Addendum
Feasibility Study for Soils/Sediments at Outfall 008

FINAL
FIELD SAMPLING PLAN

for

Stratford Army Engine Plant
Stratford, Connecticut

Contract No.: W912WJ-15-D-0003
Task Order No.: 0003

June 26, 2020

Prepared for:

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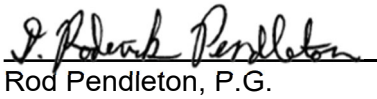
This is to certify that Wood has performed a peer technical review of this deliverable under USACE NAE Contract No. W912WJ-15-D-0003 consistent with Wood Quality Management Program Procedure-PJM-PRO-002, Technical Review.

QUALITY ASSURANCE STATEMENT

Delivery Order Title: Stratford Army Engine Plant Feasibility Study Addendum

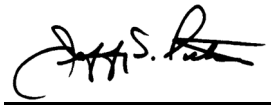
Task Order No.: 0003

Wood Environment & Infrastructure, Inc. (Wood) (Formerly Amec Foster Wheeler) has prepared this Field Sampling Plan for the Feasibility Study Addendum Work Plan for the Stratford Army Engine Plant, Stratford, CT project. The Program Manager and Project Manager have completed a technical and quality assurance review of this document for technical accuracy and completeness, in accordance with the objectives of the revised Performance Work Statement, dated March 13, 2020 and Woods's Final Proposal, dated April 22, 2020.



Rod Pendleton, P.G.
Project Manager

June 26, 2020
Date



Jeffrey S. Pickett, C.G.
Program Manager

June 26, 2020
Date

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure
AOI	Area of Investigation
ASTM	American Society for Testing and Materials
bgs	below ground surface
BL	Blank
CENAE	United States Army Corps of Engineers New England District
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Chain-of-Custody
CT DEEP	Connecticut Department of Energy and Environmental Protection
DGPS	Differential GPS
DI	de-ionized
DUP	Duplicate
EB	Equipment Blank
ERM-Q	Effects Range Medium Quotient
FDR	Field Data Record
FOL	Field Operations Leader
FS	Feasibility Study
FSP	Field Sampling Plan
GPS	global positioning system
ID	Identification
Kropp	Kropp Environmental
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NAD	North American Datum
NAVD	North American Vertical Datum
NPDES	National Pollutant Discharge Elimination System

OF-008	Outfall 008
PCB	Polychlorinated Biphenyls
ppm	parts per million
Project	Stratford Army Engine Plant Feasibility Study
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
SAEP	Stratford Army Engine Plant
SAP	Sample and Analysis Plan
SB	Source Blank
SD	Sediment
SOP	Standard Operating Procedure
SPT	standard penetration test
SSHP	Site-Specific Safety and Health Plan
TBD	to be determined
TG&B	Two Guys and a Boat
TSCA	Toxic Substances Control Act
USACE	United States Army Corps of Engineers
U.S. Army	United States Department of the Army
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency
Wood	Wood Environment & Infrastructure Solutions, Inc.

1.0 INTRODUCTION

This Field Sampling Plan (FSP) has been prepared by Wood Environment & Infrastructure Solutions, Inc. (Wood) for the Stratford Army Engine Plant (SAEP) Feasibility Study (FS) (Project), in Stratford, Connecticut (**Figure 1-1**) on behalf of United States Army Corps of Engineers (USACE), New England District (CENAE). The purpose of the FSP is to collect data that can be used in combination with data from previous investigations to provide pre-design data for the proposed remediation of contaminated sediments in Outfall 008 (OF-008) including Raymark Waste Delineation.

The FSP provides guidance for field work to be conducted including the sampling and data-gathering methods Wood and its subcontractors will use to collect Project data during the pre-design investigations. The work proposed within this FSP, as well as preparation of the revised Sediment Remediation Endpoints Report Addendum, will be conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980.

1.1 Background

The former SAEP is located at 550 Main Street, Stratford, Connecticut. The Site Areas of Investigation (AOIs) for this project are the Tidal Flats area between the SAEP and the Housatonic River channel, and the OF-008 drainage ditch. The locations of these AOIs, along with the background reference area, are presented in **Figure 1-2**. This FSP contains proposed investigative activities for collection of sediment analytical data in the Tidal Flats, and subsurface soils geotechnical data near the OF-008 drainage ditch.

The property was initially developed in 1927 for Sikorsky Aircraft. Aircraft and engines have been manufactured at the facility since 1929. Wastes generated included waste oils, fuels, solvents, and paints. An on-site chemical waste treatment plant operated to treat waste generated at the facility and released effluent to the Housatonic River under a National Pollutant Discharge Elimination System (NPDES) permit. Lagoons on the Site were regulated under the Resource Conservation and Recovery Act (RCRA) and were closed under RCRA in the 1980s. The facility was cited in 1983 for violating the Toxic Substances Control Act (TSCA) regarding reporting of polychlorinated biphenyl (PCB)-containing transformers. The Site was owned by the United States (U.S.) Air Force until 1976, when ownership was transferred to the U.S. Army (USEPA, 2016).

All manufacturing operations at the facility have ceased, and some office space is currently utilized for site security and building maintenance. The Connecticut Department of Energy and Environmental Protection (CT DEEP) is the lead regulatory agency in remedial oversight at the Site (USEPA, 2016).

1.2 FSP Organization

The FSP provides the sampling objectives and describes the sediment sampling program for the Tidal Flats area, as well as geotechnical boring program to be conducted. This FSP complements the Site-Specific Safety and Health Plan (SSHP) (Wood, 2020a) and the Quality Assurance Project Plan (QAPP) (Wood, 2020b), which are provided under separate cover. The FSP addresses the following topics:

- Section 1.0 – Introduction
- Section 2.0 – Project Background
- Section 3.0 – Project Organization and Responsibilities
- Section 4.0 – Objectives and Scope
- Section 5.0 – Field Procedures
- Section 6.0 – Field Operations Documentation
- Section 7.0 – Sample Designation, Packaging, and Shipping
- Section 8.0 – Investigation Derived Waste
- Section 9.0 – Non-Conformance/Corrective Actions
- Section 10.0 – Reporting
- Section 11.0 – References

2.0 PROJECT BACKGROUND

2.1 Investigation History

There have been numerous investigations of the sediments in the Tidal Flats and Outfall Ditch areas since 1992, as summarized below:

- Sampling of the Tidal Flats and OF-008 drainage ditch sediments was conducted by the U.S. Army in 1992, 1994, and 1999 as part of a Remedial Investigation (RI).
- Background/reference sediment sampling was conducted in 1994, 1999, 2009, and 2012.
- In April 2014, the U.S. Department of the Army issued the Final Work Plan for Determination of Sediment Remediation Endpoints, Tidal Flats and Outfall 008, Stratford Army Engine Plant, Stratford, Connecticut (AMEC, 2014a). The Final Work Plan was reviewed by CT DEEP. The Final Work Plan proposed sediment toxicity testing to assist in developing the remediation endpoint goals for the sediments in question and laid out the steps for development of the remediation endpoints. The Final Work Plan also presented some of the historical sediment data referenced above. In April and May 2014, additional sediment sampling and toxicity testing were conducted, and in September 2014 the Army issued the Draft Sediment Remediation Endpoints Report for the Tidal Flats and Outfall 008 (AMEC, 2014b). The report presented the results of sediment chemical characterization, toxicity testing results, and proposed sediment remediation endpoints for the Tidal Flats and OF-008 areas. The results of the toxicity testing were that toxicity was not definitively linked with a specific chemical present in the sediment. As an alternative to using toxicity test results alone for development of remediation endpoints, the report presented statistical analyses of the data and proposed using and Effects Range Medium Quotient (ERM-Q) of 1.0 for the metals cadmium, chromium, and copper.
- On December 2, 2014, the CT DEEP submitted comments on the Draft Sediment Remediation Endpoints Report (AMEC, 2014b). CT DEEP concluded from their review of the report that toxicity was not definitively linked with a specific chemical and recommended setting the remedial goal based on multiple chemicals to more accurately describe the chemical quality associated with the non-toxic samples. CT DEEP's recommendations for determining the sediment remediation endpoint goals were as follows:
    - Use an ERM-Q of 0.5 for the eight metals arsenic, cadmium, chromium, copper, lead, nickel, silver, and zinc; an ERM-Q greater than 0.5 would require remediation.
    - Concentrations of mercury and PCBs should generally not be present in post-remedial conditions.

  - Additional site characterization was needed to refine the area of sediment contamination both at depth within the Tidal Flat and OF-008 areas, as well as within surficial and deeper sediments between the eastern edge of the intertidal flats and the Housatonic River.

- On February 17, 2015, the U.S. Department of the Army responded to CT DEEP's comments indicating that they agreed to removal of contaminated sediments with ERM-Qs greater than 0.5 from the 0-2 foot below ground surface (bgs) interval in both the Tidal Flats and OF-008 areas, as well as replacement with CT DEEP-approved backfill. Following further discussions with CT DEEP, the U.S. Department of the Army issued a memorandum to CT DEEP on March 24, 2015 indicating that they were committed to proceeding with the additional sampling in a timely manner to ensure re-development of the SAEP site without further delay.
- In April 2015, additional sediment sampling was conducted in the Tidal Flats and OF-008 areas, as follows:
  - between the Tidal Flats and the margin of the dredged Housatonic River channel
  - at depths greater than 2 feet (ft) bgs in the Tidal Flats
  - at depths greater than 2 ft bgs in the OF-008 drainage ditch.
- In November 2015, Amec Foster Wheeler was placed under contract to analyze the sediment samples collected in April 2015, and to incorporate the analytical results into a revised version of the Sediment Remediation Endpoints Report. The revised Sediment Remediation Endpoints Report was issued to the Army on July 29, 2016, and to the CT DEEP on March 7, 2017.
- On May 17, 2017, the Army received comments from the CT DEEP on the Sediment Remediation Endpoints Report. As a result of CT DEEP and USEPA comments, the U.S. Army developed a Field Sampling Plan (Amec Foster Wheeler, 2018b) to conduct sediment sampling and analyses in the Tidal Flats to further delineate:
  - concentrations of PCBs from 0-2 feet below ground surface (bgs) at locations where total PCBs have been detected at concentrations exceeding 50 ppm; and
  - concentrations of PCBs and mercury at depths between 4 and 8 feet bgs near the historic wastewater outfalls which discharged to the Tidal Flats west of the Causeway.
- Results of the sediment chemical characterization, proposed sediment remediation endpoints, and preliminary remediation footprints for the Tidal Flats and OF-008, are presented in the Sediment Remediation Endpoints Report (Amec Foster Wheeler, 2018B).
- In February 2020 field work was conducted to further delineate the horizontal and vertical extent of metals, mercury, and PCBs in the Tidal Flats sediments.
- In June 2020 geotechnical sampling will be conducted at two locations around OF-008.

