FINAL

REMEDIAL INVESTIGATION REPORT

MILITARY MUNITIONS RESPONSE PROGRAM

FORT SEGARRA MUNITIONS RESPONSE SITE 01
WATER ISLAND, UNITED STATES VIRGIN ISLANDS

FUDS PROJECT NUMBER: I02VI097701

August 2019

Contract No.: W912DY-10-D-0025
Task Order No.: 0033

Prepared For:

UNITED STATES ARMY CORPS OF ENGINEERS

Prepared By:

PIKA-PIRNIE JV, LLC
12723 Capricorn Drive, Suite 500
Stafford, Texas 77477

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I have reviewed this document and certify that it contains accurate content and complies with contractual requirements.

05 August 2019

JV Program Manager — Date
Shahrukh Kanga, P.E., PMP, CSP, CHMM

05 August 2019

JV Deputy Program Manager — Date
Patrick Shirley, P.G.

05 August 2019

JV Corporate Quality Manager — Date
Al Larkins

05 August 2019

PIKA-Pirnie JV Project Manager — Date
Susan Burtnett, P.E., BCEE

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LIST OF ACRONYMS AND ABBREVIATIONS

ABP	Agent Breakdown Product
ARAR	Applicable or Relevant and Appropriate Requirements
Army	United States Army
ASR	Archives Search Report
CA	Chemical Agent
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CFR	Code of Federal Regulations
CG	Phosgene
CK	Cyanogen Chloride
CSM	Conceptual Site Model
CWM	Chemical Warfare Materiel
DAAMS	Depot Area Air Monitoring System
DERP	Defense Environmental Restoration Program
DID	Data Item Description
DoD	Department of Defense
DQO	Data Quality Objective
Dynamac	Dynamac Corporation
EE/CA	Engineering Evaluation/Cost Analysis
EM	Engineer Manual
EOD	Explosives Ordnance Disposal
EP	Engineer Pamphlet
ER	Engineer Regulation
FS	Feasibility Study
FUDS	Formerly Used Defense Sites
GA	Tabun
H	Sulfur Mustard Agent (also known as Levinstein mustard)
HD	Distilled Mustard Agent
HHRA	Human Health Risk Assessment
HQ	Sesqui-Mustard Agent
HTW	Hazardous and Toxic Waste

INPR	Inventory Project Report
JV	Joint Venture (PIKA-Pirnie JV, LLC)
MC	Munitions Constituents
MD	Munitions Debris
MEC	Munitions and Explosives of Concern
MINICAMS	Miniature Chemical Agent Monitoring System
MMRP	Military Munitions Response Program
MRS	Munitions Response Site
MTA	Management Technology Associates, Inc.
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
PA	Preliminary Assessment
RAO	Remedial Action Objective
RI	Remedial Investigation
SAIC	Science Applications International Corporation
SARA	Superfund Amendments and Reauthorization Act of 1986
SI	Site Inspection
SLERA	Screening Level Ecological Risk Assessment
TEC	USACE, Engineering Research and Development Center, Topographic Engineering Center
TO	Task Order
TPP	Technical Project Planning
VOC	Volatile Organic Compounds
URS	URS Corporation
U.S.	United States
USACE	United States Army Corps of Engineers
USAESCH	United States Army Engineering and Support Center – Huntsville
USDOI	United States Department of the Interior
USEPA	United States Environmental Protection Agency
USVI	United States Virgin Islands
WERS	Worldwide Environmental Remediation Services
WWII	World War II

EXECUTIVE SUMMARY

ES.1 This Remedial Investigation (RI) report has been prepared on behalf of the United States Army Corps of Engineers (USACE) in support of the Military Munitions Response Program (MMRP) for the Fort Segarra Munitions Response Site (MRS) 01. Fort Segarra is a Formerly Used Defense Site (FUDS) located on Water Island in the United States Virgin Islands (USVI). USACE is the Department of Defense's (DoD's) executing agent for the FUDS program.

ES.2 The focus of this RI report is the 17-acre Fort Segarra MRS 01, which is comprised of four non-contiguous areas that include the Flamingo Bay Landfill Area and Test Areas 4, 5, and 8. The FUDS project number for the Fort Segarra MRS 01 is I02VI097701. Fort Segarra MRS 01 is also referred to as Project 01 in historical documents and previous studies. The two other MRSs associated with Fort Segarra, the Open Burn/Open Detonation Demolition Area (MRS 03) and the Anti-Motor Torpedo Boat Battery (MRS 04), were recommended for no further action based on previously completed studies and are not discussed in more detail in this RI report.

ES.3 The objective of the RI is to gather sufficient information to characterize the nature and extent of munitions and explosives of concern (MEC), chemical warfare materiel (CWM[1]), munitions constituents (MC), and chemical agents (CA[2]) at the Fort Segarra MRS 01 and to assess the potential risks and hazards to human health, safety, and the environment from the potential presence MEC, CWM, MC, and/or CA. For the Fort Segarra MRS 01, enough information exists to complete the RI without the collection of additional field data. Existing information includes historical documents and previous studies detailing MEC-, CWM-, MC-, and/or CA-related activities.

ES.4 The Fort Segarra MRS 01 is located in the southern portion of Water Island, which is the smallest of the USVI. The island is approximately 1,800 feet from the island of St. Thomas and directly south from the capital city, Charlotte Amalie. The construction of Fort Segarra started in 1944, with a battery on the southern tip of Water Island to defend the Roosevelt Roads Naval Facility on Puerto Rico. While the concrete gun positions and supporting buildings were completed, the gun armaments were never installed. Fort Segarra was deactivated in 1946 at the end of the World War II (WWII).

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[1] Chemical warfare materiel (CWM) are items generally configured as a munition containing a chemical compound that is intended to kill, seriously injure, or incapacitate a person through its physiological effects (*DASA(ESOH) Interim Guidance for Chemical Warfare Materiel (CWM) Responses*, 1 April 2009)

[2] A chemical agent (CA) is a chemical compound intended for use (to include experimental compounds) that, through its chemical properties, produces lethal or other damaging effects on human beings, and is intended for use in military operations to kill, seriously injure, or incapacitate persons through its physiological effects (*DASA(ESOH) Interim Guidance for Chemical Warfare Materiel (CWM) Responses*, 1 April 2009)

ES.5 The United States Army Chemical Corps (hereafter referred to as the Chemical Corps) used portions of Water Island from 1948 to 1950 for limited testing and storage of chemical munitions as part of the San Jose Project. Six tests were conducted on Water Island. These included tests with bombs filled with distilled mustard agent (HD), aged cyanogen chloride (CK), and sulfur mustard agent (H) and with smoke pots filled with tabun (GA), HD, and sesqui-mustard agent (HQ). In 1950, the San Jose Project operations were moved to Dugway Proving Ground in Utah.

ES.6 In 1952, Water Island was permanently transferred to the United States Department of the Interior (USDOI), who subsequently leased the island to a private party (master lessee) for two 20-year terms for development as a resort area. The Water Island Hotel was in use from 1954 until 1989, when Hurricane Hugo badly damaged the hotel and it never reopened. In 1992, the master lease expired, and the USDOI began negotiations to sell individual parcels to sublessees. After transfer of Water Island from the USDOI to the USVI government in 1996, the hotel and associated structures were demolished in 1998. In November 2014, a lease was issued for a new hotel/resort development at the former hotel location and in other areas of Water Island, including Test Areas 4 and 5 and the Flamingo Bay Landfill Area. Additional residential development has also taken place on the island over the last 10 years. In September 2017, Hurricanes Irma and Maria caused wide-spread damage to the island.

ES.7 Based on the historical documents and previous studies, there is no evidence of MEC use at the Fort Segarra MRS 01. As noted in paragraph ES.5, gun armaments were never installed. Additionally, there is no documentation of conventional munitions use at the former Fort Segarra and no MEC or munitions debris (MD) have been found at the Fort Segarra MRS 01. As for the historical CWM use, per historical documents, only six tests were completed or partially completed on Water Island before the CWM testing program ended. Historical CWM associated with the testing included M70 filled with HD, E-23 smoke pots filled with GA, HD, and HQ, M70, M78, and M79 bombs filled with aged CK, and T-3 bombs filled with H and HD. Although a few suspected CWM-related items were found within the Fort Segarra MRS 01, the items did not contain CA and were removed; none have been found since 1994.

