3-Dichloropropene	1.0	U	50.0	50.2		ug/L		100	75 - 124	8	20
trans-1,3-Dichloropropene	1.0	U	50.0	51.3		ug/L		103	73 - 127	8	20
Ethylbenzene	0.50	U	50.0	46.6		ug/L		93	79 - 121	4	20
Hexachlorobutadiene	1.0	U	50.0	41.7		ug/L		83	66 - 134	7	20
2-Hexanone	10	U	250	306		ug/L		122	57 - 139	12	20
Isopropylbenzene	1.0	U	50.0	50.8		ug/L		102	72 - 131	3	20
4-Isopropyltoluene	1.0	U	50.0	53.3		ug/L		107	77 - 127	5	20
Methylene Chloride	10	U	50.0	50.0		ug/L		100	74 - 124	4	20
4-Methyl-2-pentanone (MIBK)	10	U	250	296		ug/L		118	67 - 130	13	20
Methyl tert-butyl ether	2.0	U	50.0	48.9		ug/L		98	71 - 124	10	20
Naphthalene	5.0	U	50.0	47.0		ug/L		94	61 - 128	18	20
N-Propylbenzene	1.0	U	50.0	53.0		ug/L		106	76 - 126	1	20
Styrene	1.0	U	50.0	54.5		ug/L		109	78 - 123	4	20
1,1,1,2-Tetrachloroethane	1.0	U	50.0	47.0		ug/L		94	78 - 124	5	20
1,1,2,2-Tetrachloroethane	1.0	U	50.0	46.9		ug/L		94	71 - 121	15	20
Tetrachloroethene	1.0	U	50.0	49.8		ug/L		100	74 - 129	4	20
Toluene	1.0	U	50.0	48.9		ug/L		98	80 - 121	5	20
1,2,3-Trichlorobenzene	2.0	U	50.0	42.6		ug/L		85	69 - 129	13	20
1,2,4-Trichlorobenzene	2.0	U	50.0	40.2		ug/L		80	69 - 130	13	20
1,1,1-Trichloroethane	0.50	U	50.0	49.6		ug/L		99	74 - 131	4	20
1,1,2-Trichloroethane	1.0	U	50.0	50.1		ug/L		100	80 - 119	9	20
Trichloroethene	0.50	U	50.0	48.6		ug/L		97	79 - 123	4	20
Trichlorofluoromethane	1.0	U Q J1	50.0	76.6	J1	ug/L		153	65 - 141	1	20
1,2,3-Trichloropropane	1.0	U	50.0	51.7		ug/L		103	73 - 122	8	20
1,2,4-Trimethylbenzene	1.0	U	50.0	57.0		ug/L		114	76 - 124	0	20
1,3,5-Trimethylbenzene	1.0	U	50.0	57.2		ug/L		114	75 - 124	2	20
Vinyl acetate	2.0	U	100	105		ug/L		105	54 - 146	10	20
Vinyl chloride	1.0	U	50.0	58.0		ug/L		116	58 - 137	18	20
o-Xylene	1.0	U	50.0	50.1		ug/L		100	78 - 122	3	20
m-Xylene & p-Xylene	1.0	U	50.0	48.3		ug/L		97	80 - 121	2	20

Method: 8260D - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 680-242926-2 MSD
Matrix: Water
Analysis Batch: 809615

Client Sample ID: SUDA7-19-01-FAL23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Xylenes, Total	1.0	U	100	98.4		ug/L		98	79 - 121	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*91*		*89 - 112*
1,2-Dichloroethane-d4 (Surr)	*95*		*81 - 118*
4-Bromofluorobenzene (Surr)	*114*		*85 - 114*
Dibromofluoromethane (Surr)	*97*		*80 - 119*

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC)

Lab Sample ID: MB 680-808343/1-A
Matrix: Water
Analysis Batch: 809299

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 808343

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.0040	U	0.050	0.0040	0.0020	ug/L		11/20/23 16:57	1
4,4'-DDE	0.0040	U M	0.050	0.0040	0.0010	ug/L		11/20/23 16:57	1
4,4'-DDT	0.0040	U	0.050	0.0040	0.0010	ug/L		11/20/23 16:57	1
Aldrin	0.0040	U	0.050	0.0040	0.0020	ug/L		11/20/23 16:57	1
alpha-BHC	0.0040	U	0.050	0.0040	0.0010	ug/L		11/20/23 16:57	1
beta-BHC	0.0040	U	0.050	0.0040	0.0020	ug/L		11/20/23 16:57	1
delta-BHC	0.0040	U	0.050	0.0040	0.0020	ug/L		11/20/23 16:57	1
Dieldrin	0.0040	U	0.050	0.0040	0.0020	ug/L		11/20/23 16:57	1
Endosulfan I	0.0040	U	0.050	0.0040	0.0020	ug/L		11/20/23 16:57	1
Endosulfan II	0.0040	U	0.050	0.0040	0.0020	ug/L		11/20/23 16:57	1
Endosulfan sulfate	0.0040	U M	0.050	0.0040	0.0020	ug/L		11/20/23 16:57	1
Endrin	0.0040	U	0.050	0.0040	0.0010	ug/L		11/20/23 16:57	1
Endrin aldehyde	0.016	U	0.050	0.016	0.0040	ug/L		11/20/23 16:57	1
Endrin ketone	0.016	U M	0.050	0.016	0.0040	ug/L		11/20/23 16:57	1
gamma-BHC (Lindane)	0.0040	U	0.050	0.0040	0.0010	ug/L		11/20/23 16:57	1
Heptachlor	0.0040	U	0.050	0.0040	0.0010	ug/L		11/20/23 16:57	1
Heptachlor epoxide	0.0040	U	0.050	0.0040	0.0020	ug/L		11/20/23 16:57	1
Methoxychlor	0.0040	U	0.050	0.0040	0.0020	ug/L		11/20/23 16:57	1
Chlordane (technical)	0.40	U M	0.50	0.40	0.16	ug/L		11/20/23 16:57	1
Toxaphene	0.80	U M	5.0	0.80	0.31	ug/L		11/20/23 16:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*72*		*14 - 130*	*11/15/23 10:07*	*11/20/23 16:57*	*1*
Tetrachloro-m-xylene	*40*	*Q M*	*44 - 124*	*11/15/23 10:07*	*11/20/23 16:57*	*1*

Lab Sample ID: LCS 680-808343/2-A
Matrix: Water
Analysis Batch: 809299

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 808343

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
4,4'-DDD	0.0400	0.0224	J	ug/L		56	56 - 143
4,4'-DDE	0.0400	0.0178	J Q	ug/L		45	57 - 135
4,4'-DDT	0.0400	0.0213	J	ug/L		53	51 - 143

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: LCS 680-808343/2-A
Matrix: Water
Analysis Batch: 809299

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 808343

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aldrin	0.0400	0.0158	J Q	ug/L		39	45 - 134
alpha-BHC	0.0400	0.0163	J Q	ug/L		41	54 - 138
beta-BHC	0.0400	0.0262	J	ug/L		65	56 - 136
delta-BHC	0.0400	0.0262	J	ug/L		65	52 - 142
Dieldrin	0.0400	0.0225	J Q	ug/L		56	60 - 136
Endosulfan I	0.0400	0.0216	J Q	ug/L		54	62 - 126
Endosulfan II	0.0400	0.0237	J	ug/L		59	52 - 135
Endosulfan sulfate	0.0400	0.0237	J Q	ug/L		59	62 - 133
Endrin	0.0400	0.0222	J Q	ug/L		56	60 - 138
Endrin aldehyde	0.0400	0.0252	J	ug/L		63	51 - 132
Endrin ketone	0.0400	0.0339	J	ug/L		85	58 - 134
gamma-BHC (Lindane)	0.0400	0.0203	J Q	ug/L		51	59 - 134
Heptachlor	0.0400	0.0216	J	ug/L		54	54 - 130
Heptachlor epoxide	0.0400	0.0227	J Q	ug/L		57	61 - 133
Methoxychlor	0.0400	0.0242	J	ug/L		60	54 - 145

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*76*		*14 - 130*
Tetrachloro-m-xylene	*30*	*Q*	*44 - 124*

Lab Sample ID: 680-242926-2 MS
Matrix: Water
Analysis Batch: 809299

Client Sample ID: SUDA7-19-01-FAL23
Prep Type: Total/NA
Prep Batch: 808343

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
4,4'-DDD	0.0042	U J1	0.0420	0.0246	J M	ug/L		59	56 - 143
4,4'-DDE	0.0042	U J1 Q M	0.0420	0.0213	J J1	ug/L		51	57 - 135
4,4'-DDT	0.0042	U	0.0420	0.0321	J	ug/L		76	51 - 143
Aldrin	0.0042	U J1 Q	0.0420	0.0194	J	ug/L		46	45 - 134
alpha-BHC	0.0042	U J1 Q	0.0420	0.0177	J J1	ug/L		42	54 - 138
beta-BHC	0.0042	U	0.0420	0.0267	J	ug/L		64	56 - 136
delta-BHC	0.0042	U	0.0420	0.0254	J	ug/L		60	52 - 142
Dieldrin	0.0042	U J1 Q M	0.0420	0.0254	J	ug/L		61	60 - 136
Endosulfan I	0.0042	U J1 Q	0.0420	0.0210	J J1	ug/L		50	62 - 126
Endosulfan II	0.0042	U M	0.0420	0.0261	J	ug/L		62	52 - 135
Endosulfan sulfate	0.0042	U J1 Q M	0.0420	0.0269	J M	ug/L		64	62 - 133
Endrin	0.0042	U J1 Q	0.0420	0.0245	J J1 M	ug/L		58	60 - 138
Endrin aldehyde	0.017	U	0.0420	0.0286	J	ug/L		68	51 - 132
Endrin ketone	0.017	U J1	0.0420	0.0351	J	ug/L		84	58 - 134
gamma-BHC (Lindane)	0.0042	U J1 Q	0.0420	0.0221	J J1	ug/L		53	59 - 134
Heptachlor	0.0042	U J1 M	0.0420	0.0265	J	ug/L		63	54 - 130
Heptachlor epoxide	0.0042	U J1 Q	0.0420	0.0243	J J1	ug/L		58	61 - 133
Methoxychlor	0.0042	U M	0.0420	0.0255	J	ug/L		61	54 - 145

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*89*		*14 - 130*
Tetrachloro-m-xylene	*44*		*44 - 124*

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: 680-242926-2 MSD
Client Sample ID: SUDA7-19-01-FAL23
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 809299
Prep Batch: 808343

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
4,4'-DDD	0.0042	U J1	0.0424	0.0222	J M J1	ug/L		52	56 - 143	10	30
4,4'-DDE	0.0042	U J1 Q M	0.0424	0.0210	J J1	ug/L		50	57 - 135	1	30
4,4'-DDT	0.0042	U	0.0424	0.0311	J	ug/L		74	51 - 143	3	30
Aldrin	0.0042	U J1 Q	0.0424	0.0155	J J1	ug/L		37	45 - 134	22	30
alpha-BHC	0.0042	U J1 Q	0.0424	0.0172	J J1	ug/L		41	54 - 138	3	30
beta-BHC	0.0042	U	0.0424	0.0245	J	ug/L		58	56 - 136	9	30
delta-BHC	0.0042	U	0.0424	0.0248	J	ug/L		59	52 - 142	2	30
Dieldrin	0.0042	U J1 Q M	0.0424	0.0238	J J1	ug/L		56	60 - 136	7	30
Endosulfan I	0.0042	U J1 Q	0.0424	0.0228	J J1	ug/L		54	62 - 126	8	30
Endosulfan II	0.0042	U M	0.0424	0.0257	J	ug/L		61	52 - 135	2	30
Endosulfan sulfate	0.0042	U J1 Q M	0.0424	0.0215	J J1	ug/L		51	62 - 133	22	30
Endrin	0.0042	U J1 Q	0.0424	0.0224	J M J1	ug/L		53	60 - 138	9	30
Endrin aldehyde	0.017	U	0.0424	0.0287	J	ug/L		68	51 - 132	0	30
Endrin ketone	0.017	U J1	0.0424	0.0540	J1	ug/L		127	58 - 134	42	30
gamma-BHC (Lindane)	0.0042	U J1 Q	0.0424	0.0209	J J1	ug/L		49	59 - 134	5	30
Heptachlor	0.0042	U J1 M	0.0424	0.0181	J J1	ug/L		43	54 - 130	37	30
Heptachlor epoxide	0.0042	U J1 Q	0.0424	0.0226	J J1	ug/L		53	61 - 133	7	30
Methoxychlor	0.0042	U M	0.0424	0.0267	J	ug/L		63	54 - 145	4	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*83*		*14 - 130*
Tetrachloro-m-xylene	*33*	*Q*	*44 - 124*

Lab Sample ID: MB 680-809981/1-A
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 810244
Prep Batch: 809981

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
4,4'-DDD	0.0040	U	0.050	0.0040	0.0020	ug/L		11/28/23 15:38	1
4,4'-DDE	0.0040	U M	0.050	0.0040	0.0010	ug/L		11/28/23 15:38	1
4,4'-DDT	0.0040	U	0.050	0.0040	0.0010	ug/L		11/28/23 15:38	1
Aldrin	0.0040	U	0.050	0.0040	0.0020	ug/L		11/28/23 15:38	1
alpha-BHC	0.0040	U	0.050	0.0040	0.0010	ug/L		11/28/23 15:38	1
beta-BHC	0.0040	U M	0.050	0.0040	0.0020	ug/L		11/28/23 15:38	1
delta-BHC	0.0040	U M	0.050	0.0040	0.0020	ug/L		11/28/23 15:38	1
Dieldrin	0.0040	U	0.050	0.0040	0.0020	ug/L		11/28/23 15:38	1
Endosulfan I	0.0040	U	0.050	0.0040	0.0020	ug/L		11/28/23 15:38	1
Endosulfan II	0.0040	U	0.050	0.0040	0.0020	ug/L		11/28/23 15:38	1
Endosulfan sulfate	0.0040	U	0.050	0.0040	0.0020	ug/L		11/28/23 15:38	1
Endrin	0.0040	U	0.050	0.0040	0.0010	ug/L		11/28/23 15:38	1
Endrin aldehyde	0.016	U	0.050	0.016	0.0040	ug/L		11/28/23 15:38	1
Endrin ketone	0.016	U	0.050	0.016	0.0040	ug/L		11/28/23 15:38	1
gamma-BHC (Lindane)	0.0040	U	0.050	0.0040	0.0010	ug/L		11/28/23 15:38	1
Heptachlor	0.0040	U M	0.050	0.0040	0.0010	ug/L		11/28/23 15:38	1
Heptachlor epoxide	0.0040	U	0.050	0.0040	0.0020	ug/L		11/28/23 15:38	1
Methoxychlor	0.0040	U M	0.050	0.0040	0.0020	ug/L		11/28/23 15:38	1
Chlordane (technical)	0.40	U M	0.50	0.40	0.16	ug/L		11/28/23 15:38	1
Toxaphene	0.80	U	5.0	0.80	0.31	ug/L		11/28/23 15:38	1

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) (Continued)

Lab Sample ID: MB 680-809981/1-A
Matrix: Water
Analysis Batch: 810244

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 809981

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	40		14 - 130	11/27/23 07:51	11/28/23 15:38	1
Tetrachloro-m-xylene	38	Q	44 - 124	11/27/23 07:51	11/28/23 15:38	1

Lab Sample ID: LCS 680-809981/2-A
Matrix: Water
Analysis Batch: 810244

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 809981

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
4,4'-DDD	0.0400	0.0194	J Q	ug/L		49	56 - 143
4,4'-DDE	0.0400	0.0256	J	ug/L		64	57 - 135
4,4'-DDT	0.0400	0.0223	J	ug/L		56	51 - 143
Aldrin	0.0400	0.0107	J Q	ug/L		27	45 - 134
alpha-BHC	0.0400	0.0152	J Q	ug/L		38	54 - 138
beta-BHC	0.0400	0.0186	J Q	ug/L		46	56 - 136
delta-BHC	0.0400	0.0178	J Q	ug/L		44	52 - 142
Dieldrin	0.0400	0.0168	J Q	ug/L		42	60 - 136
Endosulfan I	0.0400	0.0132	J Q	ug/L		33	62 - 126
Endosulfan II	0.0400	0.0160	J Q	ug/L		40	52 - 135
Endosulfan sulfate	0.0400	0.0179	J Q	ug/L		45	62 - 133
Endrin	0.0400	0.0170	J Q	ug/L		43	60 - 138
Endrin aldehyde	0.0400	0.0286	J	ug/L		71	51 - 132
Endrin ketone	0.0400	0.0164	J Q	ug/L		41	58 - 134
gamma-BHC (Lindane)	0.0400	0.0160	J Q	ug/L		40	59 - 134
Heptachlor	0.0400	0.0155	J Q	ug/L		39	54 - 130
Heptachlor epoxide	0.0400	0.0156	J Q	ug/L		39	61 - 133
Methoxychlor	0.0400	0.0243	J	ug/L		61	54 - 145

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	53		14 - 130
Tetrachloro-m-xylene	39	Q	44 - 124

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) - RE

Lab Sample ID: 680-242926-2 MS
Matrix: Water
Analysis Batch: 810244

Client Sample ID: SUDA7-19-01-FAL23
Prep Type: Total/NA
Prep Batch: 809981

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
4,4'-DDD - RE	0.0043	U H J1 Q	0.0432	0.0218	J H J1	ug/L		50	56 - 143
4,4'-DDE - RE	0.0043	U H Q	0.0432	0.0286	J H	ug/L		66	57 - 135
4,4'-DDT - RE	0.0043	U H	0.0432	0.0236	J H	ug/L		55	51 - 143
Aldrin - RE	0.0043	U H J1 Q	0.0432	0.0130	J H J1	ug/L		30	45 - 134
alpha-BHC - RE	0.0043	U H J1 Q	0.0432	0.0161	J H J1	ug/L		37	54 - 138
beta-BHC - RE	0.0043	U H M J1 Q	0.0432	0.0223	J H J1	ug/L		52	56 - 136
delta-BHC - RE	0.0043	U H M J1 Q	0.0432	0.0197	J H J1	ug/L		46	52 - 142
Dieldrin - RE	0.0043	U H J1 Q	0.0432	0.0180	J H J1	ug/L		42	60 - 136
Endosulfan I - RE	0.0043	U H J1 Q	0.0432	0.0145	J H J1	ug/L		34	62 - 126

Method: 8081B 8082A - Organochlorine Pesticides & PCBs (GC) - RE (Continued)

Lab Sample ID: 680-242926-2 MS
Matrix: Water
Analysis Batch: 810244

Client Sample ID: SUDA7-19-01-FAL23
Prep Type: Total/NA
Prep Batch: 809981

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Endosulfan II - RE	0.0043	U H J1 Q	0.0432	0.0178	J H J1	ug/L		41	52 - 135
Endosulfan sulfate - RE	0.0043	U H J1 Q	0.0432	0.0203	J H J1	ug/L		47	62 - 133
Endrin - RE	0.0043	U H J1 Q	0.0432	0.0187	J H J1	ug/L		43	60 - 138
Endrin aldehyde - RE	0.017	U H	0.0432	0.0274	J H	ug/L		63	51 - 132
Endrin ketone - RE	0.017	U H J1 Q	0.0432	0.0184	J H J1	ug/L		43	58 - 134
gamma-BHC (Lindane) - RE	0.0043	U H J1 Q	0.0432	0.0169	J H J1	ug/L		39	59 - 134
Heptachlor - RE	0.0043	U H M J1 Q	0.0432	0.0210	J H J1	ug/L		49	54 - 130
Heptachlor epoxide - RE	0.0043	U H J1 Q	0.0432	0.0171	J H J1	ug/L		40	61 - 133
Methoxychlor - RE	0.0043	U H J1	0.0432	0.0210	J H J1	ug/L		49	54 - 145

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl - RE	*61*		*14 - 130*
Tetrachloro-m-xylene - RE	*44*		*44 - 124*

Lab Sample ID: 680-242926-2 MSD
Matrix: Water
Analysis Batch: 810244

Client Sample ID: SUDA7-19-01-FAL23
Prep Type: Total/NA
Prep Batch: 809981

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
4,4'-DDD - RE	0.0043	U H J1 Q	0.0411	0.0210	J H J1	ug/L		51	56 - 143	4	30
4,4'-DDE - RE	0.0043	U H Q	0.0411	0.0272	J H	ug/L		66	57 - 135	5	30
4,4'-DDT - RE	0.0043	U H	0.0411	0.0247	J H	ug/L		60	51 - 143	5	30
Aldrin - RE	0.0043	U H J1 Q	0.0411	0.0121	J H J1	ug/L		29	45 - 134	8	30
alpha-BHC - RE	0.0043	U H J1 Q	0.0411	0.0143	J H J1	ug/L		35	54 - 138	12	30
beta-BHC - RE	0.0043	U H M J1 Q	0.0411	0.0205	J H J1	ug/L		50	56 - 136	9	30
delta-BHC - RE	0.0043	U H M J1 Q	0.0411	0.0190	J H J1	ug/L		46	52 - 142	4	30
Dieldrin - RE	0.0043	U H J1 Q	0.0411	0.0176	J H J1	ug/L		43	60 - 136	2	30
Endosulfan I - RE	0.0043	U H J1 Q	0.0411	0.0130	J H J1	ug/L		32	62 - 126	11	30
Endosulfan II - RE	0.0043	U H J1 Q	0.0411	0.0174	J H J1	ug/L		42	52 - 135	2	30
Endosulfan sulfate - RE	0.0043	U H J1 Q	0.0411	0.0198	J H J1	ug/L		48	62 - 133	3	30
Endrin - RE	0.0043	U H J1 Q	0.0411	0.0183	J H J1	ug/L		45	60 - 138	2	30
Endrin aldehyde - RE	0.017	U H	0.0411	0.0271	J H	ug/L		66	51 - 132	1	30
Endrin ketone - RE	0.017	U H J1 Q	0.0411	0.0177	J H J1	ug/L		43	58 - 134	4	30
gamma-BHC (Lindane) - RE	0.0043	U H J1 Q	0.0411	0.0154	J H J1	ug/L		37	59 - 134	9	30
Heptachlor - RE	0.0043	U H M J1 Q	0.0411	0.0188	J H J1	ug/L		46	54 - 130	11	30
Heptachlor epoxide - RE	0.0043	U H J1 Q	0.0411	0.0161	J H M J1	ug/L		39	61 - 133	6	30
Methoxychlor - RE	0.0043	U H J1	0.0411	0.0205	J H J1	ug/L		50	54 - 145	3	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl - RE	*56*		*14 - 130*
Tetrachloro-m-xylene - RE	*35*	*Q*	*44 - 124*

Method: 410.4 - COD

Lab Sample ID: MB 280-634381/5
Matrix: Water
Analysis Batch: 634381

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chemical Oxygen Demand	20	U	20	20	8.7	mg/L		11/17/23 11:07	1

Lab Sample ID: LCS 280-634381/3
Matrix: Water
Analysis Batch: 634381

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	100	101		mg/L		101	90 - 110

Lab Sample ID: LCSD 280-634381/4
Matrix: Water
Analysis Batch: 634381

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chemical Oxygen Demand	100	100		mg/L		100	90 - 110	1	11

Lab Sample ID: MB 280-634617/5
Matrix: Water
Analysis Batch: 634617

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Chemical Oxygen Demand	20	U	20	20	8.7	mg/L		11/20/23 10:26	1

Lab Sample ID: LCS 280-634617/3
Matrix: Water
Analysis Batch: 634617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	100	100		mg/L		100	90 - 110

Lab Sample ID: LCSD 280-634617/4
Matrix: Water
Analysis Batch: 634617

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chemical Oxygen Demand	100	101		mg/L		101	90 - 110	1	11

Lab Sample ID: 680-242926-2 MS
Matrix: Water
Analysis Batch: 634617

Client Sample ID: SUDA7-19-01-FAL23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	20	U	50.0	54.4		mg/L		109	90 - 110

Lab Sample ID: 680-242926-2 MSD
Matrix: Water
Analysis Batch: 634617

Client Sample ID: SUDA7-19-01-FAL23
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chemical Oxygen Demand	20	U	50.0	52.8		mg/L		106	90 - 110	3	11

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 680-808769/12-A
Matrix: Water
Analysis Batch: 808843

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 808769

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0025	mg/L		11/17/23 10:12	1

Lab Sample ID: LCS 680-808769/13-A
Matrix: Water
Analysis Batch: 808843

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 808769

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.0500	0.0522		mg/L		104	83 - 116

Lab Sample ID: 680-242926-2 MS
Matrix: Water
Analysis Batch: 808843

Client Sample ID: SUDA7-19-01-FAL23
Prep Type: Total/NA
Prep Batch: 808769

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.0025	J1	0.0500	0.0341	J1	mg/L		63	83 - 116

Lab Sample ID: 680-242926-2 MSD
Matrix: Water
Analysis Batch: 808843

Client Sample ID: SUDA7-19-01-FAL23
Prep Type: Total/NA
Prep Batch: 808769

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Cyanide, Total	0.0025	J1	0.0500	0.0389	J1	mg/L		73	83 - 116	13	20

GC/MS VOA

Analysis Batch: 809615

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-242926-1	SUD-DUP01-FAL23	Total/NA	Water	8260D	
680-242926-2	SUDA7-19-01-FAL23	Total/NA	Water	8260D	
MB 680-809615/8	Method Blank	Total/NA	Water	8260D	
LCS 680-809615/4	Lab Control Sample	Total/NA	Water	8260D	
LCSD 680-809615/5	Lab Control Sample Dup	Total/NA	Water	8260D	
680-242926-2 MS	SUDA7-19-01-FAL23	Total/NA	Water	8260D	
680-242926-2 MSD	SUDA7-19-01-FAL23	Total/NA	Water	8260D	

GC Semi VOA

Prep Batch: 808343

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-242926-1	SUD-DUP01-FAL23	Total/NA	Water	3510C	
680-242926-2	SUDA7-19-01-FAL23	Total/NA	Water	3510C	
MB 680-808343/1-A	Method Blank	Total/NA	Water	3510C	
LCS 680-808343/2-A	Lab Control Sample	Total/NA	Water	3510C	
680-242926-2 MS	SUDA7-19-01-FAL23	Total/NA	Water	3510C	
680-242926-2 MSD	SUDA7-19-01-FAL23	Total/NA	Water	3510C	

Analysis Batch: 809299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-242926-1	SUD-DUP01-FAL23	Total/NA	Water	8081B 8082A	808343
680-242926-2	SUDA7-19-01-FAL23	Total/NA	Water	8081B 8082A	808343
MB 680-808343/1-A	Method Blank	Total/NA	Water	8081B 8082A	808343
LCS 680-808343/2-A	Lab Control Sample	Total/NA	Water	8081B 8082A	808343
680-242926-2 MS	SUDA7-19-01-FAL23	Total/NA	Water	8081B 8082A	808343
680-242926-2 MSD	SUDA7-19-01-FAL23	Total/NA	Water	8081B 8082A	808343

Prep Batch: 809981

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-242926-1 - RE	SUD-DUP01-FAL23	Total/NA	Water	3510C	
680-242926-2 - RE	SUDA7-19-01-FAL23	Total/NA	Water	3510C	
MB 680-809981/1-A	Method Blank	Total/NA	Water	3510C	
LCS 680-809981/2-A	Lab Control Sample	Total/NA	Water	3510C	
680-242926-2 MS - RE	SUDA7-19-01-FAL23	Total/NA	Water	3510C	
680-242926-2 MSD - RE	SUDA7-19-01-FAL23	Total/NA	Water	3510C	

Analysis Batch: 810244

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-242926-1 - RE	SUD-DUP01-FAL23	Total/NA	Water	8081B 8082A	809981
680-242926-2 - RE	SUDA7-19-01-FAL23	Total/NA	Water	8081B 8082A	809981
MB 680-809981/1-A	Method Blank	Total/NA	Water	8081B 8082A	809981
LCS 680-809981/2-A	Lab Control Sample	Total/NA	Water	8081B 8082A	809981
680-242926-2 MS - RE	SUDA7-19-01-FAL23	Total/NA	Water	8081B 8082A	809981
680-242926-2 MSD - RE	SUDA7-19-01-FAL23	Total/NA	Water	8081B 8082A	809981

General Chemistry

Analysis Batch: 634381

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-242926-1	SUD-DUP01-FAL23	Total/NA	Water	410.4	
MB 280-634381/5	Method Blank	Total/NA	Water	410.4	

General Chemistry (Continued)

Analysis Batch: 634381 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 280-634381/3	Lab Control Sample	Total/NA	Water	410.4	
LCSD 280-634381/4	Lab Control Sample Dup	Total/NA	Water	410.4	

Analysis Batch: 634617

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-242926-2	SUDA7-19-01-FAL23	Total/NA	Water	410.4	
MB 280-634617/5	Method Blank	Total/NA	Water	410.4	
LCS 280-634617/3	Lab Control Sample	Total/NA	Water	410.4	
LCSD 280-634617/4	Lab Control Sample Dup	Total/NA	Water	410.4	
680-242926-2 MS	SUDA7-19-01-FAL23	Total/NA	Water	410.4	
680-242926-2 MSD	SUDA7-19-01-FAL23	Total/NA	Water	410.4	

Prep Batch: 808769

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-242926-1	SUD-DUP01-FAL23	Total/NA	Water	9012B	
680-242926-2	SUDA7-19-01-FAL23	Total/NA	Water	9012B	
MB 680-808769/12-A	Method Blank	Total/NA	Water	9012B	
LCS 680-808769/13-A	Lab Control Sample	Total/NA	Water	9012B	
680-242926-2 MS	SUDA7-19-01-FAL23	Total/NA	Water	9012B	
680-242926-2 MSD	SUDA7-19-01-FAL23	Total/NA	Water	9012B	

Analysis Batch: 808843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-242926-1	SUD-DUP01-FAL23	Total/NA	Water	9012B	808769
680-242926-2	SUDA7-19-01-FAL23	Total/NA	Water	9012B	808769
MB 680-808769/12-A	Method Blank	Total/NA	Water	9012B	808769
LCS 680-808769/13-A	Lab Control Sample	Total/NA	Water	9012B	808769
680-242926-2 MS	SUDA7-19-01-FAL23	Total/NA	Water	9012B	808769
680-242926-2 MSD	SUDA7-19-01-FAL23	Total/NA	Water	9012B	808769