2.2 Physical Project Description

This FSP focuses on collection on additional chemical data from the sediments of the OF-008 drainage ditch.

This AOC consists of discharge from the former Chemical Waste Treatment Plant to OF-008 and the associated drainage ditch (ACSIM, 2004). The Outfall 008 drainage ditch is located at the southern boundary of the site and was used to discharge treated wastewater associated with metal plating into a drainage ditch that flows to the south. The drainage ditch originates at Outfall 008. It is approximately 10 to 12 feet wide and generally less than 2 feet deep. From Outfall 008 the ditch extends south-southeast a distance of 1,100 feet where it intersects a perpendicular ditch. This perpendicular ditch formerly carried runoff from the airport (located to the southwest, across Main Street) to Marine Basin (located 250 feet east of the junction of the Outfall 008 Drainage Ditch and the perpendicular ditch). The Connecticut Department of Transportation (CT DOT) re-routed this ditch in 2014, isolating it from the OF-008 ditch by creating a new ditch that drains runoff from the airport and runs parallel to the OF-008 ditch, connecting directly to the Marine Basin. In addition, a partially collapsed steel culvert which formerly ran underneath dirt road 100 feet upstream of the east-west portion of the OF-008 drainage ditch was removed in 2014. The steel culvert had limited tidal fluctuation impacts in the portion of the ditch between the culvert and Outfall 008 until it was removed. Water in the perpendicular drainage ditch flows to the Marine Basin, which in turn drains to the Housatonic River. There is a non-functioning tide gate at the confluence of the OF 008 ditch and the Marine Basin which currently limits tidal fluctuation impacts in the ditch between the culvert and the Marine Basin.

OF-008 was used to discharge supernatant from the waste treatment plant clarifier to the drainage channel immediately northeast of Building B-18, to Marine Basin and ultimately the Housatonic River. The outfall was constructed in 1979. The facility's 1985 NPDES permit allowed a discharge of 190,000 gallons per day of treated finishing wastewater from the outfall, and in 1991, the renewed NPDES permit allowed the facility to discharge 123,840 gallons per day of treated metal finishing wastewater from cyanide and chromium plating operations via the outfall.

Records indicate that frequent violations of permit limitations (e.g., elevated pH levels, heavy metals concentrations exceeding permitted levels, and discharges exceeding the allowable maximum daily flow) occurred prior to the mid-1980s. Violations occurred after that time with less frequency (ACSIM, 2004). During a 1984 USEPA inspection, white foam was observed where lime-green colored liquids were being discharged from the CWTS clarifier into the tidal basin (ACSIM, 2004). A review of the monthly Discharge Monitoring Reports for 1990 identified violations of permit limitations for average daily flow and maximum daily concentration limits for nickel, cyanide, and total toxic organics (ACSIM, 2004). Elevated levels of chlorinated volatile organic compounds (VOCs), fuel-related VOCs, and other VOCs were detected during required NPDES Permit sampling (ACSIM, 2004).

As part of the CT DOT Runway Safety Area Project (Re-alignment of CT Route 113, CT DOT Project 15-336), in 2013 parts of the Outfall 008 drainage ditch and a portion of the property adjacent to the ditch were evaluated for the presence of Raymark waste. The investigation determined that Raymark waste was present adjacent to the Outfall 008 drainage ditch, and the extent of Raymark waste is depicted in **Figure 1-3**. The Removal Work Plan identifies Raymark wastes at depths up to 8 feet in areas adjacent to the drainage ditch, and states that "RMW (Raymark Waste) extends into the tidal channel." The delineation of Raymark Waste did not extend upstream along the drainage channel to the north, toward Outfall 008, beyond a limited area near the junction of the "T" shape of the channel. The excavation of Raymark Waste was conducted in 2015, slightly altering the portion of the Outfall 008 drainage ditch adjacent to the former Raymark Waste, including removal of a culvert crossing and regrading of the ditch banks. The final report (AECOM 2015) does not indicate additional removals beyond those identified in the Removal Work Plan (URS Corporation AES 2014). Confirmation sampling was performed only along Route 113 at a location where excavation could not extend to the predetermined limits. The figures note that the limits of excavation were defined by borings that do not contain Raymark waste (see Figure 2 URS Corporation AES 2014). In addition, the design called for the installation of sheet pile along and into the Outfall 008 ditch coincident with the line of samples that did not contain Raymark waste, which was used during the remediation to control water. The use of sheet pile would have prevented the inspection of sidewalls and/or collection of additional confirmation samples within or immediately adjacent to the Outfall 008 ditch.

2.3 Summary of Existing Project Data

Average metals ERM-Q values in OF-008 drainage ditch sediments generally exceed 0.5 along the entire length of the drainage area ditches between 0 and 4 feet bgs, with few exceptions Amec Foster Wheeler, 2018a).

Concentrations of total PCBs and mercury in the 0-1 and 1-2 foot bgs intervals are generally non-detect or less than 1.0 ppm and 0.55 ppm, respectively. In the 2-3 and 3-4 foot bgs sample intervals, the concentrations of total PCBs increase, and are present at concentrations > 1.0 ppm. Mercury concentrations in the sediments of the ditch from the 2-3 and 3-4 foot bgs intervals are less than the proposed background value of 0.55 ppm, except for one sample in each of the intervals at a concentration of 0.77 ppm each.

In the summer of 2015, the CT DOT excavated the Raymark Waste adjacent to the Outfall 008 Drainage Ditch (see Figure 1-3), slightly altering the drainage ditch sections adjacent to the former waste. Because of the partial excavation and restoration of these sections of the drainage ditch, the results of the 2014 0-2 feet bgs sediment samples may no longer be representative of actual conditions in these sections of the drainage ditch.

The OF-008 investigation presented in this FSP intends to better define the horizontal and vertical remedial footprint of metals, mercury, PCBs, and asbestos around OF-008 drainage

ditch. This investigation additionally intends to identify the presence of PCB Aroclor 1268 which has been identified as Raymark waste.

3.0 ORGANIZATION AND RESPONSIBILITIES

The proposed project team, shown in the attached Project Organizational Chart (**Table 3-1**), consists of staff from our Portland, Maine, office. The project team is familiar with many of USACE's requirements, which will enable the work to be performed efficiently, safely, and in accordance with USACE's policies and procedures.

The project will be managed out of our Portland, Maine office by Rod Pendleton. In addition to Rod Pendleton, the following presents a list of key personnel that will work on the project:

Table 3-1 Project Organization Chart

Name	Title
Jeff Pickett, CG	Program Manager
Rod Pendleton, PG	Project Manager
Jason Raimondi	Project Sediment Remediation Specialist
Brad Wolfe, CG	Project Geologist
Wolfgang Calicchio	Project Chemist (FOL)
Amberlee Clark	Lead Field Geologist (SHSO)
Karen Furey	Project Administrator
Natalie Cormier	Project Accountant

The qualifications of key Wood personnel and their organizational responsibilities are summarized below.

Jeffrey Pickett, CG, is the **Program Manager**, responsible for the overall quality of the project, as well as ensuring that the necessary resources are made available to the Wood PM for execution of the work. He also provides a critical outlet for CENAE outside the core project team and can coordinate with other Wood executives to implement corrective actions.

Rod Pendleton, PG, is Wood's **Project Manager**. He will be the primary day-to-day contact with CENAE personnel and will be ultimately responsible for the technical and relational success of the effort. He is a Wood -certified project manager with 31 years of experience performing and managing environmental investigations.

Jason Raimondi is Wood's Project **Sediment Remediation Specialist.** Jason co-authored the Final Feasibility Study and authored the Draft Proposed Plan for the Tidal Flats and OF-008 drainage ditch remediation. Jason will be consulted by the project team on an as-needed basis for engineering support.

Brad Wolfe, CG, is Wood's **Project Geologist.** Brad will manage and direct the field operations associated with the sampling of OF-008 drainage ditch.

Wolfgang Calicchio will act as the **Project Chemist**, responsible for development of the QAPP, as well as need for corrective action for field and analytical issues. He is responsible for notifying the PM of QA/QC issues with project field samples or analytical results as soon as discrepancy is identified. He will be the primary point of contact with the analytical laboratory responsible for the analysis of sediment samples collected during the project. Wolfgang will be the Field Operation Lead during execution of this FSP,

Amberlee Clark will act as the **Lead Field Geologist** overseeing the junior geologists. Amberlee will be the Site Health and Safety Officer during execution of this FSP.

Worksheet #s 5 through 7 in the QAPP specify organization and responsibilities, communications pathways, and personnel responsibilities and qualifications, respectively (Wood, 2020b).

The following subcontractors will be involved in this project:

Utility Locators:
Utility Survey Corps/Dig Smart of Maine/ Divisions of Blood Hound, LLC
87 East Main St.
Washingtonville, NY 10992
Jessica Kirstein
Tel. # 845-496-2550

Soil Slide-Hammer Coring Labor Subcontractor:
KROPP Environmental Contractors
P.O Box 258
32 Exeter Road
Lebanon, CT 06247
Sally Kropp
Tel. # 860-642-9952

Sediment VibraCore Subcontractor:
TG&B Marine Services, Inc.
Monument Beach, MA
Mark Avakian
Tel. # 508-326-5686

Analytical Laboratory:
Eurofins Lancaster
24 25 New Holland Pike
Lancaster, PA 17601
Jane Huber
Tel. # 717-456-2300

Asbestos Laboratory:
EMSL Analytical, Inc.