ES.8 Based on the lack of MEC, CWM, MC, and/or CA, the conceptual site model (CSM) pathway analysis indicates there are incomplete exposure pathways for human and ecological receptors. This is supported by the following RI findings:

- Construction of the former Fort Segarra was not completed prior to the end of WWII, no armaments were installed, and no munitions training was conducted at the fort. Therefore, no MEC source areas exist at the Fort Segarra MRS 01.
- Historical documents, previous studies and investigations indicate that CWM, and associated debris or scrap that could potentially have been contaminated with CA (i.e., 3X scrap), have been removed and disposed offsite.

- Because there are no MEC or CWM sources, no MC or CA source areas are anticipated. Additionally, MC and CA were not detected in media sampled.

Based on these findings, a human health risk assessment (HHRA) and screening level ecological risk assessment (SLERA) for MC and CA exposure were not needed.

ES.9 Based on the available historical information, previous studies, and investigations reviewed for the RI, the following findings are noted for MEC, CWM, MC, and CA:

- The limited CWM and/or CA-related use of MRS 01 (i.e., six tests from 1948 to 1950) is well-documented in historical documents and previous studies;
- Construction of the former Fort Segarra was not completed prior to the end of WWII, no armaments were installed, and no munitions training was conducted at the fort;
- No MEC or MD have been found during previous studies at the MRS;
- Limited sampling for MC has yielded no explosives detections and no MC metals exceedances above screening criteria;
- It has been 66 years since the Chemical Corps used the Fort Segarra MRS 01 for testing and storage of chemical munitions;
- There is historical documentation noting that CWM munitions were shipped to Dugway Proving Ground or dumped at sea following completion of the tests;
- Based on the types of activities conducted (i.e., controlled static testing only –never used as an impact area), CWM is not expected throughout the site;
- Although a few suspected CWM-related items have been found within the Fort Segarra MRS 01, the items were determined to not contain CA and have been removed;
- No CWM-related items have been found since 1994; and
- Limited sampling for CA has yielded no detections; CA would have degraded to non-hazardous levels in the 66 years since the site was used.

ES.10 Based on the RI findings, MEC, CWM, MC, and CA are not present within the Fort Segarra MRS 01. The CSM pathway analyses reflect incomplete pathways for MEC, CWM, MC, and CA since they are not present. Furthermore, there is no hazard or risk remaining from conventional or chemical munitions, or their chemical constituents. No action is needed to protect human health or the environment. Furthermore, the CERCLA response process indicates that in cases where the RI does not require a response action, a feasibility study (FS) is not needed. The next phase of the project is the Proposed Plan.

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1.0 INTRODUCTION

The PIKA-Pirnie JV, LLC[3] (hereafter referred to as the JV) prepared this RI report on behalf of USACE to further remedial activities at the Fort Segarra MRS 01, located on Water Island in the USVI. The JV completed this RI under United States Army Engineering and Support Center – Huntsville (USAESCH) WERS Contract W912DY-10-D-0025, Task Order (TO) 0033. This TO was issued and is being administered by USAESCH. USACE Jacksonville District provides overall project management, stakeholder coordination, and regional support. The work required under the Performance Work Statement (provided in **Appendix A**) falls under the DERP-FUDS. In addition, 29 Code of Federal Regulations (CFR) 1910.120 also applies to all actions taken at this site. The Fort Segarra MRS 01 environmental restoration activities were performed under CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and the NCP, and pursuant to Engineer Regulation (ER) 200-3-1 – *Environmental Quality Formerly Used Defense Sites (FUDS) Program Policy*, dated 10 May 2004.

1.1 PURPOSE

The overall goal of this RI is to gather sufficient information to characterize the nature and extent of MEC, CWM, MC, and CA at the Fort Segarra MRS 01 and to assess the potential risks and hazards to human health, safety, and the environment from MEC, CWM, MC, and/or CA. For the Fort Segarra MRS 01, sufficient information exists to support completing the RI without the collection of additional field data. Existing information includes previous studies and historical documents detailing MEC-, CWM-, CA-, and/or MC-related activities.

1.2 PROPERTY DESCRIPTION AND PROBLEM IDENTIFICATION

The following sections provide a description of Fort Segarra MRS 01 and identify the problem addressed by the RI.

[3] The JV is comprised of protégé firm PIKA International, Incorporated (Inc.) and its mentor Arcadis-US, Inc. (formerly Malcolm Pirnie, Inc.).

1.2.1 Property Description

1.2.1.1 The Fort Segarra MRS 01 is located on the southern portion of Water Island in the USVI**.** Water Island is located approximately 1,800 feet from St. Thomas, directly south from the capital Charlotte Amalie. The island is approximately 500 acres, measuring 1.75 miles long and 0.5 miles wide, with steep, rocky slopes and a highly indented coast with a maximum elevation of 290 feet, as shown on **Figure 1-1**. Access to Water Island is primarily by boat via two docks: one small dock located on the west side of the island and a deep-water dock on the south side of Flamingo Bay. There is also a helicopter pad on the north side of Flamingo Bay.

Figure 1-1: Aerial photograph of Water Island

1.2.1.2 The Fort Segarra MRS 01 occupies approximately 17 acres and consists of four non-contiguous areas: the Flamingo Bay Landfill Area and Test Areas 4, 5, and 8 (see **Figures 1-2 and 1-3** on the following page). The Flamingo Bay Landfill Area is in the southern portion of Water Island directly south of Flamingo Bay on a 5.4-acre tract of land that was historically used as a landfill. Test Area 4 is adjacent to the Flamingo Bay Landfill and consists of a 4.9-acre parcel of land. Test Area 5 is a 3.3-acre parcel east of Test Area 4. Test Area 8 is north of Flamingo Bay and consists of 3.5 acres. Many of the barracks, administration, and support buildings constructed as part of the former Fort Segarra have been converted to private homes. The primary land use on the island is residential.

1.2.1.3 The focus of the RI under this scope of work is the Fort Segarra MRS 01. The other two MRSs at the former Fort Segarra, the Open Burn/Open Detonation Demolition Area (MRS 03) and Anti-Motor Torpedo Boat Battery (MRS 04), were recommended for no further action based on previously completed studies and are not included in this RI report.

1.2.2 Problem Identification

1.2.2.1 While numerous studies and investigations have been conducted at the Fort Segarra MRS 01, CERCLA-required actions to characterize the nature and extent of MEC, CWM, MC, and CA have not been completed. As such, the RI documents the type (nature) and density and distribution (extent), or lack of, for MEC, CWM, MC, and CA. Hazards and risks to human and ecological receptors from MEC, CWM, MC, and CA were also assessed. Based on the information presented in the studies and investigations that substantiates the conclusion that MEC, CWM, MC, and CA do not exist at Fort Segarra MRS 01, the CSMs show there is no source of MEC, CWM, MC, or CA, and pathways for human and ecological receptors are incomplete.

Remedial Investigation Report
Former Fort Segarra
Water Island, USVI
(FUDS # I02VI097701)