Lab Chronicle

Client: Seres Engineering & Services LLC
Job ID: 680-242926-1
Project/Site: Fort Devens, Sudbury Training Annex

Client Sample ID: SUD-DUP01-FAL23
Lab Sample ID: 680-242926-1
Date Collected: 11/08/23 10:10
Matrix: Water
Date Received: 11/14/23 10:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	809615	11/22/23 11:32	MLL	EET SAV
	Instrument ID: CMSAB									
Total/NA	Prep	3510C	RE		237.7 mL	1 mL	809981	11/27/23 07:51	DS	EET SAV
Total/NA	Analysis	8081B 8082A	RE	1	1 mL	1 mL	810244	11/28/23 18:16	UI	EET SAV
	Instrument ID: CSGJ									
Total/NA	Prep	3510C			236.3 mL	1 mL	808343	11/15/23 10:07	DS	EET SAV
Total/NA	Analysis	8081B 8082A		1	1 mL	1 mL	809299	11/20/23 20:23	UI	EET SAV
	Instrument ID: CSGK									
Total/NA	Analysis	410.4		1	2 mL	2 mL	634381	11/17/23 11:07	CLP	EET DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			6 mL	6 mL	808769	11/17/23 06:36	JAS	EET SAV
Total/NA	Analysis	9012B		1			808843	11/17/23 10:20	JAS	EET SAV
	Instrument ID: KONELAB4									

Client Sample ID: SUDA7-19-01-FAL23
Lab Sample ID: 680-242926-2
Date Collected: 11/08/23 10:10
Matrix: Water
Date Received: 11/14/23 10:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	5 mL	5 mL	809615	11/22/23 11:55	MLL	EET SAV
	Instrument ID: CMSAB									
Total/NA	Prep	3510C	RE		233.5 mL	1 mL	809981	11/27/23 07:51	DS	EET SAV
Total/NA	Analysis	8081B 8082A	RE	1	1 mL	1 mL	810244	11/28/23 17:59	UI	EET SAV
	Instrument ID: CSGJ									
Total/NA	Prep	3510C			238.4 mL	1 mL	808343	11/15/23 10:07	DS	EET SAV
Total/NA	Analysis	8081B 8082A		1	1 mL	1 mL	809299	11/20/23 18:48	UI	EET SAV
	Instrument ID: CSGK									
Total/NA	Analysis	410.4		1	2 mL	2 mL	634617	11/20/23 10:26	LL	EET DEN
	Instrument ID: WC_Genesys20									
Total/NA	Prep	9012B			6 mL	6 mL	808769	11/17/23 06:36	JAS	EET SAV
Total/NA	Analysis	9012B		1			808843	11/17/23 10:20	JAS	EET SAV
	Instrument ID: KONELAB4									

Laboratory References:

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

EET SAV = Eurofins Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: Seres Engineering & Services LLC
Job ID: 680-242926-1
Project/Site: Fort Devens, Sudbury Training Annex

Laboratory: Eurofins Savannah

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2463	09-22-24

Laboratory: Eurofins Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-24

Method Summary

Client: Seres Engineering & Services LLC
Project/Site: Fort Devens, Sudbury Training Annex

Job ID: 680-242926-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds (GC/MS)	SW846	EET SAV
8081B 8082A	Organochlorine Pesticides & PCBs (GC)	SW846	EET SAV
410.4	COD	EPA	EET DEN
9012B	Cyanide, Total and/or Amenable	EPA	EET SAV
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	EET SAV
5030C	Purge and Trap	SW846	EET SAV
9012B	Cyanide, Total and/or Amenable, Distillation	SW846	EET SAV

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

EET SAV = Eurofins Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

CHAIN-OF-CUSTODY RECORD

ARVC
Heather Levesque
669 Marina Drive, Suite B7, Charleston, SC 29492
(843) 619-370-0374, jennifer.singer@arcadis.com

COC # SUD-LTM-FAL23

US Army Corps of Engineers

Project Name: Former Fort Devens, Sudbury Traning Annex	Laboratory: Eurofins Environment Testing TestAmerica, Savannah, GA	Event: Seres-Arcadis JV, Long Term Monitoring, Sudbury Annex, Fall 2023
Project Number: DEVNS-STA PO 2312 - 00000001	POC: Jerry Lanier, 912-250-0281, jerry.lanier@eurofinsus.com	
WBS Code:	Ship to: Eurofins TestAmerica, 5102 LaRoche Avenue, Savannah, GA 31404	

Comments:
SW9012B (A) = Cyanide
SW8081B (A) = Pesticides

Equipment:

Code	Matrix
WG	Ground Water

Code	Container/Preservative
1	1x 2-1 Liter, amber, glass, Cool < 6degC
6	1x 125mL, plastic, Cool < 6degC
29	3x 40mL glass VOA Vials, HCl, pH < 2; Cool < 6degC
48	1x 250mL plastic, NaOH to pH >12; Cool < 6degC

Event: Seres-Arcadis JV, Long Term Monitoring, Sudbury Annex, Fall 2023

	Sample ID	Matrix	Date	Time	Samp Init.	Analytical Test Method: E410.4 - COD (6)	SW8081B (A) (1)	SW8260B - VOCs (29)	SW9012B (A) (48)	Location ID	Sample Type	Depth (ft bgs) Top	Depth (ft bgs) Bottom	Cooler	Comments
1	SUD-DUP01-FAL23	WG	11/8/23	1010	FM	X	X	X	X	SUDA7-19-01	FD1	2.00	10.00	1	
2	SUDA7-19-01-FAL23	WG	11/8/23	1010	FM	X	X	X	X	SUDA7-19-01	MS1	2.00	10.00	1	
3	SUDA7-19-01-FAL23	WG	11/8/23	1010	FM	X	X	X	X	SUDA7-19-01	N1	2.00	10.00	1	
4	SUDA7-19-01-FAL23	WG	11/8/23	1010	FM	X	X	X	X	SUDA7-19-01	SD1	2.00	10.00	1	
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															

680-242926 Chain of Custody

Turnaround Time: NA

Relinquished by: (Signature) [signature] 11/10/23 1400
Date 11/8/23
Time
Received by: (Signature)

Received by Laboratory: (Signature) [signature] TM 11-14-23 1005
Date
Time 3.0/3.3

11/30/2023

Eurofins Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Phone: 912-354-7858 Fax: 912-352-0165

Chain of Custody Record

eurofins Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Lanier, Jerry A	Carrier Tracking No(s):	COC No: 680-756178.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Jerry.Lanier@et.eurofinsus.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): Dept. of Defense ELAP - A2LA; DoD - ANAB		Job #: 680-242926-1
Address: 4955 Yarrow Street, ,	Due Date Requested: 11/29/2023			
City: Arvada	TAT Requested (days):			
State, Zip: CO, 80002				
Phone: 303-736-0100(Tel) 303-431-7171(Fax)	PO #:			
Email:	WO #:			
Project Name: Fort Devens, Sudbury Training Annex	Project #: 68023801			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	410.4/ COD	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
SUD-DUP01-FAL23 (680-242926-1)	11/8/23	10:10 Eastern		Water			X	1	
SUDA7-19-01-FAL23 (680-242926-2)	11/8/23	10:10 Eastern		Water			X	1	
SUDA7-19-01-FAL23 (680-242926-2MS)	11/8/23	10:10 Eastern	MS	Water			X	1	
SUDA7-19-01-FAL23 (680-242926-2MSD)	11/8/23	10:10 Eastern	MSD	Water			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Southeast, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Southeast, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Southeast, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Southeast, LLC.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by: TH	Date/Time: 11-14-25	Company	Received by:	Date/Time: 11/15/23 0945	Company EET DEN
Relinquished by:	Date/Time: 16:01	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time: ,	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: -0.1 IR Gun CF 0.3

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-242926-1

Login Number: 242926

List Source: Eurofins Savannah

List Number: 1

Creator: Sims, Robert D

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Seres Engineering & Services LLC

Job Number: 680-242926-1

Login Number: 242926
List Number: 2
Creator: Rystrom, Joshua R

List Source: Eurofins Denver
List Creation: 11/15/23 06:32 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix C

Summary of Historical Groundwater Target Compounds at AOC A7, 1996 – 2022

Appendix C
Summary of Historical Groundwater Target Compounds at AOC A7, 1996 - 2022
Former Sudbury Training Annex, Sudbury, Massachusetts

Well Number	Jul-96 1996	Oct-96 1996	Apr-97 1997	Oct-97 1997	Apr-98 1998	Oct-98 1998	Apr-99 1999	Oct-99 1999	Apr-00 2000	Oct-00 2000	May-01 2001	Oct-01 2001	Apr-02 2002	Oct-02 2002	Apr-03 2003	Oct-03 2003	Apr-04 2004	Oct-04 2004	Jun-05 2005	Sep-05 2005
1,1,2,2-Tetrachloroethane - MCP GW-1: 2.0 µg/L																				
JO-A07-M63/SUD-A07-065[(2)]	13	21	24	26	20	31	23	22	12	20	12	14	20	13	5.1	3.8	4.8	1.8	2.0	4.1
Tetrachloroethene - MCP GW-1: 5.0 µg/L																				
OHM-A7-08	12	27	120	120	92	130	94	92	43	71	40	59	14	33	24	23	21	13	8.7	25.4
JO-A07-M63/SUD-A07-065[(2)]	14	14	28	21	28	32	30	24	17	25	40	16	23	14	1.9	3.0	2.9	0.62	1.5	11.6
Trichloroethene - MCP GW-1: 5.0 µg/L																				
JO-A07-M63/SUD-A07-065[(2)]	10	15	24	25	1.0	36	36	30	21	37	17	29	40	33	5.9	11	17	9.3	3.8	25.4
gamma-BHC (Lindane) - MCP GW-1: 0.2 µg/L																				
OHM-A7-08	0.538	2.8	17	0.052	16	13	12	6.7	9.6	5.1	7.0	4.3	1.4	2.6	2.6	2.0	1.4	0.82	1.1	1.84
JO-A07-M63/SUD-A07-065[(2)]				0.31		0.38	0.32	0.33	0.066		0.25	0.31	0.25	0.24	0.12	0.041		0.10	0.059	0.17
4,4'-DDD - MCP GW-1: 0.2 µg/L																				
OHM-A7-08				0.35	5.0	5.6	0.30	5.0	0.28	2.0	0.10	0.25	0.13	2.0	0.21	0.40	0.29	0.11	0.21	0.12
Arsenic																				
OHM-A7-08	NS	NS	ND	ND	ND	ND	ND	ND	7.9	**13**	**10**	**15**	8.7	**24**	1.8	**21**	**14**	**15.8**	0.94	ND
JO-A07-M63/SUD-A07-065[(1)]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.9	6.2	1.5 J	1.1 J	0.99	4.1	0.17 J	3.9
JO-A07-M62/SUDWP-A07-01[(2)]	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2 J	ND	0.88 J	ND	ND	ND	NS
SUDA7-19-01[(3)]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead																				
OHM-A7-08	NS	NS	**485**	**290**	**17**	10	11.7	10	11	5.8	10	4.4	5.2	7.9	0.90	14	9.5	9.3	ND	ND
JO-A07-M63/SUD-A07-065[(1)]	ND	ND	ND	ND	ND	ND	ND	ND	1.9 J	ND	ND	ND	ND	2.0	1.4	0.46 J	2.7	3.4	ND	ND
JO-A07-M62/SUDWP-A07-01[(2)]	NS	NS	**27.4**	ND	3.1	ND	ND	ND	ND	ND	ND	ND	ND	3.0	0.15 J	0.082 J	0.14	ND	ND	NS

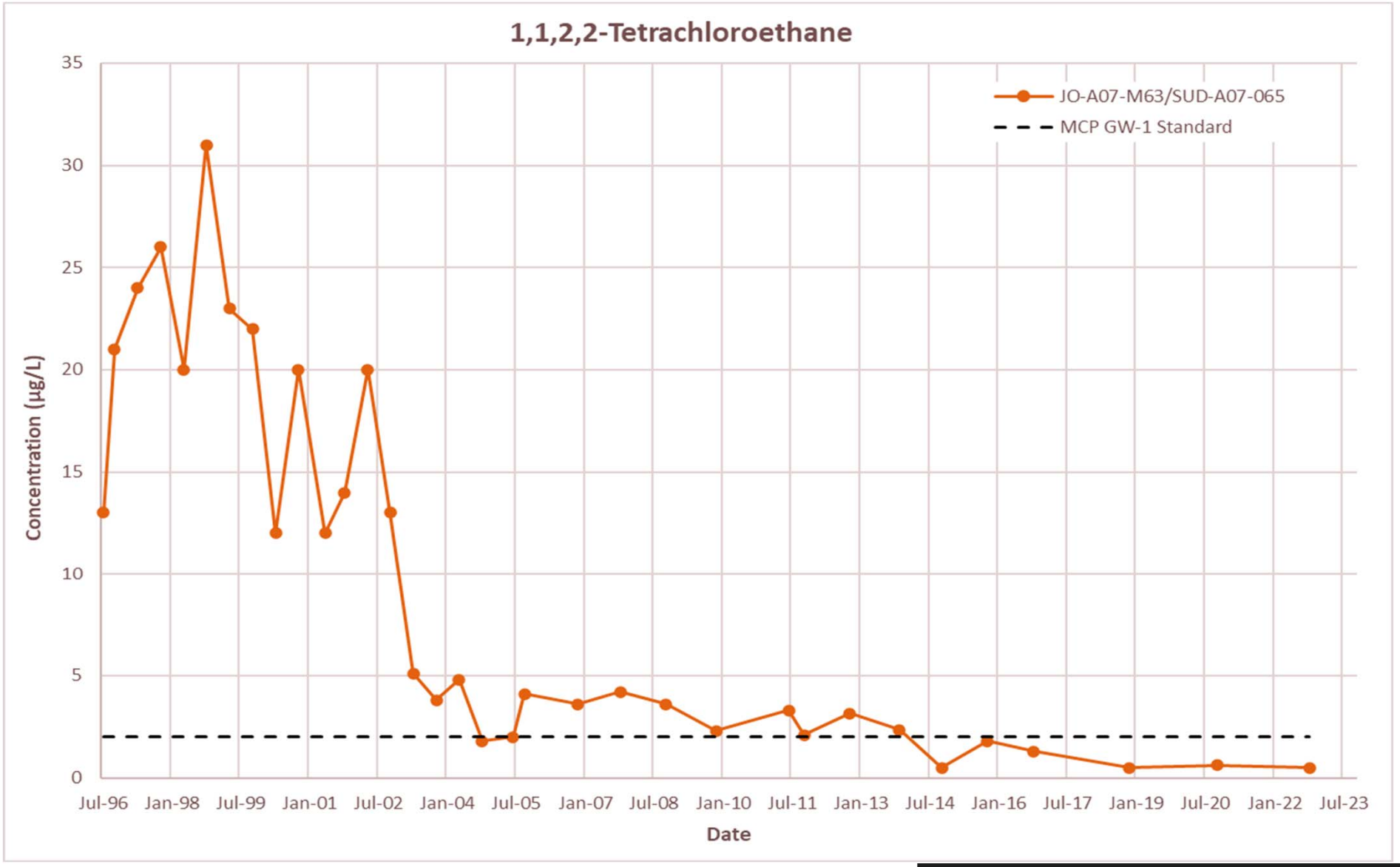
Appendix C
Summary of Historical Groundwater Target Compounds at AOC A7, 1996 - 2022
Former Sudbury Training Annex, Sudbury, Massachusetts

Well Number	Nov-06 2006	Oct-07 2007	Oct-08 2008	Nov-09 2009	Jun-11 2011	Oct-11 2011	Oct-12 2012	Nov-13 2013	Oct-14 2014	Oct-15 2015	Oct-16 2016	Dec-17 2017	Apr-18 2018	Nov-18 2018	Nov-19 2019	Oct-20 2020	Oct-21 2021	Oct-22 2022
1,1,2,2-Tetrachloroethane - MCP GW-1: 2.0 µg/L																		
JO-A07-M63/SUD-A07-065[2]	3.6	4.2	3.6	2.3	3.3	2.1	3.14	2.34	0.5	1.8	1.3			0.5		0.63		0.5
Tetrachloroethene - MCP GW-1: 5.0 µg/L																		
OHM-A7-08	16.4	6.2	8.1	11	5.6	6.2	8.18	7.46		4.2	2.7			3.3		2.6		2.7
JO-A07-M63/SUD-A07-065[2]	8.9	11.9	13	12	15	9.9	13.2	14	14.8	12.5	9.3			3.1		6.9		6
Trichloroethene - MCP GW-1: 5.0 µg/L																		
JO-A07-M63/SUD-A07-065[2]	7.1	9.3	4.6	4.4	4.7	1.3	6.77	8.35	6.7	6.9	3.9			0.5		2.8		2.6
gamma-BHC (Lindane) - MCP GW-1: 0.2 µg/L																		
OHM-A7-08	1.91	0.58	0.52	0.522	0.332	0.45	0.529	0.366	0.33	0.18	0.11			0.011		0.18		0.11
JO-A07-M63/SUD-A07-065[2]	0.18	0.34	0.22	0.097	0.077	0.079	0.243	0.241	0.22	0.17	0.14			0.034		0.10		0.05
4,4'-DDD - MCP GW-1: 0.2 µg/L																		
OHM-A7-08	0.10	0.16	0.040	0.050	0.053	0.043	0.049	0.045	0.042	0.037	0.023					0.028		0.028
Arsenic																		
OHM-A7-08	ND	4.7	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
JO-A07-M63/SUD-A07-065[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
JO-A07-M62/SUDWP-A07-01[2]	ND	ND	2.7 J	ND	ND	ND	NS	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
SUDA7-19-01[3]	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Lead																		
OHM-A7-08	ND	7.3	ND	ND	ND	5.0 J	ND	ND	ND	6.3	NS	NS	NS	NS	NS	NS	NS	NS
JO-A07-M63/SUD-A07-065[1]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS
JO-A07-M62/SUDWP-A07-01[2]	ND	ND	ND	ND	ND	ND	NS	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:
All results and standards are in micrograms per liter (µg/L).
Target compounds in this table are compounds that have been detected above MCP GW-1 standards historically; no cleanup concentration requirements are stipulated for the site and MCP GW standards are included for comparative purposes.

[1] Well OHM-A7-51 was removed from the long-term monitoring program in 2015.
[2] Well SUD-A07-M65 was installed in 2006 to replace well JO-A07-M63, which was decommissioned in 2013.
[3] Well SUDWP-A07-01 was installed in 2013 as a replacement for damaged well JO-A07-M62.
[4] Well SUDA7-19-01 was installed in 2019 to replace well SUDWP-A07-1, which was decommissioned.

Acronyms and Abbreviations:
J = estimated concentration
ND = not detected
NS = not sampled



Notes:

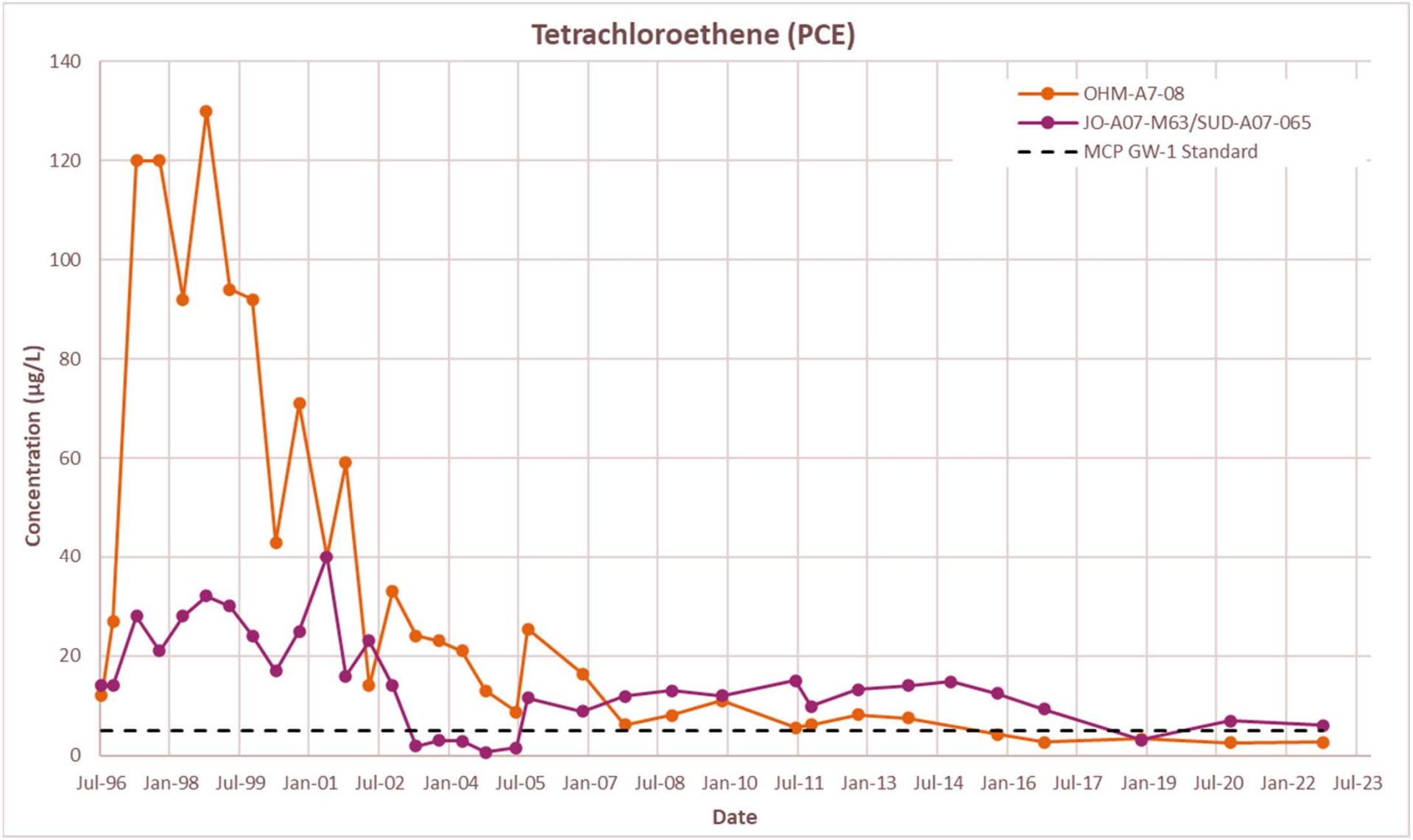
1. Data for compounds not detected are shown at half the reporting limit.
2. µg/L = microgram per liter

2023 ANNUAL LONG-TERM MONITORING AND MAINTENANCE REPORT
AREA OF CONTAMINATION A7
FORMER SUDBURY TRAINING ANNEX
SUDBURY, MASSACHUSETTS

TREND GRAPH
1,1,2,2-TETRACHLOROETHANE

SERES Engineering & Services, LLC
ARCADIS a joint venture

FIGURE
C-1



Notes:

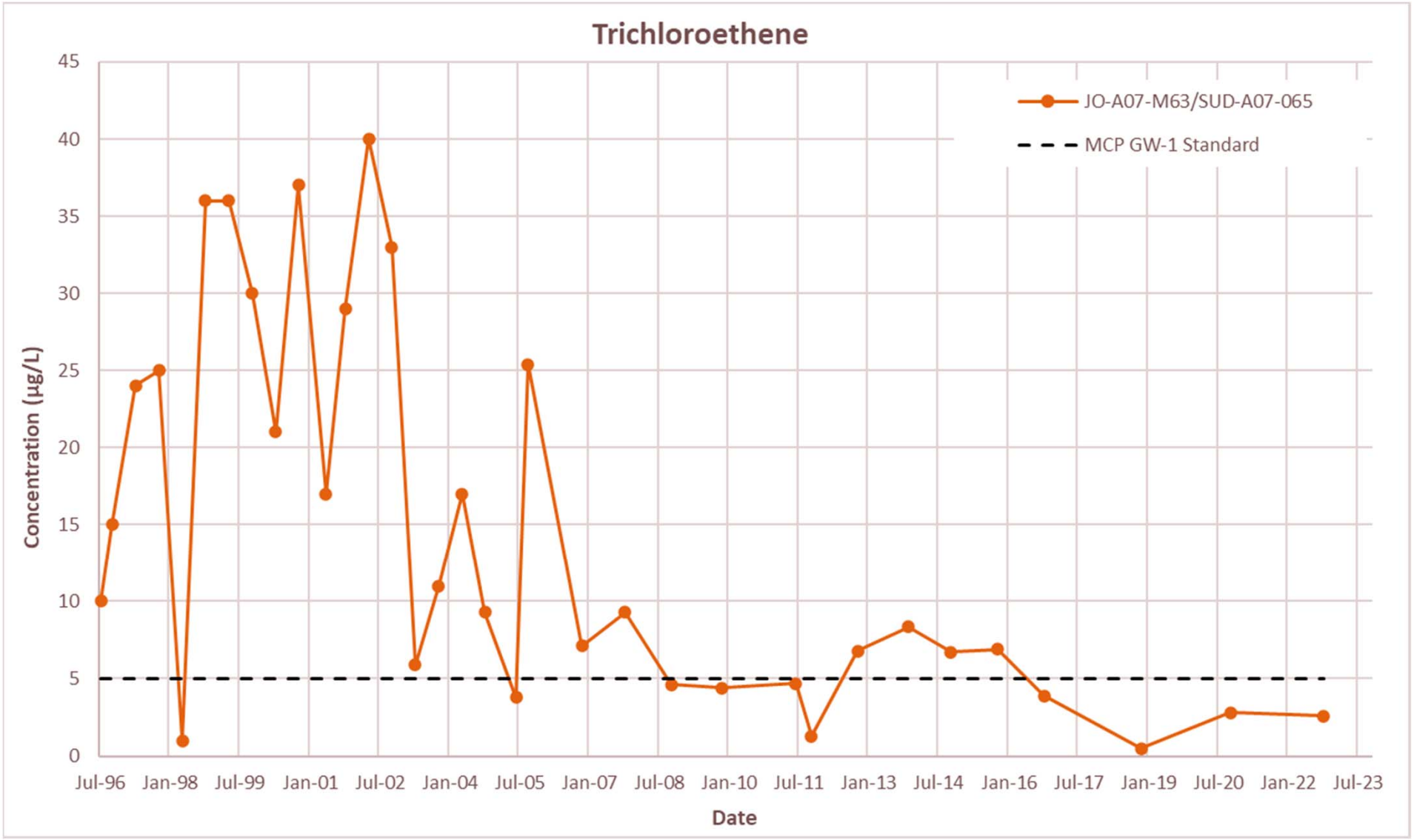
1. Data for compounds not detected are shown at half the reporting limit.
2. µg/L = microgram per liter

2023 ANNUAL LONG-TERM MONITORING AND MAINTENANCE REPORT
AREA OF CONTAMINATION A7
FORMER SUDBURY TRAINING ANNEX
SUDBURY, MASSACHUSETTS

TREND GRAPH
TETRACHLOROETHENE (PCE)

SERES Engineering & Services, LLC
ARCADIS a joint venture

FIGURE
C-2



Notes:

1. Data for compounds not detected are shown at half the reporting limit.
2. µg/L = microgram per liter

2023 ANNUAL LONG-TERM MONITORING AND MAINTENANCE REPORT
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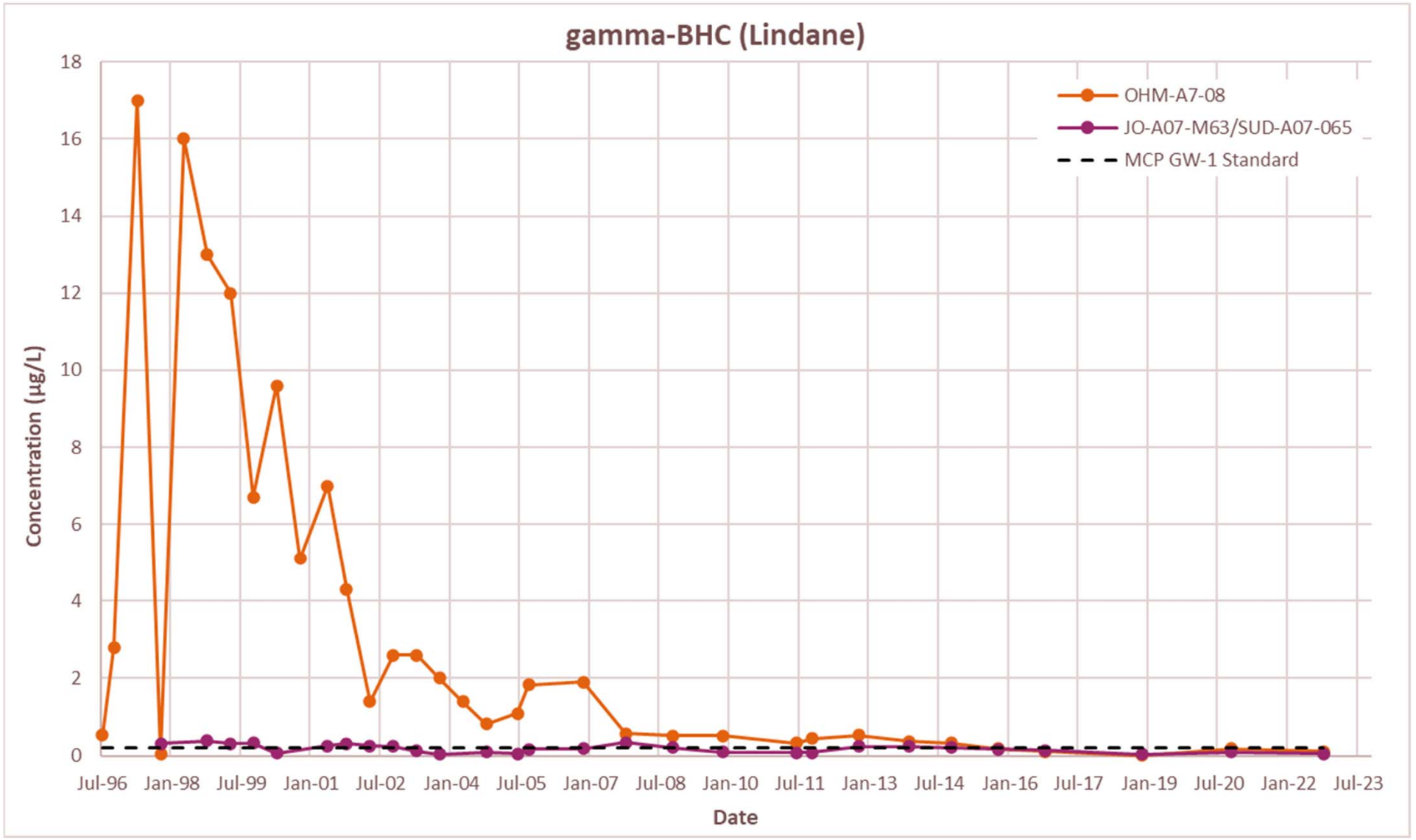
SUDBURY, MASSACHUSETTS