200 Route 130 North
Cinnaminson, NJ 08077

Geotechnical laboratory:
Geotechnics
544 Braddock Ave.
East Pittsburgh, PA 15112
Nathan Melaro
Tell. # 412-823-7600

4.0 OBJECTIVES AND SCOPE

This section identifies the objectives and scope of the project activities planned, as well as the project schedule.

4.1 Objectives

The general objective of the work to be conducted in this FSP is to supplement the usable, existing Project data collected to date to support development of the design for remediation of contaminated soils/sediments in OF-008 drainage ditch. In particular, the sampling and analyses specified in this FSP will allow for further characterization of soils and sediment to a depth of 5 feet along the embankment of the OF-008 drainage ditch area. Six 8-ft cores will be collected to evaluate for the potential presence of Raymark waste in the ditch. The data collected under this FSP will be used to identify soils and sediment that will be removed as part of future remediation.

Section 4.2 presents the scope of work proposed to meet the objectives outlined above.

4.2 Scope of Work

The scope of work detailed in the subsections below presents the major elements of the investigation proposed for the embankments and center of the OF-008 drainage ditch.

Field sampling will be completed to further characterize OF-008 soils along the embankment of the drainage ditch, which will be removed as part of a future remediation. Wood will collect up to 39 cores to a depth of five feet along the length of the OF-008 drainage ditch as depicted on **Figure 4-1**. One composite sample for each five-ft core will be analyzed for chemical and physical parameters shown on **Table 4-1** and **Table 4-2**, respectively. Discrete sample intervals will be collected and analyzed for PCBs only. These will include one sample from 0-1 ft, 1-2 ft, and 2-5 ft for a total of three PCB samples per location. Composite samples from 0-5 ft will not be collected for PCB analysis.

An additional six 8-ft sediment cores will be collected for PCBs only at locations in the center of the OF-008 drainage ditch as shown in **Figure 4-1**. These six 8-ft cores will include discrete samples that will be collected at every 1-ft interval for a total of 8 samples per location.

It is anticipated that sample coring activities will be completed utilizing AMS Slide-Hammer and VibraCore methodology. Each core will be collected with a dedicated disposable liner and equipment will be decontaminated between locations. Investigation Derived Waste (IDW) will be consolidated in up to three 55-gallon drums. IDW will be sampled, profiled, and transported to an approved disposal facility.

The numbers and types of samples, including methods and Quality Assurance (QA)/Quality Control (QC) samples, are also shown in **Table 4-1** and **Table 4-2**.

Table 4-1 – Environmental Analytical Testing Requirements

Parameters	Preparation/ Analysis Method	# Field Samples	QC Samples			TOTAL
			Field Dups	Field Blank	MS/ MSD	
Metals/0-5 ft composite	SW-846 6020 (list of 12) Inductively Coupled Plasma Mass Spectroscopy	39	2	1	1/1	44
Mercury/0-5 ft composite	SW-846 7474/7471	39	2	1	1/1	44
TCLP/0-5 ft composite	Method 1311	39	NA	NA	NA	39
Metals (TCLP extract)	SW-846 6020 (list of 12) Inductively Coupled Plasma Mass Spectroscopy	39	NA	NA	NA	39
Asbestos/0-5 ft composite	ASTM D7521 or equivalent	39	2	NA	NA	41
Aroclors/0-1 ft, 1-2 ft, 2-5 ft discrete	SW846 8082 (list of 8)	117	6	3	6	132
Aroclors 0-8 ft cores Discrete samples for every foot	SW846 8082 (list of 8)	48	2	2	4	56

Sample analysis will include Aroclors for assessment of total PCBs. Note that Aroclor 1268 is a signature Aroclor associated with Raymark waste.

Table 4-2 – Physical Testing Requirements

Test Description	Test Method	Quantity
Soil Classifications (USCS)	ASTM D2487	39
Sieve Analysis	ASTM D6913	39
Hydrometer Analysis	ASTM D7928	39
Multi-point Atterberg Limit	ASTM D4318	39
Moisture Content	ASTM D2216	39

<u>Assumptions regarding OF-008 Sampling:</u>

- One mobilization/demobilization of two Wood junior staff to conduct subsurface utility clearance activities with private utility locator.
- One mobilization/demobilization and 2 field days for Wood technical lead oversight.
- One mobilization to the site of four KROPP environmental subcontractor personnel for hand coring activities is required.

- Two sample core collection crews will be used to collect soil samples via AMS Slide-Hammer.
    - A soil sample collection crew consists of two KROPP technicians with one Wood geologist to direct and oversee each core collection.
    - All cores will be collected with 5-ft long acetate liners.
    - 28 soil core locations.
- Up to five, 0-5 ft bgs soil cores will be collected per crew per day.
- One sample core collection crew will be used to collect sediment sample using Vibracore.
    - A sediment sample collection crew consists of the subcontractor TG&B with one Wood geologist to direct and oversee each core collection.
    - Six locations will be collected with 8-ft long acetate liners.
    - 11 locations will be collected with 5-ft long acetate liners.
    - 17 sediment core locations.
- One sample processing crew will be able to process eight 0-5 ft cores per day.
    - A sample processing crew consists of one Wood Chemist and one Wood Geologist.
- Five Wood personnel will require 2 days for mobilization/demobilization. Wood assumes that 5 field personnel working 10-hour days for 3 days will be required to complete the soil and sediment core collection and an additional 10-hour day will be required for 2 field personnel for sample processing and logging.
- Three 55-gallon drums of IDW may be generated for disposal.

4.3 Schedule

Table 4-3 below presents the major milestone events through the completion of the Soil delineation at OF-008 Drainage Ditch Report.

Table 4-3 – Project Schedule

Task	Event	Date
20	Work Plan Revisions	21 days from NTP
21	Field Sampling OF-008 Delineation	21 days from Final Work Plan Approval
22	Reporting	60 days from completion of field work

5.0 FIELD PROCEDURES

This section of the FSP presents the major elements of the investigation proposed for the Tidal Flats area sediments. Standard Operating Procedures (SOPs) are included in the QAPP (Wood, 2020b), and are listed below:

S-1 Sediment Sampling
S-2 Sub-Surface Soil Sampling
S-3 Procedure for Description and Identification of Soils
S-4 Sediment Core Processing and Thin Interval Sectioning
S-5 Geotechnical Drilling Sampling Logging
S-6 Decontamination of Field Equipment
S-7 Use of Field Logbooks
S-8 Field Sample Tracking System
S-9 Sample Chain of Custody Procedure
S-10 Sample Packaging and Shipment

5.1 Rationale/Design

The rationale for soil delineation is presented in Section 4.2.

5.2 Utility Clearance

Using a Trimble® GPS receivers with sub-meter accuracy, locations will be marked out with 3ft survey stakes with orange flagging and utility cleared. Location I.D. will be written on the orange flagging to depict boring location. Blood Hound Utility Locators will pre-clear the 45 locations of utilities.

Call Before You Dig will be contacted at least one week in advance of investigation activities on the embankment of OF-008 drainage ditch.

5.3 Decontamination Procedures for Field Equipment

Decontamination is performed as a QC measure and a safety precaution. It prevents cross-contamination between samples and helps to maintain a clean working environment for the safety of field personnel.

Decontamination of soil and sediment sampling equipment will be performed between coring locations. Decontamination of soil and sediment coring devices will be conducted via scrubbing surfaces with a phosphate free detergent (LiquiNox) and rinsing with available clean potable water from the facility. Decontamination of field equipment used for sample collection and processing (i.e., stainless steel spoons and bowls for homogenization) will be performed in the same manner,

except that the final rinse will be with DI water. The decontamination procedures are described in SOP S-6 in the QAPP (Wood, 2020b). Polycarbonate sleeves for collection of Piston-Vibracore® samples will only be used once; therefore, no decontamination is required. The effectiveness of decontamination procedures will be assessed by collection of one equipment rinse blank per type of sample collection equipment per week during the program for samples collected without dedicated equipment/tubing, as discussed in Section 5.7. During the investigation program, a QC blank sample of the source water used for decontamination will be collected (see Section 5.7).

5.4 Core Sample Collection, Processing, and Analysis

The field sampling crew will be split into four teams. There will be two soil core collection teams, one sediment core collection team, and one core processing team. Cores will be collected using two different methods. Soil cores will be collected using 6 ft AMS Slide-Hammer methodology and sediment samples will be collected using VibraCore methodology. Cores will be collected in the field and transported to an on-Site sample processing location where cores will be processed.

The Field Teams are as follows:

Soil Core Collection Team A: 14 locations
1. Wood Geologist: Dominic Livoti
2. KOPP Environmental Tech 1
3. KOPP Environmental Tech 2

Soil Core Collection Team B: 14 locations
1. Wood Geologist: Shawna Couplin
2. KOPP Environmental Tech 3
3. KOPP Environmental Tech 4

Sediment Core Collection Team: 17 locations
1. Wood Geologist: Maddy Bruno
2. TG&B: 2 personnel

Core Processing Team: 45 locations
1. Wood Chemist: Wolfgang Calicchio (FOL)
2. Wood Lead Geologist: Amberlee Clark (H&S)

5.4.1 AMS Slide-Hammer Soil Sample Collection

Soil samples will be collected as outlined below. Sampling equipment must be decontaminated prior to sample collection at each location, as described in Section 5.3.

At the direction of a Wood Geologist, KROPP environmental technicians will utilize AMS Slide-Hammers for the advancement of cores at the OF-008 soil delineation investigation sample locations. Wood geologists from Collection Teams A and B will maneuver to the previously

marked coordinates provided in **Table 5-1** and **Figure 4-1**. A rigid polycarbonate tube (tube) (2-inch inner diameter and 1/16" wall thickness) will be used for soil core collection and placed inside a 2-3/16-inch stainless steel core barrel.

For collection of the AMS Slide-Hammer core samples, the following steps will be taken:

- After arriving at each core location prepare a soil core log (**Appendix A**).
- Insert the 2-inch x 6-ft polycarbonate sample sleeve into the stainless-steel core assembly.
- Place the loaded AMS Slide-Hammer assembly at the proposed location.
- Advance the core to 6 ft bgs utilizing the slide hammer.
- Record depth of penetration on the soil core log.
- Utilize the jack and retrieve the core assembly.
- Remove the core liner.
- Using a tape measure with 0.1-foot increments, measure and record the total length of the retrieved soil core.
- Calculate percent recovery. The target recovery for cores will be 70%. Cores pushed to 5 feet will be within 1.5 ft of penetration (i.e., 70 percent). Cores that do not meet these criteria will be rejected and another core attempted. The following decision tree will be utilized when collecting cores:

  1st Core:
  1. If core recovery is 80% or greater, move on to next location.
  2. If core recovery is < 80%, set core aside.
  3. Step out and conduct a second coring attempt.