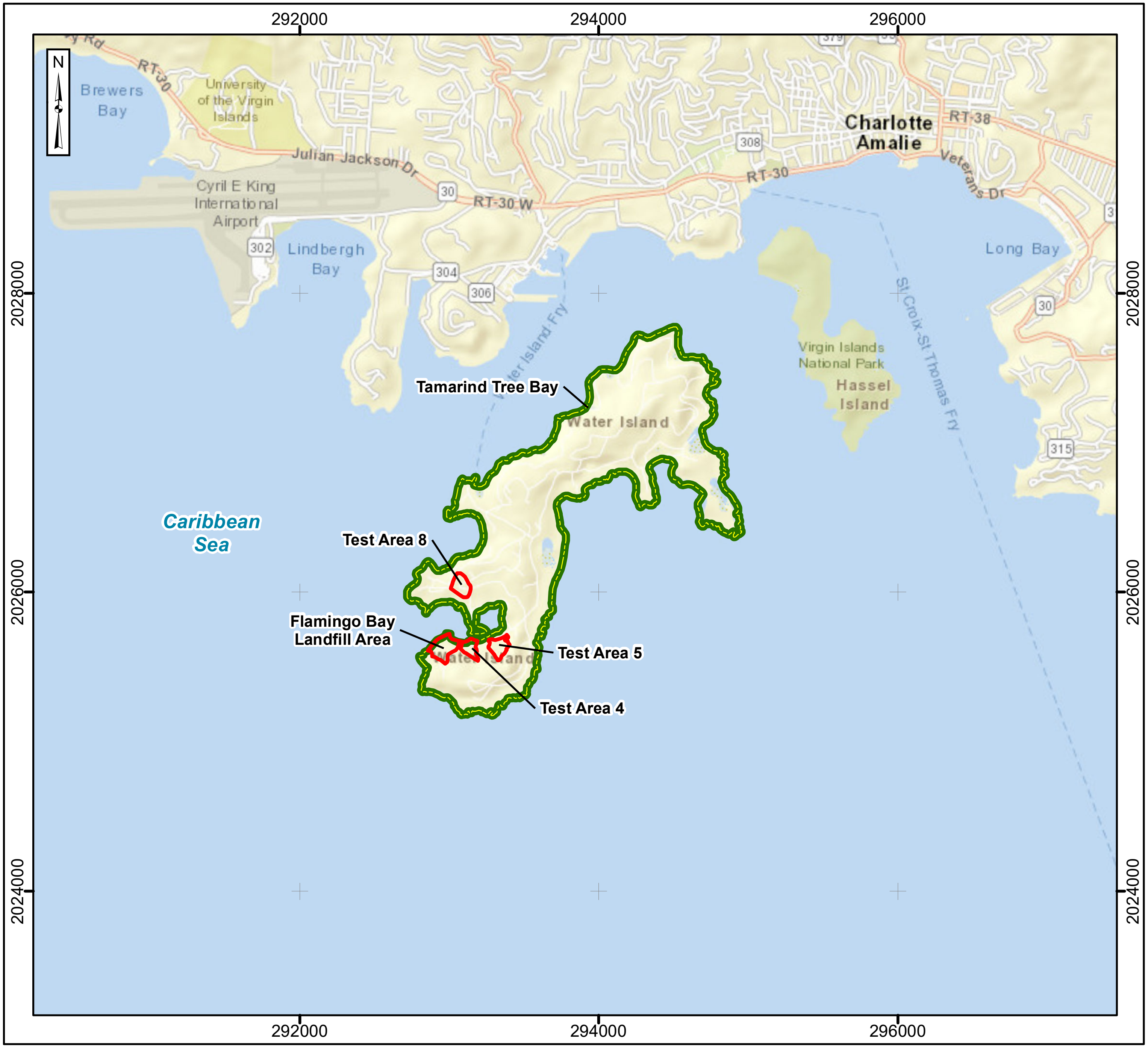


Figure 1-2
Site Location

Legend

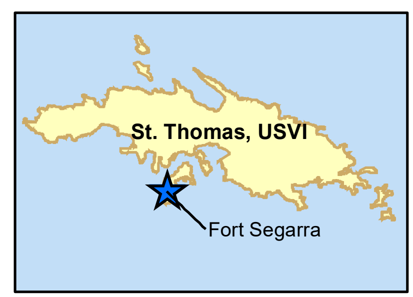
- Approximate Fort Segarra Boundary (FUDS Property Boundary)
- Fort Segarra MRS 01

0 0.5 1
Kilometers

0 0.5 1
Miles

Data Sources: ESRI, ArcGIS Online, Aerial Imagery

Coordinate System: UTM Zone 20N
Datum: NAD83
Units: Meters



Remedial Investigation Report
Former Fort Segarra
Water Island, USVI
(FUDS # I02VI097701)

Figure 1-3
Site Details

Legend

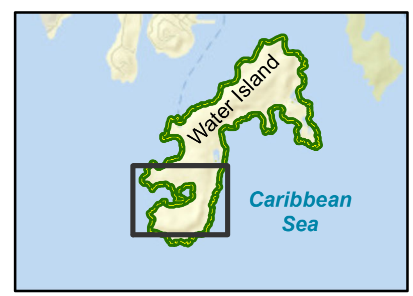
Approximate Fort Segarra Boundary (FUDS Property Boundary)
Fort Segarra MRS 01

0 0.1 0.2 Kilometers

0 0.1 0.2 Miles

Data Sources: ESRI, ArcGIS Online, Aerial Imagery, 2010

Coordinate System: UTM Zone 20N
Datum: NAD83
Units: Meters



1.2.2.2 No MEC or MC are expected at the Fort Segarra MRS 01 since construction of the former Fort Segarra was not completed prior to the end of WWII, and no gun armaments were installed. Additionally, no munitions training was conducted on Water Island. Therefore, no MEC or MC are expected at the Fort Segarra MRS 01; this is supported by information presented in historical documents and previous studies and investigations that are documented in this RI report.

1.2.2.3 From May 1948 to September 1950, the Chemical Corps used portions of Water Island (including the Fort Segarra MRS 01) for testing and storage of CWM, to evaluate the performance of CWM in a tropical environment. Several CWM test areas were designated on Water Island, including Test Areas 4, 5, and 8. Six tests were conducted on Water Island, including static tests with M70 bombs filled with HD; tests with E-23 smoke pots filled with GA, HD, and HQ; and surveillance tests of M70, M78, and M79 bombs filled with aged CK and T-3 bombs filled with H and HD. The Flamingo Bay Landfill Area was not used for testing activities, but the deep-water dock adjacent to the landfill area was used to deliver equipment and munitions during the CWM testing, and two suspect chemical bombs (identified as M70 and M78 bombs) were uncovered in this area in 1966 during excavations (Science Applications International Corporation [SAIC], 1993).

1.2.2.4 Although use of CWM and CA is documented, previous studies and investigations have confirmed that CWM and CA were removed following completion of the tests. Only a few CWM-related items have been found on Water Island, and these items have been confirmed to be free of CA. Sampling documented in the previous studies and investigations further validates that CA is not present at the site. As such, no CWM or CA remain at the Fort Segarra MRS 01; this is supported by the studies and investigations that are documented in this RI report.

1.3 HISTORICAL INFORMATION

1.3.1 Historically, the island had been used as a stopping point for ocean going sailing ships beginning in the 1500s. In the 1700s, several plantations were developed on the island. The U.S. government purchased most of the Virgin Islands from Denmark in 1917; however, Water Island was not purchased until 1944 when the U.S. government acquired it from the Danish East Asiatic Company through condemnation proceedings. At that time, Water Island was essentially uninhabited. Fort Segarra, named in honor of U.S. Army Lieutenant Colonel Raphael Angel Segarra, was approved for construction in March 1942, and once the island was acquired in 1944, construction began on a battery on the southern tip of Water Island to defend the Roosevelt Roads Naval Facility on Puerto Rico. Gun emplacements, barracks, watchtowers, underground bunkers, and other military and ancillary facilities were constructed on the island, as well as docks, roads, and water, sewage, and power systems. While the concrete gun positions and supporting buildings were completed, the gun armaments, as noted in the previous section, were never installed, and the site was deactivated in 1946 at the end of the WWII.

1.3.2 In December 1947, testing of CWM under jungle conditions by the Chemical Corps at San Jose Island, Panama, (i.e., the San Jose Project) was halted when the U.S. and Panamanian governments failed to agree to a renewal of the lease for the island. The island was evacuated, and the San Jose Project materiel and personnel were relocated to the Virgin Islands (now the USVI) between March and May 1948. From May 1948 to September 1950, the Chemical Corps used portions of Water Island and St. Thomas Island for testing and storage of chemical munitions as part of the relocated San Jose Project. Test areas were designated on the western end of St. Thomas Island and in a few areas on Water Island. In September 1950, because conditions at Water Island were not considered to be optimal for the program, the San Jose Project operations were moved to Dugway Proving Ground in Utah.

1.3.3 Following the end of the San Jose Project on Water Island in 1950, the Army granted a provisional permit to the USDOI for use of the island. In 1952, Water Island was permanently transferred to the USDOI, which subsequently leased the island to a private party (master lessee) for two 20-year terms for development as a resort area. The Water Island Hotel officially opened for business on 1 January 1954, with 30 hotel rooms and two guest cottages, capable of accommodating 50 to 60 guests. The hotel was expanded, starting in 1965, and at one time was the largest hotel in the USVI. In 1989, Hurricane Hugo badly damaged the hotel, and it never reopened. In 1992, the master lease expired, and the USDOI began negotiations to sell individual parcels to sublessees.

1.3.4 Hurricane Marilyn in 1995 caused further damage to the former hotel and to many other structures on Water Island. After transfer of Water Island from the USDOI to the USVI government in 1996, the hotel and associated structures were demolished in 1998. Debris generated because of the hurricane damage was largely deposited in the southern portion of the island near Test Area 5. This included a large amount of concrete rubble generated during the demolition of the hotel in 1998. In November 2014, a lease was issued for a new hotel/resort development at the former hotel location and in other areas of Water Island, including Test Areas 4 and 5 and the Flamingo Bay Landfill Area. Additional residential development has also taken place on the island over the last 10 years. In September 2017, Hurricanes Irma and Maria caused wide-spread damage to the island.