TREND GRAPH
TRICHLOROETHENE (TCE)

SERES Engineering & Services, LLC
ARCADIS a joint venture

FIGURE
C-3



Notes:

1. Data for compounds not detected are shown at half the reporting limit.
2. µg/L = microgram per liter

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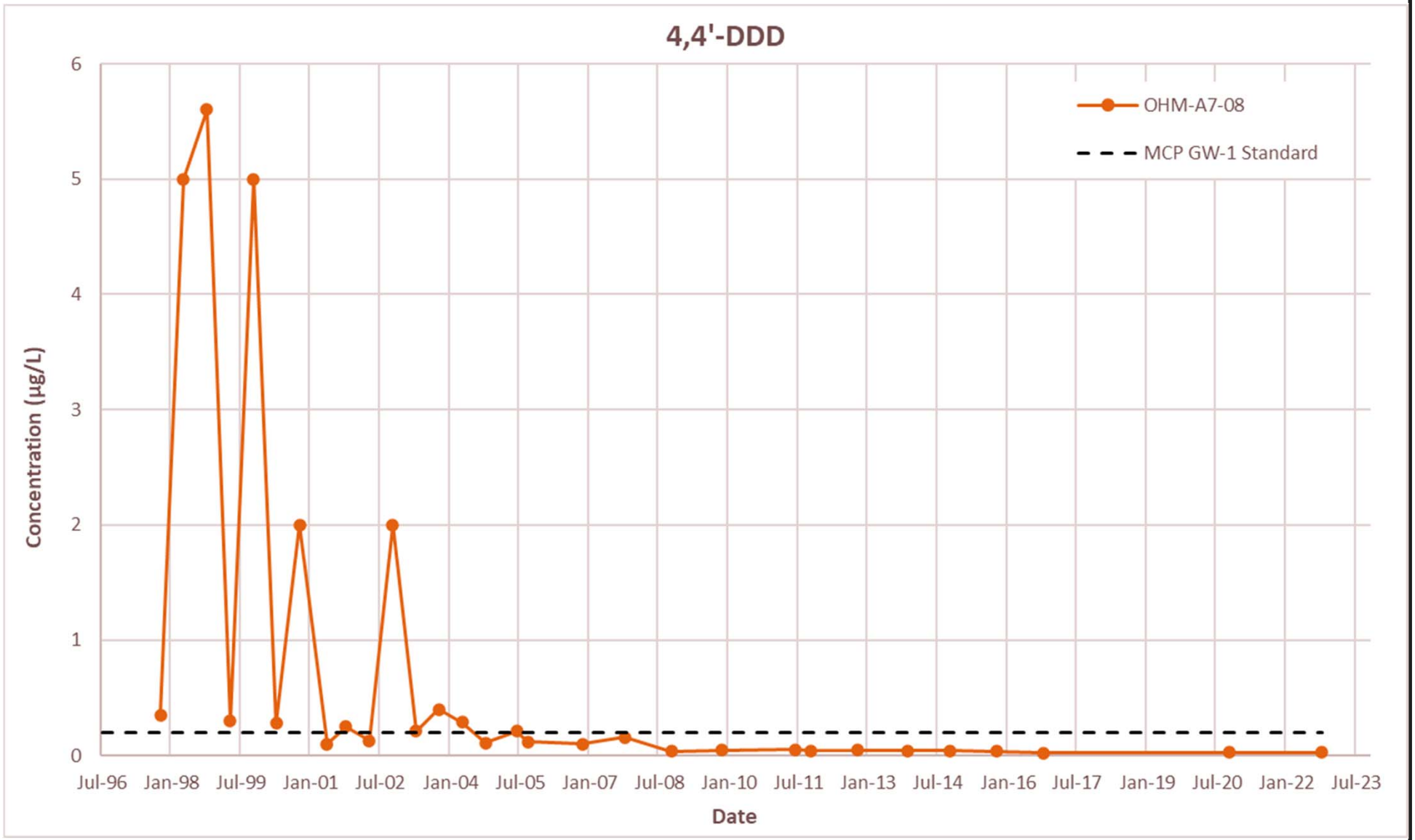
TREND GRAPH
GAMMA-BHC (LINDANE)

SERES Engineering & Services, LLC
ARCADIS a joint venture

FIGURE
C-4



Notes:

1. Data for compounds not detected are shown at half the reporting limit.
2. µg/L = microgram per liter

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SUDBURY, MASSACHUSETTS

TREND GRAPH
4,4'-DDD

SERES Engineering & Services, LLC
ARCADIS a joint venture

FIGURE
C-5

Appendix D

Data Validation Report

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

ARCADIS U.S., Inc.
3109 West Martin Luther King Jr. Blvd, Suite 350
Tampa, FL 33607
ATTN: Mr. Nathan Mullens
nrmullens@seres-es.com

March 27, 2024

SUBJECT: Fort Devens - Data Validation

Dear Mr. Mullens,

Enclosed are the final validation reports for the fractions listed below. This SDG was received on March 18, 2024. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #58599_A:

SDG #	Fraction
680-242926-1	Volatiles, Chlorinated Pesticides, Polychlorinated Biphenyls, Wet Chemistry

The data validation was performed under Stage 2B guidelines. The analysis was validated using the following documents, as applicable to each method:

- Quality Assurance Project Plan, Long Term Monitoring Program, Former Fort Devens, 2020
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014; update VI, July 2018

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

163 pages-ADV 3 WEEK TAT

Attachment 1

Stage 2B EQUIS EDD

LDC# 58599 (Arcadis - Millersville, MD / Fort Devens)

LDC	SDG#	DATE REC'D	(2) DATE DUE	VOA (8260D)		Pest. (8081B)		(4) Met. (6010C /6020A)		4 D.Met. (6010C /6020A)		Fe,Mn (6010C)		Mn (6010C)		VPH (MADEP -VPH		Alk (2320B)		COD (410.4)		CN- (9012B)															
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	680-242926-1	03/18/24	04/08/24	2	0	2	0	-	-	-	-	-	-	-	-	-	-	-	-	2	0	2	0														
B	680-242928-2/SQ6350	03/18/24	04/08/24	-	-	-	-	-	-	-	-	2	0	1	0	3	0	2	0	-	-	-	-														
C	680-242934-2/SQ6351	03/18/24	04/08/24	-	-	-	-	-	-	-	-	2	0	-	-	3	0	2	0	-	-	-	-														
D	680-242974-3	03/18/24	04/08/24	-	-	-	-	1	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-														
Total	TR/PG			2	0	2	0	1	0	1	0	4	0	1	0	6	0	4	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

V:\LOGIN\Arcadis\Fort Devens\58599ST.wpd

Data Validation Report for 680-242926-1

Facility:	Former Fort Devens, Sudbury Traning Annex
Event:	Seres-Arcadis JV, Long Term Monitoring, Sudbury Annex, Fall 2023
SDG:	680-242926-1
Guidance Document:	Quality Assurance Project Plan, PFAS Site Inspection, Former Fort Devens, 2017
Prime Contractor:	Seres - Arcadis SB Joint Venture, LLC, Charleston, SC
Project Manager:	Jennifer Singer
Contract Laboratory(ies):	Eurofins Environment Testing TestAmerica, Arvada, CO | Eurofins Environment Testing TestAmerica, Savannah, GA
Data Review Contractor:	Laboratory Data Consultants, Inc.
Data Review Level:	2B
Primary Data Reviewer:	Long Ngo, Environmental Scientist
Second Reviewer:	Pei Geng, Senior Scientist
Date Submitted:	March 26, 2024

Field Sample ID	Lab Sample ID	Matrix	Type/Type Code	E410.4	SW8081B	SW8260D	SW9012B
SUDA7-19-01-FAL23	680-242926-2	Water	Field Sample/N	X	X	X	X
SUD-DUP01-FAL23	680-242926-1	Water	Field Duplicate/FD	X	X	X	X

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page at 2B data validation level. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistent with the requirements contained in the Quality Assurance Project Plan, PFAS Site Inspection, Former Fort Devens, 2017 and the additional guidance documents incorporated by reference to the extent possible. Where definitive guidance is not provided, results have been evaluated in a conservative manner using professional judgment.

Sample collection was managed and directed by Seres - Arcadis SB Joint Venture, LLC, Charleston, SC; analyses were performed by Eurofins Environment Testing TestAmerica, Arvada, CO | Eurofins Environment Testing TestAmerica, Savannah, GA and were reported under sample delivery group (SDG) 680-242926-1. Data have been evaluated electronically based on electronic data deliverables (EDDs) provided by the laboratory, and hard copy data summary forms have also been reviewed during this effort and compared to the automated review output by the reviewers whose signatures appear on the following page. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative and throughout this report.

All quality control (QC) elements associated with this SDG have been reviewed by a project chemist in accordance with the requirements defined for the project. This review is documented in the attached Data Review Checklists. The QC elements listed below were supported by the electronic deliverable and were evaluated using ADR processes.

- Calibration Blank
- Calibration Blank - Negative
- Continuing Calibration Verification
- Field Duplicate RPD
- Lab Blank
- LCS Recovery
- LCS RPD
- MS Recovery
- MS RPD
- Prep Hold Time
- Surrogate
- Test Hold Time

Results of the ADR process were subsequently reviewed and updated as applicable by the data review chemists identified on the signature page. Quality control elements that were not included in the electronic deliverable were reviewed manually and findings are documented within this report. Summaries of findings and associated qualified results are documented throughout this report.

A total of 39 results (21.67%) out of the 180 results (sample and field QC samples) reported are qualified based on review and 0 results (0.00%) have been rejected or deemed a serious deficiency (X qualifier). Trace values, defined as results that are qualified as estimated because they fall between the detection limit and the reporting limit/limit of quantitation, are not counted as qualified results in the above count. The qualified results are detailed throughout this report and discussed in the narrative below, where appropriate.

Narrative Comments

Analytical Method	Data Reviewer Comment
E410.4	No additional comments; see Checklist for detail.
SW8081B	No additional comments; see Checklist for detail.
SW8260D	No additional comments; see Checklist for detail.
SW9012B	No additional comments; see Checklist for detail.

March 26, 2024

Reviewed by Long Ngo, Environmental Scientist, Laboratory Data Consultants, Inc.

As the First Reviewer, I certify that I have performed a data review process in accordance with the requirements of the project guidance document, and have compared the electronic data to the laboratory's hard copy report and have verified the consistency of the reported sample results and method quality control data between the two deliverables.

Reviewed by Pei Geng, Senior Scientist, Laboratory Data Consultants, Inc.

March 26, 2024

As the Second Reviewer, I certify that I have performed a quality assurance review of the report generated by the First Reviewer.

Quality Control Outliers for test method SW8081B, Continuing Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCV68081024429 (CV) CCV68081024429	p,p'-DDE	121	80 - 120	80 - 120	percent	J/None	V2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8081B, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCS6808083432A (BS) LCS6808083432A	Aldrin	40.0	45 - 134	10 - 134	percent	J/UJ	C	
LCS6808083432A (BS) LCS6808083432A	alpha-BHC (alpha-Hexachlorocyclohexane)	41.0	54 - 138	10 - 138	percent	J/UJ	C	
LCS6808083432A (BS) LCS6808083432A	alpha-Endosulfan	54.0	62 - 126	10 - 126	percent	J/UJ	C	
LCS6808083432A (BS) LCS6808083432A	Dieldrin	56.0	60 - 136	10 - 136	percent	J/UJ	C	
LCS6808083432A (BS) LCS6808083432A	Endosulfan sulfate	59.0	62 - 133	10 - 133	percent	J/UJ	C	
LCS6808083432A (BS) LCS6808083432A	Endrin	56.0	60 - 138	10 - 138	percent	J/UJ	C	
LCS6808083432A (BS) LCS6808083432A	gamma-BHC (Lindane)	51.0	59 - 134	10 - 134	percent	J/UJ	C	
LCS6808083432A (BS) LCS6808083432A	Heptachlor epoxide	57.0	61 - 133	10 - 133	percent	J/UJ	C	
LCS6808083432A (BS) LCS6808083432A	p,p'-DDE	45.0	57 - 135	10 - 135	percent	J/UJ	C	
LCS6808099812A (BS) LCS6808099812A	Aldrin	27.0	45 - 134	10 - 134	percent	J/UJ	C	
LCS6808099812A (BS) LCS6808099812A	alpha-BHC (alpha-Hexachlorocyclohexane)	38.0	54 - 138	10 - 138	percent	J/UJ	C	
LCS6808099812A (BS) LCS6808099812A	alpha-Endosulfan	33.0	62 - 126	10 - 126	percent	J/UJ	C	
LCS6808099812A (BS) LCS6808099812A	beta-BHC (beta-Hexachlorocyclohexane)	47.0	56 - 136	10 - 136	percent	J/UJ	C	
LCS6808099812A (BS) LCS6808099812A	beta-Endosulfan	40.0	52 - 135	10 - 135	percent	J/UJ	C	
LCS6808099812A (BS) LCS6808099812A	delta-BHC (delta-Hexachlorocyclohexane)	45.0	52 - 142	10 - 142	percent	J/UJ	C	
LCS6808099812A (BS) LCS6808099812A	Dieldrin	42.0	60 - 136	10 - 136	percent	J/UJ	C	
LCS6808099812A (BS) LCS6808099812A	Endosulfan sulfate	45.0	62 - 133	10 - 133	percent	J/UJ	C	
LCS6808099812A (BS) LCS6808099812A	Endrin	43.0	60 - 138	10 - 138	percent	J/UJ	C	
LCS6808099812A (BS) LCS6808099812A	Endrin ketone	41.0	58 - 134	10 - 134	percent	J/UJ	C	
LCS6808099812A (BS) LCS6808099812A	gamma-BHC (Lindane)	40.0	59 - 134	10 - 134	percent	J/UJ	C	
LCS6808099812A (BS) LCS6808099812A	Heptachlor	39.0	54 - 130	10 - 130	percent	J/UJ	C	
LCS6808099812A (BS) LCS6808099812A	Heptachlor epoxide	39.0	61 - 133	10 - 133	percent	J/UJ	C	

Quality Control Outliers for test method SW8081B, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCS6808099812A (BS) LCS6808099812A	p,p'-DDD	49.0	56 - 143	10 - 143	percent	J/UJ	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the LCS Recovery for SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
SUDA7-19-01-FAL23 680-242926-2	N	Aldrin	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	alpha-Endosulfan	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	Dieldrin	0.0520	0.00420 UJ1QM	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	Endosulfan sulfate	0.0520	0.00420 UJ1QM	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	Endrin	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	gamma-BHC (Lindane)	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	Heptachlor epoxide	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	p,p'-DDE	0.0520	0.00420 UJ1QM	0.00420 UJ		ug/l	C/M
SUD-DUP01-FAL23 680-242926-1	FD	Aldrin	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	alpha-Endosulfan	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Dieldrin	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Endosulfan sulfate	0.0530	0.00420 U Q M	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Endrin	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	gamma-BHC (Lindane)	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Heptachlor epoxide	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M

Qualified Results associated with the LCS Recovery for SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
SUD-DUP01-FAL23 680-242926-1	FD	p,p'-DDE	0.0530	0.00420 U Q M	0.00420 UJ		ug/l	C/I/M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8081B, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
SUDA7-19-01-FAL23 (SD) 680-242926-2	Aldrin	37.0	45 - 134	10 - 134	percent	J/UJ	M	
SUDA7-19-01-FAL23 (MS) 680-242926-2	alpha-BHC (alpha-Hexachlorocyclohexane)	42.0	54 - 138	10 - 138	percent	J/UJ	M	
SUDA7-19-01-FAL23 (SD) 680-242926-2	alpha-BHC (alpha-Hexachlorocyclohexane)	41.0	54 - 138	10 - 138	percent	J/UJ	M	
SUDA7-19-01-FAL23 (MS) 680-242926-2	alpha-Endosulfan	50.0	62 - 126	10 - 126	percent	J/UJ	M	
SUDA7-19-01-FAL23 (SD) 680-242926-2	alpha-Endosulfan	54.0	62 - 126	10 - 126	percent	J/UJ	M	
SUDA7-19-01-FAL23 (SD) 680-242926-2	Dieldrin	56.0	60 - 136	10 - 136	percent	J/UJ	M	
SUDA7-19-01-FAL23 (SD) 680-242926-2	Endosulfan sulfate	51.0	62 - 133	10 - 133	percent	J/UJ	M	
SUDA7-19-01-FAL23 (MS) 680-242926-2	Endrin	58.0	60 - 138	10 - 138	percent	J/UJ	M	
SUDA7-19-01-FAL23 (SD) 680-242926-2	Endrin	53.0	60 - 138	10 - 138	percent	J/UJ	M	
SUDA7-19-01-FAL23 (MS) 680-242926-2	gamma-BHC (Lindane)	53.0	59 - 134	10 - 134	percent	J/UJ	M	
SUDA7-19-01-FAL23 (SD) 680-242926-2	gamma-BHC (Lindane)	49.0	59 - 134	10 - 134	percent	J/UJ	M	
SUDA7-19-01-FAL23 (SD) 680-242926-2	Heptachlor	43.0	54 - 130	10 - 130	percent	J/UJ	M	
SUDA7-19-01-FAL23 (MS) 680-242926-2	Heptachlor epoxide	58.0	61 - 133	10 - 133	percent	J/UJ	M	
SUDA7-19-01-FAL23 (SD) 680-242926-2	Heptachlor epoxide	53.0	61 - 133	10 - 133	percent	J/UJ	M	
SUDA7-19-01-FAL23 (SD) 680-242926-2	p,p'-DDD	52.0	56 - 143	10 - 143	percent	J/UJ	M	
SUDA7-19-01-FAL23 (MS) 680-242926-2	p,p'-DDE	51.0	57 - 135	10 - 135	percent	J/UJ	M	
SUDA7-19-01-FAL23 (SD) 680-242926-2	p,p'-DDE	50.0	57 - 135	10 - 135	percent	J/UJ	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the MS Recovery for SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
SUDA7-19-01-FAL23 680-242926-2	N	Aldrin	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M

Qualified Results associated with the MS Recovery for SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
SUDA7-19-01-FAL23 680-242926-2	N	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	alpha-Endosulfan	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	Dieldrin	0.0520	0.00420 UJ1QM	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	Endosulfan sulfate	0.0520	0.00420 UJ1QM	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	Endrin	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	gamma-BHC (Lindane)	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	Heptachlor	0.0520	0.00420 U J1 M	0.00420 UJ		ug/l	M
SUDA7-19-01-FAL23 680-242926-2	N	Heptachlor epoxide	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	p,p'-DDD	0.0520	0.00420 U J1	0.00420 UJ		ug/l	M
SUDA7-19-01-FAL23 680-242926-2	N	p,p'-DDE	0.0520	0.00420 UJ1QM	0.00420 UJ		ug/l	C/M
SUD-DUP01-FAL23 680-242926-1	FD	Aldrin	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	alpha-Endosulfan	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Dieldrin	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Endosulfan sulfate	0.0530	0.00420 U Q M	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Endrin	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	gamma-BHC (Lindane)	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Heptachlor	0.0530	0.00420 U	0.00420 UJ		ug/l	I/M
SUD-DUP01-FAL23 680-242926-1	FD	Heptachlor epoxide	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	p,p'-DDD	0.0530	0.00420 U M	0.00420 UJ		ug/l	I/M
SUD-DUP01-FAL23 680-242926-1	FD	p,p'-DDE	0.0530	0.00420 U Q M	0.00420 UJ		ug/l	C/I/M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8081B, MS RPD

The objective of matrix spikes/matrix spike duplicates (MS/MSD) RPD analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. MS/MSD analyses are also performed to generate data that determines the long-term precision of the analytical method on various matrices. Non-homogenous samples can impact the apparent method precision. Summary forms were evaluated and compared to electronic data deliverables. Matrix spikes/matrix spike duplicates results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
SUDA7-19-01-FAL23 (SD) 680-242926-2	Endrin ketone	42.4	< 30	< 30	rpd	J/None	D	
SUDA7-19-01-FAL23 (SD) 680-242926-2	Heptachlor	37.7	< 30	< 30	rpd	J/None	D	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8081B, Surrogate

Method performance for individual samples is demonstrated through spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Summary forms were evaluated and compared to electronic data deliverables. Surrogate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
SUDA7-19-01-FAL23 (SD) 680-242926-2	2,4,5,6-Tetrachloro-meta-xylene	33.0	44 - 124	10 - 124	percent	J/UJ	I	No Qualifiers Applied
SUD-DUP01-FAL23 (FD) 680-242926-1	2,4,5,6-Tetrachloro-meta-xylene	42.0	44 - 124	10 - 124	percent	J/UJ	I	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Surrogate for SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
SUD-DUP01-FAL23 680-242926-1	FD	Aldrin	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	alpha-Endosulfan	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	beta-BHC (beta-Hexachlorocyclohexane)	0.0530	0.00420 U	0.00420 UJ		ug/l	I
SUD-DUP01-FAL23 680-242926-1	FD	beta-Endosulfan	0.0530	0.00420 U M	0.00420 UJ		ug/l	I
SUD-DUP01-FAL23 680-242926-1	FD	delta-BHC (delta-Hexachlorocyclohexane)	0.0530	0.00420 U	0.00420 UJ		ug/l	I
SUD-DUP01-FAL23 680-242926-1	FD	Dieldrin	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Endosulfan sulfate	0.0530	0.00420 U Q M	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Endrin	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Endrin aldehyde	0.0530	0.0170 U	0.0170 UJ		ug/l	I
SUD-DUP01-FAL23 680-242926-1	FD	Endrin ketone	0.0530	0.0170 U M	0.0170 UJ		ug/l	I
SUD-DUP01-FAL23 680-242926-1	FD	gamma-BHC (Lindane)	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Heptachlor	0.0530	0.00420 U	0.00420 UJ		ug/l	I/M
SUD-DUP01-FAL23 680-242926-1	FD	Heptachlor epoxide	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Methoxychlor	0.0530	0.00420 U M	0.00420 UJ		ug/l	I
SUD-DUP01-FAL23 680-242926-1	FD	p,p'-DDD	0.0530	0.00420 U M	0.00420 UJ		ug/l	I/M
SUD-DUP01-FAL23 680-242926-1	FD	p,p'-DDE	0.0530	0.00420 U Q M	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	p,p'-DDT	0.0530	0.00420 U	0.00420 UJ		ug/l	I

Qualified Results associated with the Surrogate for SW8081B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
SUD-DUP01-FAL23 680-242926-1	FD	Technical Chlordane	0.530	0.420 U M	0.420 UJ		ug/l	I
SUD-DUP01-FAL23 680-242926-1	FD	Toxaphene	5.30	0.850 U Q M	0.850 UJ		ug/l	I

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8260D, Continuing Calibration Verification

Compliance requirements for satisfactory continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCVIS6808096153 (CV) CCVIS6808096153	Bromomethane	57.0	80 - 120	80 - 120	percent	J/UJ	V2	
CCVIS6808096153 (CV) CCVIS6808096153	Chloroethane	76.0	80 - 120	80 - 120	percent	J/UJ	V2	
CCVIS6808096153 (CV) CCVIS6808096153	Trichlorofluoromethane	149	80 - 120	80 - 120	percent	J/None	V2	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Continuing Calibration Verification for SW8260D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
SUDA7-19-01-FAL23 680-242926-2	N	Bromomethane	20.0	10.0 U Q J1	10.0 UJ		ug/l	M/V2/V5
SUDA7-19-01-FAL23 680-242926-2	N	Chloroethane	20.0	10.0 U Q	10.0 UJ		ug/l	V2
SUD-DUP01-FAL23 680-242926-1	FD	Bromomethane	20.0	10.0 U Q	10.0 UJ		ug/l	M/V2/V5
SUD-DUP01-FAL23 680-242926-1	FD	Chloroethane	20.0	10.0 U Q	10.0 UJ		ug/l	V2

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8260D, Ending Continuing Calibration Verification

Compliance requirements for satisfactory closing continuing calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration is performed to verify and evaluate instrument performance during sample analysis. Summary forms were evaluated against project acceptance criteria, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
CCVC68080961521 (EV) CCVC68080961521	Bromomethane	46.0	50 - 150	50 - 150	percent	J/UJ	V5	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the Ending Continuing Calibration Verification for SW8260D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
SUDA7-19-01-FAL23 680-242926-2	N	Bromomethane	20.0	10.0 U Q J1	10.0 UJ		ug/l	M/V2/V5
SUD-DUP01-FAL23 680-242926-1	FD	Bromomethane	20.0	10.0 U Q	10.0 UJ		ug/l	M/V2/V5

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8260D, LCS Recovery

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
LCS6808096154 (BS) LCS6808096154	Trichlorofluoromethane	147	65 - 141	10 - 141	percent	J/None	C	
LCSD6808096155 (BD) LCSD6808096155	Trichlorofluoromethane	149	65 - 141	10 - 141	percent	J/None	C	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW8260D, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
SUDA7-19-01-FAL23 (MS) 680-242926-2	1,2-Dichlorobenzene	79.0	80 - 119	10 - 119	percent	J/UJ	M	
SUDA7-19-01-FAL23 (MS) 680-242926-2	Bromomethane	43.0	53 - 141	10 - 141	percent	J/UJ	M	
SUDA7-19-01-FAL23 (SD) 680-242926-2	Bromomethane	49.0	53 - 141	10 - 141	percent	J/UJ	M	
SUDA7-19-01-FAL23 (MS) 680-242926-2	Trichlorofluoromethane	154	65 - 141	10 - 141	percent	J/None	M	
SUDA7-19-01-FAL23 (SD) 680-242926-2	Trichlorofluoromethane	153	65 - 141	10 - 141	percent	J/None	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the MS Recovery for SW8260D

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
SUDA7-19-01-FAL23 680-242926-2	N	1,2-Dichlorobenzene	2.00	1.00 U J1	1.00 UJ		ug/l	M
SUDA7-19-01-FAL23 680-242926-2	N	Bromomethane	20.0	10.0 U Q J1	10.0 UJ		ug/l	M/V2/V5
SUD-DUP01-FAL23 680-242926-1	FD	1,2-Dichlorobenzene	2.00	1.00 U	1.00 UJ		ug/l	M
SUD-DUP01-FAL23 680-242926-1	FD	Bromomethane	20.0	10.0 U Q	10.0 UJ		ug/l	M/V2/V5

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Quality Control Outliers for test method SW8260D, Surrogate

Method performance for individual samples is demonstrated through spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. The sample itself may produce effects due to such factors as interferences and high concentrations of analytes. Summary forms were evaluated and compared to electronic data deliverables. Surrogate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
SUDA7-19-01-FAL23 (MS) 680-242926-2	Toluene-d8	88.0	89 - 112	10 - 112	percent	J/UJ	I	No Qualifiers Applied

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW9012B, Field Duplicate RPD

Field duplicate analyses are performed in order to assess sample collection/laboratory precision for each sample matrix. Summary forms were evaluated and compared to electronic data deliverables. Field duplicate results that were outside of the acceptance criteria are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
SUD-DUP01-FAL23 (N) 680-242926-1	Cyanide	200	< 30	< 30	rpd	J/UJ	D3	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

No results associated with this QC element required qualification.

Quality Control Outliers for test method SW9012B, MS Recovery

Data for matrix spikes/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, MS/MSD data can be used in conjunction with other available QC information. Reported results were evaluated to determine compliance with the required acceptance criteria, and summary forms were evaluated and compared to electronic data deliverables. Findings of this review, and any associated qualified results, are listed below.

Sample ID/ Lab Sample ID	Analyte	Result	Warning Limits	Control Limits	Units	Qualifier	Reason Code	Comment
SUDA7-19-01-FAL23 (MS) 680-242926-2	Cyanide	63.0	83 - 116	10 - 116	percent	J/UJ	M	
SUDA7-19-01-FAL23 (SD) 680-242926-2	Cyanide	73.0	83 - 116	10 - 116	percent	J/UJ	M	

Where two qualifiers are listed, such as 'J/UJ', the first applies to positive results, and the second to non-detect results.
Upper and Lower Warning and Control Limits are abbreviated UWL, LWL, UCL, and LCL in the Comment field.

Qualified Results associated with the MS Recovery for SW9012B

FieldSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
SUDA7-19-01-FAL23 680-242926-2	N	Cyanide	0.0100	0.00250 J J1	0.00250 J	-	mg/l	M/TR
SUD-DUP01-FAL23 680-242926-1	FD	Cyanide	0.0100	0.00500 U	0.00500 UJ		mg/l	M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOD) or (LOQ) based on the sample concentration and the validation guidance. In instances where no LOD is provided, results are reported down to the LOQ.