  2nd Core
  1. If core recovery is 80% or greater, move on to next location.
  2. If core recovery is < 80%, set core aside.
  3. Step out and conduct a third coring attempt.

  3rd Core
  1. If core recovery is 80% or greater, move onto next location.
  2. If core recovery is < 80%, assess all three core recoveries.
  3. If one of the three core recoveries is 70% or greater, keep that core and move on to the next location.
  4. If all three core recoveries are < 70%, call the Army Corps of Engineers (Tony Delano) to discuss results and how to proceed at the location.

     Tony Delano tel. - 978-399-6022

     A maximum of three cores will be attempted at any one location.

- Cap and tape both ends and label the core tube with the Location ID, depths, and

top/bottom.

- Transport soil cores in a vertical position to the field office at the SAEP facility.
- See Sample Processing in Section 5.4.3.
- Decontaminate Slide-Hammer equipment.
- For delineation samples, one 2-in diameter core per sample location will provide adequate volume for chemical and physical analyses.

5.4.2 VibraCore Sediment Sample Collection

Sediment samples will be collected as outlined below. Sampling equipment must be decontaminated prior to sample collection, as described in Section 5.3.

TG&B Marine Services will use a Trimble® *Ag*GPS 124/132 differential GPS receiver with sub-meter accuracy to maneuver to the coordinates provided in the **Table 5-1,** and portrayed in **Figure 4-1**, for the OF-008 ditch delineation samples. The user manual for the Trimble® *Ag*GPS 124/132 can be found here: http://trl.trimble.com/docushare/dsweb/Get/Document-9665/Ag124_132%20Rev%20C1.pdf. The boat will be anchored up wind of the designated sample location, and maneuvered back to the sampling coordinates, where a spud or anchor will be set, thus allowing the boat to remain stationary over the desired location. The depth of water from surface to the top of the sediment will be measured and recorded, as well as the time of collection of the measurement.

TG&B Marine Services will use a portable VibraCore sampling system comprised of a 3-HP gasoline engine which drives a 2-3/4" X 12" vibrating head. The head vibrates at 12,000 vpm. It will be coupled to a 3" OD aluminum tube by a custom-built clamp. The vibrator assembly will then be clamped to a 3" SS barrel. A 2-3/4" OD polycarbonate liner will be inserted, along with a set of stainless steel (SS) fingers (catch basket) and a plunger, into the liner. This assembly will then be driven to the target depth. Once this is achieved, the assembly will be pulled out of the bottom by use of a come-along. The tube, with the sample inside, will be pulled out of the barrel, capped and labeled. For collection of the Portable Mechanical Vibracore® System samples, the following steps will be taken:

- After arriving at each core location and anchoring the boat, prepare a sediment core log (**Appendix A**).
- Measure water height above the surface of the sediment using a weighted tape, and record on sediment core log, along with the exact time of measurement.
- Cut an eight-foot core of polycarbonate tube and feed the tube into the core assembly.
- Using the Portable Mechanical Vibracore® System, advance core to the appropriate depth, record depth of penetration on the sediment core log.
- Retrieve the core assembly and remove the core tube.
- Decant water from the top of the core tube if present.

- Using a tape measure with 0.1-foot increments, measure and record the total length of the retrieved sediment core.
- Calculate percent recovery. The target recovery for cores will be 70%. Cores pushed to 5 feet will be within 1.5 ft of penetration (i.e., 70 percent). Cores that do not meet these criteria will be rejected and another core attempted. The following decision tree will be utilized when collecting cores

  1st Core
  1. If core recovery is 80% or greater, move onto next location.
  2. If core recovery is < 80%, set core aside.
  3. Step out and conduct a second coring attempt.

  2nd Core
  1. If core recovery is 80% or greater, move onto next location.
  2. If core recovery is < 80%, set core aside.
  3. Step out and conduct a third coring attempt.

  3rd Core
  1. If core recovery is 80% or greater, move onto next location.
  2. If core recovery is < 80%, assess all three core recoveries.
  3. If one of the three core recoveries is 70% or greater, keep that core and move onto the next location.
  4. If all three core recoveries are < 70%, call the Army Corps of Engineers (Tony Delano) to discuss results and how to proceed at the location.

  Tony Delano tel. - 978-399-6022

  A maximum of three cores will be attempted at any one location.

- Cap and tape both ends and label the core tube with the Location ID and top/bottom.
- Record coordinates for the core location from the GPS onto the sediment core log.
- Transport sediment cores in a vertical position to the field office at the SAEP facility.
- See Sample Processing below in Section 5.4.3.
- For delineation samples, one core per sample location will provide adequate volume for chemical and physical.

5.4.3 Soil and Sediment Sample Processing and Analysis

- Mark the depth from soil/sediment surface corresponding with sample interval on the sample liner with indelible marker.
- Cut the liner and soil/sediment core lengthwise using a knife designed for the purpose.
- Record description of soil/sediment core by depth interval on sediment core log, and take digital photograph(s), with scale, core location ID and up direction noted in the photograph.

- Cut the core into sections specified in **Table 5-1** using a decontaminated stainless-steel knife.
- Place each sample interval from the core into separate, decontaminated stainless steel bowls for homogenization.
- Containerize samples for analysis in accordance with QAPP Worksheet #19 (Wood, 2020b).

The numbers and types of samples, including methods and Quality Assurance (QA)/Quality Control (QC) samples, will be collected as shown in **Table 5-1**.

Field samples collected during the investigation will be analyzed by a certified laboratory via analytical methods published by the United States Environmental Protection Agency (USEPA) as listed in QAPP Worksheet #19 (Soil/Sediment) Analytical SOP Requirements (Wood, 2020b). Project-specific measurement performance criteria are established for analytical methods presented in Worksheet #12 of the QAPP (Wood, 2020b) for each analytical method and media planned for the investigation. Additional information on analytical method sensitivity, target analytes, and detection limits is provided on Worksheet #15 of the QAPP (Wood, 2020b).

Analytical chemistry methods will be completed by Eurofins Lancaster of Lancaster, PA and EMSL Analytical Inc. of Cinnaminson, NJ using parameters as listed in Worksheet #23 of the QAPP (Wood, 2020b).

5.5 Sample Containers and Preservation Techniques

Specifications for sample collection processes and the containers and preservative used to store samples prior to analysis were determined based on requirements in the published analytical methods or USEPA Region I data validation guidelines (USEPA, 1996). Required sample volumes, containers, and preservation requirements for each method and matrix is presented in **Table 5-1** and the QAPP Worksheet #19 (Wood, 2020b).

5.6 Sample Chain of Custody (COC) and Shipping

Procedures have been established to document the custody of samples that are collected during investigations and to identify and track samples delivered or shipped to the analytical laboratory for analysis. Tracking procedures have also been established to verify that data for samples are obtained from the laboratory. The sample custody process is illustrated in Worksheet #26 and SOP S-5 of the QAPP (Wood, 2020b).

A computerized sample tracking program will be used to ensure that relevant sample information is recorded accurately and completely at each stage of the sample handling process. The field sample tracking system is described in SOP S-8 in the QAPP (Wood, 2020b). The sample tracking program will be the primary method used to record sample collection information and print individual bottle labels as described in the QAPP. COC forms may be handwritten or computer generated. Examples of the handwritten and computer generated COC are presented in Appendix D of the QAPP (Wood, 2020b).

The primary chemical analyses include PCB Aroclors, metals, mercury, asbestos and analyses for

waste disposal characterization. The collection of QC samples (blanks, spikes, and duplicates) and formal data quality reviews will be included in investigation programs as outlined in detail in the QAPP (Wood, 2020b).

5.7 Field Quality Control Sampling Procedures

The field quality control samples, for the sediment investigations only, will consist of the following:

- Rinsate (or equipment) blanks from decontaminated equipment
- Decontamination source water (source blank)
- Field duplicate and matrix spike/matrix spike duplicate (MS/MSD) samples

5.7.1 Rinsate Field Equipment Blank

Following equipment decontamination procedures, a rinsate blank (also referred to as an equipment blank) will be collected and submitted for analyses to confirm that the decontamination water is not introducing low-level impacts to target samples. The parameters to be analyzed will depend on, and include, the same parameters as analyzed as the target samples. The rinsate blank will be collected as follows.

- Thoroughly decontaminate the sampling device from which the blank will be collected (see Section 5.3).
- Assign sample ID for rinsate sample and attach bottle labels.
- Pour source water (tap water from the facility) over the equipment surfaces that have contacted the sample.
- Run source water through the entire sampling apparatus that was used to collect samples.
- Collect or “catch” the rinsate water directly into the appropriate sample bottles.
- Record the collection time and sample ID in the field logbook.
- Store, pack, and ship samples in accordance with Section 7.0.
- Document the sampling activities and general identifying information on an FDR.
- Document sample collection requirements for each analytical fraction including the container types/volumes, time collected, sample bottle IDs, analyses to be performed etc., on the FDR.

5.7.2 Decontamination Water Source

A sample of the potable tap water (also known as a source blank) from the SAEP facility, to be used for decontamination of sampling equipment, will be collected for analysis of PCB Aroclors and metals. The source blank will be collected as follows.

- Assign sample ID for source sample and attach bottle labels.

- Turn on potable water tap and allow to run for one minute before collecting the water directly into the appropriate sample bottles.
- Record the collection time and sample ID in the field logbook.
- Store, pack, and ship samples in accordance with Section 7.0.
- Document the sampling activities and general identifying information on an FDR.
- Document sample collection requirements for each analytical fraction including the container types/volumes, time collected, sample bottle IDs, analyses to be performed etc., on the FDR.