1.4 HISTORICAL DOCUMENTS, PREVIOUS STUDIES, AND INVESTIGATIONS

Information and findings from historical documents detailing the tests done as part of the San Jose Project on Water Island, and previous studies and investigations conducted at the former Fort Segarra from 1966 through 2016 are listed below and summarized in the sections that follow.

- 1947-1950 San Jose Project Progress Reports
- 1966 Ordnance Discovery at Flamingo Bay Landfill - Navy Report
- 1989 Inventory Project Report

- 1991 Archives Search Report
- 1991 Photo Analysis
- 1993 Scoping Study
- 1995 Phase I Remedial Investigation Report
- 1995 Environmental Assessment
- 2001 Historic Photo Analysis
- 2001 Preliminary Assessment Report
- 2002 Archives Search Report
- 2004 Site Investigation Report
- 2005 Engineering Evaluation/Cost Analysis Report
- 2006 Engineering Evaluation/Cost Analysis Action Memorandum
- 2009 Site Specific Final Report
- 2012 Five-Year Review Report
- 2013 Revised Inventory Project Report
- 2016 Site Specific Final Report

1.4.1 Historical MEC/MC Use at Fort Segarra MRS 01

After Water Island was acquired by the War Department in 1944, construction began on a battery on the southern tip of the island. Gun emplacements, barracks, watchtowers, underground bunkers, and other military and ancillary facilities were constructed on the island as well as docks, roads, and water, sewage, and power systems. However, while the concrete gun positions and supporting buildings were completed, the gun armaments were never installed, and the fort was deactivated in 1946 at the end of the WWII. There is no documentation of conventional munitions being used within the Fort Segarra MRS 01 for defense or for training.

1.4.2 Historical CWM/CA Use at Fort Segarra MRS 01

In early 1948, the Chemical Corps moved its San Jose Project, which evaluated the performance of CWM in a tropical environment, from Panama to the Virgin Islands. From May 1948 to September 1950, the Chemical Corps used portions of Water Island for testing and storage of CWM. CWM test areas were designated in several areas on Water Island, including Test Areas 4, 5, and 8. Originally, 57 tests were to be conducted as part of the San Jose Project in the USVI, but only eight tests were completed or partially completed before the testing program ended. The purpose of these tests was to determine the dispersion capabilities of the various items and how the CA would be spread through the air. Two tests were conducted on St. Thomas Island,

and six tests were conducted on Water Island (SAIC, 1993). Most of the tests on Water Island were conducted within Test Area 4 (USACE, 2002). While not used for testing, the deep-water dock adjacent to the Flamingo Bay Landfill Area was used to deliver equipment and munitions during the CWM testing.

1.4.3 1947-1950 San Jose Project Progress Reports

In December 1947, testing of CWM under jungle conditions by the Chemical Corps at San Jose Island, Panama, was halted when the United States and Panamanian governments failed to agree to a renewal of the lease for the island. The island was evacuated, and the San Jose Project materiel and personnel were relocated to the USVI between March and May 1948. From May 1948 to September 1950, the relocated San Jose Project continued the testing program on St. Thomas and Water Island. The San Jose Project Progress Reports include a report summarizing the project for 1 November 1947 through 31 October 1948 and monthly progress reports from November 1948 through March 1950. Project tests reports were included with the progress reports as phases of a test were completed.

1.4.4 1966 Ordnance Discovery at Flamingo Bay Landfill Area

In 1966, a Naval Explosives Ordnance Disposal (EOD) Detachment responded to an unearthing of metal objects that appeared to be bombs. The Navy report noted several bombs had been unearthed during a dredging operation at the Flamingo Bay Landfill Area, which the Navy EOD believed to be Army M70 and M78 chemical bombs. All but one of the bombs had been vented, and the unvented bomb was blown in place without noticeable release of CA. (USACE, 2002)

1.4.5 1989 Inventory Project Report

The 1989 Inventory Project Report (INPR) designated 500 acres at Water Island as FUDS-eligible. The purpose of the report was “to assess possible hazardous and toxic waste contamination, unexploded ordnance, and unsafe debris.” As noted in the report, the site walk/visual survey did not reveal evidence of “toxic chemicals or ordnance hazards.” The study recommended that an investigation for munitions be conducted in that portion of the former Fort Segarra where several chemical bombs had been unearthed in 1966 (USACE, 1989).

1.4.6 1991 Archives Search Report

1.4.6.1 In 1991, USACE completed an Archives Search Report (ASR) for the former Fort Segarra that addressed the general operations of the Chemical Corps in the USVI for the San Jose Project. This ASR was conducted to find and evaluate available information related to the San Jose Project in the USVI and to determine if the sites used for the San Jose Project in the USVI were potentially contaminated by conventional (i.e., MEC) or special (chemical) ordnance (i.e., CWM). The ASR outlined the site history, site description, real estate ownership information, results of a visual site inspection and interviews, and evaluated potential ordnance contamination based on site information and historical documents. A risk assessment was also conducted as part of the ASR, which assigned a score of 1 to Water Island, signifying imminent hazard.

1.4.6.2 The ASR noted that based on the visual site survey, the surface ground areas within Test Areas 4, 5, 6, and 7 did not appear to have been severely disturbed over the years after use of the site by the San Jose Project, so that the potential for buried MEC or CWM existed in those areas. While no physical evidence or documentary indications were discovered to demonstrate the existence of a hazard, the ASR determined that the potential for hazards existed. The ASR called out the filled area adjacent to Flamingo Bay (i.e., the Flamingo Bay Landfill Area) as a likely location for the existence of MEC and/or CWM. Because the area presented the strongest possibility of existence of MEC and/or CWM, the report recommended the installation of a chain link fence around the perimeter of the Flamingo Bay Landfill, which was subsequently installed (USACE, 1991a).

1.4.7 1991 Photo Analysis

In 1991, USACE performed an analysis of aerial photography taken in the vicinity of St. Thomas, USVI. The analysis was performed to support the U.S. Army Toxic & Hazardous Materials Agency in the environmental evaluation and identification of potential contamination sources in this area. Black and white aerial photography of the study areas was obtained for 1948, 1954, and 1958. The aerial photographic analysis revealed very few potential contamination sources. Only one photo-identified area, located in Test Area 5 on Water Island, was determined to be used as a test and disposal area. (USACE, 1991b)

1.4.8 1993 Scoping Study

1.4.8.1 In 1993, USACE conducted a scoping study on the former Fort Segarra to determine if a CWM excavation was required. If a CWM excavation was needed, the scoping study's purpose was to provide recommendations regarding techniques, technologies, and equipment which could be used. The study made additions to the information contained in the 1991 ASR, based on interviews with Chemical Corps personnel describing the historical operations associated with the San Jose project and more archival research.

Figure 1-4: M70 bomb used during a static-firing test (2002 ASR)

1.4.8.2 The interviews indicated that all six tests at Fort Segarra MRS 01 were controlled, well-documented, and decontamination occurred after each test so as not to affect the following test. The types and limited numbers of test items used allowed easy removal of the debris after the testing. The personnel indicated that CWM was removed following completion of the project and either disposed at sea or sent to Dugway Proving

Ground in Utah. Because historical records and personnel interviews indicated that no CWM testing or disposal operations occurred in Test Areas 1, 2, 3, and 7, the scoping study recommended that no additional investigations be conducted in those areas. In addition, the study noted that the area of the toxic storage yard, located adjacent to Test Area 8, and the northern portion of Test Area 6, had been significantly developed since the 1950s with no reported incident of encountering CWM and recommended that no further investigation be conducted in those areas. However, further investigation was recommended for Test Areas 4 and 5 and the Flamingo Bay Landfill Area (SAIC, 1993).

1.4.9 1995 Site Characterization - Phase I Remedial Investigation Report

1.4.9.1 In 1993 and 1994, USACE conducted site characterization and debris removal operations on Water Island at Test Areas 4, 5, 6, and 8, Tamarind Tree Bay Area, and the Flamingo Bay Landfill Area to characterize the potential presence of MEC/CWM and make recommendations for further investigations at the individual test sites. The investigation of all the sites included a surface inspection, magnetometer sweeps, and select surface soil sampling for CA and CA breakdown products. The Tamarind Tree Bay Area and Test Area 6 are not located within the Fort Segarra MRS 01.