Table of All Qualified Results

Test Method: SW8081B		Extraction Method: SW3510C						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
SUDA7-19-01-FAL23 680-242926-2	N	Aldrin	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	alpha-Endosulfan	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	Dieldrin	0.0520	0.00420 UJ1QM	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	Endosulfan sulfate	0.0520	0.00420 UJ1QM	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	Endrin	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	gamma-BHC (Lindane)	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	Heptachlor	0.0520	0.00420 U J1 M	0.00420 UJ		ug/l	M
SUDA7-19-01-FAL23 680-242926-2	N	Heptachlor epoxide	0.0520	0.00420 U J1 Q	0.00420 UJ		ug/l	C/M
SUDA7-19-01-FAL23 680-242926-2	N	p,p'-DDD	0.0520	0.00420 U J1	0.00420 UJ		ug/l	M
SUDA7-19-01-FAL23 680-242926-2	N	p,p'-DDE	0.0520	0.00420 UJ1QM	0.00420 UJ		ug/l	C/M
SUD-DUP01-FAL23 680-242926-1	FD	Aldrin	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	alpha-BHC (alpha-Hexachlorocyclohexane)	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	alpha-Endosulfan	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	beta-BHC (beta-Hexachlorocyclohexane)	0.0530	0.00420 U	0.00420 UJ		ug/l	I
SUD-DUP01-FAL23 680-242926-1	FD	beta-Endosulfan	0.0530	0.00420 U M	0.00420 UJ		ug/l	I
SUD-DUP01-FAL23 680-242926-1	FD	delta-BHC (delta-Hexachlorocyclohexane)	0.0530	0.00420 U	0.00420 UJ		ug/l	I
SUD-DUP01-FAL23 680-242926-1	FD	Dieldrin	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Endosulfan sulfate	0.0530	0.00420 U Q M	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Endrin	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Endrin aldehyde	0.0530	0.0170 U	0.0170 UJ		ug/l	I
SUD-DUP01-FAL23 680-242926-1	FD	Endrin ketone	0.0530	0.0170 U M	0.0170 UJ		ug/l	I
SUD-DUP01-FAL23 680-242926-1	FD	gamma-BHC (Lindane)	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Heptachlor	0.0530	0.00420 U	0.00420 UJ		ug/l	I/M
SUD-DUP01-FAL23 680-242926-1	FD	Heptachlor epoxide	0.0530	0.00420 U Q	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	Methoxychlor	0.0530	0.00420 U M	0.00420 UJ		ug/l	I

Table of All Qualified Results

Test Method: SW8081B		Extraction Method: SW3510C						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
SUD-DUP01-FAL23 680-242926-1	FD	p,p'-DDD	0.0530	0.00420 U M	0.00420 UJ		ug/l	I/M
SUD-DUP01-FAL23 680-242926-1	FD	p,p'-DDE	0.0530	0.00420 U Q M	0.00420 UJ		ug/l	C/I/M
SUD-DUP01-FAL23 680-242926-1	FD	p,p'-DDT	0.0530	0.00420 U	0.00420 UJ		ug/l	I
SUD-DUP01-FAL23 680-242926-1	FD	Technical Chlordane	0.530	0.420 U M	0.420 UJ		ug/l	I
SUD-DUP01-FAL23 680-242926-1	FD	Toxaphene	5.30	0.850 U Q M	0.850 UJ		ug/l	I

Test Method: SW8260D		Extraction Method: SW5030C						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
SUDA7-19-01-FAL23 680-242926-2	N	1,2-Dichlorobenzene	2.00	1.00 U J1	1.00 UJ		ug/l	M
SUDA7-19-01-FAL23 680-242926-2	N	Bromomethane	20.0	10.0 U Q J1	10.0 UJ		ug/l	M/V2/V5
SUDA7-19-01-FAL23 680-242926-2	N	Chloroethane	20.0	10.0 U Q	10.0 UJ		ug/l	V2
SUD-DUP01-FAL23 680-242926-1	FD	1,2-Dichlorobenzene	2.00	1.00 U	1.00 UJ		ug/l	M
SUD-DUP01-FAL23 680-242926-1	FD	Bromomethane	20.0	10.0 U Q	10.0 UJ		ug/l	M/V2/V5
SUD-DUP01-FAL23 680-242926-1	FD	Chloroethane	20.0	10.0 U Q	10.0 UJ		ug/l	V2

Test Method: SW9012B		Extraction Method: METHOD						
FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	Qualified Result	Bias	Units	Reason
SUDA7-19-01-FAL23 680-242926-2	N	Cyanide	0.0100	0.00250 J J1	0.00250 J	-	mg/l	M/TR
SUD-DUP01-FAL23 680-242926-1	FD	Cyanide	0.0100	0.00500 U	0.00500 UJ		mg/l	M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Table of Results with Modified Qualifiers

Modified Qualifiers for test method SW9012B

FieldSample ID / LabSample ID	Type	Analyte	LOQ	Lab Result	ADR Result	ADR Reason	Modified Result	Reason
SUDA7-19-01-FAL23 680-242926-2	N	Cyanide	0.0100	0.00250 J J1	0.00250 J	D3/M/TR	0.00250 J	M/TR
SUD-DUP01-FAL23 680-242926-1	FD	Cyanide	0.0100	0.00500 U	0.00500 UJ	D3/M	0.00500 UJ	M

Analytes not found in project samples are reported as not detected at the limit of detection (LOD) unless blank contamination occurs and then the sample may be reported as not detected at the (LOQ) based on the sample concentration.
In instances where no LOD is provided, results are reported down to the LOQ.
Trace values are not included in the qualified results table unless additional reason codes are associated.

Reason Code Definitions

Code	Definition
C	LCS Recovery
D	MS RPD
D3	Field Duplicate RPD
I	Surrogate recovery outside project limits.
M	MS Recovery
TR	Trace Level Detect
V2	CCV
V5	Ending Continuing Calibration Verification

Flag Code and Definitions

Flag	Definition
J	Estimated Value
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a tentative identification.
NJ	The analyte has been tentatively identified or presumptively as present and the associated numerical value was the estimated concentration in the sample.
R	The data are rejected due to deficiencies in meeting QC criteria and may not be used for decision making.
U	Undetected: The analyte was analyzed for, but not detected.
UJ	The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
X	Result may require rejection; PDT attention required

Bias

-	The result may be biased low
+	The result may be biased high

Note - The bias field is a separate field; however, it is an integral part of the final flag (qualifier) on the sample result

Review Questions

Method: E410.4 (Chemical Oxygen Demand (Colorimetric, Automated Manual))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were ICB/CCBs run at the required frequency?	•			
Were target analytes in the ICBs/CCBs non-detect?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?			•	Not applicable to this method.
Were target analytes reported in the field blank(s) less than MDL?			•	Not applicable to this method.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			
Were MS/MSD recoveries within project acceptance limits?	•			
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data recommended for rejection (exclusion) in the data validation process?		•		Data acceptable as reported and qualified.

Review Questions

Method: SW8081B (Organochlorine Pesticides by Capillary GC)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?		•		Samples were reextracted due to LCS %R out and so were analyzed outside of the analytical holding time.
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?		•		CCV%D was greater than %D limits but no results were qualified.
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were ICB/CCBs run at the required frequency?	•			
Were target analytes in the ICBs/CCBs non-detect?	•			
Were surrogate recoveries within project acceptance limits?		•		Several results qualified UJ due to surrogate %R below %R limits.
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?			•	Not applicable to this method.
Were target analytes reported in the field blank(s) less than MDL?			•	Not applicable to this method.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?		•		Several results qualified UJ due to LCS %R below %R limits.
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			
Were MS/MSD recoveries within project acceptance limits?		•		Several results qualified UJ due to MS/MSD %R below %R limits.
Was the MS/MSD RPD within project acceptance limits?		•		MS/MSD RPD greater than RPD limits but no results were qualified.
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data recommended for rejection (exclusion) in the data validation process?		•		Data acceptable as reported and qualified.

Review Questions

Method: SW8260D (Volatile Organic Compounds by GC/MS)				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?		•		Several results qualified UJ due to CCV %D greater than %D limits.
Were the required minimum levels of calibration standards used in the initial calibration?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were ICB/CCBs run at the required frequency?	•			
Were target analytes in the ICBs/CCBs non-detect?	•			
Were surrogate recoveries within project acceptance limits?		•		Surrogate %R below %R limits but no results were qualified.
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?			•	Not applicable to this method.
Were target analytes reported in the field blank(s) less than MDL?			•	Not applicable to this method.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?		•		LCS/LCSD %R greater than %R limits but no results were qualified.
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			
Were MS/MSD recoveries within project acceptance limits?		•		Several results qualified UJ due to MS/MSD %R below %R limits. MS/MSD %R greater than %R limits but no results were qualified.
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?	•			
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were DoD QSM corrective actions followed if deviations were noted?	•			
Were any data recommended for rejection (exclusion) in the data validation process?		•		Data acceptable as reported and qualified.

Review Questions

Method: SW9012B (Total and Amenable Cyanide (Automated Colorimetric, with Off-Line Distillation))				
Review Questions	Yes	No	NA	Comment
Did Chain-of-Custody information agree with laboratory report and EDD for requested field samples and tests?	•			
Were samples preserved properly and received in good condition?	•			
Were holding times met?	•			
Were all requested target analytes reported?	•			
Was the Calibration within acceptance criteria?	•			
Was either analysis of an ICV performed after each ICAL or a second source standard prior to sample analysis?	•			
Were all reported analytes for the ICV within the required criteria?	•			
Were ICB/CCBs run at the required frequency?	•			
Were target analytes in the ICBs/CCBs non-detect?	•			
Was a method blank prepared and analyzed with each batch?	•			
Were target analytes in the method blank less than MDL?	•			
Were field blanks (EBs or FBs) submitted with these samples?			•	Not applicable to this method.
Were target analytes reported in the field blank(s) less than MDL?			•	Not applicable to this method.
Was an LCS/LCSD pair prepared and analyzed with each batch?	•			
Were LCS/LCSD recoveries within project acceptance limits?	•			
Was the LCS/LCSD RPD within project acceptance limits?	•			
Was a MS/MSD pair prepared with each batch?	•			
Were MS/MSD recoveries within project acceptance limits?		•		Results qualified J-(detects) or UJ(non-detects) due to MS/MSD %R below %R limits.
Was the MS/MSD RPD within project acceptance limits?	•			
If a field duplicate was analyzed, were the RPDs within QAPP acceptance limits?		•		Field duplicate RPD was greater than limits but no results were qualified due to result being non-detect.
Were QAPP specified laboratory LOQs/RLs achieved?	•			
Have all Laboratory Case Narrative comments/findings been addressed in the data review process?	•			
Were any data recommended for rejection (exclusion) in the data validation process?		•		Data acceptable as reported and qualified.

Field Duplicate Report By SDG

Former Fort Devens, Sudbury Traning Annex
Seres-Arcadis JV, Long Term Monitoring, Sudbury Annex, Fall 2023
Field Duplicates for SDG: 680-242926-1

Location	Analysis
SUDA7-19-01	E410.4

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Chemical Oxygen Demand	ND	ND	20.0	NA	30	NA	OK

Location	Analysis
SUDA7-19-01	SW8081B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Aldrin	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	alpha-BHC (alpha-Hexachlorocyclohexane)	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	alpha-Endosulfan	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	beta-BHC (beta-Hexachlorocyclohexane)	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	beta-Endosulfan	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	delta-BHC (delta-Hexachlorocyclohexane)	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Dieldrin	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Endosulfan sulfate	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Endrin	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Endrin aldehyde	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Endrin ketone	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	gamma-BHC (Lindane)	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Heptachlor	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Heptachlor epoxide	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Methoxychlor	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	p,p'-DDD	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	p,p'-DDE	ND	ND	0.0520	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG

Former Fort Devens, Sudbury Traning Annex
Seres-Arcadis JV, Long Term Monitoring, Sudbury Annex, Fall 2023
Field Duplicates for SDG: 680-242926-1

Location	Analysis
SUDA7-19-01	SW8081B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	p,p'-DDT	ND	ND	0.0520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Technical Chlordane	ND	ND	0.520	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Toxaphene	ND	ND	5.20	NA	30	NA	OK

Location	Analysis
SUDA7-19-01	SW8260D

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,1,1,2-Tetrachloroethane	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,1,1-Trichloroethane	ND	ND	1.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,1,2,2-Tetrachloroethane	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,1,2-Trichloroethane	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,1-Dichloroethane	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,1-Dichloroethene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,1-Dichloropropene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,2,3-Trichlorobenzene	ND	ND	5.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,2,3-Trichloropropane	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,2,4-Trichlorobenzene	ND	ND	5.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,2,4-Trimethylbenzene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,2-Dibromo-3-chloropropane	ND	ND	10.0	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,2-Dibromoethane (EDB)	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,2-Dichlorobenzene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,2-Dichloroethane	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,2-Dichloroethene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,2-Dichloropropane	ND	ND	1.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Sudbury Traning Annex
Seres-Arcadis JV, Long Term Monitoring, Sudbury Annex, Fall 2023
Field Duplicates for SDG: 680-242926-1

Location	Analysis
SUDA7-19-01	SW8260D

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,3,5-Trimethylbenzene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,3-Dichlorobenzene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,3-Dichloropropane	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	1,4-Dichlorobenzene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	2,2-Dichloropropane	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	2-Butanone (MEK)	ND	ND	25.0	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	2-Chlorotoluene	ND	ND	1.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	2-Hexanone	ND	ND	20.0	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	4-Chlorotoluene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	4-Methyl-2-pentanone (MIBK)	ND	ND	20.0	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Acetone	ND	ND	25.0	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Benzene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Bromobenzene	ND	ND	1.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Bromochloromethane	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Bromodichloromethane	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Bromoform	ND	ND	2.50	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Bromomethane	ND	ND	20.0	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Carbon disulfide	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Carbon Tetrachloride	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Chlorobenzene	ND	ND	1.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Chloroethane	ND	ND	20.0	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Chloroform	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Chloromethane	ND	ND	2.50	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	cis-1,2-Dichloroethene	ND	ND	2.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Sudbury Traning Annex
Seres-Arcadis JV, Long Term Monitoring, Sudbury Annex, Fall 2023
Field Duplicates for SDG: 680-242926-1

Location	Analysis
SUDA7-19-01	SW8260D

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	cis-1,3-Dichloropropene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Cumene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Dibromochloromethane	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Dibromomethane	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Dichlorodifluoromethane	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Ethylbenzene	ND	ND	1.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Hexachlorobutadiene	ND	ND	5.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	m,p-Xylene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Methyl tert-butyl ether (MTBE)	ND	ND	5.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Methylene chloride	ND	ND	20.0	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	n-Butylbenzene	ND	ND	2.50	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	n-Propylbenzene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Naphthalene	ND	ND	10.0	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	o-Xylene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	p-Cymene (p-Isopropyltoluene)	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	sec-Butylbenzene	ND	ND	2.50	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Styrene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	tert-Butylbenzene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Tetrachloroethene (PCE)	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Toluene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	trans-1,2-Dichloroethene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	trans-1,3-Dichloropropene	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Trichloroethene (TCE)	ND	ND	1.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Trichlorofluoromethane	ND	ND	2.00	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Field Duplicate Report By SDG
Former Fort Devens, Sudbury Traning Annex
Seres-Arcadis JV, Long Term Monitoring, Sudbury Annex, Fall 2023
Field Duplicates for SDG: 680-242926-1

Location	Analysis
SUDA7-19-01	SW8260D

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Vinyl acetate	ND	ND	2.50	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Vinyl chloride	ND	ND	2.00	NA	30	NA	OK
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Xylenes, Total	ND	ND	2.00	NA	30	NA	OK

Location	Analysis
SUDA7-19-01	SW9012B

Field ID - Primary/Field Dup	Lab ID - Primary/Field Dup	Analyte	Primary Result	FD Result	RL	RPD	RPD Criteria	RPD Check	RL Check
SUDA7-19-01-FAL23 / SUD-DUP01-FAL23	680-242926-2 / 680-242926-1	Cyanide	0.00250	ND	0.0100	NA	30	NA	OK

FD = Field Duplicate
RL = Reporting Limit
RPD = Relative Percent Difference

RL Check = If either the primary sample or field duplicate result is less than 5 times the RL then the criteria used to determine if the field duplicate is outside QC limits is +/- RL for Water and +/- 2 times RL for Soil"

Appendix E

2023 Geotechnical Engineering Annual Inspection Report

FINAL

United States Army Corps of Engineers
New England District

2023 Geotechnical Engineering Annual Inspection Report

Area of Contamination A7

Former Sudbury Training Annex

Sudbury, Massachusetts

Contract No. W912WJ-19-D-0014

Contract Delivery Order No. W912WJ-23-F-0055

July 2024

1 Introduction

The Resource Conservation and Recovery Act (RCRA) Subtitle C cap at Area of Contamination (AOC) A7 was constructed with the following objectives:

- Eliminate the potential risk to human health and the environment associated with exposure to wastes
- Minimize off-site migration of contaminants
- Limit infiltration to the underlying waste within the landfill area, thereby minimizing leachate generation and groundwater degradation.

The landfill cap system was completed in the fall of 1996 and consists of the following layers:

- Geocomposite gas vent layer
- Geosynthetic clay liner
- 40 mil linear low-density polyethylene geomembrane
- Geocomposite drainage layer
- 15 inches of drainage sand, 15 inches of filter sand, and 6 inches of vegetative soil (topsoil).

Annual landfill inspections are performed in accordance with the Long-Term Monitoring and Maintenance Plan (LTMMP; KOMAN Government Solutions, LLC [KGS] 2020). Several figures are included in this annual inspection report for reference to assist with interpretation of observations and data. The AOC A7 landfill cap inspection features are presented on **Figure 1** (including a depiction of limited soil and waste removal areas), and design drawings that depict the design of the landfill cap are reproduced as **Figure 2** through **Figure 4**.

2 Landfill Inspection

Personnel from the SERES-Arcadis Joint Venture (S-A JV) and USACE inspected the Sudbury Training Annex Landfill at AOC A7 on November 3, 2023. Observations were made regarding the vegetative cover, vegetation types, erosion, settlement, and general condition of the various features. Photos of pertinent areas and components of the landfill are presented in **Attachment A**, and the Inspection and Maintenance checklist (which summarizes the findings of this inspection) is presented in **Attachment B**. A narrative of the inspection findings is below.

The landfill cap was observed to be in good condition with no significant erosion or settlement (**Attachment A;** Photo 1 to 4). In general, the cap vegetation appears healthy and dense, and provides good coverage of the landfill cap, with grass and clover predominating. Minimal/superficial rutting was observed adjacent to one of the monitoring wells located on the cap. The cap and adjacent area vegetation were mowed from October 17 to October 26, 2023, by Tantara Corporation (Tantara) of Worcester, Massachusetts. No encroachment of wetland species on the cap was observed during the mowing or inspection events. It is recommended that future mowing of the cap continue to include mowing of the field area adjacent to the cap to prevent encroachment of woody and wetland species onto the cap.

2.1 Access Road Inspection

The access road leading to the main (southern) landfill entry gate is in good condition. There are minor potholes present and the road is fully functional; however, the road is best navigated with a pickup truck or sport utility vehicle.

2.2 Security Fence Inspection

The following summarizes the current fence conditions:

- Southern fence – The fence and southern gate were observed to be in good condition (**Attachment A**; Photo 5).
- Eastern fence – The fence is in good condition. Some small branches were observed to have fallen on the fence, but no damage to the fence was observed (**Attachment A**; Photo 6).
- Northern fence – The fence and the main gate were observed to be in good condition (**Attachment A**; Photo 7).
- Western fence – The fence is in good condition (**Attachment A**; Photo 8).

In general, it is recommended that trees be periodically cleared from the fence area as they naturally grow and/or fall onto the fence and potentially allow the entry of trespassers or wildlife that could burrow and become established around or within the cap soil cover.

2.3 Drainage System Inspection

The drainage system is designed to drain surface water and infiltrated water off the cap system. It consists of the following components:

- Geocomposite drainage layer
- A perimeter stone drain along the toe-of-slope
- Perimeter grass-covered drainage channels
- A rip-rap-lined outlet area located at the northeast corner of the landfill.

The Sudbury Training Annex Landfill drainage system at AOC A7 was inspected on November 3, 2023, by the S-A JV and USACE. No maintenance activities were performed during these inspections. Observations were made regarding the vegetative cover, vegetation types, erosion, and general condition of the drainage system. **Attachment B** of this report contains the Inspection and Maintenance checklists, which summarize the findings of this inspection. A narrative of the findings of these inspections follows.

The cap drainage system is in good condition. Drainage channels are free of sediment and debris. The grass on drainage channel bottoms is in good condition and the vegetation on the side slopes is healthy and dense. Some small animal burrows were observed in the drainage system, which were subsequently filled in.

The toe drain appears to be functioning properly, and no slope stability or erosion problems were observed (**Attachment A**; Photo 9). Sections of geotextile that were repaired in 2017 remain in good condition. As part of the annual maintenance program, toe drains should continue to be cleared of moss growth and other debris that is accumulating on the geotextile covering the drainage stone in other areas.

The culvert pipe at the southeast corner of the site (under the fence line by the road) appears to be in good working condition.

2.4 Gas Vent System Inspection

A passive gas venting system was installed to facilitate the ventilation of any methane generated from the degrading waste material beneath the landfill cover system. The passive system consists of four 6-inch-diameter gas vents (A7-1 to A7-4; **Figure 1**). The gas vent system was observed to be in good condition (**Attachment A**; Photo 10). Each of the four vent pipes is intact, properly identified, and appears to be functioning as intended. The installed bird/insect screens remain in good condition. As described in the 2020 inspection report (S-A JV 2021), three of the four gas vents are slightly tilted from 1 to 8 degrees (measured by USACE). It is unclear whether the tilts are due to settlement of the landfill, or if they were present at their original construction. The slight tilts are not expected to affect the functioning of the gas vents and no other indications of settlement or erosion were observed; therefore, no action is required at this time. Future inspections should continue to include monitoring of the angle of each gas vent to check for any significant ground settling over time.

In accordance with the LTMMP, the AOC A7 landfill gas vents are monitored once every five years for parameters of interest (including volatile organic compounds, hydrogen sulfide, carbon monoxide, percent lower explosive limit, oxygen, carbon dioxide, and methane). The most recent gas monitoring event was completed in 2020, and the next event is scheduled for 2025.

2.5 Other Observations

The following additional observations were noted during the November 3, 2023, inspection activities:

- The stormwater culverts along the western/southwestern cap line appear to be in good condition. No action is required.
- The groundwater monitoring wells were in generally good condition (**Attachment A**; Photo 11).

3 Recommendations and Corrective Actions

The following recommendations and corrective actions should be conducted for future maintenance of the landfill:

1. Continue mowing the landfill cap on an annual basis to control vegetative growth, as well as the adjacent fields to prevent woody and wetland plant species from encroaching onto the cap. Mowing should not take place until September when ground-nesting songbirds are mature enough to avoid being harmed.
2. Continue annual inspections of landfill cap components. The inspection should continue to be performed in the fall, soon after mowing (i.e., within 1 to 2 weeks), and preferably within 48 hours after a precipitation event to aid in inspecting the effectiveness of surface runoff in the drainage swales.
3. Continue general landfill maintenance, such as clearing moss and debris from toe drain areas and clearing large/woody vegetative growth from the cap and drainage channels. Also continue to clear vegetation from the fence line during the annual monitoring and maintenance program to prevent damage to the fence and gates.
4. Continue to monitor the angle of tilt of the gas vents as part of the annual inspections to check for possible settlement over time.

5. Since the cap was installed in 1996, post-closure inspection and monitoring have been performed for more than 27 years. Planning should commence for the performance time and metrics to reduce long-term monitoring and sampling activities, or to perform them at a reduced frequency, after 30 years, in accordance with RCRA Subtitle C landfill cap regulations for post-closure monitoring periods of performance.

4 References

SERES-Arcadis 8(a) JV 2, LLC. 2021. Final 2020 Annual Long-Term Monitoring and Maintenance Report, Area of Contamination A7, Former Sudbury Training Annex, Sudbury, Massachusetts. October.

USACE. 1998. Long-Term Monitoring & Maintenance Plan for the Landfill at Area of Concern 7, Fort Devens Sudbury Training Annex, Sudbury, Massachusetts. Prepared by Department of Army, New England District, Corps of Engineers, Concord, Massachusetts (SU 1998041 USA). April.

Attachment A

Photograph Log

Photograph Log

United States Army Corps of Engineers
Former Sudbury Training Annex, Sudbury, Massachusetts
Annual Landfill Inspection

Photograph: 1

Description: Photo taken of landfill cap, looking west

Location: AOC A7

Photograph taken by: Ian Martz

Date: 11/3/2023

Photograph: 2

Description: Photo of landfill cap, looking northeast

Location: AOC A7

Photograph taken by: Ian Martz

Date: 11/3/2023

Photograph Log

United States Army Corps of Engineers
Former Sudbury Training Annex, Sudbury, Massachusetts
Annual Landfill Inspection

Photograph: 3

Description: Photo taken of general landfill conditions, looking west and showing northern fence

Location: AOC A7

Photograph taken by: Ian Martz

Date: 11/3/2023

Photograph: 4

Description: Photo taken of general landfill conditions, looking south

Location: AOC A7

Photograph taken by: Ian Martz

Date: 11/3/2023

Photograph Log

United States Army Corps of Engineers
Former Sudbury Training Annex, Sudbury, Massachusetts
Annual Landfill Inspection

Photograph: 5

Description: Photo taken of southern fence towards entrance gate, looking east

Location: AOC A7

Photograph taken by: Ian Martz

Date: 11/3/2023

Photograph: 6

Description: Photo taken of eastern fence, showing fallen tree (no damage to fence observed)

Location: AOC A7

Photograph taken by: Ian Martz

Date: 11/3/2023

Photograph Log

United States Army Corps of Engineers
Former Sudbury Training Annex, Sudbury, Massachusetts
Annual Landfill Inspection

Photograph: 7

Description: Photo taken of northern fence, monitoring wells, and northern gate

Location: AOC A7

Photograph taken by: Ian Martz

Date: 11/3/2023

Photograph: 8

Description: Photo taken of western fence and gate, looking south

Location: AOC A7

Photograph taken by: Ian Martz

Date: 11/3/2023

Photograph Log

United States Army Corps of Engineers
Former Sudbury Training Annex, Sudbury, Massachusetts
Annual Landfill Inspection

Photograph: 9

Description: Photo of the landfill toe drain

Location: AOC A7

Photograph taken by: Ian Martz

Date: 11/3/2023

Photograph: 10

Description: Photo of gas vent on landfill cap, looking north

Location: AOC A7

Photograph taken by: Ian Martz

Date: 11/3/2023

Photograph Log

United States Army Corps of Engineers
Former Sudbury Training Annex, Sudbury, Massachusetts
Annual Landfill Inspection

Photograph: 11

Description: Photo of monitoring well on landfill cap, looking east

Location: AOC A7

Photograph taken by: Ian Martz

Date: 11/3/2023

Attachment B

Inspection & Maintenance Checklist

AOC A7
Geotechnical Engineering Inspection Report
Fall 2023

US Army Corps of Engineers®
New England District

Inspection & Maintenance Check List
Sudbury Annex (AOC A7)

Inspectors: Ian Martz (JV), Brent Smith (USACE)
Date: 11/3/2023

Item	Description of Inspection Items	Checked (X)	Comments
Landfill Cap	Inspect for Eroded Areas	X	Minimal/superficial rutting observed (no damage to cap or liner system). No significant eroded areas observed on the cap. A couple of minor animal burrows on the cap which were filled in by hand during the inspection.
	Inspect for Settlement and Ponded Water	X	No settlement or ponded water observed the cap.
	Inspect for Wetland Species Encroachment	X	No evidence of wetland species encroachment. Any wetland vegetation is limited to the wetland reclamation area.
	Inspect Vegetated Areas	X	Vegetation observed to be in generally good condition. Landfill cap and surrounding areas mowed in October 2023.
Drainage System	Inspect Stone Toe Drain	X	Observed to be in good condition.
	Inspect for Eroded Areas	X	No significant eroded areas observed. Some geotextile exposed on the southeast corner of the cap (as noted in prior inspections; not a new condition and no evidence of change from prior years).
	Inspect for Grass in Drainage Channels	X	Grass present and mowed/trimmed.
	Inspect for Debris & Unwanted Vegetation in Drainage Channels	X	None observed. Two small animal burrows observed in the drainage areas.
	Inspect Rip-Rap Areas	X	Observed to be in good condition.
Gas Vent System	Inspect Vent Pipe and Bird Screen	N/A	Vent pipes monitored for tilt (no changes observed since previous inspection, tilts range from approximately 1 to 8 degrees). All bird screens observed to be intact.
	Methane Monitoring	N/A	No methane monitoring conducted - next monitoring scheduled for 2025.
Groundwater Monitoring Wells	Inspect Casings and Locks	X	Monitoring wells observed to generally be in good condition. All locks appear to be functioning.
Security Fence	Inspect for Damage to or Breaches in Fencing, Gates, etc.	X	Fence and gates were observed to be in good condition. A few branches have fallen on the fence, but no immediate action items required, and the JV/USACE were able to remove most by hand. A few were left in place and will be addressed during the next landfill mowing event.
Access Road	Inspect for Erosion, Potholes and Rutting, and Washouts	X	The road was observed to be in good condition.

Description of Maintenance Activities Performed (as necessary):
1. Conducted landfill mowing from October 17, 2023 through October 26, 2023 (some partial days and delays due to wet conditions).