5.7.3 Field Duplicates and Matrix Spike/Matrix Spike Duplicates

Field duplicate samples will be collected following sediment sample homogenization, then apportioning into two sets of containers. Both sets of containers will be submitted for analyses with one set designated as an "original sample," the other designated as a "duplicate sample". Field duplicate samples will be collected at a rate of one per 20 field samples.

Matrix spike and matrix spike duplicate (MS/MSD) samples will be collected following sediment sample homogenization, then apportioned into three sets of containers. The three sets of containers will be submitted for analyses with one set designated as an "original sample," the second designated as a "matrix spike", and the third designated as a “matrix spike duplicate”. MS/MSD samples will be collected at a rate of one per 40 field samples and submitted to the laboratory for analysis of PCB Aroclors.

5.8 Sample Location Surveys

The soil core horizontal coordinates will be collected via differential GPS with sub-meter accuracy by the Wood field crew after soil cores are collected. TG&B Marine Services will use a Trimble® *Ag*GPS 124/132 differential GPS receiver with sub-meter accuracy to collect the coordinates for the sediment cores. Coordinates will be collected and recorded in the Connecticut State Plane coordinate system on FDRs.

6.0 FIELD OPERATIONS DOCUMENTATION

Records of field data will be made throughout the project as described in Worksheet #29 of the QAPP (Wood, 2020b) to capture information that might be needed later, such as during preparation of the report or for use by other investigators who were not present when the data were collected. The field activities and the collection of field samples will be documented using Project and field logbooks, FDR forms, and COC forms. **Appendix A** contains the field forms to be utilized in the documentation of field efforts. Photography will also be used to document field activities.

The Wood FOL has the responsibility to maintain files containing logbooks, forms, and notebooks that document daily field activities. Individual responsibilities may be delegated to other field staff, as appropriate. Special emphasis will be placed on the completeness and accuracy of information recorded in the field logbooks, forms, and notebooks. Documentation will contain statements that are legible, accurate, and inclusive of required documentation for project activities. Because the logbooks, FDR forms, and COC forms provide the basis for future reports, they must contain accurate facts and observations.

Examples of the project record types for this project include:

- Chain-of-Custody (COC) Records
- Project and field logbooks
- Sample FDRs
- Field Instrument Calibration Records; etc.

Original records will be scanned at Wood's Portland, Maine office and uploaded to the electronic Project file. CENAE will also be provided with electronic Project files, including the native format files for work plans and reports. Hardcopy originals will be maintained in the Project paper file in the Portland, Maine office.

6.1 Chain of Custody Forms

COC forms are used to document the custody of samples that are collected during investigations, and to identify and track samples delivered or shipped to the analytical laboratory for analysis. Use of COC forms is described in Section 5.9 and in the QAPP (Wood, 2020b).

6.2 Logbooks

The Wood field team will follow the procedures described in the QAPP and SOP S-7 to complete field logbook entries. Project and field logbooks will be newly procured and provide the means of recording the chronology of data collection activities performed during the investigation in detail. As such, entries will be described in as much detail as possible so that a field activity could be reconstructed without reliance on memory.

Logbooks will be hardcover permanently bound field survey books or notebooks and be project-specific. Logbooks will be stored in the project files when not in use. Each logbook will be

identified by the Wood project number and logbook number. Logbooks will be water resistant and have sequentially numbered pages.

The title page of each logbook will contain the following:

- Logbook number
- CENAE Contract Number
- Wood project number
- Project name
- Logbook start/end date

The Project and field logbooks provide a daily handwritten account of field activities. Entries will be written in a clear, logical and legible manner, and made in permanent black or blue ink. Correction to an entry will be made with a single line with the author initials and date. Each page of the logbook will be dated and signed by the person completing the logbook. Partially completed pages will have a line drawn through the unused portion at the end of each day and signed and dated by the person making the entry.

Field and Project logbooks are the property of CENAE and will be given to CENAE (if requested) at the end of this project. These documents will also be scanned and saved to the electronic Project file.

6.2.1 Project Logbook

The Project logbook is a record of major tasks completed for each day or operation. Entries are made each day. The FOL responsible for on-Project field operations will complete the Project logbook and will include at a minimum the following information:

- A list of field logbooks created for the project;
- Names and titles of project related personnel present at the Project during each day of operation;
- A summary of activities completed for each day of operation;
- A listing of changes made to established program procedures; and
- A summary of problems encountered during the day including a description of corrective actions and impacts on the project.

Due to the short duration of the proposed field work (approximately 4 days), the Field Logbook may substitute for the Project Logbook for this Project.

6.2.2 Field Logbook

Field logbooks are daily records of field task activities that are entered in real time by the on-Project field technicians and scientists. The following information will be entered into the field logbooks:

- The date and time of each entry. The daily log will begin with weather conditions and the names and organizations of personnel performing the documented task;
- A summary of important tasks or subtasks completed during the day;
- A description of field tests completed in association with the daily task;
- A description of samples collected including documentation of quality control samples that were prepared (equipment blanks, field duplicates, MS/MSDs, trip blanks, etc.);
- Documentation of equipment maintenance and decontamination activities; and
- A summary of problems encountered during the day including a description of corrective actions and impacts on the daily task; and.
- Other pertinent information as appropriate.

6.3 Sample Collection and Exploration Records

FDRs document details of explorations and sample collection activities. A sample collection record is completed each time a field sample is collected. The goal of the FDR is to document exploration and sample collection methods, materials, dates and times, sample locations, and identifiers. Field measurements and observations associated with a given exploration or sample collection task are recorded on the sample collection record. Sample collection records are maintained throughout the field program by the FOL in files that become a permanent record of field program activities. A listing of investigation and sample collection records is included on Worksheet #29 of the QAPP (Wood, 2020b) including:

- Daily Project Safety and Health Inspection Checklist
- Daily Tailgate Safety Meeting Checklist
- Summary of Daily Activities
- Field Instrument Calibration Record
- Equipment Blank Sampling Record
- Soil Sample Log
- Sediment Sample Logs

6.4 Photographic Records

Photographs of field activities will be taken to supplement other field documentation. Photos will be collected of the sediment core in the post open/pre-section state; that also documents total length, and sample collection intervals. Information about each photograph's location and subject matter will be recorded in the field. Photographs will be saved to the electronic Project file and used in reporting as appropriate.

7.0 SAMPLE DESIGNATION, PACKAGING, AND SHIPPING

Samples collected during the investigations will be designated and identified consistently as described in **Section 7.1**, and each location will be surveyed for incorporation into the Project database as described in **Section 7.2**.

7.1 Sample Designation

Samples collected during Project activities will be assigned unique sample identifications (IDs) as described in **Section 7.2** below that will be used to identify and track each sample collected for analysis during completion of the Project scope of work. In addition, the sample IDs will be used to identify and retrieve the analytical results received from the laboratory, as well as other data related to the sample.

The contracted laboratories will provide appropriate containers for the collection of the Project samples as described in the QAPP (Wood, 2020b). Each sample bottle will be identified with a separate ID label. Labeling will be pre-printed and/or augmented by notations completed in indelible/waterproof ink. Entry errors will be crossed out with a single line, dated, and initialed. Each securely affixed label will include the following information:

- Project ID
- Location ID
- Field sample ID
- Preservatives present and/or added
- Date and time of collection
- Analytical fraction and method
- Sampler(s) initials

Prior to each sampling event, the Wood FOL will check that labels are applied to each sample container including containers intended for QC sample aliquots (e.g., field duplicate, matrix spike, etc.).

7.2 Sample Numbering System

7.2.1 Assigning Location IDs

A unique location ID will be assigned to each sampling location with unique horizontal coordinates. Examples are provided below:

- Soil cores:
  - For delineation sample cores, the location IDs will be in the form “OF8-01”, and are given sequential two-digit numbers in the last two characters of the location ID. OF8 = Outfall 008, and 01 is the core number.
- QC Samples:
  - Equipment blanks will be given unique location IDs in the form “EB-01”, and are given sequential three digit numbers in the last three characters of the location ID.
  - The source water blank will be given the unique location ID “SB-01”
  - Trip blanks, if necessary, will be given unique location IDs in the form “TB-01”, and are given sequential three digit numbers in the last three characters of the location ID.

7.2.2 Sample IDs

A unique sample ID will be assigned to each sample collected during the investigation, and will be identified by the character naming system, as follows:

Sample Type (2 to 3 digits)

OF8 – Outfall 008 sample

RWD – Raymark Waste Delineation

SB – source water blank

EB – equipment rinsate blank

FD – Field Duplicate

Horizontal Sample Locator from Location ID (2 digits)

Examples: 01, 03, etc.

Sample Depth Interval in feet

Examples 0001 = 0’ to 1’ bgs

0812 = 8’ to 12’ bgs

Sample Modifiers (2 to 3 digits)

DUP – Duplicate Sample

MS – Matrix Spike

MSD – Matrix Spike Duplicate

EB – Equipment Blank

SB – Source Blank

Example Field Sample IDs

- A soil sample collected from sample location 37, from the depth interval 7- 8’ bgs would be identified as “OF8370708”.
- A duplicate soil sample collected from sample location 15, from the depth interval 1-2’ bgs would be identified as “OF8150102DUP”.
- An MS sample from soil core from sample location 29 collected from a depth interval of 3-4’ bgs would be identified as “OF8290304MS”.

Depth information for samples will be noted in field notes and on Field Data Records (FDRs) (**Appendix A**). The Wood FOL is responsible for checking that labels are affixed to the sample containers prior to each sampling task, and that labels are completed correctly prior to the sample being submitted to the laboratory.

Future samples collected at previously sampled locations will be identified using the previously identified location ID.

7.3 Sample Packaging and Shipment

Sample packaging and shipment procedures are presented in QAPP SOP S-10 (Wood, 2020b), and are provided in the following bullets:

- Be certain that containers are sufficiently tight, preserved, and labeled correctly.
- Sediment samples will be allowed to settle for a minimum of 2 hrs prior to shipping to the laboratory.
- The sample manger will look closely at sediment samples to see if a clear water layer forms above the sediment. Water layers will be decanted from the sample jar prior to shipping to the laboratory.
- Clean the exterior of each sample container such that no gross contamination remains.
- Complete the Chain of Custody (COC) as described QAPP SOP S-9. When the COC form is completed, verify that bottle labels, analytical fractions, and bottle numbers match what is written on the COC form.