1.4.9.2 The results of the initial investigation concluded there were no suspect anomalies or surface debris at Tamarind Bay, Test Area 6, Test Area 8, the portion of Test Area 4 north of the road, or the portions of the Flamingo Bay Landfill Area outside the fence. The remainder of Test Area 4, all of Test Area 5, and the fenced Flamingo Bay Landfill Area were further characterized with magnetometer surveys, anomaly investigation, and the collection of surface soil samples. The magnetometer sweeps indicated anomalies, but did not give indication of buried MEC, CWM, or MD. No CA was detected during field screening or laboratory analysis of the surface soil samples collected at the former Fort Segarra; no documentation was found indicating the samples were analyzed for MC.

1.4.9.3 Following the site characterization, recommendations were made for an intrusive investigation. Specific anomalies, which were suspected to be buried MEC, CWM, or MD, in Test Area 5 were recommended for intrusive investigation, as well as 10 percent of the 20-foot by 20-foot grid squares dividing the southern portion of Test Area 4 and the fenced portion of the Flamingo Bay Landfill Area. A circular depression in Test Area 4 and a suspected trench area in the Flamingo Bay Landfill Area were also recommended for sampling (MTA, 1995).

1.4.10 1995 Environmental Assessment

In 1993, Dynamac Corporation (Dynamac) performed a Level 1 and Level 2 site survey and environmental assessment on Water Island for the USDOI. The primary objective of the environmental assessment was to determine whether hazardous substances were present on Water Island. As part of the assessment, a site inspection was conducted at the Flamingo Bay Landfill Area and Test Areas 4 and 5. While abandoned vehicles and household/construction debris were noted in multiple locations, the site inspection did not note MEC, CWM, or physical indications of buried MEC or CWM (i.e., depressions, mounds, etc.), signs of stressed vegetation, or barren ground surfaces. (Dynamac, 1995).

1.4.11 2001 Historical Photo Analysis

In September 2001, USACE published a report on the analysis of historical aerial photographs of Water Island. While the report covered all of Water Island, it focused on Test Areas 4 and 5, and the Flamingo Bay Landfill Area. The analysis objective was to identify potential areas of concern (such as ground scars) that might be related to the testing of chemical weapons materiel. The location of the loading dock and the former pond adjacent to the Flamingo Bay Landfill Area were noted, as well as the location of the toxic storage area. In addition, ground scars at Test Area 5 and a clear area at Test Area 4 were noted. (USACE, 2001).

1.4.12 2001 Preliminary Assessment

1.4.12.1 In June 2000, the USEPA listed the “Flamingo Bay Army Test Areas” (i.e., Test Areas 4, 5, and 8, and the Flamingo Bay Landfill Area) on the Federal Agency Hazardous Waste Compliance Docket pursuant to Section 120(c)of CERCLA. This listing was prompted by the 1995 Site Characterization Report (USACE) indicating CWM testing by the Army and the possible presence of CA at the site. The focus of the preliminary assessment (PA) conducted by the USDOI was on possible activities at the site associated with non-munitions hazardous substances that may have occurred following the Army's departure from the former Fort Segarra in 1952. As part of the PA, a hazard ranking system score was determined for the site based on specific factors: the likelihood of a release; the characteristics of the waste, and the affected receptors.

1.4.12.2 Even using “worst-case” scenarios, the site (i.e., Test Areas 4, 5, and 8, and the Flamingo Bay Landfill Area) scored only an 11 under the hazard ranking system, based on the lack of receptors. While sites scoring less than 28.50 are normally designated "no further remediation action planned (NFRAP)" under the federal Superfund program, because of the previous use of the site as a CWM testing area, the USEPA expressed concern regarding the potential presence of contaminants (i.e., CA) and their associated risks. As a result, the USEPA required further site evaluation including the collection and analysis of soil samples, to assure an appropriate investigation for hazards, and to assist in the decision regarding further action at the site.

1.4.13 2002 Revised Archives Search Report

1.4.13.1 In 2002, USACE completed a revised ASR for the former Fort Segarra to evaluate the historical information contained in 1991 ASR (USACE) and the 1993 Scoping Study (USACE). USACE conducted additional research at various archives and records holding facilities, interviewed individuals associated with the site or its operations, and visited the site, and analyzed aerial photographs (USACE, 2000).

1.4.13.2 The ASR concentrated on the potential that MEC and/or CWM contamination could remain on Fort Segarra from the activities during WWII and from the CWM testing from March 1948 through September 1950. Specifically, data was sought related to types of munitions used at the site, possible disposal areas, and unknown training areas.

1.4.13.3 Three areas were identified on Water Island that were associated with potential MEC activities.

- Battery 314 – A gun emplacement for two 6-inch guns constructed at the top of the hill in the southern portion of the island. Historical documents indicate that the guns were never installed, and the emplacement was never operational.
- Test Area 4 – Excess bursters were destroyed by detonation in Test Area 4 (also referred to as Fort Segarra MRS 03). The detonation area was identified as the dredge cut that connected the former freshwater lagoon area with Flamingo Bay. No MEC or MD have been found at Test Area 4 during previous studies and no further action was recommended.
- 818th Anti-Motor Torpedo Boat Battery – Two-gun emplacements (Druif Point with two 90mm guns and two 37mm guns and Providence Point with two 37mm guns) were constructed, and construction of an ammunition supply area located near Caroline Point was started. The supply area was to consist of three bunkers; however only two were completed. Historical documents indicate that the guns were never installed, and the emplacements were never operational. There have been no reports of conventional munitions found on the island. The Anti-Motor Torpedo Boat Battery (Fort Segarra MRS 04) was investigated and determined to require no further action based on previous studies. Fort Segarra MRS 04 is not discussed further in this RI report.

1.4.13.5 The 2002 ASR made the following observations from the list of munitions removed from the San Jose Project on Water Island and interviews from 1993 with military personnel involved in the San Jose Project.

- Test No. 135 consisted of surveillance of 33 CK-filled 500-pound M78 bombs placed in storage in the Toxic Storage Yard. The contents of four of these bombs were found to be largely solid, and further sampling on these items was not continued. One of the four bombs was destroyed; the final disposition of the other three bombs is not provided. At the termination of the San Jose Project, 29 CK-filled M78 bombs were removed from Water Island and ocean dumped near Vieques, Puerto Rico, leaving only the three CK-filled M78 bombs unaccounted for with respect to final disposition.
- The surveillance tests near Test Area 8 involved seven (7) CK-filled M79 bombs, 15 CK-filled M70 bombs, two (2) HD-filled T-3 bombs, and two (2) H-filled T-3 bombs. Removal of these items at the close of the San Jose Project can be accounted for. A total

of 124 CK-filled M70 bombs and eight (8) CK-filled M79 bombs were ocean dumped. In addition, 168 HD-filled and 66 H-filled T-3 bombs were shipped to the Army Chemical Center in Maryland.

- The test items used in four of the tests were smoke pots filled with GA, HD, or HQ. At least 23 smoke pots were involved in tests on Water Island. The disposition of smoke pots is not indicated in San Jose Project documentation.
- As previously mentioned, burster charges were detonated at the close of the San Jose Project in Test Area 4 between the road and the marina. This was investigated under Fort Segarra MRS 04.

1.4.13.6 The ASR also discussed historical documents related to “dis-establishment” of the San Jose Project that dictated several provisions that the Chemical Corps was to undertake prior to their leaving Water Island. The documents specified that, after completion of the testing program, the Chemical Corps was required to identify areas that might remain contaminated, including any burial pits, and fence them off. The fence to use was specified as four-foot hog wire, topped with three strands of barbed wire on galvanized steel posts. Appropriate permanent warning signs were also required for any fenced areas. Interviews conducted during the ASR and onsite inspections did not reveal the presence of fenced and/or signed areas. The ASR concluded that the lack of fencing and signage indicated the Chemical Corps did not consider any areas, such as burial pits, or items left behind as contaminated. Based on interviews conducted during the ASR with long-term residents of Water Island, no areas of the island that fit the fenced/signed area description were identified.

1.4.14 2004 Site Investigation Report

1.4.14.1 In 2004, after completion of the PA, the USEPA directed the USDOI to complete a Site Investigation (SI) at Test Areas 4, 5, and 8, and the Flamingo Bay Landfill Area to evaluate the presence of non-munitions hazardous substances (USDOI, 2004). As noted previously, the USEPA expressed concern regarding the potential presence of CA and their associated risks and required further site evaluation, including the collection and analysis of soil samples.