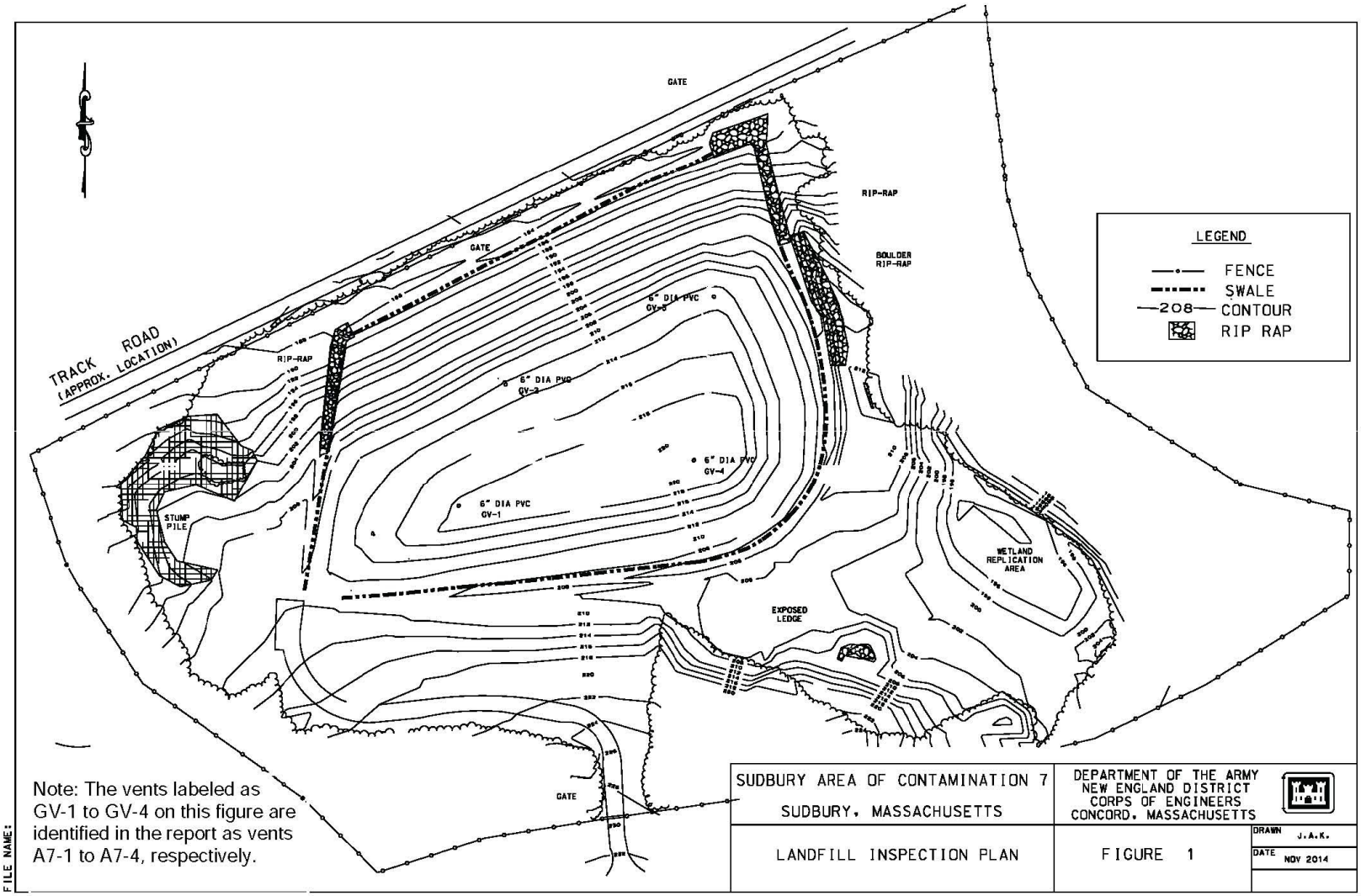
The following maintenance and monitoring activities are recommended:

1. Continue mowing the landfill cap on an annual basis to control vegetative growth, as well as the adjacent fields to prevent woody and wetland plant species from encroaching onto the cap.

2. Continue annual inspections and general landfill maintenance, such as clearing moss and debris from toe drain areas and clearing large/woody vegetative growth from the cap and drainage channels.

3. Continue to monitor the angle of tilt of the gas vents on a routine basis to check for possible settlement over time.

Figures



Note: The vents labeled as GV-1 to GV-4 on this figure are identified in the report as vents A7-1 to A7-4, respectively.

SUDBURY AREA OF CONTAMINATION 7 SUDBURY, MASSACHUSETTS	DEPARTMENT OF THE ARMY NEW ENGLAND DISTRICT CORPS OF ENGINEERS CONCORD, MASSACHUSETTS	
LANDFILL INSPECTION PLAN	FIGURE 1	DRAWN J.A.K. DATE NOV 2014

FILE NAME:

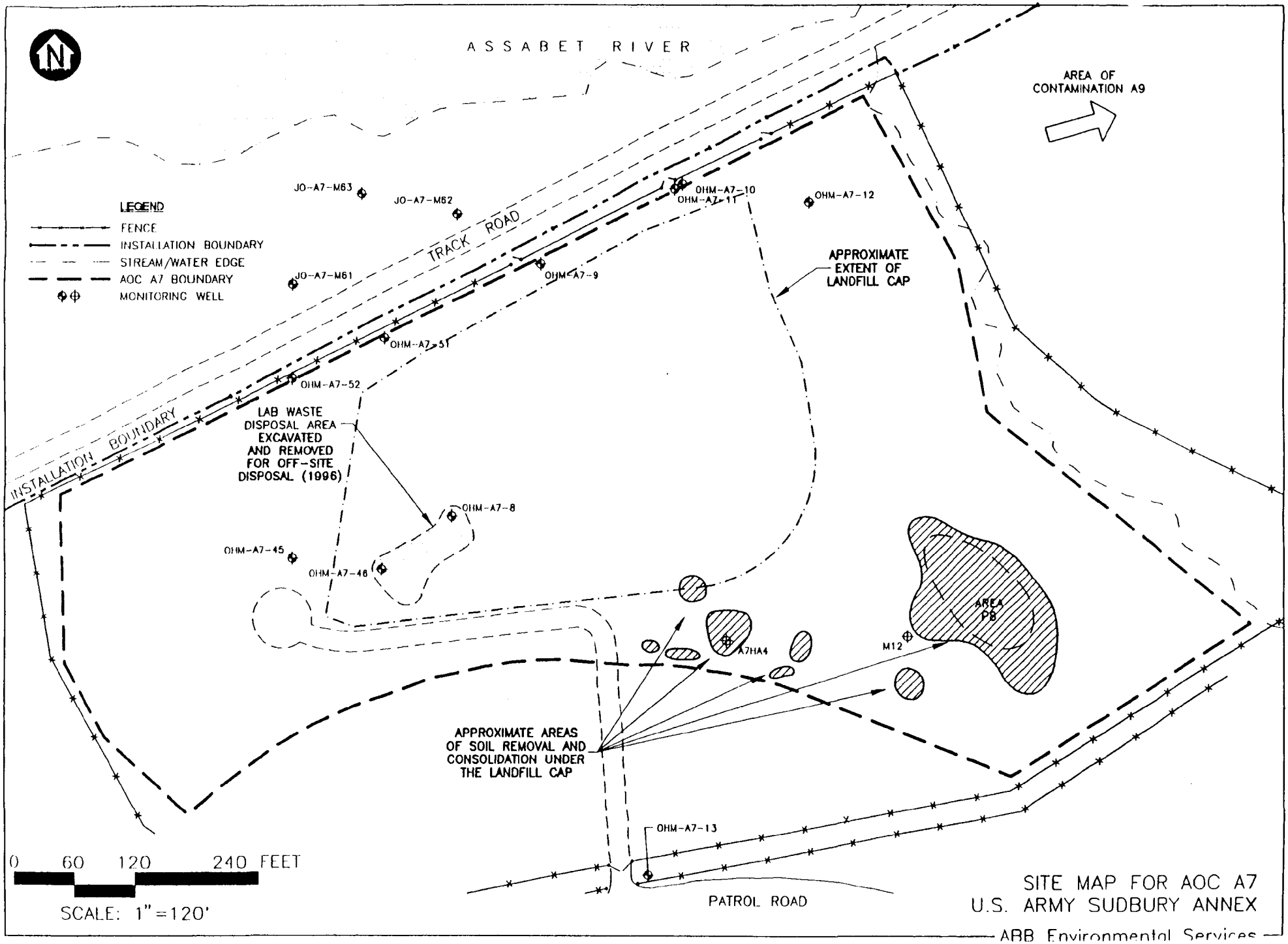
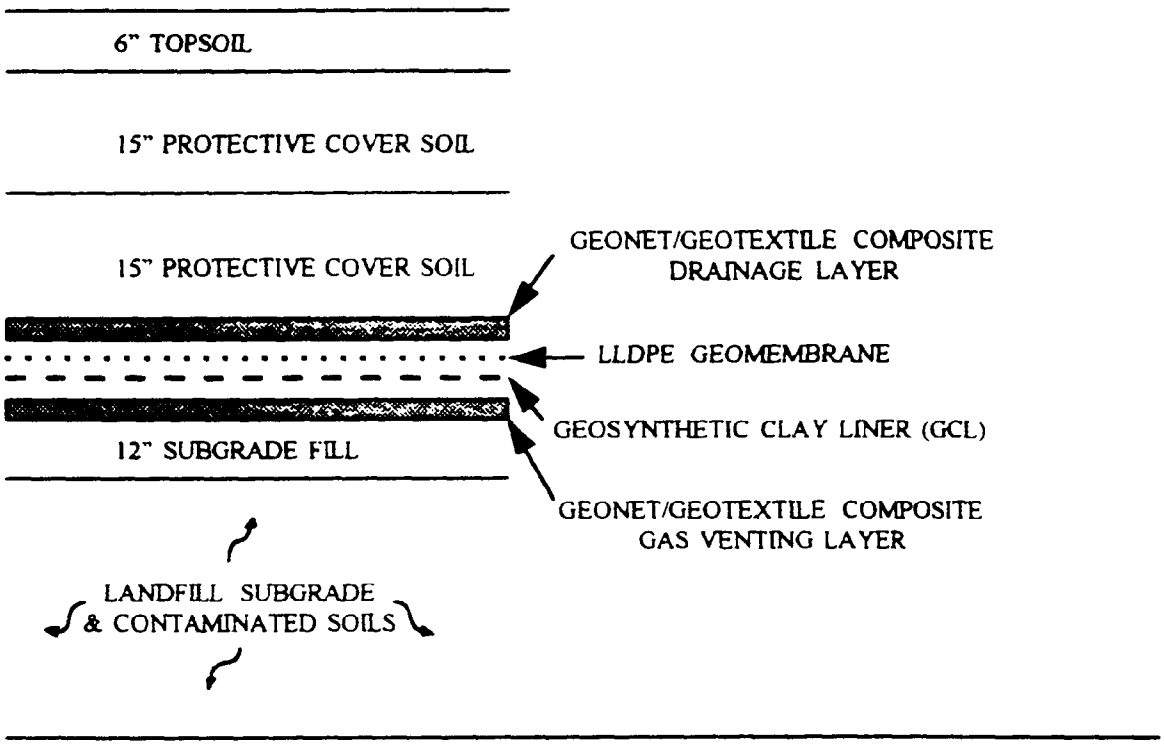

ASSABET RIVER
AREA OF CONTAMINATION A9
LEGEND
FENCE
INSTALLATION BOUNDARY
STREAM/WATER EDGE
AOC A7 BOUNDARY
MONITORING WELL
JO-A7-M63
JO-A7-M62
JO-A7-M61
TRACK ROAD
OHM-A7-10
OHM-A7-11
OHM-A7-12
OHM-A7-9
OHM-A7-51
OHM-A7-52
APPROXIMATE EXTENT OF LANDFILL CAP
INSTALLATION BOUNDARY
LAB WASTE DISPOSAL AREA EXCAVATED AND REMOVED FOR OFF-SITE DISPOSAL (1996)
OHM-A7-8
OHM-A7-45
OHM-A7-46
A7HA4
M12
AREA P8
APPROXIMATE AREAS OF SOIL REMOVAL AND CONSOLIDATION UNDER THE LANDFILL CAP
OHM-A7-13
PATROL ROAD
0 60 120 240 FEET
SCALE: 1"=120'
SITE MAP FOR AOC A7
U.S. ARMY SUDBURY ANNEX
ABB Environmental Services

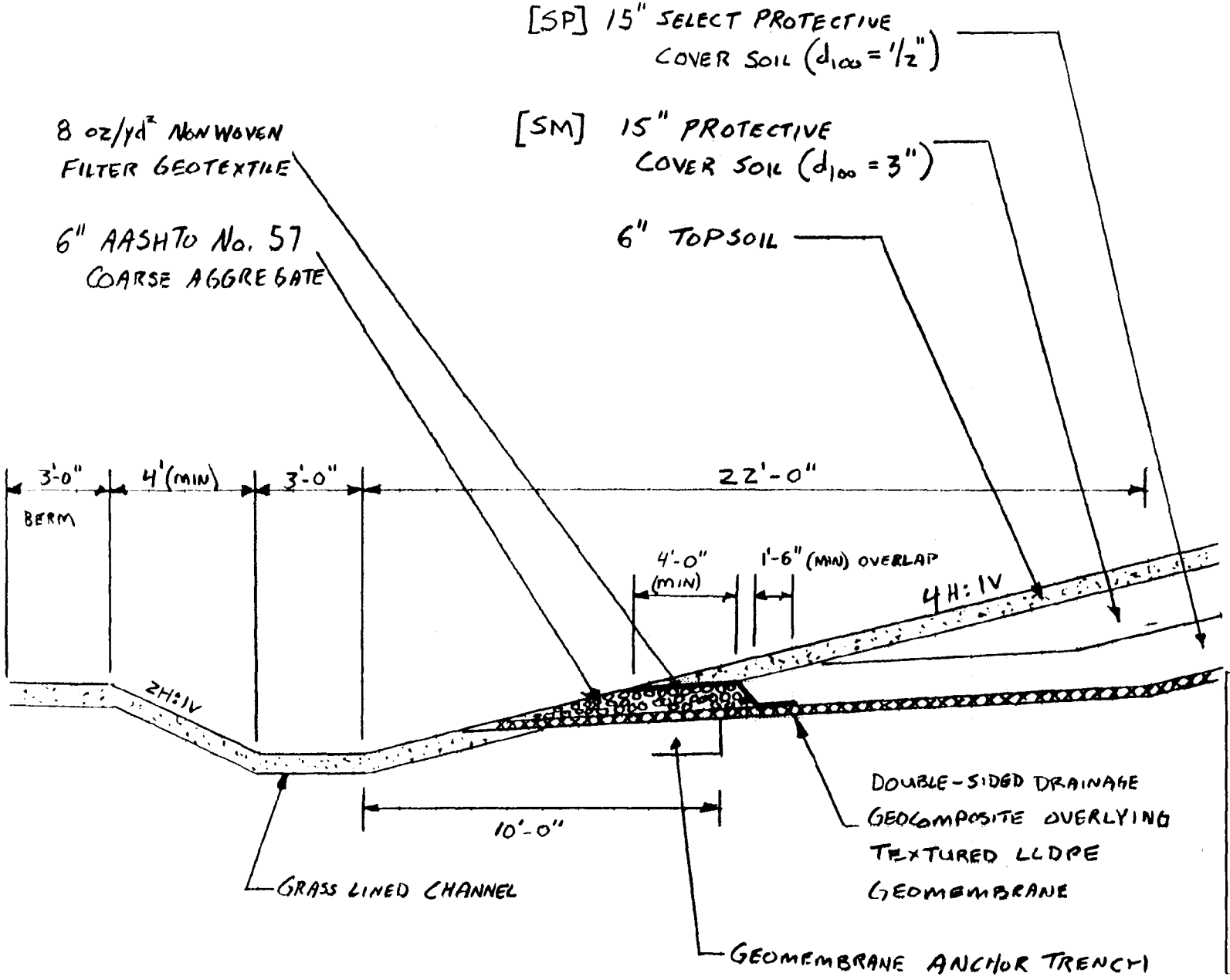
Figure 2

SUDBURY TRAINING ANNEX
AREA OF CONCERN A7
RCRA SUBTITLE C LANDFILL CAP CROSS-SECTOIN



NOT TO SCALE

Figure 3



CLIENT/SUBJECT SUDBURY ANNEX
TASK DESCRIPTION PERIMETER STONE DRAIN DETAIL
PREPARED BY ____ DEPT ____ DATE ____
MATH CHECK BY ____ DEPT ____ DATE ____
METHOD REV. BY ____ DEPT ____ DATE ____
APPROVED BY
DEPT ____ DATE ____
TASK NO. ____
W.O. NO. 03886-118-005
SHEET 1 of 1

WESTON MANAGERS JACOBS ENGINEERING CONSULTANTS

Figure 4

Appendix F

Annual Land Use Control Checklist and Interviews

Appendix F
Annual Land Use Control Checklists and Interviews
Former Sudbury Training Annex, Sudbury, MA

I. Checklist for Review of Sudbury Annex (AOC A7) Annual Report			
2023 Annual Report Review Item	**Yes**	**No**	**Comments**
Changes to the use of the site?		X	
Containment system intact?	X		Landfill cap observed to be in good condition. Additional information is available in the landfill inspection report (Appendix E).
Monitoring system operational?	X		Drainage system and gas vents observed to be in good condition. Additional information is available in the landfill inspection report (Appendix E).
Site free of disruptions deeper than 4 feet?	X		
Monitoring wells observed to be intact?	X		
Water level readings within acceptable limits?	X		

II. Checklist for United States Fish and Wildlife Service (USFWS) Interview			
Item	**Yes**	**No**	**Comments**
Changes to the use of the site?		X	
Approved conditional exemptions, amendments and/or releases?		X	No known releases/spills.
Unauthorized uses and activities?		X	
Corrective action used to resolve unauthorized uses and activities?		X	
Are the institutional controls effective?	X		No known spills or dumping.
Any anticipated future redevelopment or other construction/demolition activities?		X	

III. USFWS Interview			
Name of Interviewer: Ian Martz (Arcadis)			
Name of Interviewee: Tom Eagle (USFWS)			
Contact Information: tom_eagle@fws.gov, 978-579-4027			
Interview Notes: Emailed interview questions to Mr. Eagle on 1/11/2024. Received responses on 1/12/2024, a summary of which is recorded below.			
Item	**Yes**	**No**	**Comments**
Are you aware of any changes to the way the property has been used since January 2023?		X	

Are you aware of any changes to any buildings, boundary walls, or fences since January 2023?		X	
Are you aware of any significant clearing of trees or brush since January 2023?		X	
The Army has a concern with any construction activities that might disturb or negatively impact the soils, especially below a depth of four feet. Are you aware of any new construction or repairs to existing building since January 2023?		X	
Are you aware of any trespassing that led to any environmental damage since January 2023?		X	
Are you aware of any excavations by either animals or people that might have disturbed or negatively impacted the soils, particularly below a depth of four feet?		X	
Are you aware of any spills or dumping processes that potentially disturbed or negatively impacted the soils since January 2023?		X	
Are there any other circumstances that you are aware of that disturbed the soils, especially below four feet, or otherwise negatively affecting the integrity of the institutional controls (fences, landfill cap)?		X	
IV. Checklist for Federal Emergency Management Agency (FEMA) Interview			
Item	**Yes**	**No**	**Comments**
Changes to the use of the site?		X	
Approved conditional exemptions, amendments and/or releases?		X	
Unauthorized uses and activities?		X	
Corrective action used to resolve unauthorized uses and activities?		X	
Are the institutional controls effective?	X		
Any anticipated future redevelopment or other construction/demolition activities?		X	

Appendix F
Annual Land Use Control Checklists and Interviews
Former Sudbury Training Annex, Sudbury, MA

V. FEMA Interview

Name of Interviewer: Penelope Reddy (USACE)

Name of Interviewee: Derek Vieira (FEMA)

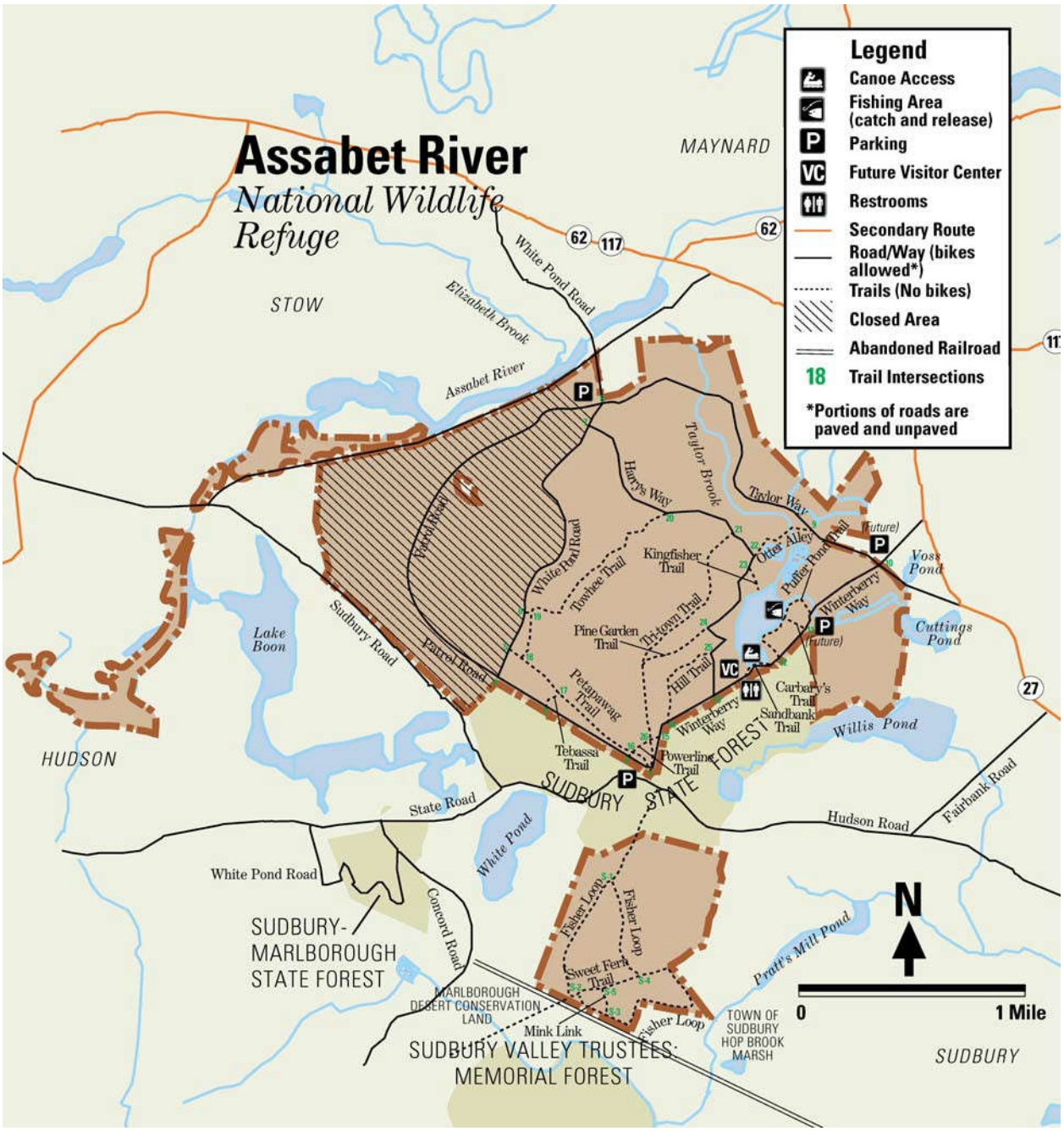
Contact Information: derek.vieira@fema.dhs.gov, 978-461-5565

Interview Notes: Emailed interview questions to Mr. Vieira on 2/27/2024, discussed questions via phone call.

Item	Yes	No	Comments
Are you aware of any changes to the way the property has been used since January 2023?		X	N/A
Are you aware of any changes to any buildings, boundary walls, or fences since January 2023?		X	N/A
Are you aware of any significant clearing of trees or brush since January 2023?		X	N/A
The Army has a concern with any construction activities that might disturb or negatively impact the soils, especially below a depth of four feet. Are you aware of any new construction or repairs to existing building since January 2023?		X	N/A
Are you aware of any trespassing that led to any environmental damage since January 2023?		X	N/A
Are you aware of any excavations by either animals or people that might have disturbed or negatively impacted the soils, particularly below a depth of four feet?		X	N/A
Are you aware of any spills or dumping processes that potentially disturbed or negatively impacted the soils since January 2023?		X	N/A
Are there any other circumstances that you are aware of that disturbed the soils, especially below four feet, or otherwise negatively affecting the integrity of the institutional controls (fences, landfill cap)?		X	N/A

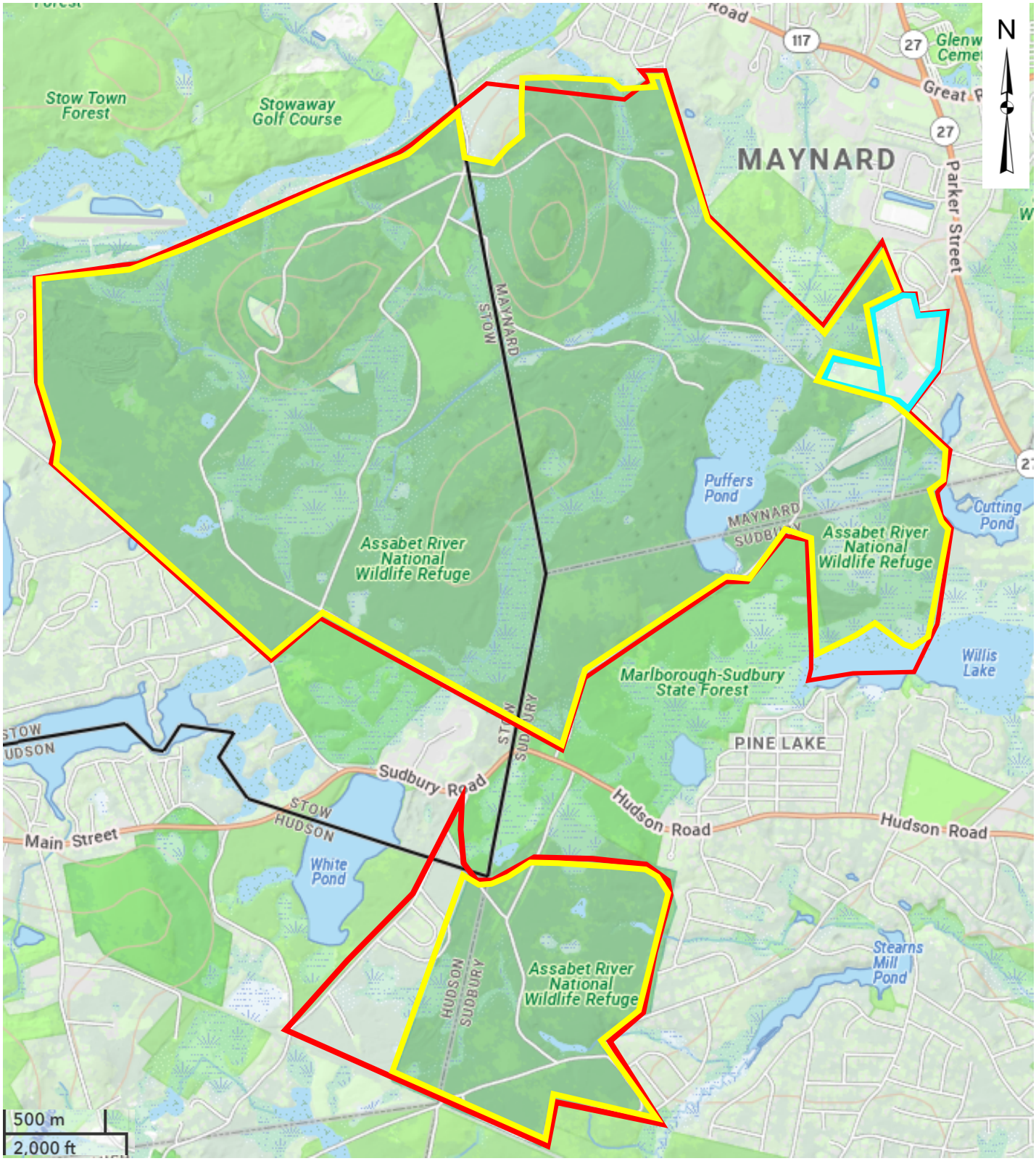
Appendix F
Annual Land Use Control Checklists and Interviews
Former Sudbury Training Annex, Sudbury, MA

VI. Checklist for Review of AOCs P31/P58 Protectiveness Assessment			
Inspection Date: November 27, 2023			
Participants: Ian Martz (Arcadis), Brent Smith (USACE)			
Item	**Yes**	**No**	**Comments**
Changes to the use of the site?		X	No change from previous year.
Site free of disruptions deeper than 4 feet?	X		No evidence of tampering of violation of LUCs were observed.



Project: W912WJ-10-D-0003
Revised: 04/06/2015
Figure from M2 and HGL, 2014 Annual Report

Figure F.1
Former Sudbury Training Annex: Assabet River NWR Layout



Legend

- Former Sudbury Annex Boundary
- USFWS-Owned Parcel
- FEMA-Owned Parcel

Note: Figure base map modified from Town of Stow WebGIS database.

FORMER SUDBURY ANNEX:
CURRENT PARCEL OWNERS

SERES Engineering & Services, LLC
ARCADIS a joint venture

FIGURE
F.2

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Appendix G

Land Transfer Agreements

Details of the transfer documents to three Federal agencies are included in the pages that follow. Documents reproduced here include:

USFWS:
Memorandum of Agreement between the United States Army and the United States Fish and Wildlife Service for the Transfer of Military Property, 28 September 2000

USAF:
Transfer Agreement between the Department of the Army and the Department of the Air Force for a Portion of the Former Fort Devens, Massachusetts 3 June 2002

Notary Public affidavit 3 June 2002 regarding the Army signatory

FEMA:
Modification to Memorandum of Agreement between the Department of the Army and the Federal Emergency Management Agency for the Transfer of Real Property at the Sudbury Training Annex, Massachusetts, signed 3 July 2003 by Joseph W. Whitaker for the Department of the Army and 29 July 2003 by Michael D. Brown for the Federal Emergency Management Agency.
Letter of Transfer for a Portion of the Former Fort Devens, Massachusetts to the Federal Emergency Management Agency, March 31, 2003; Memorandum of Agreement between the Department of the Army and the Federal Emergency Management Agency for the Transfer of Real Property at the Sudbury Training Annex, Massachusetts, March 21, 2003

Notary Public affidavit 21 March 2003 regarding the Army signatory

Notary Public affidavit 31 March 2003 regarding the FEMA signatory

MEMORANDUM OF AGREEMENT
BETWEEN
THE UNITED STATES ARMY
AND THE UNITED STATES FISH AND WILDLIFE SERVICE
FOR THE TRANSFER OF
MILITARY PROPERTY

The United States Fish and Wildlife Service (FWS) and the United States Army (the Army) hereby enter into a Memorandum of Agreement (MOA) to clarify responsibilities and requirements of both parties pursuant to the transfer of real property at the Devens Reserve Forces Training Area (Devens RFTA), Sudbury Training Annex, Massachusetts, from the Army to the FWS. The authority to enter into this MOA is Defense Base Realignment and Closure (BRAC) Act of 1990, Public Law 101-510, 10 U.S.C. 2687 note and 16 U.S.C. 667b.