- Wrap sample containers in bubble wrap. Zip-type plastic baggies may be used as additional containment.
- Line the cooler with the trash bag and add a layer of packing material. If the cooler has a drain, close and seal to prevent leakage of water from melting ice.
- Place sample containers into the cooler, and pack them sufficiently to prevent them from shifting during shipment.
- Place double bagged, ice-filled zip-type bags on samples such that samples are contacted by the ice.
- Place sufficient ice to retain the sample temperature between 2 and 6° C. Place a temperature blank in with the samples.
- Fill the remaining space in the cooler with packing material and close and secure the top of the trash bag.
- On the chain of custody, sign in the relinquished by box and add in the subsequent received by box the name of the courier/carrier and the air bill number (if applicable).
- Place the COC into a plastic bag and tape it to the inside top of the cooler.
- Close the cooler and tape the cooler shut with strapping tape or similar high-strength shipping tape.
- If more than one cooler is being shipped under the same COC, copies of the COC should be placed into each additional cooler in the same manner as the original COC.
- If shipped through FEDEX or other shipping vendor, apply custody seals to the cooler such that the seals must be broken in order to open the cooler.
- Apply “UP Arrows” in the appropriate direction on at least opposing sides of the cooler exterior, or indicate on top “this side up”.
- Add the appropriate shipping address labels to the cooler along with a return address to the cooler. If more than one cooler is being shipped, add “one of X” to the label so that the recipient is aware that more than one cooler should be received.

8.0 INVESTIGATION-DERIVED WASTE

As part of the field activities, a certain amount of waste material will be generated in association with personal protection, sample handling, and decontamination. Effort will be taken to minimize the waste generated. Personal protective equipment will be bagged and disposed of as municipal waste. Consistent with previous investigative activities, if there is soil Investigation-Derived Waste (IDW) produced, it will be containerized in 55-gallon DOT-approved steel drums. Disposition of IDW will be determined when analytical results of the investigation sampling are available. IDW drums will be affixed with the proper label and will be stored in a secure location at the direction of the facility manager.

9.0 NON-CONFORMANCE/CORRECTIVE ACTIONS

Worksheet # 31 - Planned Project Assessments Table, and Worksheet #32 - Assessment Findings and Corrective Action Responses in the QAPP (Wood, 2020b), present the proposed project assessments and corrective action responses for the project. Corrective action procedures will be taken in the event a discrepancy is discovered by field personnel or during a desk or field audit, or the laboratory discovers discrepancies or problems. Typical discrepancies or problems include but are not limited to: improper sampling procedures, improper instrument calibration procedures, incomplete or improper sample preservation, and problems with samples upon receipt at the laboratory.

10.0 REPORTING

The following subsections discuss the electronic data deliverable requirements for the project, as well as the content of the Outfall 008 Soil Investigations Report. Files and records associated with the deliverables will be maintained on the Wood Portland, Maine office server. CENAE will be provided with electronic Project files, including the native format files for work plans and reports. Report deliverables will be submitted to regulatory agencies for review in electronic PDF format, and native format files will be supplied upon request.

10.1 Electronic Data Deliverables

Both the analytical laboratory and Wood will obtain the most recent version (ADR.NET) of the LDC ADR software. Wood will develop comprehensive ADR library files (i.e., Electronic Quality Assurance Project Plan or EQAPP) for analytical methods (PCB Aroclors, metals, and mercury) to be used on the project. The library files will be submitted to CENAE for approval prior to field sampling. Approved library files will be used by the subcontract laboratory and Wood to check the laboratory electronic data deliverables (EDDs) for compliance, and the ADR module will be used to perform applicable data validation reviews. ADR validation actions will be reviewed/verified by the Wood project chemist. Final results will be provided to CENAE and be entered into EDMS.

Data from field activities and the analytical laboratory will be entered into the Wood's TED environmental database. The contract laboratory will submit Stage 2a EDDs to Wood using the Staged Electronic Data Deliverables (SEDD) format (i.e., xml format files) by Sample Delivery Group (SDG). The contract laboratory will ensure that SEDD files are checked using the Contract Compliance Screening (CSS) tool contained in the laboratory version of the ADR software. The laboratory shall prepare a separate non-conformance report addressing and explaining items identified by the CSS tool. SEDD files will be submitted on CD along with the hardcopy data package and will also include a transmittal letter ensuring that the SEDD files are error-free and in agreement with hard copy data packages.

Asbestos electronic analytical data results will be provided by the laboratory in an EQUIS EZEDD format. The EDD will be loaded into the Wood Portland, Maine Technical Environmental Database (TED) and the data will be reported to CENAE in tabular form (excel tables).

10.2 Sediment Remediation Endpoints Report Addendum

Wood will revise the Sediment Remediation Endpoints Report (Appendix A-1 of the Final Focused Feasibility Study [Wood, 2018]) to summarize the field sampling efforts and incorporate the sediment analytical data. Figures will be 11x17-size and depict newly collected sample results overlaid with historic sampling results. Each sample location will have a specific symbol based on the year the sample was collected. Average ERM-Q indices greater than 0.5 will be depicted in red, while average ERM-Q Indices less than 0.5 will be depicted in green. Similarly, separate figures will be completed for PCBs with newly collected samples overlaid with historic sampling results. Each PCB sample

location will have a specific symbol based on the year the sample was collected. PCB results greater than 1 ppm will be depicted in red, while PCB results less than 0.5 will be depicted in green.

Limitations and uncertainties will be identified as part of the evaluation, including a discussion of bias (low/high) in analytical data, and the implications of this on the recommendations for sediment reuse for construction and redevelopment purposes.

The Sediment Remediation Endpoints Report will be submitted to CENAE for review in electronic PDF format, and the text of the report will be submitted in MS-Word format. The Draft Final Report will be submitted to both CENAE and regulatory agencies in electronic PDF format, with native format files available upon request. The Final Report will be submitted in both electronic native format and hardcopy format to CENAE and the regulatory agencies.

11.0 REFERENCES

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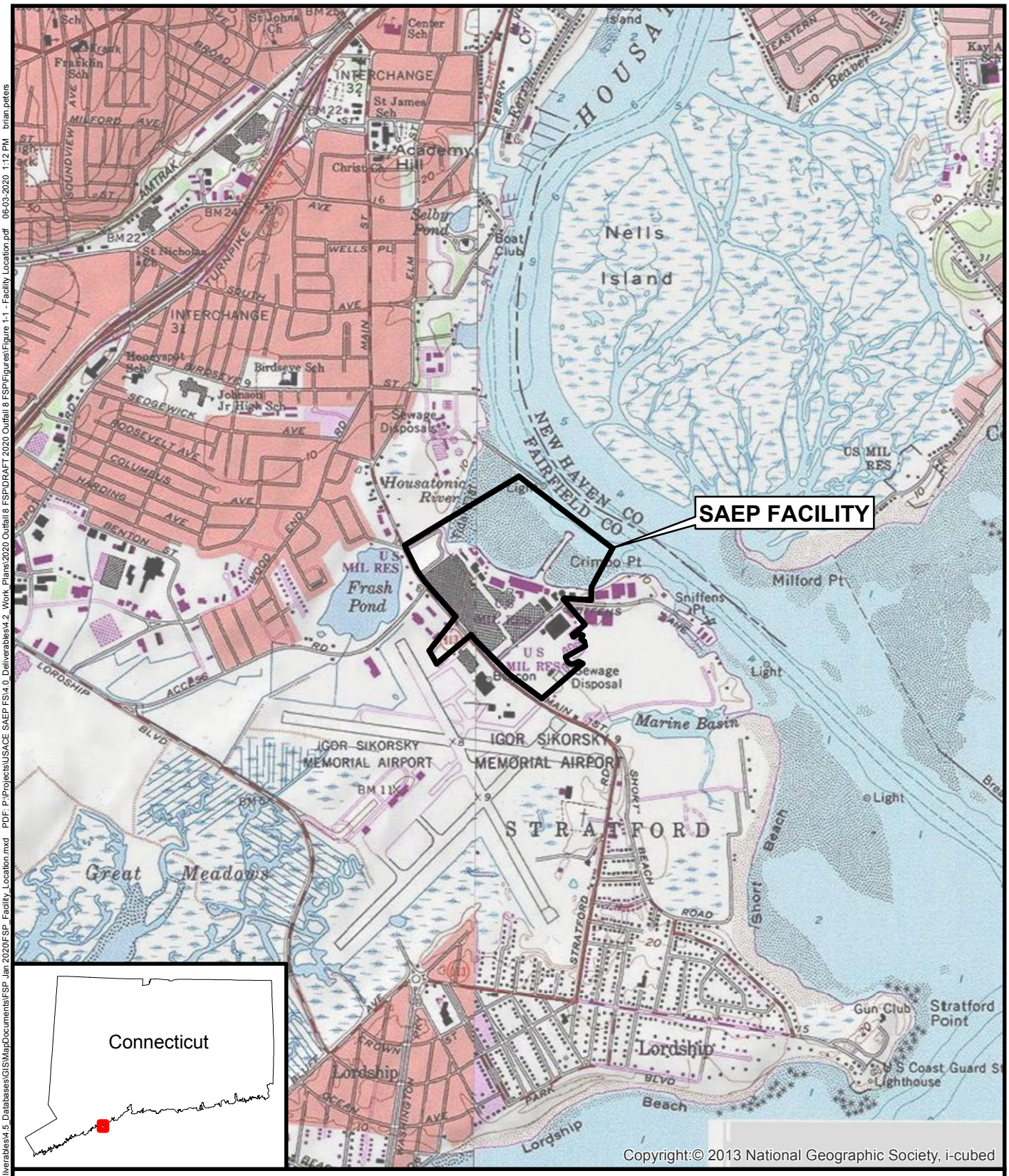
USEPA, 1996. Region I, EPA-New England Data Validation Functional Guidelines for Evaluating Environmental Analyses. July 1996. Revised December 1996.

Wood, 2018. Final Focused Feasibility Study, Stratford Army Engine Plant, Stratford, Connecticut. October 2018.

Wood, 2020a. Draft Site Safety and Health Plan, Rev 1(SSHP), Stratford Army Engine Plant, Stratford, Connecticut. June 2020.