1.4.14.2 Because the USEPA-required SI was to be conducted at the same time USACE was conducting an Engineering Evaluation/Cost Analysis (EE/CA), the two field investigations were coordinated to occur concurrently. Soil samples were collected in May and June of 2003, and analyzed for both USACE-required analytes (explosives and CA) and USEPA-required analytes.

For the SI evaluation, soil samples were analyzed for a modified USEPA Target Analyte List and Target Compound List, with volatile organic compounds (VOCs) removed from the list and cyanide added. Given the tropical environment and isolation of the site, analysis of samples for VOCs was considered to be unwarranted. Cyanide was added to the analyte list at the request of the USEPA due to the use of GA at the site during CWM testing.

1.4.14.3 Results for the SI-required analyses were compared with results from background samples collected at the site during the SI-EE/CA sampling, and with USEPA Region 3 risk-based concentrations (RBCs) for human exposure. Data for arsenic and lead were then used to score the site using the USEPA Quickscore software. The site scored 7.21, indicating no potential risk to human health or the environment in Test Areas 4 and 5 and the Flamingo Bay Landfill Area, and no further investigation was required. Data from Test Area 8 was not used for scoring the site because it was under the jurisdiction of the USVI government.

1.4.15 2005 Engineering Evaluation/Cost Analysis

1.4.15.1 In 2005, USACE finalized an EE/CA for the former Fort Segarra, including collection and analysis of media at Test Areas 4, 5, and 8, and the Flamingo Bay Landfill Area. The EE/CA investigation included 46 test pits, 17 trenches, and 88 soil samples plus eight background soil samples. No MEC or CWM was identified during the EE/CA at the areas of interest investigated at the former Fort Segarra. Only CWM-related items were discovered on the ground surface in the form of 3X scrap at the Flamingo Bay Landfill Area. The 3X scrap is categorized as once having contained CA, but air monitoring confirmed that no CA was present. No MC or CA were detected in the soil samples. **Table 1-1** presents a summary of the investigation conducted as part of the 2005 EE/CA, including the amount of test pits, trenches, and soil samples per site.

1.4.15.2 The EE/CA recommended a removal action at the Flamingo Bay Landfill Area to remove and dispose of the 3X scrap and to implement site-wide institutional controls for addressing all of the areas of interest investigated at Fort Segarra MRS 01 (Test Areas 4, 5, and 8, and the Flamingo Bay Landfill Area) (USACE, 2005).

Table 1-1: 2005 EE/CA Investigation Summary

	Activity	Components	Method	Analysis	CONCLUSION
AREA 4	Intrusive Excavation	Intrusively investigated 17 test pits, two soil borings and 2 residential background samples, collected via test pits.	Mechanical or hand excavation	• Air monitoring by Miniature Chemical Agent Monitoring System (MINICAMS) for HD, GA, phosgene (CG), and CK. • Depot Area Air Monitoring System (DAAMS) air sample monitoring for HD, GA, CG, and CK.	No MEC, CWM, MC or CA were found at Test Area 4.
	Soil Sampling	28 samples from intrusive excavations (including 2 residential background samples).	Composite Samples	• Headspace analysis for CA (HD, GA). • Soil analysis for low-level CA (HD, GA), agent breakdown product (ABP), and hazardous and toxic waste (HTW) constituents, including metals and explosives.	
	Activity	**Components**	**Method**	**Analysis**	**CONCLUSION**
AREA 5	Intrusive Excavation	Intrusively investigated four test pits and five trenches across the 1954 ground scar, and seven trenches across anomalous areas identified by MTA. Two residential background samples were collected via soil borings.	Mechanical or hand excavation	• Air monitoring by MINICAMS for HD, GA, CG, and CK. • DAAMS air sample monitoring for HD, GA, CG, and CK.	No MEC, CWM, MC or CA were found at Test Area 5.
	Soil Sampling	24 samples were collected within Test Area 5 from excavations and test pits (including 2 residential background samples).	Composite Samples	• Headspace analysis for CA (HD, GA). • Soil analysis for low-level CA (HD, GA), ABP, and HTW constituents, including metals and explosives.	
	Activity	**Components**	**Method**	**Analysis**	**CONCLUSIONS**
AREA 8	Intrusive Excavation	Intrusively investigated 12 test pits.	Mechanical or hand excavation	• Air monitoring by MINICAMS for HD, GA, CG, and CK. • DAAMS air sample monitoring for HD, GA, CG, and CK.	No MEC, CWM, MC or CA were found at Test Area 8.
	Soil Sampling	10 samples from test pits and 2 background samples	Composite Samples	• Headspace analysis for CA (HD, GA). • Soil analysis for low-level CA (HD, GA), ABP, and HTW constituents, including metals and explosives.	
	Activity	**Components**	**Method**	**Analysis**	**CONCLUSIONS**
Flamingo Bay Landfill Area	Intrusive Excavation	5 trenches in the grid areas identified by MTA. 13 test pits including 2 background test pits and 2 residential background soil borings.	Mechanical or hand excavation	• Air monitoring by MINICAMS for HD, GA, CG, and CK. • DAAMS air sample monitoring for HD, GA, CG, and CK.	No MEC or CWM was found at the Flamingo Bay Landfill Area. Two items suspected of being CA contaminated media were identified at the Flamingo Bay Landfill Area during the 2003 field investigation: a vented 1-ton container was discovered on the surface of the landfill, and a concrete-filled M78 500-lb. bomb casing was identified at the water line adjacent to the Flamingo Bay Landfill Area. Soil samples collected from underneath the 1-ton container tested negative for chemical agent. The original contents of these containers are unknown; because there is a possibility that these items contained CA, these items are considered to be 3X scrap.
	Soil Sampling	26 samples from excavations, 2 samples from background locations, 2 residential sample locations.	Composite Samples	• Headspace analysis for CA (HD, GA). • Soil analysis for low-level CA (HD, GA), ABP and HTW constituents, including metals and explosives.	No MC or CA was identified at Flamingo Bay Landfill Area.

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1.4.16 2006 EE/CA Action Memorandum

In July 2006, USACE completed an EE/CA Action Memorandum. Per the EE/CA Action Memorandum, the following response actions were selected as remedies at the Fort Segarra MRS 01 (USACE, 2006).

- Site-Wide Institutional Controls – Test Area 4 (4.9 acres), Test Area 5 (3.3 acres), and Test Area 8 (3.5 acres), Flamingo Bay Landfill Area (5.4 acres)
- 3X Scrap Removal Action (of items identified during the EE/CA) – Flamingo Bay Landfill Area (5.4 acres)

1.4.17 2009 Site Specific Final Report (3X Scrap Removal Action/Installation of Signs)

In 2009, USACE conducted a removal action to remove, dispose, and document removal of potential 3X scrap that was identified during the EE/CA. Items removed from Fort Segarra during the removal action included a 1-ton container and a concrete filled M79 bomb body. The scrap was distributed amongst 26 drums which were transported via barge to the Tropical Shipping location on St. Thomas and then to an incinerator in Port Arthur, Texas, where it was destroyed. Additionally, USACE designed two informational signs concerning the former Fort Segarra and installed one at the public ferry dock and one at the deep-water dock on Water Island as part of the site-wide institutional control response action. (USACE, 2009)

1.4.18 2012 Five-Year Review Report

1.4.19.1 In 2012, USACE conducted the first Five-Year Review of the former Fort Segarra. The Five-Year Review was performed to determine if response actions identified in the 2006 EE/CA Action Memorandum had been implemented and if they continued to minimize safety risks and remained protective of human health and the environment (USACE, 2012).

1.4.19.2 The assessment portion of the Five-Year Review found that the response actions at Test Areas 4, 5, and 8, and Flamingo Bay Landfill Area had been partially completed in accordance with the requirements of the EE/CA Action Memorandum. A removal action was performed in Flamingo Bay Landfill Area, and informational signs had been installed and maintained. However, while fact sheets/brochures had been printed and distributed to the community prior to the EE/CA field investigation, they were no longer being distributed. Although brochures were not currently being distributed, interviews with local residents indicated that the community on Water Island was aware of the site's history and understood how to respond if "suspect" items were identified in the area. The Five-Year Review Report concluded that the remedy was protective of human health and the environment. Furthermore, there were no reported incidents involving MEC, CWM, or MD at the site since the 2006 EE/CA; therefore, the remedy had been protective in the short term.