A. INTRODUCTION

Fort Devens, Massachusetts closed on 31 March 1996. The Devens RFTA was established on April 1 1996. The property to be transferred to the FWS is part of the Devens RFTA. The Army will transfer as excess property a parcel of approximately 2,205.2 acres to the FWS, which intends to use it as a National Wildlife Refuge. The boundaries of the property, hereinafter referred to as the Transfer Parcel or the Parcel (remaining BRAC parcels less 27(7) PS and 39(4) PS/PR) are identified in the official survey and legal description dated 25 September 1997 and 24 April 1997. Copies of these documents are on file with the U.S. Army Corps of Engineers, New England District, Concord, Massachusetts.

The FWS has requested transfer of the Parcel as excess Federal property, pursuant to the Federal Property and Administrative Services Act of 1949 (FPASA), 40 U.S.C. Sections 471-544 and 16 U.S.C. Section 667b for inclusion in the National Wildlife Refuge System based upon the FWS's determination that the Parcel has particular value in the execution of the national migratory bird management program. Both parties agree that the transfer of this property includes specific responsibilities and requirements as outlined in this MOA.

B. GENERAL TERMS AND CONDITIONS

1. The FWS acceptance of the Transfer Parcel, the buildings located on the Parcel and fixed equipment is at no cost to the FWS.

2. No provisions of this agreement shall be interpreted or applied so as to obligate the FWS or the Army in excess or advance of appropriations or otherwise so as to result in a violation of the Anti-Deficiency Act, 31 U.S.C. Section 1341.

EXHIBIT B

NVIRONMENTAL COMPLIANCE RESPONSIBILITIES

1. Both the Army and the FWS acknowledge that the Sudbury Training Annex is a National Priorities List (NPL) site under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended. Sudbury Training Annex has been on the NPL since February 1990. Since that time, the CERCLA- regulated environmental investigations have been underway, and in August 1996, remedial actions to effect environmental cleanup and restoration began. The Transfer Parcel contains 74 Study Areas (SA) of potential environmental contamination. Of the 74 SAs, 62 have No Further Action Decision Documents (NFADDs) signed, 6 have No Further CERCLA Action Record Of Decision (ROD) signed, 4 have a Source Control ROD and/or Management Of Migration ROD signed, 1 is pending a Removal Action and 1 is pending sampling/analysis results. The Army agrees to provide the FWS copies of all work plans and reports relating to pending actions at SA's P27 and P58 at the same time said plans and reports are provided to Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MDEP)

The Army shall provide the FWS with a copy of the Sudbury Training Annex Federal Facility Agreement (FFA) entered into by the United States EPA Region 1 and the Army on 13 May 1991, and made effective on 15 November 1991. The Army agrees to provide the FWS with prompt Notice of the initiation of any negotiations to amend the FFA. The Army agrees to provide the FWS with any future amendments to the FFA within 30 days of execution of such amendments. The FWS agrees to take no action inconsistent with the terms of the FFA. The environmental remediation of the Sudbury Training Annex National Priority List (NPL) Site is being undertaken by the Army in accordance with the FFA negotiated with the EPA and in cooperation with MDEP. The Army and FWS agree that, should a conflict arise between the terms of the FFA as it presently exists or may be amended, and the provisions of this MOA, the terms of the FFA will take precedence over the provisions of this MOA. The Army will inform the FWS of any such conflicts affecting the FWS use of the Transfer Parcel. The Army reserves the right to access the premises as it deems necessary to fulfill its responsibilities under the FFA, the Army's Installation Restoration Program and this MOA.

2. Except as specifically provided for herein, the FWS does not assume any of the United States Government's present or future potential liability or responsibility for hazardous materials, hazardous substances, hazardous wastes, petroleum or any other contamination existing on or emanating from the Transfer Parcel, attributable to the Army's activities, on the date the Parcel is transferred to the FWS (hereinafter referred to as the Date of Transfer). In addition, except as specifically provided herein, the FWS does not assume, and shall not have after the Date of Transfer, any obligation to undertake the United States Government's defense or payment of any claim or action, whether in existence now or brought in the future, caused by or arising out of the use, storage, management, release, or disposal of any hazardous material, hazardous substance, hazardous waste, petroleum product or derivative or any other contaminant (including any use, storage, management, release, or disposal of such that occurs during any subsequent environmental remediation) on any portion of the Transfer Parcel prior to the Date of Transfer,

including hazardous material, hazardous substance, hazardous waste, petroleum or any other contamination not presently known but subsequently discovered and determined to be attributable to activities or conditions on the Parcel prior to the Date of Transfer.

3. With respect to hazardous material, hazardous substance, hazardous waste, petroleum or any other contamination existing on or emanating from the Transfer Parcel on the Date of Transfer, except as otherwise specifically provided herein, the Army warrants that it shall comply with and retain all of the United States Government's responsibility and present and potential liability, as required by law and regulation, for funding and implementing actions including, but not limited to, investigations, sampling, testing, cleanup, restoration, maintenance, monitoring, closure, five-year reviews, site inspections, removal actions, remedial actions, corrective actions and any other actions necessary to ensure the protection of human health and the environment (all actions to be so funded and implemented hereinafter collectively referred to as Response Actions).

Should a release or threatened release of any hazardous material, hazardous substance, hazardous waste, petroleum derivative or other contaminant, attributable to the Army's activities, occur on the Transfer Parcel after the Date of Transfer, the Army warrants that it shall be responsible for conducting all Response Actions necessary to protect human health and the environment in accordance with applicable laws and regulations. Except as otherwise specifically provided herein, the FWS has not assumed and shall assume no liability or costs arising out of, or related to, such contamination.

The Army shall not be liable for any claims arising out of or in any way predicated on release of any hazardous substance on the Transfer Parcel occurring after the Date of Transfer where such substance was placed on the Transfer Parcel by the FWS, its successors or assigns, its agents, contractors, invitees, or its lessees or sublessees or third parties after the Date of Transfer. This paragraph shall not affect the Army's responsibilities to conduct Response Actions that are required by applicable laws and regulations.

4. The Army hereby reserves an easement and right of access to and over any and all portions of the Transfer Parcel for itself and its officers, agents, employees and contractors, for purposes of conducting Response Actions after the Date of Transfer in order to fulfill the Army's environmental responsibilities under this Agreement, the FFA (including Section IX - ACCESS of the FFA), and applicable law. It is the intention of the Army and the FWS that such easement and right of access shall run with the land. In exercising this easement and right of access, except in case of imminent endangerment to human health or the environment, the Army shall give the FWS or the then record owner of the affected portion(s) of the Transfer Parcel reasonable prior written notice of the Response Action(s) to be conducted on the Transfer Parcel, and shall use reasonable means, to avoid and/or minimize interference with the FWS's or such record owner's use of the Transfer Parcel. Subject to the provisions of this Paragraph, and except as otherwise provided for by law, the FWS, such record owner, and any other person shall have no claim or cause of action against the Army, or any officer, agent, employee or contractor of the Army, for interference with the use of the Transfer Parcel based upon Response Actions taken under this Subsection.

a. Nothing in this Agreement shall limit or otherwise affect the Army's, EPA's or MDEP's respective rights of access to and over any and all portions of the Transfer Parcel under applicable law for purposes including but not limited to:

(i) conducting oversight activities, including but not limited to investigations, sampling, testing, monitoring, verification of data or information submitted to EPA or MDEP, and/or site inspections, in order to monitor the effectiveness of Response Actions and/or the protectiveness of any remedy which is required by (a) any ROD or amendments thereto, which ROD was approved by the Army and EPA and issued by the Army pursuant to CERCLA or the FFA and the modifications thereto before or after the Date of Transfer, or (b) any decision document approved by MDEP and issued by the Army under applicable state law before or after the Date of Transfer;

(ii) Performing five-year reviews as required by CERCLA, and

(iii) Taking additional Response Actions in accordance with applicable law and the FFA.

b. The FWS covenants on behalf of itself and its successors and assigns that the Army and EPA shall have, to and over the Transfer Parcel, those rights of access set forth in Section IX- ACCESS of the FFA in order to effectuate the purposes of the FFA in connection with any Study Area or Area of Contamination (as that term is defined under the FFA), including where the Transfer Parcel itself becomes a Study Area or Area of Contamination after the Date of Transfer.

c. The Army and EPA and their agents, employees, and contractors shall have access to and over the Transfer Parcel as may be necessary to conduct any Response Action pursuant to CERCLA or the FFA found to be necessary, before or after the Date of Transfer, on the Transfer Parcel or on other property comprising the Sudbury Training Annex NPL site. This reservation includes the right of access to and use of, to the extent permitted by law, any available utilities at reasonable cost to the Army or EPA.

d. In exercising the rights hereunder, the Army and EPA shall give the FWS or its successors or assigns reasonable prior written notice of Response Actions taken on the Transfer Parcel under the FFA and shall, to the extent reasonable, consistent with the FFA, and at no additional cost to the United States, endeavor to minimize any disruption to the FWS, or its successors' or assigns', use of the Transfer Parcel.

e. The FWS agrees that notwithstanding any other provision of this Agreement, except as otherwise provided by law, the Army assumes no liability, should implementation of the FFA interfere with the use of the Transfer Parcel. Except as otherwise provided by law, the FWS and its successors and assigns shall have no claim on account of any such interference against the Army or EPA or any officer, agent, employee, or contractor thereof.

f. Prior to the determination by the Army and EPA that all remedial action is complete under CERCLA and the FFA for the Sudbury Training Annex NPL site, (i) FWS, its successors and assigns shall not undertake activities on the Transfer Parcel that would interfere with or impede the completion of the CERCLA cleanup at the Sudbury Training Annex NPL site, and shall give prior written notice to the Army and EPA of any construction, alterations, or similar work on the Transfer Parcel that may interfere with or impede said cleanup, and (ii) the FWS shall comply with any institutional controls established or put in place by the Army relating to the Transfer Parcel which are required by any ROD or amendments thereto, or other applicable land use controls related to the Transfer Parcel, which ROD was approved by the Army and EPA and issued by the Army pursuant to CERCLA or the FFA before or after the Date of Transfer. Additionally, the FWS shall ensure that any leasehold it grants in the Transfer Parcel or any fee interest conveyance of any portion thereof provides for legally binding compliance with the institutional controls required by any such ROD.

g. For any portion of the Transfer Parcel subject to a Response Action under CERCLA or the FFA, prior to the conveyance of an interest therein, the FWS and its successors and assigns (i) shall include in all conveyance documents provisions for allowing the continued operation of any monitoring wells, treatment facilities, or other response activities undertaken pursuant to CERCLA or the FFA on said portion of the Transfer Parcel, and (ii) shall notify the Army and EPA by certified mail at least sixty (60) days prior to any such conveyance of an interest in said property, which notice shall include a description of said provisions allowing for the continued operation of any monitoring wells, treatment facilities, or other response activities undertaken pursuant to CERCLA or the FFA.

h. Prior to the determination by the Army and EPA that all remedial action under CERCLA and the FFA is complete for the Sudbury Training Annex NPL site, the FWS and all subsequent grantees or transferees of an interest in any portion of the Transfer Parcel will provide copies of the instrument evidencing such transaction to EPA and the Army by certified mail, within fourteen (14) days after the effective date of such transaction.

i. The FWS and all such subsequent grantees or transferees shall include the provisions of this Subsection C.4 in all subsequent lease, transfer, or conveyance documents related to the Transfer Parcel or any portion thereof that are entered into prior to a determination by the Army and EPA that all remedial action is complete at the Sudbury Training Annex NPL site.

The FWS acknowledges that arsenic-based herbicides were applied in the vicinity of the fence-line along Patrol Road and on the former railroad beds on the northern and southern portions of the Sudbury Annex, and that the Army has concluded, after completing a facility-wide investigation, that the resulting concentrations of arsenic in the soil do not pose an unacceptable risk to human health or the environment based on the future land use of the Transfer Parcel as a National Wildlife Refuge. The FWS covenants on behalf of itself and its successors and assigns that no portion of a fifty (50) foot strip of land on either side of the center of the above-described fence line or former railroad beds shall be used for residential habitation unless the then-owner of the Transfer Parcel can demonstrate to EPA that such use is consistent with the protection of human health and the environment. The positions of such fence line and former railroad beds will be established by survey. The FWS further covenants that it and its successors and assigns shall include in any deed or other conveyance document transferring any interest in any or all of the Transfer Parcel a restrictive covenant that identifies the use restriction set forth in this Subsection C.5 to all successors in interest to any interest in any or all of the Transfer Parcel. It is the intention of the FWS and the Army that this use restriction shall run with the land comprising the Transfer Parcel.

6. The FWS acknowledges that prior to the transfer of the Transfer Parcel to FWS, the Army informed the FWS that it had completed an Ordnance and Explosives Survey/Removal Action covering the entire Annex to determine if explosives or ordnance (OE) existed on the site. The Army represents that no OE was discovered but OE residue was found in Building T405, and was remediated in the fall of 1999. The Army's Conclusions of the Final UXO Characterization Report of 18 February 1998 states that: "Unless 100 percent of the site is searched, it cannot be positively determined with complete accuracy that no OE is present on the site. However, based upon the results of the surface and sub-surface activities and the results of the Site Stats/Grid Stats Random Selection Program, Sudbury Annex, Massachusetts, does not show evidence of being contaminated with OE or OE related material and can be excessed without further UXO activities except the 18 earth covered magazines. The interiors of these magazines require an inspection prior to being released with the Annex." The FWS acknowledges receipt of a copy of the Conclusions of the Army's Final UXO Characterization Report of 16 February 1998.

a. The FWS acknowledges that the Army has informed it that as of the Date of Transfer, the subsurface soil below the depth of four (4) feet on the Transfer Parcel may contain OE or OE-related material as a result of past Army activities on the Transfer Parcel. The FWS covenants on behalf of itself and its successors and assigns that, except as provided herein, no activity or use shall be undertaken on the Transfer Parcel that might disrupt or otherwise negatively impact the subsurface soil below the depth of four (4) feet. Such prohibited activities and uses shall include any disturbance of the subsurface soil below the depth of four (4) feet in any manner, including but not limited to construction activities such as filling, drilling, excavation or change of topography. The FWS covenants on behalf of itself and its successors and assigns that if it or its successor or assign wants to undertake an activity or use on the Transfer Parcel that will disrupt or otherwise negatively impact the subsurface soil below the depth of four (4) feet, including any construction activities involving the disturbance or disruption of the subsurface soil below the depth of four (4) feet, FWS or its

successor or assign shall pay for all costs associated with the clearance or removal of any OE or OE-related material discovered on the Transfer Parcel below the depth of four (4) feet. FWS further covenants on behalf of itself and its successors and assigns that it and its successors and assigns shall include in any deed or other conveyance document transferring any interest in any or all of the Transfer Parcel a restrictive covenant that identifies the use restriction and conditions set forth in this Subsection C.6. It is the intention of the FWS and the Army that this use restriction shall run with the land comprising the Transfer Parcel.

b. The Army covenants to FWS and its successors and assigns that the Army shall provide OE safety assistance at no cost to FWS and its successor or assign, including the clearance or removal of any OE or OE-related material discovered on the Transfer Parcel in the course of non-construction activities, including but not limited to landscaping, routine repair and maintenance, security surveys, and other activities not involving the disturbance or disruption of the subsurface soil on the Transfer Parcel below the depth of four (4) feet. The Army also covenants to FWS and its successors and assigns that it shall be responsible for the investigation and clearance or removal of all chemical munitions and all OE refuse sites found on the Transfer Parcel. An OE refuse site is defined as a site where military munitions have been collected and disposed of by burial and there are ten (10) or more munitions in a cubic yard. FWS covenants on behalf of itself and its successors and assigns that it and its successors and assigns shall include notice of these covenants by the Army in any deed or other conveyance document transferring any interest in any or all of the Transfer Parcel.

7. The Army has completed an Environmental Baseline Study (EBS) dated 27 January 1997 which characterized the environmental condition of the property. The Army has also completed an Environmental Condition of Property (ECOP) of the Transfer Parcel dated 8 August 2000. The ECOP summarizes what is known about the environmental condition of the Transfer Parcel and reflects the Army's position that the Transfer Parcel is suitable for transfer under the CERFA as a Category 1.3.4.5.& 7 parcel. The Army has complete asbestos and residual Unexploded Ordnance (UXO) cleanup work on the Transfer Parcel identified in the EBS. The Army will provide the FWS with a copy of the EBS and final ECOP.

8. The FWS covenants on behalf of itself and its successors and assigns that, except as provided herein, post-closure use of that portion of the Transfer Parcel that is within the boundaries of Area of Contamination (AOC) A7 (the Old Gravel Pit Landfill) shall not disturb either the integrity of the final covers, liners or any other components of the containment system(s) or the function of the monitoring system(s) in place at that AOC on the Date of Transfer or constructed at that AOC after the Date of Transfer. Post-closure activities prohibited under this Section C.8 shall include but not be limited to:

a. Surface application of water that could affect the effectiveness of the containment system(s) in preventing infiltration and directing runoff away from landfilled materials, or impact the migration of any contaminated groundwater underlying that portion of the Transfer Parcel that is within the boundaries of AOC A7;

b. Extraction, consumption, exposure or utilization of groundwater underlying that portion of the Transfer Parcel that is within the boundaries of AOC A7, except for the limited purpose of treating and monitoring groundwater contamination levels in accordance with plans approved by EPA and/or MADEP and issued by the Army, unless the Army determines that such extraction, consumption, exposure or utilization will not have any adverse impacts on any Response Action or Remedy at the Sudbury Training Annex NPL site;

c. Any disturbance of the surface or subsurface of that portion of the Transfer Parcel that is within the boundaries of AOC A7 in any manner, including but not limited to construction, filling, drilling, excavation or change of topography within AOC A7, that might interfere with, negatively impact, or restrict access for any ongoing Response Action within AOC A7 at the Sudbury Training Annex NPL site;

d. Any disturbance of the surface or subsurface of that portion of the Transfer Parcel that is within the boundaries of AOC A7 in any manner, including but not limited to construction, filling, drilling, excavation or change of topography within AOC A7, that might interfere with, negatively impact, or jeopardize the protectiveness of any Remedy within AOC A7 at the Sudbury Training Annex NPL site; and

e. Any activity within AOC A7 that will result in disturbance of the mobilization and/or transport of any hazardous substance, hazardous waste, petroleum product or derivative or any other contaminant existing on or emanating from that portion of the Transfer Parcel that is within the boundaries of AOC A7 on the Date of Transfer.

f. If the FWS or any of its successors or assigns proposes an activity that may disturb either the integrity of the final covers, liners or any other components of the containment system(s) or the function of the monitoring system(s) at AOC A7, FWS or such successor or assign shall not undertake such activity unless it first obtains written approval from the Army and EPA. The Army and EPA shall have the discretion to approve a disturbance of the final cover, liners or other component of the containment system(s), including any removal of waste, if FWS or such successor or assign demonstrates that such disturbance will not increase the potential threat to human health or the environment. Any investigation, remediation, or disposal of hazardous or other waste arising out of a disturbance of the final covers, liners or other component of the containment system(s) at AOC A7 by FWS or such successor or assign shall be the sole responsibility of FWS or such successor or assign. Any request for approval as described above shall be made in writing and delivered to the Army and the Administrator of EPA Region 1.

g. FWS also covenants that it and its successors and assigns shall include in any deed or other conveyance document transferring any interest in any of that portion of the Transfer Parcel that is within the boundaries of AOC A7 a restrictive covenant that runs with the land and identifies all the use restrictions and conditions set forth in this Subsection C.8 to all successors to any interest in any or all of the Transfer Parcel.

9. The Army has completed a Record of Environmental Consideration (REC) dated 16 January 1997 for this property transfer and the FWS acknowledges receipt of a copy of that REC.

10. To the extent not inconsistent with the Army's continuing obligations with respect to environmental remediation, as provided for in Section C of this MOA, the Transfer Parcel, including all buildings, structures and other improvements, are transferred without any representation, warranty, or guaranty by the Army as to quality, character, condition, size, kind, or that the same is in condition or fit to be used for the purpose the FWS intends.

11. The Transfer Parcel may include buildings and structures with asbestos containing materials (ACM), lead-based paint and small electrical fixtures with Polychlorinated Biphenyl (PCB). To the extent available, information regarding ACM lead-based paint and PCBs on the property is contained in the EBS. Details of the information gathering process regarding these issues are contained in the EBS. After the Date of Transfer, the FWS will be responsible for any and all remediation of any remaining ACM, lead-based paint and PCB containing electrical fixtures located within structures on the Transfer Parcel.

12. Lands to be transferred to the FWS have been partially surveyed for historic properties. A number of the archeological sites found by these surveys may be eligible for the National Register of Historic Places. As a federal agency, with the responsibility to comply with all federal laws and regulations that govern the treatment of cultural resources, it will be the responsibility of the FWS to complete any necessary historic property inventories for lands it is to receive from the Army and to take into account the effects of its undertakings on historic properties discovered there.

D. ARMY SPECIFIC RESPONSIBILITIES

Designate an installation program manager who will be the primary point of contact between the FWS and the Army.

E. FWS SPECIFIC RESPONSIBILITIES

1. Designate an individual who will be the primary point of contact between the Army and the FWS.

2. Allow Army access to the Transfer Parcel for completion of any remedial environmental work described in Section C.

F. NOTIFICATION REQUIREMENTS Any notices to be given pursuant to this MOA shall be addressed to:

U.S. Army: Commander, Devens Reserve Forces Training Area
31 Quebec Street
Devens, MA 01432-4424

U.S. Fish & Wildlife Service:
Refuge Manager
Assabet River National Wildlife Refuge
Weir Hill Road
Sudbury, MA 01776

G. MODIFICATIONS OR AMENDMENTS

1. This MOA may be modified, amended or terminated by the mutual agreement of both parties, in writing, and signed by a duly authorized representative of the FWS and the Army.

The duly authorized representative of the Army is Mr. Paul W. Johnson, Deputy Assistant Secretary of the Army (Installations and Housing).

The duly authorized representative of the FWS is Regional Director ~~FWS Region 5~~, or his/her designee.

2. This MOA will be reviewed by both parties prior to the beginning of each fiscal year. The MOA will remain in effect unless both parties determine modification or termination is necessary.

3. Both parties to the MOA are required to provide notice to EPA and MDEP of any modifications or amendments to the MOA.

IN WITNESS WHEREOF, each of the parties has executed this MOA effective on the date last signed, the 28th day of September 2000.

DEPARTMENT OF THE ARMY

Paul W. Johnson
Deputy Assistant Secretary of the Army
(Installations and Housing)

County/City of Arlington
Commonwealth/State of Virginia
The foregoing instrument was subscribed and sworn before me this 28th day of Sept 2000 by
Paul W. Johnson

DEPARTMENT OF THE INTERIOR

Dr. Mamie A. Parker
Acting Regional Director
U.S. Fish and Wildlife Service, Region 5

Madeline H. Fleming
Notary Public
My commission expires

TRANSFER AGREEMENT
BETWEEN
THE DEPARTMENT OF THE ARMY
AND
THE DEPARTMENT OF THE AIR FORCE
FOR
A PORTION OF THE FORMER FORT DEVENS, MASSACHUSETTS

The Secretary of the Army ("Army"), acting through Joseph W. Whitaker, Deputy Assistant Secretary of the Army (Installations and Housing), does hereby transfer to the Department of the Air Force ("Air Force"), jurisdiction, custody, and control of approximately 4.148 acres, more or less, including all facilities thereupon, of the former Fort Devens, Massachusetts, Sudbury Training Annex, more specifically described in Exhibit A to this Transfer Agreement (hereinafter called the "Property"), and the interests, rights, easements, and appurtenances, as described and set forth herein, subject to the following terms and conditions:

Article 1 - Authority: This transfer of the Property is made in accordance with Public Law 101-510, section 2905(b)(2)(C), as amended. This transfer is without cost to either the Army or the Air Force. This transfer is also detailed on Department of Defense Form 1354, Exhibit B to this Transfer Agreement, of even date with this Transfer Agreement.

Article 2 – Environment:

2.1 Both the Army and the Air Force acknowledge that the Property was a National Priorities List (NPL) site under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, and such property was de-listed on January 29, 2002. The Army has provided the Air Force with a copy of the Sudbury Training Annex Federal Facilities Agreement (FFA) entered into by the United States Environmental Protection Agency Region 1 and the Army on 13 May 1991, and made effective on 15 November 1991, and the Air Force acknowledges receipt of a copy of that FFA. The Army agrees to provide the Air Force with any future amendments to the original FFA. The Air Force agrees to take no action on the Property inconsistent with the terms of the FFA. The environmental remediation of the contaminated portions of the Property has been undertaken by the Army in accordance with the FFA and in cooperation with the Massachusetts Department of Environmental Protection. Except in

regard to property disposal, the Army and the Air Force agree that should a conflict arise between the terms of the FFA as it presently exists or may be amended and the provisions of this Transfer Agreement, the terms of the FFA will take precedence over the provisions of this Transfer Agreement. The Army will inform the Air Force of any such conflicts affecting the Air Force's use of the Property. The Army reserves the right to access the Property, as it deems necessary, to fulfill its responsibilities under the FFA and this Transfer Agreement.

2.2 The Air Force does not assume any of the U.S Government's liability or responsibility for contamination caused by the Army's use, management, or release of hazardous substances, hazardous waste, or petroleum products on any portion of Fort Devens, the Sudbury Annex, or the Property. The Army does not assume any of the U.S. Government's liability or responsibility for contamination caused by the Air Force's use, management, or release of hazardous substances, hazardous waste, or petroleum products on any portion of the Property. The Army and the Air Force retain, respectively, any and all liability and responsibility for any release of hazardous substances, hazardous waste, or petroleum products on any portion of the Property resulting from its use or management of the Property prior to the effective date of this Transfer Agreement.

2.3 The Army has completed an Environmental Baseline Study (EBS), dated 27 January 1997, which characterized the environmental condition of the Property. The Army has also completed an Environmental Condition of Property (ECOP), dated 1 Feb 2001. The ECOP summarizes what is known about the environmental condition of the Property and reflects the Army's position that the Property is suitable for transfer under the Community Environmental Response Facilitation Act as a Category 4 parcel. The Air Force acknowledges receipt of the EBS and the ECOP.

2.4 The Army has completed a Record of Environmental Consideration (REC), dated 16 January 1997, for this transfer and the Air Force acknowledges receipt of the REC.

2.5 The Property has been partially inventoried for historic properties. Known archeological sites are present on the Property. The Air Force will be responsible for completion of any outstanding historic property inventories for the Property and to take into account the effects of its undertakings on historic properties.

2.6 To the extent not inconsistent with the Army's continuing obligations with respect to environmental remediation, the Property, including all buildings, structures, and other improvements, are transferred without any representation, warranty, or guarantee by the Army as to quality, character, condition, size, kind, or that the same is in condition or fit to be used for the purpose(s) intended by the Air Force.

2.7 The Property may include buildings and structures with asbestos containing materials (ACM), lead-based paint, and PCBs. To the extent available, information regarding ACM, lead-based paint, and PCBs on the property is contained in the EBS. Details of the information gathering process regarding these issues are contained in the EBS. After the effective date of this Transfer Agreement, the Air Force will be responsible for any and all remediation of any remaining ACM, lead based paint, and PCBs on the Property.

Article 3 - Possession and Accountability: Full administrative jurisdiction and control

for the Property will shift from the Army to the Air Force as of the date of this Transfer Agreement (its effective date)

Article 4 - Other Terms and Conditions of Transfer:

4.1 No provisions of this agreement shall be interpreted or applied so as to obligate the Army or the Air Force in excess or advance of appropriations or otherwise so as to result in a violation of the Anti-Deficiency Act, 31 U.S.C. § 1341.

4.2 The Air Force will be permitted to use all existing roadways for ingress and egress to the property in accordance with the ingress/egress easement reserved for the Air Force in the transfer of the property by the Army to U.S. Fish and Wildlife Service (USFWS). The same ingress and egress easements are provided in the legal description of the Property at Exhibit A to this Transfer Agreement.

4.3 The Air Force shall continue to reimburse the Army for utilities until the effective date of this Transfer Agreement. After the transfer, the Air Force shall make its own arrangements for the payment of utilities to the utility providers.

4.4 The Army will not be responsible to provide any services for operation, maintenance, and care of the roadways within and outside the Property or leading to the Property. This includes snow removal, cleaning, maintenance, and repair of the roadways. Since the Army will no longer own the Property, the Air Force will make arrangements with the USFWS for access to the Property as necessary. The Air Force will be responsible for the security, safety, and protection of the Property.

4.5 This Transfer Agreement may be modified or amended by the mutual agreement of both parties in writing and signed by a duly authorized representative of the Army and the Air Force. The duly authorized representative of the Army for this purpose is the Deputy Assistant Secretary of the Army (Installations and Housing) or his/her designee. The duly authorized representative of the Air Force for this purpose is the Deputy Assistant Secretary of the Air Force (Installations) or his/her designee.

Article 5 – Notice:

Any notices to be given pursuant to this Transfer Agreement shall be addressed to—

For the Army:
Commander, Devens Reserve Forces Training Area
31 Quebec Street
Devens, MA 01432-4424

For the Air Force:
Air Force Real Estate Agency
ATTN: AFREA/DR, Mr. Jon Peterson
112 Luke Ave, Room 104
Bolling Air Force Base, D.C. 20332-8020

or such other address as the parties may, from time to time, direct.

NOW THEREFORE, in consideration of the foregoing, the Army and the Air Force enter into this Transfer Agreement this 31 day of June, 2002.