Wood, 2020b. Draft Quality Assurance Project Plan (QAPP), Stratford Army Engine Plant, Stratford, Connecticut. June 2020.

FIGURES



wood.

N

0 1,000 2,000 Feet

Figure 1-1
Facility Location

Draft Field Sampling Plan
Stratford Army Engine Plant
Stratford, Connecticut

Prepared/Date: BRP 06-03-20 | Checked/Date: BPW 06-03-20

Document: P:\Projects\USACE SAEP FS\4.0_Deliverables\4.5_Databases\GIS\MapDocuments\FSP_Jan 2020\FSP_Facility_Location.mxd PDF: P:\Projects\USACE SAEP FS\4.0_Deliverables\4.2_Work_Plans\2020 Outfall 8 FSP\DRAFT 2020 Outfall 8 FSP\Figures\Figure 1-1 - Facility Location.pdf 06-03-2020 1:12 PM brian.peters

wood.

2014 Aerial Imagery: USDA
National Agriculture Imagery Program

Prepared/Date: BRP 06-03-20 | Checked/Date: BPW 06-03-20

N

0 300 600 Feet

Figure 1-2
Location of Areas of Interest

Draft Field Sampling Plan
Stratford Army Engine Plant
Stratford, Connecticut

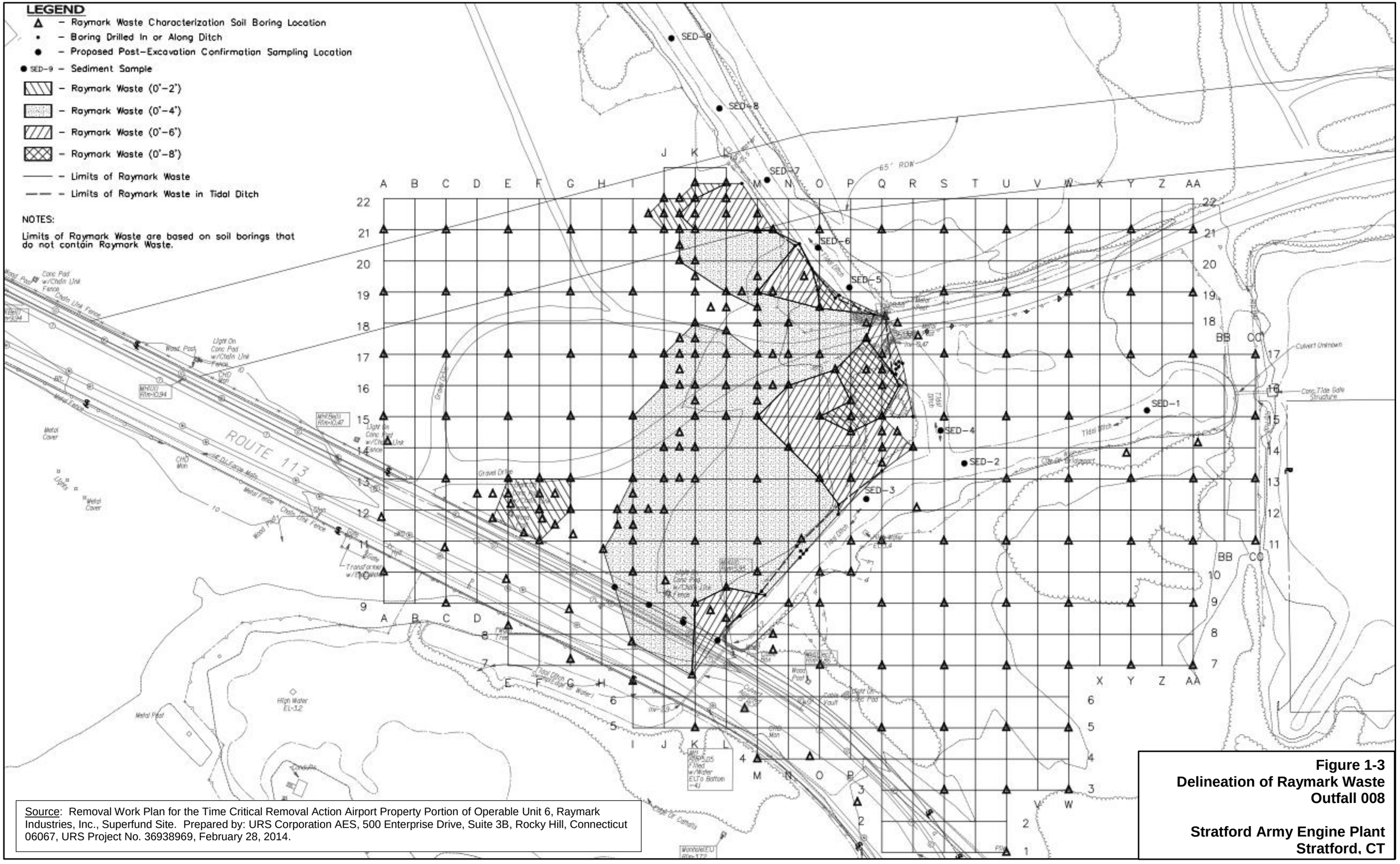
Document: P:\Projects\USACE SAEP FS\4.0_Deliverables\4.5_Databases\GIS\MapDocuments\FSP Jan 2020\AOI_11x17LS.mxd PDF: P:\Projects\USACE SAEP FS\4.0_Deliverables\4.2_Work_Plans\2020 Outfall 8 FSP\DRAFT 2020 Outfall 8 FSP\Figures\Figure 1-2 - Areas of Interest.pdf 06-03-2020 1:10 PM brian.peters

LEGEND

- △ – Raymark Waste Characterization Soil Boring Location
- • – Boring Drilled In or Along Ditch
- ● – Proposed Post-Excavation Confirmation Sampling Location
- ● SED-9 – Sediment Sample
- – Raymark Waste (0'-2')
- – Raymark Waste (0'-4')
- – Raymark Waste (0'-6')
- – Raymark Waste (0'-8')
- ——— – Limits of Raymark Waste
- — — – Limits of Raymark Waste in Tidal Ditch

NOTES:

Limits of Raymark Waste are based on soil borings that do not contain Raymark Waste.



Source: Removal Work Plan for the Time Critical Removal Action Airport Property Portion of Operable Unit 6, Raymark Industries, Inc., Superfund Site. Prepared by: URS Corporation AES, 500 Enterprise Drive, Suite 3B, Rocky Hill, Connecticut 06067, URS Project No. 36938969, February 28, 2014.

Figure 1-3
Delineation of Raymark Waste
Outfall 008

Stratford Army Engine Plant
Stratford, CT

Location ID	Easting	Northing
RWD-01	898,853	621,540
RWD-02	898,859	621,535
RWD-03	898,865	621,529
RWD-04	898,867	621,522
RWD-05	898,864	621,515
RWD-06	898,862	621,508

- Coordinates are CT State Plane NAD 83, US Survey Feet

Location ID	Easting	Northing	Location ID	Easting	Northing	Location ID	Easting	Northing	Location ID	Easting	Northing
OF8-01	898,194	622,331	OF8-11	898,648	621,868	OF8-21	899,057	621,457	OF8-31	898,648	621,766
OF8-02	898,229	622,260	OF8-12	898,688	621,797	OF8-22	898,952	621,430	OF8-32	898,604	621,827
OF8-03	898,278	622,204	OF8-13	898,731	621,736	OF8-23	898,907	621,415	OF8-33	898,546	621,898
OF8-04	898,347	622,140	OF8-14	898,794	621,660	OF8-24	898,841	621,373	OF8-34	898,433	621,997
OF8-05	898,410	622,094	OF8-15	898,893	621,538	OF8-25	898,767	621,354	OF8-35	898,371	622,055
OF8-06	898,424	622,111	OF8-16	898,944	621,485	OF8-26	898,778	621,414	OF8-36	898,308	622,102
OF8-07	898,470	622,040	OF8-17	899,044	621,509	OF8-27	898,848	621,458	OF8-37	898,215	622,154
OF8-08	898,486	622,063	OF8-18	899,109	621,528	OF8-28	898,834	621,515	OF8-38	898,155	622,207
OF8-09	898,582	621,943	OF8-19	899,138	621,498	OF8-29	898,746	621,633	OF8-39	898,092	622,255
OF8-10	898,597	621,961	OF8-20	899,106	621,462	OF8-30	898,689	621,710			

- Coordinates are CT State Plane NAD 83, US Survey Feet

wood.

2016 Aerial Imagery:
Connecticut Environmental Conditions Online

Prepared/Date: BRP 06-24-20 | Checked/Date: BPW 06-24-20

N

0 55 110
Feet

Legend

- Proposed 8-ft Core in Outfall 008 Drainage Ditch (Vibracore)
- Proposed 5-ft Core Outfall 008 Locations (Slide-Hammer)
- Proposed 5-ft Core Outfall 008 Locations (Vibracore)

Figure 4-1
Proposed OF8 Investigation
Soil/Sediment Core Sampling Locations
Draft Field Sampling Plan
Stratford Army Engine Plant
Stratford, Connecticut

Document: P:\Projects\USACE SAEP FS\4.0_Deliverables\4.5_Databases\GIS\MapDocuments\FSP Jan 2020\GeoTech_Outfall008_11x17LS.mxd PDF: P:\Projects\USACE SAEP FS\4.0_Deliverables\4.2_Work_Plans\2020 Outfall 8 FSP\DRAFT 2020 Outfall 8 FSP\Figures\Figure 4-1 - Proposed Sampling Locations.pdf 06-24-2020 2:49 PM brian.peters