1.4.19.3 The Five-Year Review Report noted that for the remedy to remain protective in the long-term, community awareness must be fully implemented. The Five-Year Review Report recommended that the USACE FUDS website be updated to include Fort Segarra, that the Final Five-Year Review Report be placed at the St. Thomas library reference desk, and that the two existing warning signs be periodically maintained.

1.4.19 2013 Revised Inventory Project Review

In 2013, the 1989 INPR was revised to administratively realign the former MMRP project into Munitions Response Areas and/or MRSs. The Fort Segarra MRS 01 acreage was revised from 2.29 acres to 17.1 acres to include Test Area 4, Test Area 5, and Test Area 8 (USACE, 2013).

1.4.20 2016 Site Specific Final Report (Replacement of Informational Signs)

In 2016, USACE replaced two informational signs concerning the former Fort Segarra at the public ferry dock and the deep-water dock on Water Island that had become damaged and corroded due to ocean-side environmental conditions (USA Environmental, 2016). As noted previously, wide-spread damage from Hurricanes Irma and Maria occurred on Water Island in September 2017, and the current condition of the signs is unknown.

1.5 REPORT ORGANIZATION

1.5.1 The sections of this RI report have been organized following guidance provided in *Munitions Response Remedial Investigation/Feasibility Study Guidance* (U.S. Army, 2009). However, because there was no field investigation conducted as part of this RI, the report's organization deviates somewhat from the outline presented in that document. General deviations include the following:

- Data needs are not addressed in **Section 2** because no fieldwork was conducted as part of the RI since sufficient data were available in existing documents regarding MEC, CWM, MC, and CA.
- The RI Findings section has been deleted because there was no field investigation. Findings from the review of historical documents and previous studies and investigations are summarized in the Characterization of CWM and CA and Characterization of MEC and MC sections (**Section 3**), and these findings are presented in the Summary of Results section (**Section 6**).
- The Revised CSM is its own section (**Section 4**).
- The Contaminant Fate and Transport section has been deleted because no source areas or exposure pathways were identified for MEC, CWM, MC, or CA.
- Because this RI relies on historical data, typically included sections and associated appendices related to a field effort have not been included.
- If needed, an Institutional Analysis will be prepared in conjunction with a Feasibility Study.

- A Munitions Response Site Prioritization Protocol will be prepared as a separate document as part of the RI. Because the Munitions Response Site Prioritization Protocol has a different review process from the RI report, it is not included in the report.

1.5.2 The RI report is organized as follows:

- **Executive Summary** – presents a description of the site and summarizes the results of the RI.
- **Section 1: Introduction** – presents the purpose of the RI with a description of the work authorization, provides a description of the site, site historical information, summaries of previous investigations, identifies the problem, and presents the organization of the report.
- **Section 2: Project Remedial Response Objectives** – presents the preliminary CSM; discusses the project approach, preliminary remedial action objectives (RAOs), identification and applicability of applicable or relevant and appropriate requirements (ARARs); and presents the DQOs.
- **Section 3: Characterization of MEC/MC and CWM/CA** – provides details on the characterization of MEC, CWM, MC, and CA using existing information; summarizes other information regarding the site including climate, topography, geology, natural resources, demographics; and present and future land use.
- **Section 4: Revised Conceptual Site Model** – presents the revised CSMs for the Fort Segarra MRS 01 based on the characterization of MEC, CWM, MC, and CA.
- **Section 5: Risk Characterization** – provides a qualitative discussion of the risk characterization for the MRS.
- **Section 6: Summary of Results** – presents the RI results and conclusions.
- **Section 7: References** – lists the references used in preparing this RI report.

1.5.3 In addition, the following appendices are provided to supplement the results reported in this document.

- **Appendix A:** Performance Work Statement
- **Appendix B:** Technical Project Planning (TPP) Memorandum and Presentation
- **Appendix C:** Post-RI Geographic Information System Data Deliverable

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2.0 PROJECT REMEDIAL RESPONSE OBJECTIVES

This section presents a discussion of the preliminary CSM, project approach, and DQOs considered while developing response objectives during the RI for the Fort Segarra MRS 01.

2.1 PRELIMINARY CONCEPTUAL SITE MODEL

A preliminary CSM for the Fort Segarra MRS 01 was developed by integrating information from the 1993 Scoping Study, 2002 ASR, and the 2005 EE/CA. This section presents the preliminary CSM in **Table 2-1**. The data collected during the RI have been incorporated into the revised CSMs, which are presented in **Section 4**.

Table 2-1: Fort Segarra MRS 01 Preliminary CSM

Profile Type	Site Characterization

MRS Profile	**Area and Layout**
	• The Fort Segarra MRS 01 is located on the southern portion of Water Island, the smallest of the USVI, approximately 1,800 feet from the island of St. Thomas, directly south of the capital city, Charlotte Amalie.
	• The Fort Segarra MRS 01 consists of four non-contiguous areas:
	  ○ The 5.4-acre Flamingo Bay Landfill Area is located south of Flamingo Bay.
	  ○ The 4.9-acre Test Area 4 is located adjacent to the Flamingo Bay Landfill Area.
	  ○ The 3.3-acre Test Area 5 is located east of Test Area 4 and south of Flamingo Bay.
	  ○ The 3.5-acre Test Area 8 is located north of Flamingo Bay, adjacent to the Water Island Fire Department.

	Structures • There are no structures present at the Flamingo Bay Landfill Area or at Test Areas 4, 5, and 8. Test Area 8 is the approximate location of a former hotel constructed on Water Island during the early 1960s.
	Utilities • Power is supplied to Water Island by the Virgin Island Water and Power Authority. A power line runs under East Gregerie Channel from St. Thomas to Water Island supplying power to all the residences. • Water Island does not maintain a municipal drinking water treatment system. Residents on the island obtain their drinking water by collecting rainwater, which is stored in cisterns. Water may also be obtained by truck from St. Thomas if a cistern runs dry. • Individual homes use septic tanks for their sewage.
	Boundaries • Water Island is under the administrative jurisdiction of the USVI government. Although there are some privately owned parcels on Water Island, the four parcels comprising the MRS are owned by the USVI government.
	Security • Access to Water Island is primarily by boat with access points at either of two docks: one small dock located on the west side of the island and the deep-water dock on the south side of Flamingo Bay. There is also a helicopter pad on the northern side of Flamingo Bay. The fencing around the Flamingo Bay Landfill Area was removed. There are no known restrictions to access the four areas within the MRS.

<table>
<tr><th>Profile Type</th><th>Site Characterization</th></tr>
<tr><td rowspan="3">Land Use and Exposure Profile</td><td>Current Land Use
• Many of the barracks, administration, and support buildings constructed as part of the former Fort Segarra have been converted to private homes. The primary land use on the island is residential.</td></tr>
<tr><td>Potential Future Land Use
• USACE does not anticipate the land uses will change in the future from residential/recreational.</td></tr>
<tr><td>Human Receptors
• Human receptors include residents, recreational visitors, and site workers.</td></tr>
<tr><td>Ecological Profile</td><td>Degree of Disturbance
Many threatened and endangered species are known to occur in the USVI:
• 2 Threatened Species
o Green sea turtle (Chelonia mydas)
o Roseate tern (Sterna dougallii dougallii)
• 10 Endangered Species
o Culebra Island giant anole (Anolis roosevelti)
o Hawksbill sea turtle (Eretmochelys imbricata)
o Leatherback sea turtle (Dermochelys coriacea)
o No common name (Agave eggersiana)
o No common name (Calyptranthes thomasiana)
o No common name (Catesbaea melanocarpa)
o St. Croix ground lizard (Ameiva polops)
o St. Thomas prickly-ash (Zanthoxylum thomasianum)
o Vahl’s boxwood (Buxus vahlii)
o Virgin Islands tree boa (Epicrates monensis granti)
https://www.fws.gov/southeast/us-virgin-islands/</td></tr>
<tr><td rowspan="2">Munitions/ Release Profile</td><td>MEC
Based on historical documentation, there is no evidence of MEC having been used at the Fort Segarra MRS 01. Construction was not completed at the former Fort Segarra prior to the end of WWII; no armaments were installed at the battery, and no munitions training was conducted at the fort. Therefore, no MEC is expected to be encountered at the Fort Segarra MRS 01.</td></tr>
<tr><td>CWM
Based on historical documentation, only six CWM tests were conducted on Water Island between 1948 and 1950. The CWM potentially used at the Fort Segarra MRS 01 include:
• M70 filled with HD,
• E-23 smoke pots filled with GA, HD, and HQ,
• M70, M78, and M79 bombs filled with aged CK, and
• T-3 bombs filled with H and HD.</td></tr>
</table>