FOR THE DEPARTMENT OF THE ARMY

By: _____ Date: 3 JUN 2002
Joseph W. Whitaker
Deputy Assistant Secretary of the Army
(Installations and Housing)
OASA(I&E)

FOR THE DEPARTMENT OF THE AIR FORCE

By: _____ Date: 5 JUN 2002
Fred W. Kuhn
Deputy Assistant Secretary of the Air Force
(Installations)

Exhibits:

A – Legal Description
B – DD Form 1354

City of Arlington
Commonwealth/State of Virginia
The foregoing instrument was acknowledged and sworn before me this 5th day of June 2002 by Fred W. Kuhn
[illegible]
Notary Public
My commission expires: May 31, 2002

COMMONWEALTH OF VIRGINIA)

COUNTY OF ARLINGTON)

I, the undersigned, a Notary Public in and for the Commonwealth of Virginia, County of Arlington, whose Commission as such expires on the 30TH day of November, 2002, do hereby certify that this day personally appeared before me in the Commonwealth of Virginia, County of Arlington, Joseph W. Whitaker, whose name is signed to the foregoing document and acknowledged this document is his free act and deed, dated this 3rd day of June, 2002.

Karen R. Cooper

NOTARY PUBLIC

MODIFICATION TO MEMORANDUM OF AGREEMENT
BETWEEN THE DEPARTMENT OF THE ARMY
AND
THE FEDERAL EMERGENCY MANAGEMENT AGENCY
FOR THE TRANSFER OF REAL PROPERTY
AT THE SUDBURY TRAINING ANNEX, MASSACHUSETTS

WHEREAS, the Department of the Army (hereinafter "Army"), and the Federal Emergency Management Agency (hereinafter "FEMA"), entered into a Memorandum of Agreement (hereinafter "MOA") dated March 31, 2003 for the transfer of real property at the Sudbury Training Annex, Massachusetts from Army to FEMA; and

WHEREAS, Army and FEMA desire to amend the MOA with respect to certain provisions relating to the property's environmental conditions and compliance responsibilities of the parties.

NOW, THEREFORE, Army and FEMA agree that the MOA is hereby amended as follows:

2. The following text is substituted for the texts of the introductory statement of paragraph 7 and subparagraph 7.a of Section D, ENVIRONMENTAL CONDITION AND COMPLIANCE RESPONSIBILITES:

7. FEMA acknowledges that arsenic-based herbicides were applied in the vicinity of the fence-line along Patrol Road and on the former railroad beds on the northern and southern portions of the Sudbury Annex, and that the Army has concluded, after completing a facility-wide investigation, that the resulting concentrations of arsenic in the soil do not pose an unacceptable risk to human health or the environment based on the future land use of the FEMA Parcel for operations (offices, a communication center, storage space and communication antennas) and training (in establishing mobile communications centers in the field).

a. In order to protect human health and the environment and further the common environmental objectives and land use plans of the United States and Massachusetts, a use restriction is needed to assure the future use of the property is consistent with the potential soil arsenic environmental condition of the Parcel. This restriction benefits the United States and the public welfare generally and is consistent with state and federal environmental statutes.

I. FEMA covenants on behalf of itself and its successors and assigns that no portion of the FEMA Parcel shall be used for either residential habitation or for any

extended use by children under six (6) years of age (including child care or recreation facilities), the FEMA Parcel having been remediated only for general business office operations and training purposes. (Extended use is defined as more than the exposure time of 38 days per year used in the risk assessment for children ages 1-6). FEMA, for itself, its successors or assigns covenants that it will not undertake nor allow any activity on or use of the property that would violate the restriction contained herein. This restriction and covenant is intended to be binding on FEMA, its successors and assigns; shall run with the land; and are forever enforceable. Nothing contained herein shall preclude FEMA, its successors and assigns, from undertaking, in accordance with applicable laws and regulations and without any cost to the Army, such additional remediation of arsenic in soil necessary to allow for residential or extended use of the Parcel. Upon completion of such remediation required to allow for residential or expanded use of the Parcel and if the then-owner of the FEMA Parcel can demonstrate to EPA that such use is consistent with the protection of human health and the environment, the United States agrees, without cost, to release or, if appropriate, modify this restriction by an amendment hereto or recordation of an amendment to the deed if transferred from Federal ownership.

ii. The restriction and conditions stated above benefit the public in general and the territory surrounding the FEMA Parcel, including lands retained by the United States, and, therefore, are enforceable by the United States government and EPA. FEMA covenants for itself, its successors, and assigns that it shall include and otherwise make legally binding, the above use restrictions in all subsequent lease, transfer or conveyance documents relating to the Parcel subject hereto. Any successor, assignee, grantee, transferee, lender, employer, agent, lessee or sublessee of FEMA, or any other third party, shall be liable for any costs that result from its violation of this restriction. It is the intention of Army and FEMA that this use restriction shall run with the land comprising the Parcel.

The MOA is amended only as set forth above. All other provisions of the agreement remain in full force and effect.

IN WITNESS WHEREOF, each of the parties has executed this agreement effective on the date of last signature below.

DEPARTMENT OF THE ARMY

JOSEPH W. WHITAKER
Deputy Assistant Secretary of the Army
(Installations and Housing) OASA (I&E)

Date: 30 July 2003

FEDERAL EMERGENCY MANAGEMENT AGENCY

MICHAEL D. BROWN
Under Secretary
Emergency Preparedness & Response
Department of Homeland Security,
on behalf of the Federal Emergency Management Agency

Date: JUL 29 2003

CMMONWEALTH OF VIRGINIA)

COUNTY OF ARLINGTON)

I, the undersigned, a Notary Public in and for the Commonwealth of Virginia, County of Arlington, whose Commission as such expires on the 30th day of November, 2006, do hereby certify that this day personally appeared before me in the Commonwealth of Virginia, County of Arlington, Joseph W. Whitaker, whose name is signed to the foregoing document and acknowledged this document is his free act and deed, dated this 3rd day of July, 2003.

Vera A. Cooper

NOTARY PUBLIC

COUNTY OF FAIRFAX
COMMONWEALTH OF VIRGINIA

Sworn and subscribed to before me by Michael D. Brown, who is to me well known, this 29th day of July, 2003.

Notary Public

My Commission Expires 5/31/05

My Commission Expires:

LETTER OF TRANSFER
FOR
A PORTION OF THE FORMER FORT DEVENS, MASSACHUSETTS
TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY

FROM: The Department of the Army

TO: The Federal Emergency Management Agency

For the Department of the Army ("Army"), I, Joseph W. Whitaker, Deputy Assistant Secretary of the Army (Installations and Housing), do hereby transfer to the Federal Emergency Management Agency ("FEMA"), jurisdiction, custody, and control of approximately 71.525 acres, more or less, of the former Fort Devens, Massachusetts, Sudbury Training Annex, more specifically described in Exhibit A to this Letter of Transfer (hereinafter called the "Property"), and the interests, rights, leases, easements, and appurtenances, as described and set forth herein and the applicable sections of the Memorandum of Agreement ("MOA") between the parties, dated 3-31-,2003, attached hereto at Exhibit B to this Letter of Transfer, to be used, operated, maintained, and funded by the FEMA, except as required to be funded by the Army by law or agreement.

Article 1 - Authority: This transfer of the Property is made in accordance with the authority delegated to the Secretary of the Army under the Defense Base Closure and Realignment Act of 1990, Public Law 101-510, 10 U.S.C. 2687, as amended.

Article 2 – Consideration: In accordance with 10 USC § 2687, 16 USC § 667b, and 40 USC §§ 471-531, this transfer of the Property is made without monetary reimbursement from the FEMA.

Article 3 - Possession and Accountability: Full administrative jurisdiction and control for the Property will shift from the Army to the FEMA as of the date of the acceptance of this Letter of Transfer by the FEMA.

Article 4 - Other Terms and Conditions of Transfer: The MOA between the parties, which is hereby incorporated by reference, sets out the general terms and conditions of this transfer, which shall be binding on the parties.

NOW THEREFORE, in consideration of the foregoing, I hereby approve and deliver this Letter of Transfer and cause jurisdiction, custody, and control of the Property described herein to be transferred to the FEMA, effective upon the date of acceptance, as recorded below.

Dated this 21st day of March, ~~2002~~ 2003.

DEPARTMENT OF THE ARMY

By: _____
Joseph W. Whitaker
Deputy Assistant Secretary of the Army
(Installations and Housing)
OASA(I&E)

Accepted:

The Federal Emergency Management Agency hereby accepts this transfer in accordance with the terms provided for herein:

FEDERAL EMERGENCY MANAGEMENT AGENCY

Date: 3-31-03 By: _____
Michael D. Brown

Its: Acting Under Secretary, Emergency Preparedness & Response
Department of Homeland Security,
on behalf of the Federal Emergency Management Agency

Exhibits:

A – Property Description
B – Memorandum of Agreement
C – DD Form 1354

COMMONWEALTH OF VIRGINIA)

COUNTY OF ARLINGTON)

I, the undersigned, a Notary Public in and for the Commonwealth of Virginia, County of Arlington, whose Commission as such expires on the 30th day of November, 2006, do hereby certify that this day personally appeared before me in the Commonwealth of Virginia, County of Arlington, Joseph W. Whitaker, whose name is signed to the foregoing document and acknowledged this document is his free act and deed, dated this 21st day of March, 2003.

Karen A. Cooper
NOTARY PUBLIC

THE DISTRICT OF COLUMBIA

Subscribed and sworn to before me by Michael D. Brown, who is to me well known, this 31st day of March, 2003.

Andrea Williams

ANDREA WILLIAMS
Notary Public, District of Columbia
My Commission Expires May 14, 2006

LEGAL DESCRIPTION AND EASEMENT
FOR FEDERAL EMERGENCY MANAGEMENT 71.525 ACRES
SUDBURY TRAINING ANNEX

MIDDLESEX COUNTY, COMMONWEALTH OF MASSACHUSETTS

The hereinafter described tracts of land are located in the Commonwealth of Massachusetts, Middlesex County, Towns of Maynard, Sudbury, and Stow, situate generally westerly of Cutting Pond, generally northerly of Willis Pond and Hudson Road and generally southeasterly of lands formerly of the Boston and Maine Corporation, being a portion of Fort Devens, Sudbury Training Annex, and being more particularly bounded and described as follows:

All bearings in the following description are referenced to grid north, Massachusetts State Plane Coordinate System (NAD 1983 Mainland Zone).

FEMA PARCEL I

BEGINNING at Corner 10373 on the northwesterly boundary of Old Marlborough Road from which Corner 69 of the Sudbury Training Annex Transfer Tract (1) bears N 41° 36' 04" E, 46.18 feet;

thence from Corner 10373 through the lands now or formerly of Fort Devens, Sudbury Training Annex, partially along the northeasterly boundary of a 50 foot wide access easement the following eight (8) courses:

1) N 49° 59' 03" W, 85.72 feet to Corner 6918;

2) thence N 49° 49' 36" W, 102.66 feet to Corner 10320;

3) thence N 68° 10' 29" W, 118.68 feet to Corner 10319;

4) thence N 73° 00' 09" W, 58.97 feet to Corner 10374, a standard USF&WS aluminum monument, set and marked "COR 10374 1998";

5) thence N 08° 46' 06" W, 698.95 feet continuing through said lands to Corner 10389;

6) thence N 08° 46' 06" W, 618.34 feet to Corner 10390, a standard USF&WS aluminum monument, set and marked "COR 10390 1998";

7) thence N 66° 02' 58" E, 393.72 feet to Corner 10391, a standard USF&WS aluminum monument, set and marked "COR 10391 1998"; and

8) thence N 57° 49' 26" W, 134.63 feet to Corner 52, a drill hole in a stone wall found as a witness at its point of intersection with the common division line between the lands of the United States of America on the southwest and the lands now or formerly of Mark I.

and Amy L. Toporoff as described in Book 23591 of Deeds at Page 216, lands now or formerly of Robert and Kerri J. Gorgon as described in Book 23903 of Deeds at Page 483, lands now or formerly of David W. Moss, III and Sharon Moss as described in Book 23603 of Deeds at Page 512, lands now or formerly of Rezaul K. and Fatema A. Khandker as described in Book 22765 of Deeds at Page 484, lands now or formerly of Paula A. and Richard C. Waterhouse as described in Book 24276 at Page 503 and lands now or formerly of James H. and Katherine A. McNulty as described in Book 20368 of Deeds at Page 266 on the northeast with the common division line between the lands of the United States of America on the south and the lands now or formerly of James A. and Mary W. Bulger as described in Book 25602 of Deeds at Page 459 and lands now or formerly of William T. and Linda M. Nachtrab as described in Book 19602 of Deeds at Page 381 on the north;

thence N 82° 36' 44" E, along the above last mentioned common division line, 200.12 feet to Corner 53, a standard USF&WS aluminum monument, set and marked "COR 53, 1996" at its point of intersection with the common division line between the lands of the United States of America on the west and the lands now or formerly of David M. and Sandra R. Manshel as described in Book 20030 of Deeds at Page 567, lands now or formerly of David L. and Christina M. Brooks as described in Book 23502 of Deeds at Page 91, the westerly terminus of Vose Hill Road and lands now or formerly of George E. and Mary Weber Saylor as described in Book 16484 of Deeds at Page 376 on the east;

thence along the above last mentioned common division line the following two (2) courses:

1) thence S 00° 15' 30" E, 254.63 feet to Corner 54, a standard USF&WS aluminum monument, set and marked "COR 54, 1996" and

2) thence S 21° 41' 53" W, 50.58 feet to Corner 55 from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "55", bears N 52° 46' 11" E, 9.69 feet at its point of intersection with the common division line between the lands of the United States of America on the south and the lands now or formerly of said George E. and Mary Weber Saylor as described in Book 16484 of Deeds at Page 376, lands now or formerly of James P. and Mary S. Brannelly as described in Book 19138 of Deeds at Page 349, lands now or formerly of James E. and Anita M. Clemens as described in Book 19171 of Deeds at Page 329 and lands now or formerly of Scott A. and Susan F. Bradley as described on Book 19111 of Deeds at Page 290 on the north;

thence along the last mentioned common division line the following four (4) courses:

1) thence from Corner 55 N 83° 50' 30" E, 216.63 feet to Corner 56, from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "56", bears N 07° 00' 41" W, 5.00 feet;

2) thence from Corner 56, N 82° 08' 09" E, 38.21 feet to Corner 57 from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "57", bears N 05° 58' 21" W, 5.00 feet;

3) thence from Corner 57, N 85° 55' 10" E, 54.20 feet to Corner 58 from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "58", bears N 05° 24' 01" W, 5.00 feet; and

4) thence from Corner 58, N 83° 16' 49" E, 161.08 feet to Corner 59 from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "59", bears N 44° 52' 56" E, 8.05 feet at its point of intersection with the common division line between the lands of United States of America on the west and lands now or formerly of Robert D. Quirk as described in Book 19670 of Deeds at Page 452, lands now or formerly of David A. and Margaret N. Purdy as described in Book 24564 of Deeds at Page 224, lands now or formerly of Dawson Heights Realty Trust, Thomas J. Sheridan, Trustee as described in Book 24569 of Deeds at Page 177, lands now or formerly of John Paul Loretta as described in Book 12585 of Deeds at Page 70, lands now or formerly of Thomas L. Coin, Jr. and Francoise Coin as described in Book 25025 of Deeds at Page 391, lands now or formerly of John P. O'Dowd and Christy H. Hill as described in Book 25025 of Deeds at Page 391 and lands now or formerly of John R. Allan as described in Book 14628 of Deeds at Page 98 on the east;

thence from Corner 59 and running along the above last mentioned common division line the following eight (8) courses:

1) S 06° 29' 04" W, 80.12 feet to Corner 60, from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "60", bears S 82° 58' 17" E, 5.00 feet;

2) thence from Corner 60, S 07° 34' 22" W, 173.61 feet to Corner 61, from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "61", bears S 82° 18' 26" E, 5.00 feet;

3) thence from Corner 61, S 07° 48' 47" W, 82.69 feet to Corner 62, a drill hole in an existing stone wall found as a witness;

4) thence S 07° 40' 47" W, 95.22 feet to Corner 63, a drill hole in an existing stone wall found as a witness;

5) thence S 08° 11' 25" W, 56.92 feet to Corner 64 from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "64", bears S 82° 25' 15" E, 5.00 feet;

6) thence from Corner 64, S 06° 58' 04" W, 125.86 feet to Corner 65, a drill hole in an existing stone wall found as a witness;

7) thence S 08° 14' 58" W, 53.43 feet to Corner 66, a drill hole in an existing stone wall found as a witness; and

8) thence S 07° 10' 05" W, 266.34 feet to Corner 67, from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "67" at its point of intersection with the northwesterly boundary of Old Marlborough Road;

thence along the said northwesterly road boundary the following two (2) courses:

1) S 40° 46' 34" W, 589.17 feet to Corner 68, a standard Army Corp. of Engineers aluminum monument found as a witness and marked "68"; and

2) thence S 41° 36' 04" W, 158.93 feet to the point or place of beginning and containing 29.697 acres of land more or less.

FEMA PARCEL II

COMMENCING at Corner 69, a standard USF&WS aluminum monument, set and marked "COR 69 1996" on the outside boundary of the Fort Devens, Sudbury Training Annex, at its point of intersection of the northwesterly road boundary of Old Marlborough Road with the southwesterly road boundary of Puffer Road and thence from point of commencement through the lands of the United States of America, Fort Devens, Sudbury Training Annex, N 81° 53' 30" W, 30.65 feet to Corner 10323 and being the true point of beginning of the hereinafter described FEMA Parcel II, from which a standard USF&WS aluminum monument, set as a witness and marked "COR 10340 1998" bears N 84° 21' 53" E, 10.12;

thence from Corner 10323 through the lands now or formerly of Fort Devens, Sudbury Training Annex, along the northwesterly boundary of a fifty (50) foot wide access and utility easement, the following seven (7) courses:

1) S 27° 15' 03" W, 51.18 feet to Corner 10324;

2) thence S 54° 06' 04" W, 120.13 feet to Corner 10307;

3) thence S 55° 24' 01" W, 186.06 feet to Corner 10306;

4) thence S 58° 10' 33" W, 186.50 feet to Corner 10305;

5) thence S 59° 32' 41" W, 273.06 feet to Corner 10304;

6) thence S 58° 52' 35" W, 228.40 feet to Corner 10303; and

7) thence S 55° 08' 51" W, 105.69 feet to Corner 10341, a standard USF&WS aluminum monument, set and marked "COR, 10341, 1998";

thence continuing through the lands now or formerly of Fort Devens, Sudbury Training Annex the following nine (9) courses:

1) N 29° 21' 42" E, 203. 66 feet to Corner 10339;

2) thence N 28° 07' 27" E, 126.79 feet to Corner 10348, a standard USF&WS aluminum monument, set and marked "COR 10348 1998";

3) thence N 17° 00' 52" E, 190.36 feet to Corner 10349, a standard USF&WS aluminum monument, set and marked "COR 10349 1998";

4) thence N 52° 09' 09" E, 38.60 feet to Corner 10350;

5) thence N 61° 32' 00" E, 203.82 feet to Corner 10351, a standard USF&WS aluminum monument, set and marked "COR 10351 1998";

6) thence N 58° 17' 22" E, 252.00 feet to Corner 10352;

7) thence N 44° 05' 33" E, 37.71 feet to Corner 10353;

8) thence N 25° 12' 40" E, 38.15 feet to Corner 10354; and

9) thence N 08° 16' 30" E, 16.28 feet to Corner 10338, a standard USF&WS aluminum monument, set and marked "COR 10338 1998" on the southerly boundary of a fifty (50) foot wide access easement;

thence continuing through the lands now or formerly of Fort Devens, Sudbury Training Annex, along the southerly and southwesterly boundary of a fifty (50) foot wide access easement the following five (5) courses:

1) S 73° 00' 09" E, 58.45 feet to Corner 10318;

2) thence S 68° 10' 29" E, 108.49 feet to Corner 10321;

3) thence S 49° 49' 41" E, 94.54 feet to Corner 10322;

4) thence S 44° 14' 00" E, 38.56 feet to Corner 10355; and

5) thence S 27° 13' 32" E, 21.97 feet to Corner 10323 the point or place of beginning and containing 5.650 acres of land more or less.

FEMA PARCEL III

COMMENCING at Corner 69, a standard USF&WS aluminum monument, set and marked "COR, 69 1996" on the outside boundary of the Fort Devens, Sudbury Training Annex, at its point of intersection with the northwesterly of boundary of Old Marlborough Road with the southwesterly boundary of Puffer road and thence from said point of commencement through the lands of the United States of America, Fort Devens, Sudbury Training Annex, S 22° 27' 02" W, 98.76 feet to Corner 10336, a

standard USF&WS aluminum monument, set and marked "COR 10336 1998" and being the true point of beginning of the hereinafter described FEMA Parcel III;

thence from Corner 10336 through the lands now or formerly of Fort Devens, Sudbury Training Annex, parallel to and distant 25 feet westerly measured at right angles from the center line of wood road the following five (5) courses:

1) S 07° 31' 32" E, 15.28 feet to Corner 10329;

2) thence S 00° 43' 53" W, 99.78 feet to Corner 10328;

3) thence S 07° 05' 45" W, 123.32 feet to Corner 10327;

4) thence S 11° 39' 35" W, 143.86 feet to Corner 10326; and

5) thence S 08° 39' 14" W, 20.28 feet to Corner 10347, at its point of intersection with an existing stonewall, a standard USF&WS aluminum monument set and marked "COR 10347 1998";

thence through the lands now or formerly of Fort Devens, Sudbury Training Annex, partially along an existing stonewall the following seven (7) courses:

1) S 65° 23' 27" W, 263.36 feet to Corner 6988;

2) thence S 64° 09' 03" W, 325.98 feet to Corner 6979;

3) thence S 64° 37' 31" W, 289.54 feet to Corner 10345, a standard USF&WS aluminum monument set and marked "COR 10345 1998";

4) thence S 72° 02' 01" W, 83.92 feet to Corner 10344, a standard USF&WS aluminum monument set and marked "COR 10344 1998";

5) thence N 59° 08' 45" W, 112.79 feet to Corner 10343, a standard USF&WS aluminum monument set and marked "COR 10343 1998";

6) thence N 46° 49' 50" W, 49.73 feet to Corner 10342, a standard USF&WS aluminum monument set an marked "COR 10342 1998"; and

7) thence N 46° 49' 50" W, 2.00 feet to Corner 10363, marked by a cross cut in a rock on the southeasterly boundary of a 50 foot wide access and utility easement;

thence continuing through the lands now or formerly of Fort Devens, Sudbury Training Annex, along the southeasterly boundary of said 50 foot wide access and utility easement the following eight (8) courses:

1) N 42° 51' 58" E, 53.12 feet to Corner 10314;

2) thence N 49° 02' 48" E, 95.13 feet to Corner 10313;

3) thence N 55° 08' 51" E, 144.76 feet to Corner 10312;

4) thence N 58° 52' 35" E, 226.48 feet to Corner 10311;

5) thence N 59° 32' 41" E, 273.37 feet to Corner 10310;

6) thence N 58° 10' 33" E, 188.31 feet to Corner 10309;

7) thence N 55° 24' 01" E, 187.84 feet to Corner 10308; and

8) thence N 54° 06' 04" E, 104.32 feet to the point or place of beginning and containing 6.436 acres of land, more or less.

FEMA PARCEL IV

COMMENCING at Corner 10373 on the northwesterly boundary of Old Marlborough road from which Corner 69 of the Sudbury Training Annex Transfer Tract (I) bears N 41° 36' 04" E, 46.18 feet;

thence from said point of commencement from Corner 10373 along the southwesterly and southerly boundary of herein described FEMA Parcel I the following four (4) courses:

1) N 49° 59' 03" W, 85.72 feet to Corner 6918;

2) thence N 49° 49' 36" W, 102.66 feet to Corner 10320;

3) thence N 68° 10' 29" W, 118.68 feet to Corner 10319; and

4) thence N 73° 00' 09" W, 58.97 feet to Corner 10374, a standard USF&WS aluminum monument, set and marked "COR 10374 1998", being the true point of beginning of beginning of the hereinafter described FEMA Parcel IV;

thence from Corner 10374 continuing through the lands of the Sudbury Training Annex Transfer Tract and along the northerly boundary of a 50 foot wide access easement the following seven (7) courses:

1) N 73° 00' 09" W, 43.97 feet to Corner 10317;

2) thence N 76° 59' 00" W, 105.28 feet to Corner 10366;

3) thence N 77° 31' 55" W, 161.21 feet to Corner 10367;

4) thence N 78° 02' 33" W, 213.86 feet to Corner 10368;

5) thence N 76° 49' 23" W, 103.23 feet to Corner 10369;

6) thence N 73° 03' 30" W, 271.67 feet to Corner 10380; and

7) thence N 66° 36' 11" W, 67.67 feet to Corner 10385, a standard USF&WS aluminum monument set and marked "COR 10385 1998";

thence continuing through the lands now or formerly of Fort Devens, Sudbury Training Annex the following two (2) courses:

1) N 23° 23' 49" E, 319.49 feet to Corner 10383, a standard USF&WS aluminum monument set and marked "COR 10383 1998"; and

2) thence S 80° 12' 41" E, 754.58 feet to Corner 10388, a standard USF&WS aluminum monument set and marked "COR 10388 1998" on the westerly boundary of FEMA Parcel I;

thence S 08° 46' 06" E, continuing through the lands now or formerly of Fort Devens, Sudbury Training Annex, along the westerly boundary of FEMA Parcel I a distance of 415.02 feet to Corner 10374 the point or place of beginning and containing 7.136 acres of land, more or less.

FEMA PARCEL V

BEGINNING at Corner 40 at its point of intersection with the division line between the lands of the United States of America on the Southeast and the lands now or formerly of Maynard Sand and Gravel as described in Book 10292 of Deeds of Page 154 on the northwest with the division line between the lands of the United States of America on the south and the lands now or formerly of Frances C. Denesivk and Elizabeth Schnair as described in Book 14873 of Deeds of Page 409 on the north, said Corner 40, being a standard Army Corp. of Engineers aluminum monument found as a witness and marked "40";

thence N 86° 51' 30" E, along the above last mentioned division line 590.00 feet to Corner 10375, marked by a standard USF&WS aluminum monument set and marked "COR 10375 1998";

thence from Corner 10375 through the lands now or formerly of Fort Devens, Sudbury Training Annex, the following five (5) courses:

1) S 00° 47' 35" E, 807.79 feet to Corner 10376, a standard USF&WS aluminum monument, set and marked "COR 10376 1998";

2) thence S 40° 33' 29" W, 164.05 feet to Corner 10378, a standard USF&WS aluminum monument, set and marked "COR 10378 1998";

thence S 45° 52' 09" W, 485.69 feet to Corner 10377, a standard USF&WS aluminum monument, set and marked "COR 10377 1998";

) thence S 89° 51' 57" W, 392.26 feet to Corner 10362, a standard USF&WS aluminum nonument set and marked "COR 10362 1998" and;

i) thence S 89° 51' 57" W, 9.89 feet to Corner 10292, said point being fifteen (15) feet easterly measured at right angles from the center line of a right-of-way from the "North Gate" through lands now or formerly of Fort Devons, Sudbury Training Annex, to the U. S. Air Force Parcel, said right-of-way known as White Pond Road;

thence continuing through the lands now and formerly of Fort Devons, Sudbury Training Annex, along the easterly boundary of said "Air Force" easement for ingress and egress, parallel to and distant 15 feet easterly measured at right angles from said easement center line, the following five (5) courses;

1) N 06° 52' 06" E, 218.97 feet to Corner 10293;

2) thence, N 10° 23' 47" W, 135.83 feet to Corner 10294;

3) thence N 22° 06' 13" W, 189.14 feet to Corner 10295;

4) thence N 12° 23' 16" W, 130.78 feet to Corner 10296; and

5) thence N 08° 18' 27" W, 237.65 feet to Corner 10297 at its point of intersection with the above first mentioned division line between the lands of the United States of America on the southeast and the lands now or formerly of Maynard Sand and Gravel on the northwest;

thence along the above first mentioned division line, the following two (2) courses:

1) N 45° 04' 31" E, 162.94 feet to Corner 39, a standard Army .Corp. of Engineers aluminum monument found as a witness and marked "39"; and

2) thence in a generally northeasterly direction along a curve to the right having a radius of 2,418.25 feet, a chord bearing of N 49° 21' 06 " E, and a chord distance of 360.66 feet and an arc length of 361.00 feet to Corner 40, and the true place of beginning containing 22.606 acres more or less.

TRACT 2M-1

Being a right-of-way from Old Marlborough Road to Puffer Pond, fifty (50) feet in width and being an easement for ingress, egress and utilities, the center line of which is more particularly bounded and described as follows:

BEGINNING at Corner 10397 from which Corner 69 of the Sudbury Training Annex Transfer Tract (1) bears N 46° 46' 29" W, 5.49 feet;

thence from Corner 10397 along the center line of said fifty (50) foot wide access and utility easement the following twenty-six (26) courses:

1) S 35° 46' 32" W, 68.16 feet to Corner 6899;

2) thence S 54° 06' 04" W, 124.44 feet to Corner 6896;

3) thence S 55° 24' 01" W, 186.95 feet to Corner 6891;

4) thence S 58° 10' 33" W, 187.40 to Corner 6887;

5) thence S 59° 32' 41" W, 273.21 feet to Corner 6873;

6) thence S 58° 52' 35" W, 227.44 feet to Corner 6868;

7) thence S 55° 08' 51" W, 146.91 feet to Corner 6864;

8) thence S 49° 02' 48" W, 97.81 feet to Corner 6862;

9) thence S 42° 51' 58" W, 54.47 feet to Corner 10398;

10) thence S 46° 43' 48" W, 96.61 feet to Corner 7026;

11) thence S 45° 50' 29" W, 124.34 feet to Corner 7028;

12) thence S 54° 03' 32" W, 168.16 feet to Corner 7029;

13) thence S 55° 06' 17" W, 167.75 feet to Corner 7024;

14) thence S 27° 40' 11" W, 120.78 feet to Corner 7021;

15) thence S 65° 44' 20" W, 16.06 feet to Corner 7019;

16) thence N 49° 33' 06" W, 147.64 feet to Corner 7015;

17) thence N 47° 57' 00" W, 66.22 feet to Corner 7014;

18) thence N 53° 56' 00" W, 140.12 feet to Corner 7012;

19) thence N 48° 38' 43" W 57.04 feet to Corner 6808;

20) thence S 88° 14' 52" W 33.10 feet to Corner 7009;

21) thence S 77° 26' 54" W, 24.10 feet to Corner 7008;

22) thence S 66° 52′ 42″ W, 25.34 feet to Corner 7007;

23) thence S 60° 10′ 28″ W, 26.86 feet to Corner 7005;

24) thence N 60° 00′ 26″ W, 32.40 feet to Corner 7004;

25) thence N 63° 40′ 50″ W, 47.04 to Corner 10298; and

26) thence N 43° 06′ 14″ W, 25.25 feet to Corner 10299 at the terminus of said easement.