TABLES

Table 5-1
Sample and Analysis Plan
Outfall 008 Soil/Sediment Investigations

Stratford Army Engine Plant
Stratford, CT

					Environmental Analysis							Physical Property Analysis				
Location ID	Coordinates (CT State Plane)		Core Collection Method	Depth Interval	Metals	Mercury	TCLP	Metals (TCLP extract)	Asbestos	Aroclors 0-5 ft cores	Aroclors 0-8 ft cores	Soil Classifications (USCS)	Sieve Analysis	Hydrometer Analysis	Multi-point Atterberg Limit	Moisture Content
					SW-846 6020 (List of 12) ICPMS	SW-846 7474/7471	Method 1311	SW-846 6020 (List of 12) ICPMS	ASTM D7521 or equivalent	SW846 8082 (List of 8)	SW846 8082 (List of 8)	ASTM D2487	ASTM D6913	ASTM D7928	ASTM D4318	ASTM D2216
	Easting	Northing	VibraCore VC	0-1 ft	0-5 ft composite	0-5 ft composite	0-5 ft composite	0-5 ft composite	0-5 ft composite	0-1 ft discrete	0-1 ft discrete	0-5 ft	0-5 ft composite	0-5 ft composite	0-5 ft composite	0-5 ft composite
				0-2 ft						1-2 ft discrete	1-2 ft discrete					
				2-3 ft						2-5 ft composite	2-3 ft discrete					
				3-4 ft							3-4 ft discrete					
			Slide-Hammer SH	4-5 ft							4-5 ft discrete					
				5-6 ft	NS	NS	NS	NS	NS	NS	5-6 ft discrete	NS	NS	NS	NS	NS
				6-7 ft	NS	NS	NS	NS	NS	NS	6-7 ft discrete	NS	NS	NS	NS	NS
				7-8 ft	NS	NS	NS	NS	NS	NS	7-8 ft discrete	NS	NS	NS	NS	NS
OF8-01	898,194	622,331	VC	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-02	898,229	622,260	VC	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-03	898,278	622,204	VC	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-04	898,347	622,140	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-05	898,410	622,094	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-06	898,424	622,111	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-07	898,470	622,040	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-08	898,486	622,063	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-09	898,582	621,943	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-10	898,597	621,961	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-11	898,648	621,868	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-12	898,688	621,797	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-13	898,731	621,736	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-14	898,794	621,660	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-15	898,893	621,538	VC	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-16	898,944	621,485	VC	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-17	899,044	621,509	VC	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-18	899,109	621,528	VC	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-19	899,138	621,498	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-20	899,106	621,462	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-21	899,057	621,457	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-22	898,952	621,430	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-23	898,907	621,415	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-24	898,841	621,373	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-25	898,767	621,354	VC	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-26	898,778	621,414	VC	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-27	898,848	621,458	VC	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-28	898,834	621,515	VC	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-29	898,746	621,633	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-30	898,689	621,710	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-31	898,648	621,766	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-32	898,604	621,827	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-33	898,546	621,898	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-34	898,433	621,997	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1

Table 5-1
Sample and Analysis Plan
Outfall 008 Soil/Sediment Investigations

Stratford Army Engine Plant
Stratford, CT

Location ID	Coordinates (CT State Plane)		Core Collection Method	Depth Interval	Environmental Analysis							Physical Property Analysis				
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					SW-846 6020 (List of 12) ICPMS	SW-846 7474/7471	Method 1311	SW-846 6020 (List of 12) ICPMS	ASTM D7521 or equivalent	SW846 8082 (List of 8)	SW846 8082 (List of 8)	ASTM D2487	ASTM D6913	ASTM D7928	ASTM D4318	ASTM D2216
	Easting	Northing	VibraCore VC	0-1 ft	0-5 ft composite	0-5 ft composite	0-5 ft composite	0-5 ft composite	0-5 ft composite	0-1 ft discrete	0-1 ft discrete	0-5 ft	0-5 ft composite	0-5 ft composite	0-5 ft composite	0-5 ft composite
				0-2 ft						1-2 ft discrete	1-2 ft discrete					
				2-3 ft						2-5 ft composite	2-3 ft discrete					
				3-4 ft							3-4 ft discrete					
			Slide-Hammer SH	4-5 ft							4-5 ft discrete					
				5-6 ft	NS	NS	NS	NS	NS	NS	5-6 ft discrete	NS	NS	NS	NS	NS
				6-7 ft	NS	NS	NS	NS	NS	NS	6-7 ft discrete	NS	NS	NS	NS	NS
				7-8 ft	NS	NS	NS	NS	NS	NS	7-8 ft discrete	NS	NS	NS	NS	NS
OF8-35	898,371	622,055	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-36	898,308	622,102	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-37	898,215	622,154	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-38	898,155	622,207	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
OF8-39	898,092	622,255	SH	0-5 ft	1	1	1	1	1	3	0	1	1	1	1	1
RWD-01	898,853	621,540	VC	0-8 ft	0	0	0	0	0	0	8	0	0	0	0	0
RWD-02	898,859	621,535	VC	0-8 ft	0	0	0	0	0	0	8	0	0	0	0	0
RWD-03	898,865	621,529	VC	0-8 ft	0	0	0	0	0	0	8	0	0	0	0	0
RWD-04	898,867	621,522	VC	0-8 ft	0	0	0	0	0	0	8	0	0	0	0	0
RWD-05	898,864	621,515	VC	0-8 ft	0	0	0	0	0	0	8	0	0	0	0	0
RWD-06	898,862	621,508	VC	0-8 ft	0	0	0	0	0	0	8	0	0	0	0	0
Field Dup					2	2	0	0	2	6	2	0	0	0	0	0
Field Blank					2	2	0	0	0	4	3	0	0	0	0	0
MS					1	1	0	0	0	3	2	0	0	0	0	0
MSD					1	1	0	0	0	3	2	0	0	0	0	0
				TOTAL SAMPLES:	45	45	39	39	41	133	57	39	39	39	39	39

Notes:
OF8 - Outfall 8
RWD - Reymark Waste Delineation
ASTM - American Standard of Testing Material
ICPMS - Inductively Coupled Plasma Mass Spectroscopy

Prepared by: BW
Checked by: DRP
Date: 6/5/2020

APPENDIX A

FIELD DATA RECORDS

Tailgate Safety Meeting Report

Check One:

☐ Initial Kickoff Safety Meeting ☐ Regular/Daily Tailgate Safety Meeting ☐ Unscheduled Tailgate Safety Meeting

Date: _____ Site: _____

Site Manager: _____ Site Health and Safety Officer: _____

Print *Print*

Order of Business

Topics Discussed (Check all that apply – Boxed bold items to be covered daily)

- ☐ **Scope of Work**
- ☐ **Anticipated Weather (snow, high winds, rain)**
- ☐ **Personnel Roles and Responsibilities**
- ☐ **Data Collection Objectives**
- ☐ **Safe work practices**
- ☐ **Logs, Reports, Recordkeeping**
- ☐ Site History/Site Layout
- ☐ Site Control (visitor access, buddy system, work zones, security, communications)
- ☐ Training/Permit Requirements
- ☐ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☐ PPE Required/PPE Used
- ☐ Define PPE Levels, Donning, Doffing Procedures
- ☐ Decontamination Procedures for Personnel and Equipment
- ☐ Sanitation and Illumination
- ☐ Medical Surveillance Requirements
- ☐ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazard effects)
- ☐ Chemical Hazards and Controls
- ☐ Signs and symptoms of over exposure to site chemicals
- ☐ Physical Hazards and Controls (e.g., overhead utility lines)
- ☐ Biological Hazards and Controls (e.g., poison ivy, spiders)
- ☐ Temperature Extremes (heat or cold stress symptoms and controls)
- ☐ Engineering Controls
- ☐ Monitoring Instruments and Personal Monitoring, Action Levels
- ☐ Perimeter Monitoring - Type and Frequency
- ☐ Near Misses/Hazard ID including worker suggestions to correct and work practices to avoid similar occurrences
- ☐ Incident Reporting Procedures
- ☐ Hazardous Materials Spill Procedures
- ☐ Medical Emergency Procedures (e.g., exposure control precautions, location of first aid kits, etc.)
- ☐ Route to Hospital and Medical Care Provider Visit Guidelines
- ☐ _____

Safety Suggestions by Site Workers: ☐ None Provided ☐ Input Given (record in field below)

Action Taken on Previous Suggestions: ☐ None Needed ☐ Actions (record in field below)

Injuries/Incidents/Personnel Changes since last meeting: ☐ None ☐ Occurred (record in field below)

Tailgate Safety Meeting Report

Observations of unsafe work practices/conditions that have developed since previous meeting:

Location of (or changes in the locations of) evacuation routes/safe refuge areas:

☐ Applicable Procedures (AHA, JHA, SWP):

☐ Field Level Risk Assessment Completed (FLRA) (e.g. new hazards identified due to site or equipment conditions):

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting

Name (Print)	Company	Signature

Meeting Conducted by: _____ Title: _____

Print Name

Signature: _____ Time: _____

FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE			
	NO.			
	SHEET		OF	

Project Name:	**Project No.**

Installation/Investigation Area:

Description of daily activities and events:

List Samples Collected:

Visitors on Site:	**Deviation from plans:**
Weather conditions:	**Important telephone calls / photos taken:**

Personnel on Site:

Name/Signature:	**Date:**
QA/QC'd by:	**Date:**

EQUIPMENT BLANK SAMPLING RECORD

PROJECT NAME	SAMPLE LOCATION	PROJECT NO
Stratford Army Engine Plant		3616176064
Rinsate Blank Sample I.D.:		
Date/Time:		
DI Water Source:		
Equipment Used:		

Sample I.D.s associated with above Rinsate Blank	Comment

Created By: BPW
Checked By:

wood.

Stratford Army Engine Plant - Feasibility Study

SEDIMENT CORE and GRAB SAMPLE LOG

Site: Stratford Army Engine Plant	**Project No.:** 3616176064	**Logger:**
Sub:	**WO:**	**Crew:**
Date:	**Time :**	**Vessel:**
Coordinates: Lat	**Long**	
Sampling Station:		
Weather/Conditions:	Traffic:	Water Temp:

Measured Water Depth:	Total Boring Depth (refusal):
Number of intervals:	*Conditions:*
Off Site Sample: **Y N**	
Dup/MS/MSD:	

Interval	Recovery (ft)	Description (Odor, Color, Type, etc.)	Sample ID
0-1'			
1-2'			
3-4'			
4-5'			
5-6'			
6-7'			
7-8'			
8-10'			

Number of containers:					Equipment
					Sampler Type
Type of container:	40 ml VOA	Amber Jar	Plastic bag	other	Capacity

Live Organisms present	Y	N
Oil-Like Present	Y	N
Odor Present	Y	N
Debris Present	Y	N

Photo Numbers

Comments