Being a fifty (50) foot wide strip of land, approximately 2686 feet in length to be used for access to FEMA Parcel II and FEMA Parcel III and as an utility easement for the reconstruction and maintenance of a water pipeline together with all necessary appurtenances, as said water line exists from the FEMA Parcel I, Headquarters site to the Puffer Pond wells site.

TRACT (2R)

Being a right-of-way from Old Marlborough Road to the Unit Training Parcel, Tract 2M, through the lands now or formerly of Fort Devens, Sudbury Training Annex, the first portion being fifty (50) feet in width, being an easement for ingress and egress, the center line of which being more particularly bounded and described as follows:

BEGINNING at Corner 10392 on the northwesterly boundary of Marlborough Road from which Corner 69 of the Sudbury Training Annex Transfer (1) bears N 41° 36′ 04 " E, 21.17 feet;

thence from Corner 10392 through the lands now or formerly of Fort Devens, Sudbury Training Annex the following forty-nine (49) courses:

1) N 49° 59′ 03″ W, 85.06 feet to Corner 10393;

2) thence N 49° 49′ 41″ W, 98.66 feet to Corner 10394

3) thence N 68° 10′ 29″ W, 113.58 feet to Corner 6959;

4) thence N 73° 00′ 09″ W, 101.01 feet to Corner 6961;

5) thence N 76° 59′ 00′ W, 104.29 feet to Corner 6963;

6) thence N 77° 31′ 55″ W, 160.98 feet to Corner 6966;

7) thence N 78° 02′ 33″ W, 214.01 feet to Corner 6970;

8) thence N 76° 49′ 23″ W, 103.49 feet to Corner 6973;

9) thence N 73° 04' 10" W, 274.71 feet to Corner 7962;

10) thence N 66° 36' 11" W, 116.59 feet to Corner 7964;

11) thence N 58° 02' 57" W, 212.45 feet to Corner 7971;

12) thence N 46° 53' 15" W, 264.56 feet to Corner 7976;

13) thence N 46° 23' 47" W, 606.58 feet to a point of curvature at Corner 10007;

14) thence in a generally northwesterly direction along a curve to a left, having a radius of 550.00 feet, a chord bearing of N 65° 55' 38" W, and a chord distance 358.35 feet, an arc length of 365.01 feet to a point of tangency at Corner 10010;

15) thence N 84° 56' 23" W, 670.61 feet to Corner 10011;

16) thence N 49° 56' 19" W, 414.34 feet to a point of curvature at Corner 10012;

17) thence in a generally northerly direction along a curve to the left, having a radius of 175.00 feet, a chord bearing of N 18° 53' 38" W, and a chord distance of 184.96 feet, an arc length of 194.87 feet to a point of tangency at Corner 10016;

18) thence N.13° 00' 23" E, 298.36 feet to Corner 10016;

19) thence N 19° 25' 22" E, 221.94 feet to a point of curvature at Corner 10017;

20) thence in a generally northerly direction along a curve to the left, having a radius of 568.00 feet, a chord bearing of N 02° 19' 59" W, and a chord distance of 421.06 feet, an arc length of 431.35 feet to a point of tangency at Corner 10019;

21) thence N 24° 05' 21" W, 300.01 feet to Corner 10020;

22) thence N 07° 38' 51" W, 318.35 feet to Corner 10021;

23) thence N 18° 26' 45" W, 367.39 feet to Corner 10022;

24) thence N 60° 52' 53" W, 129.67 feet to Corner 10023;

25) thence N 67° 11' 16" W, 149.27 feet to Corner 10024;

26) thence N 83° 36' 48"W, 360.29 feet to Corner 10025;

27) thence N 71° 05' 35" W, 397.19 feet to Corner 10026;

28) thence N 70° 53' 36" W, 205.64 feet to Corner 10027;

29) thence N 61° 38' 25" W, 234.91 feet to Corner 10028;

30) thence N 74° 16' 03" W, 117.70 feet to Corner 10029;

31) thence S 85° 17' 36" W, 34.75 feet to Corner 10031;

32) thence S 58° 39' 32" W, 584.74 feet to Corner 10032;

33) thence S 43° 18' 42" W, 97.15 feet to Corner 10033;

34) thence S 57° 03' 53" W, 116.98 feet to Corner 10034;

35) thence S 65° 56' 26" W, 444.80 feet to Corner 10036;

36) thence N 82° 37' 51" W, 216.98 feet to Corner 10037

37) thence N 88° 24' 11" W, 256.71 feet to Corner 6732, said point being on the center line of the Air Force White Pond Road easement;

38) thence continuing through the lands of Sudbury Training Annex along the center line of the thirty (30) foot wide portion of said easement S 20° 49' 48" W, 387.49 feet to Corner 10039;

39) thence S. 21° 35' 22" W, 469.24 feet to Corner 10040;

40) thence S 23° 59' 01" W, 156.95 feet to Corner 10041;

41) thence S 33° 02' 28" W, 149.23 feet to Corner 10042;

42) thence S 46° 06' 22" W, 430.34 feet to Corner 10043;

43) thence S 41° 53' 31" W, 382.99 feet to Corner 10044;

44) thence S 39° 28' 35" W, 322.65 feet to a point of curvature at Corner 10045;

45) thence in a generally southerly direction along a curve to the left, having a radius of 155.49 feet, a chord bearing S 15° 42' 48" W, and a chord distance of 97.89 feet, an arc length of 99.59 feet to Corner 10048;

46) thence continuing through the lands of the Sudbury Training Annex along the center line of the twenty (20) foot wide portion of said easement S 50° 39' 37" W, 884.24 feet to Corner 10049;

47) thence S 38° 00' 52" W, 119.61 feet to Corner 10050;

48) thence S 20° 51' 31" W, 161.88 feet to Corner 10051; and

49) thence S 36° 05' 30" E, 211.34 to Corner 10396 on the northwesterly boundary of the 3.476± acre Unit Training Parcel, Tract 2M, being the terminus of the above described varied width easement for ingress and egress from Old Marlborough Road to White Pond Road to the Unit Training Parcel, Tract 2M.

TRACT (2R-1) FEMA PORTION (1R)

Being a thirty (30) foot wide right-of-way from Northgate through the lands now or formerly of Fort Devons, Sudbury Training Annex, to the varied width right-of-way for ingress and egress leading from Old Marlborough Road to the FEMA Unit Training Parcel, Tract 2M, and being an easement for ingress and egress the center line of which being more particularly bounded and described as follows:

BEGINNING at Corner 6728 from which Corner 38 of the Sudbury Training Annex Transfer Tract (1) bears N 45° 04' 31" E, 51.68 feet;

thence from Corner 6728 and through the lands now or formerly of Fort Devens, Sudbury Training Annex, the following five (5) courses:

1) thence S 08° 18' 27" E, 227.04 feet to Corner 6371;

2) thence S 12° 23' 16" E, 132.58 feet to Corner 6366;

3) thence S 22° 06' 13" E ,188.88 feet to Corner 6729;

4) thence S 10° 23' 47" E, 132.01 feet to Corner 6730; and

5) thence S 06° 52' 06" W, 218.54 feet to Corner 6731 being a point of terminus of the above described thirty (30) foot wide easement for ingress and egress on the center line of the varied width right-of-way ingress and egress easement, 2R, from Marlborough Road to the previously described FEMA Unit Training Parcel, Tract 2M.

The above described tracts of land are delineated on a plan entitled "United States Department of Interior Fish and Wildlife Service, Great Meadows National Wildlife Refuge Puffer Pond Division, Sudbury Training Annex Transfer Tract (1,1R,2R,2R-1,1E,1E-1,1E-2,2M,2M-1) 2007.1 acres, Middlesex County, Towns of Maynard, Stow and Sudbury, Commonwealth of Massachusetts," surveyed November 1986, map prepared October 18, 1996, last revised December, 1998, prepared by C.T. Male Associates, P.C., Latham, New York, said plan as of record in the files of the Department of Interior. A print of that plan is attached hereto.

MEMORANDUM OF AGREEMENT
BETWEEN
THE DEPARTMENT OF THE ARMY
AND
THE FEDERAL EMERGENCY MANAGEMENT AGENCY
FOR THE TRANSFER OF
REAL PROPERTY
AT THE SUDBURY TRAINING ANNEX, MASSACHUSETTS

The Federal Emergency Management Agency (hereinafter "FEMA") and the Department of the Army (hereinafter the "Army") hereby enter into a Memorandum of Agreement (MOA) to clarify responsibilities and requirements of both parties pursuant to the transfer of real property at the Sudbury Training Annex, Massachusetts (hereinafter the "Annex"), from the Army to FEMA. The authority to enter into this MOA is the Defense Base Closure and Realignment (BRAC) Act of 1990, Public Law 101-510, 10 U.S.C. Section 2687, note; and the Federal Property and Administrative Services Act of 1949 (FPASA), 40 U.S.C. Sections 471-544.

A. INTRODUCTION

The Annex was identified for closure under BRAC in 1995. FEMA has had a permit to occupy a part of the Annex hereinafter known as "Parcel I" since 27 May 1980 (hereinafter the "Use Permit Date"), and the Army will transfer to FEMA a total of 71.525 acres of land (hereinafter the "FEMA Parcel") that includes 5 non-contiguous small parcels, including Parcel I. FEMA intends to continue to use the land for its operations and training missions. The FEMA Parcel includes two large buildings (one above ground and one under ground), several communication antennas, and other structures and improvements that were owned and operated by FEMA on Parcel I. The boundaries of the FEMA Parcel are identified in the official survey map and legal description dated December 1998, copies of which are on file with the U.S. Army Corps of Engineers, New England District, Concord, Massachusetts, and attached as Exhibit A to the letter of transfer.

NOW, THEREFORE, the parties agree as follows:

B. TRANSFER OF REAL PROPERTY

1. The Army agrees to transfer by DD form 1354, and FEMA agrees to accept the transfer of , certain real property (hereinafter referred to as the "Property") consisting of a total of 71.25 acres of land (the FEMA Parcel) located at the Sudbury Training Annex, Massachusetts, and including 5 non-contiguous small parcels, among them Parcel I. FEMA intends to continue to use the land for its operations and training missions. The FEMA Parcel includes two large buildings (one

above ground and one under ground), several communication antennas, other structures and improvements that were owned and operated by FEMA on Parcel I since the Use Permit Date.

2. In accordance with an Office of Management and Budget waiver dated 26 September 2001, the acquisition of the FEMA Parcel, the buildings located on the Parcel, and the fixed equipment will be conveyed to FEMA for no-cost.

C. ACKNOWLEDGMENTS AND GENERAL CONDITIONS

1. The Army has had no operational presence on the property or facilities owned, built, or operated by FEMA on Parcel I since the Use Permit Date.

2. The Army has completed an Environmental Baseline Survey (EBS, January 1997), the BRAC Cleanup Plan Report (October 1996), and an Environmental Condition of Property (ECOP, August 2002). The ECOP and the EBS summarize what is known about the environmental condition of the property and reflect the Army's finding that the property is suitable for transfer to another federal agency, FEMA, for its continued use as a management facility and as a training area. FEMA acknowledges receipt of the EBS and ECOP. The Army has completed any necessary remediation for the FEMA Parcel as identified in the EBS and further described in the ECOP. FEMA has been given the opportunity to inspect the property.

3. In accordance with the National Environmental Policy Act, the Army completed a Record of Environmental Consideration (REC) dated 16 Jan 97 for this property disposal and determined that the disposal would not have any significant impact on the quality of the natural or human environment. FEMA acknowledges receipt of a copy of that REC.

D. ENVIRONMENTAL CONDITION AND COMPLIANCE RESPONSIBILITIES

1. The Army and FEMA acknowledge that the Annex was previously listed as a National Priorities List (NPL) site under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended. The Army has provided FEMA with a copy of the Sudbury Training Annex Federal Facility Agreement (FFA) entered into by the United States Environmental Protection Agency, Region 1, (EPA) and the Army on 13 May 1991, and made effective on 15 November 1991; and FEMA acknowledges receipt of this document. The Army agrees to provide FEMA with any future amendments to the FFA. FEMA agrees to take no action inconsistent with the terms of the FFA. The environmental remediation of the Sudbury Training Annex NPL Site was undertaken by the Army in accordance with the FFA negotiated with the EPA and in cooperation with the Massachusetts Department of Environmental Protection (MADEP). The Army and FEMA agree that should a conflict arise between the terms of the FFA as it presently exists or as amended and the provisions of this MOA, the terms of the FFA will take precedence over the provisions of this MOA. The Army will inform FEMA of any such conflicts affecting the FEMA use of its parcel. Both parties to this MOA are required to provide notice to EPA and MADEP of any modifications, amendments or termination of the

MOA. FEMA and it successors and assigns shall take no action inconsistent with the terms of the FFA.

2. If there is an actual or threatened release of a hazardous substance on that portion of Parcel I which has been occupied by FEMA since the Use Permit Date, or in the event that a hazardous substance is discovered on that parcel after the Use Permit Date, FEMA or its successors or assigns shall be responsible for such release or newly discovered substance, unless FEMA can adequately demonstrate that such release or newly discovered substance was present on the property prior to the Use Permit Date or such release or newly discovered substance is determined to be attributable to past activities of the Army, its contractors or agents. This paragraph shall not affect the Army's responsibilities to conduct Response Actions that are required by applicable laws and regulations.

3. The FEMA Parcel may include buildings, structures or other improvements with asbestos containing materials (hereinafter "ACM"), lead-based paint, and/or polychlorinated biphenyls (hereinafter "PCBs"). To the extent it is available, information regarding ACM, lead-based paint, and PCBs on the Property is contained in the EBS and the ECOP. After the date of transfer, the FEMA shall be responsible for any and all remediation or abatement of any remaining ACM, lead-based paint, and PCBs on the Property.

4. Right of Access

a. The Army reserves a right of access to and over any and all portions of the FEMA Parcel for itself and its officers, agents, employees and contractors, for purposes of conducting Response Actions after the date of transfer in order to fulfill the Army's environmental responsibilities under this Agreement, the FFA (including Section IX - ACCESS of the FFA), and applicable law. This right shall run with the land, and FEMA shall provide for and preserve the right of access to the property by the Army as set forth in this Subsection in any subsequent transfer or conveyance of the Property. Except in case of imminent endangerment to human health or the environment, the Army shall give FEMA or the then record owner of the affected portion(s) of the FEMA Parcel reasonable prior notice of the Response Action(s) to be conducted on the FEMA Parcel, and shall use reasonable means, without significant additional cost to the Army, to avoid and/or minimize interference with FEMA's or such record owner's use of the FEMA Parcel. Subject to the provisions of this Agreement, and except as otherwise provided for by law, FEMA, such record owner, and any other person shall have no claim or cause of action against the Army, or any officer, agent, employee or contractor of the Army, for interference with the use of the FEMA Parcel arising from Army implementation of the FFA or Army Response Actions taken under this Subsection.

b. Nothing in this Agreement shall limit or otherwise affect the Army's, EPA's or MADEP's rights of access to and over any and all portions of the FEMA Parcel under applicable law for purposes including but not limited to:

(1). conducting oversight activities, including but not limited to investigations, sampling, testing, monitoring, verification of data or information submitted to EPA or MADEP, and/or site inspections, in order to monitor the effectiveness of Response Actions and/or the protectiveness of any remedy which is required by (i) any record of decision ("ROD") or amendments thereto-or (ii) any decision document approved by MADEP and issued by the Army under applicable state law before or after the Date of Transfer.

(2). performing five-year reviews as required by CERCLA, and;

(3). taking additional Response Actions in accordance with applicable law and the FFA.

5. FEMA shall comply with any institutional controls established or put in place by the Army relating to the FEMA Parcel which are required by any ROD or amendments thereto. Additionally, FEMA shall ensure that any leasehold or transfer it grants in the FEMA Parcel or any fee or easement interest conveyance of any portion thereof provides for legally binding compliance with the institutional controls required by any such ROD.

6. For any portion of the FEMA Parcel subject to a Response Action under CERCLA or the FFA, FEMA and its successors and assigns (i) shall, prior to the conveyance of an interest therein, include in all conveyance documents provisions for allowing the continued operation of any monitoring wells, treatment facilities, or other response activities undertaken pursuant to CERCLA or the FFA on said portion of the FEMA Parcel, and (ii) shall notify the Army and EPA by certified mail at least sixty (60) days prior to any such conveyance of an interest in said property, which notice shall include a description of said provisions allowing for the continued operation of any monitoring wells, treatment facilities, or other response activities undertaken pursuant to CERCLA or the FFA.

7. FEMA acknowledges that arsenic-based herbicides were applied in the vicinity of the fence-line along Patrol Road and on the former railroad beds on the northern and southern portions of the Sudbury Annex, and that the Army has concluded, after completing a facility-wide investigation, that the resulting concentrations of arsenic in the soil do not pose an unacceptable risk to human health or the environment based on the future land use of the FEMA Parcel for operations (offices, a communication center, storage space and communication antennas) and training (in establishing mobile communications centers in the field).

a. FEMA is informed and does acknowledge that pesticides may be present on the Property. To the best of the Army's knowledge, the past use and application of any pesticide product by the Army was in accordance with its intended purpose, and any pesticide residue resulting from such application does not an unacceptable risk to human health and the environment. To the extent allowed under CERCLA Section 107(i), the Army assumes no liability for damages or for future remediation of such pesticide residue.

b. FEMA agrees that its continued possession, potential use and continued management of the Property, including any demolition of structures, will be in compliance with all applicable laws relating to hazardous substances/pesticides and hazardous wastes.

c. To the best of the Army's knowledge and according to FEMA, there are no hazardous materials that remain or pose an unacceptable risk to human health or the environment on this property. No transformers containing PCB are on the property, nor has any lead-based paint or friable asbestos been identified during inspections. Since the Army does not own, operate or maintain any buildings or structures on the FEMA Parcel, the environmental condition and responsibility for any remediation found to be necessary for these buildings and any other structures will remain the responsibility of FEMA. FEMA agrees that its future use of the property after the date of transfer will be in compliance with all applicable laws relating to hazardous substances, petroleum, underground and above-ground storage tanks, PCBs, asbestos, lead based paint, radiological materials, radon, etc. Both the Army and FEMA agree that institutional controls listed in the MOA will be maintained even though the site has been delisted from the NPL.

8. Information received from FEMA indicates that there is no lead-based paint in the buildings on the property. However, because of FEMA access restrictions to the buildings constructed and operated by FEMA, this cannot be confirmed by the Army. Available information concerning known lead-based paint and/or lead-based paint hazards contained in the Environmental Baseline Survey, have been provided to FEMA. FEMA hereby acknowledges receipt of all of the information described in this paragraph. Further, FEMA acknowledges that it has received the opportunity to conduct its own risk assessment or inspection for the presence of lead-based paint and/or lead-based paint hazards prior to execution of this document

a. The Army and FEMA acknowledge that all buildings on the FEMA Parcel, which were constructed or rehabilitated prior to 1978, are presumed to contain lead-based paint on the interior and/or exterior. Continued exposure to lead from paint, paint chips, and dust may pose a health hazard to young children if not managed properly. Prior to occupation of such buildings for residential purposes, FEMA will be responsible for the evaluation, notification, management, and abatement, if necessary, of any lead-based paint hazards in accordance with Applicable Law; to include the guidelines and regulations established pursuant to Title X of the Housing and Community Development Act of 1992. Residential buildings or property means dwelling units, common areas, building exterior surfaces; and, buildings visited regularly by the same child, 6 years of age or under, on at least two different days within any week, including day-care centers, preschools and kindergarten classrooms and similarly used buildings; and, any surrounding land, including outbuildings, fences and play equipment affixed to the land, available for use by residents and children; but not including land used for agricultural, commercial, industrial, or other non-residential purposes; and, not including paint on the pavement of parking lots, garages, or roadways.

b. FEMA further covenants that it and its successors and assigns shall include in any

deed or other conveyance document transferring any interest in any or all of the FEMA Parcel a restrictive covenant that identifies the use restriction set forth in this Subsection D.8 to all successors in interest to any interest in any part or all of the FEMA Parcel. It is the intention of FEMA and the Army that this use restriction shall run with the land comprising the FEMA Parcel.

9. FEMA acknowledges that prior to the transfer of the FEMA Parcel to FEMA, the Army completed an Ordnance and Explosives Survey/Removal Action covering the entire Annex to determine if explosives or ordnance (OE) existed on the site. No OE was discovered. The Conclusion of the Final UXO Characterization Report of 18 February 1998, however, states that: "Unless 100 percent of the site is searched, it cannot be positively determined with complete accuracy that no OE is present on the site. However, based upon the results of the surface and sub-surface activities and the results of the Site Stats/Grid Stats Random Selection Program, Sudbury Annex, Massachusetts, it does not show evidence of being contaminated with OE or OE related material and can be excessed without further UXO activities except the 18 earth covered magazines. The interiors of these magazines require an inspection prior to being released with the Annex." The magazine area is not located near the FEMA parcel. FEMA acknowledges receipt of a copy of the Conclusions of the Army's Final UXO Characterization Report of 16 February 1998.

10. FEMA acknowledges that the subsurface soil below the depth of four (4) feet on the FEMA Parcel may contain OE or OE-related material as a result of past Army activities on the FEMA Parcel.

a. FEMA covenants on behalf of itself and its successors and assigns that, except as provided herein, no activity or use shall be undertaken on the FEMA Parcel that might disrupt or otherwise negatively impact the subsurface soil below the depth of four (4) feet. Such prohibited activities and uses shall include any disturbance of the subsurface soil below the depth of four (4) feet in any manner, including but not limited to construction activities such as filling, drilling, excavation or change of topography. FEMA covenants on behalf of itself and its successors and assigns that if, however, it or its successor or assign wants to undertake an activity or use on the FEMA Parcel that will disrupt or otherwise negatively impact the subsurface soil below the depth of four (4) feet, including any construction activities involving the disturbance or disruption of the subsurface soil below the depth of four (4) feet, FEMA or its successor or assign, following written notice to and approval by the Army of any such activity or use, shall pay for all costs associated with the clearance or removal of any OE or OE-related material discovered on the FEMA Parcel below the depth of four (4) feet. FEMA further covenants on behalf of itself and its successors and assigns, that it shall include in any deed or other conveyance document transferring any interest in any or all of the FEMA Parcel a restrictive covenant that identifies the use restriction and conditions set forth in this Subsection. It is the intention of FEMA and the Army that this use restriction shall run with the land comprising the FEMA Parcel.

b. The Army covenants to FEMA and its successors and assigns that the Army shall provide OE safety assistance at no cost to FEMA or its successor or assign, including the clearance or removal of any OE or OE-related material discovered on the FEMA Parcel in the course of non-construction activities, including but not limited to landscaping, routine repair and maintenance, security surveys, and other activities not involving the disturbance or disruption of the subsurface soil on the FEMA Parcel below the depth of four (4) feet. FEMA and its successors and assigns shall notify the Army immediately if any OE material is discovered. The Army also covenants to FEMA and its successors and assigns that it shall be responsible for the investigation and clearance or removal of all chemical munitions and all OE refuse sites found on the FEMA Parcel. An OE refuse site is defined as a site where military munitions have been collected and disposed of by burial on which there are ten (10) or more munitions in a cubic yard. FEMA covenants on behalf of itself and its successors and assigns that it and its successors and assigns shall include notice of these Army covenants in any deed or other conveyance document transferring any interest in any or all of the FEMA Parcel.

11. Lands to be transferred to FEMA have been partially surveyed for historic properties. Known archeological sites are present on the property. These sites may be eligible for the National Register of Historic Places. As a federal agency, with the responsibility to comply with all federal laws and regulations that govern the treatment of cultural resources, FEMA will be responsible for the completion of any necessary historic property inventories for lands it is to receive from the Army and for taking into account the effects of its undertakings on historic properties discovered there.

E. LIABILITY

1. Each party to this Agreement shall be responsible for any liability arising from its own conduct. Neither party agrees to insure, defend, or indemnify the other.

2. Except as otherwise provided in this MOA, the Army, rather than FEMA, shall remain liable and responsible for any costs, claims, or damages arising against the U.S. Government for the use, management, release or disposal of hazardous substances, hazardous waste, or petroleum products, or any other contamination thereof existing on or emanating from Parcel I prior to the Use Permit Date and for the remainder of the FEMA Parcel up until the date of transfer to FEMA. FEMA assumes liability and responsibility for contamination caused by use, management or release of hazardous materials, hazardous substances, hazardous wastes or petroleum products by FEMA for Parcel I as of the Use Permit Date and for the FEMA Parcel as of the date of its transfer to FEMA.

3. In the circumstances described in Subsection D.2. above, the Army shall remain responsible for funding and implementing actions to include investigations, sampling, testing, cleanup, restoration, maintenance, monitoring, closure, five-year reviews, site inspections, removal actions, remedial actions, corrective actions and any other actions necessary to ensure

the protection of human health and the environment. FEMA shall assume no liability or costs arising out of or related to contamination existing prior to the FEMA Use Permit Date for Parcel I or prior to the date of transfer for the remainder of the FEMA Parcel.

4. FEMA agrees to hold the Army harmless from, and indemnify the Army against, any liability for any claims arising out of or in any way predicated on release of any hazardous substance on Parcel I occurring after the Use Permit Date, and on the remainder of the FEMA parcels after the date of transfer, where such substance was placed on the property by FEMA, its successors or assigns, its agents, contractors, invitees, or its lessees or subleases. Unless it is attributable to Army occupancy of the property, the Army will have no liability for future remediation of any hazardous substances, petroleum, underground and above ground storage tanks, PCBs, asbestos, lead-based paint, radiological materials, radon, etc., and will have no liability for damages for personal injury, illness, disability, or death to FEMA employees, officers, or agents, or any successors or assigns, lessees, licensees, or to any other person, including members of the general public, arising from or incident to the purchase, transportation, removal, handling, use, disposition, or other activity causing or leading to contact of any kind whatsoever with such substances on the property, whether or not FEMA, its successors or assigns have properly warned or failed to properly warn the individual(s) injured.

F. TRANSFER OF THIS PARCEL WITHOUT WARRANTY OR REPRESENTATION

1. FEMA shall accept transfer of the FEMA Parcel, including all FEMA owned, built, and operated buildings, structures and other improvements from the Army without any representation, warranty, or guaranty by the Army as to the quality, character, condition, size, kind, or that the same is in condition or fit to be used for the purpose FEMA intends, except for the Army's position that the property is suitable for transfer and the Army's continuing obligations as provided within this MOA.

2. FEMA shall covenant for itself, its successors, and assigns that it shall include in any subsequent grant, lease, transfer or conveyance documents all required covenants and restrictions described in this MOA (such as residential use restriction, digging/ground disturbance limitations) as well as any required because of FEMA ownership and operation of the facilities (such as lead-based paint, PCBs and asbestos) and CERCLA 120(h). FEMA agrees that these institutional controls are necessary on the property because of its occupancy, benefit the public in general and the territory surrounding the property, run with the land, and are enforceable by the U. S. Government.

F. NOTIFICATION REQUIREMENTS

Any notices to be provided pursuant to this MOA shall be addressed to:
-U.S. Army: Commander, Devens Reserve Forces Training Area, 31 Quebec Street, Devens, MA 01432-4424, telephone (978) 796-3053.

- Federal Emergency Management Agency: Mr. Vernon L. Wingert, Chief, Support Services Liaison Branch FEMA, 500 C St., SW, Room 325, Washington, DC 20472, telephone: (202) 646-2872.

G. MISCELLANEOUS AGREEMENTS

1. If any provision of this MOA becomes invalid or unenforceable, the remaining provisions shall remain in force and unaffected to the extent permitted by law and regulation.

2. In the event of a dispute between the parties, The Army and FEMA agree that they will use their best efforts to resolve the dispute in an informal fashion through consultation and communication, or other forms of non-binding alternative dispute resolution mutually acceptable to the parties.

H. OBLIGATION OF APPROPRIATIONS

No provision of this agreement shall be interpreted or applied so as to obligate the Army or FEMA in excess or advance of appropriations or otherwise so as to result in a violation of the Anti-Deficiency Act, 31 U.S.C. Section 1341.

IN WITNESS WHEREOF, each of the parties has executed this MOA effective on the date last signed, the 21st day of March 2003.

DEPARTMENT OF THE ARMY

JOSEPH W. WHITAKER
Deputy Assistant Secretary of the Army
(Installations and Housing) OASA(I&E)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MICHAEL D. BROWN
Acting Under Secretary
Emergency Preparedness & Response
Department of Homeland Security,
on behalf of the Federal Emergency Management Agency

COMMONWEALTH OF VIRGINIA)

COUNTY OF ARLINGTON)

I, the undersigned, a Notary Public in and for the Commonwealth of Virginia, County of Arlington, whose Commission as such expires on the 30th day of November, 2006, do hereby certify that this day personally appeared before me in the Commonwealth of Virginia, County of Arlington, Joseph W. Whitaker, whose name is signed to the foregoing document and acknowledged this document is his free act and deed, dated this 21st day of March, 2003.

Karen A. Cooper
NOTARY PUBLIC

THE DISTRICT OF COLUMBIA

Subscribed and sworn to before me by Michael D. Brown, who is to me well known, this 3rd day of March, 2003.

Andrea Williams

ANDREA WILLIAMS
Notary Public, District of Columbia
My Commission Expires May 14, 2006