Profile Type	Site Characterization
	Suspected Munitions Encounters • In 1966, two suspect chemical bombs (identified as M70 and M78 bombs) were uncovered in the Flamingo Bay Landfill Area during excavations. One of the bombs had been vented while the other had not. The Navy EOD vented this bomb without noticeable release of CA. • During the 1991 ASR site visit, a suspected 500-pound M78 chemical bomb filled with concrete was found on the shore, west of the deep-water dock. The bomb reportedly had a shipping plug in the nose and a vacant tail fuse well. The casing had a hole from being vented. This concrete bomb was likely used as a mooring anchor and washed up onshore during Hurricane Hugo. • The concrete-filled bomb was noted again during site visits in 1993, 1994, and in 2001. During the 2001 site visit, it was noted that fuse ports contained transport plugs, and the casing had been vented by shape charge, a common demilitarization technique used at the time. • In April 1994, a USACE contractor found an empty Chemical Corps 1-ton storage container on the surface of the Flamingo Bay Landfill Area during a non-intrusive investigation. It had been breached. • The 2005 EE/CA classified the concrete-filled bomb and the 1-ton storage container as 3X debris or scrap and recommended a removal action for the items, which was subsequently completed in 2009. During the 2009 removal, it was determined to be a 1,000-pound M79 chemical bomb filled with concrete, not a M78 as originally thought. Although related to the CWM testing activities, none of the items mentioned above are considered CWM or MEC. All the items were determined not to contain CA and were removed from Water Island.
	Associated MC/CA • Based on the historical documents, no MC has been identified at the Fort Segarra MRS 01. • Based on the historical CWM tested at the site, potential CA include: H, HD, HQ, GA, and CK. Based on the previous studies, no CA has been identified at the Fort Segarra MRS 01. • Based on the soil sampling results from previous studies, no indications of MC or CA have been reported in or near the MRS.
	Transport Mechanisms / Migration Routes / Pathway Analysis • Incomplete exposure pathways were identified for MEC due to the lack of a MEC source area. • Potentially complete exposure pathways were initially identified for CWM due to 3X scrap at the site. Incomplete exposure pathways are supported since the 3X scrap has been removed from the site. • Incomplete exposure pathways for human and ecological receptors were identified for MC and CA.

2.2 PROJECT APPROACH

This RI was conducted using existing data included in previous investigations and studies. The RI report was prepared consistent with DIDs approved for the WERS contract, along with the following guidance documents.

- WERS Contract No. W912DY-10-D-0025, TO 0033, *Performance Work Statement Remedial Investigation/Feasibility Studies for Fort Pickens MRS01-Range Complex-FUDS Project No. I04FL006301, Fort Segarra – FUDS Project No. I02VI097701, Benedict Field, Bombing Target MRS – FUDS Project No. I02VI056401, Revision 3, 24 May 2016.* (USACE, 2016a)

- *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (United States Environmental Protection Agency [USEPA], 1988)

- Data Item Description (DID) WERS-010.01 – *EE/CA, RI, and FS Reports* (USACE, 2010)

- Environmental and Munitions Center of Expertise Engineer Manual (EM) 200-1-15 – *Technical Guidance for Military Munitions Response Actions* (USACE, 2015)

- ER 200-3-1 – *Environmental Quality Formerly Used Defense Sites (FUDS) Program Policy* (USACE, 2004)

- *Munitions Response Remedial Investigation/Feasibility Study Guidance* (U.S. Army, 2009]

- Final Study Paper: *Decision Logic to Assess Risks Associated with Explosive Hazards, and to Develop Remedial Action Objectives (RAOs) for Munitions Response Sites* (USACE, 2016b)

2.3 PRELIMINARY REMEDIAL ACTION OBJECTIVES

2.3.1 The purpose of the RI was to gather sufficient data to characterize the nature and extent of safety hazards from MEC and/or CWM, and potential risks from MC and/or CA at the site, if any, and to perform risks assessments. The primary goal of the RI was to collect the appropriate amount of information to determine if there is an unacceptable risk to human health, safety, and the environment arising from MEC, CWM, CA, and/or MC.

2.3.2 RAOs are site-specific, initial clean-up objectives that are established based on the nature and extent of impacts, the resources that are currently and potentially threatened, and the potential for human and environmental exposure. For the Fort Segarra MRS 01, no MEC, CWM, MC, or CA exists and/or remains at the site, and exposure pathways for receptors are incomplete. Therefore, no RAOs are needed nor were established.

2.4 IDENTIFICATION OF POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

This section defines ARARs and the three general categories ARARs.

2.4.1 Definition of Applicable or Relevant and Appropriate Requirements

2.4.1.1 Pursuant to Section 300.400(g) of the NCP, a list of ARARs is developed to identify requirements applicable to the release or remedial action contemplated based upon an objective determination of whether the requirement specifically addresses a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a site. CERCLA, as amended by SARA, and the NCP require that the development and evaluation of remedial alternatives must attain ARARs and ensure protection of public health and the environment as the minimum threshold criteria that must be met during selection of a future response action. ARARs are defined as follows.

- Applicable requirements means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable.

- Relevant and appropriate requirements means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate.

2.4.1.2 It is first determined whether an ARAR is applicable for the CERCLA site. If it is not applicable, then it is determined whether the ARAR is relevant and appropriate. The procedure for determining whether a requirement is relevant and appropriate is a two-step process. First, to determine relevance, it is evaluated whether the requirement addresses problems or situations sufficiently similar to the circumstances of the proposed response action. Second, for appropriateness, the determination must be made about whether the requirement would also be well-suited to the conditions of the CERCLA site. In some cases, only a portion of a requirement would be both relevant and appropriate. When a requirement is deemed relevant and appropriate, it must be attained (or waived). If a requirement is not both relevant and appropriate, it is not an ARAR. "Applicable requirements" and "relevant and appropriate requirements" are considered to have the same weight under CERCLA.

2.4.1.3 As the RI/FS process continues, the list of ARARs is further defined, particularly with respect to data collected during the RI. The ARARs are used to establish the appropriate extent of cleanup; to aid in scoping, formulating, and selecting proposed treatment technologies and remedial alternatives; and to govern the implementation and operation of the selected remedial alternative. Throughout the RI/FS phase, ARARs are identified and used by considering the following:

- Contaminants suspected or identified to be at the site (e.g., MEC, CWM, MC, and/or CA);
- Chemical analysis performed;
- Types of media (air, soil, groundwater, surface water, and sediment);
- Geology and other site characteristics;
- Use of site resources and media;
- Potential contaminant transport mechanisms;
- Purpose and application of potential ARARs; and
- Remedial alternatives considered for site cleanup.

2.4.2 Types of ARARs

2.4.2.1 Generally, ARARs pertain to either contaminant levels or to performance or design standards to ensure protection at all points of potential exposure. ARARs are divided into three general categories: chemical-specific, location-specific, and action-specific. CERCLA actions may have to comply with them as follows.

2.4.2.2 **Chemical-Specific.** Chemical-specific requirements define acceptable exposure levels for specific hazardous substances and, therefore, may be used as a basis for establishing preliminary remediation goals and cleanup levels for chemicals of concern in the designated media. Chemical-specific ARARs are also used to determine treatment and disposal requirements for remedial actions. In the event a chemical has more than one requirement, the more stringent of the requirements will be used.

2.4.2.3 **Location-Specific.** Location-specific requirements set restrictions on the types of remedial actions that can be performed based on site-specific characteristics or location.

2.4.2.4 **Action-Specific.** Action-specific requirements set controls or restrictions on the design, implementation, and performance of remedial actions. They are triggered by the particular types of treatment or remedial actions that are selected to accomplish the cleanup.

2.5 DATA QUALITY OBJECTIVES

2.5.1 Data Needs

Prior to the initiation of the RI, representatives from USACE, the USVI Department of Planning and Natural Resources (DPNR), and the PIKA-Pirnie JV participated in a TPP meeting. The TPP meeting was held on 17 May 2017 at the USVI DPNR office on St. Croix, USVI. At this meeting, an overview of the Fort Segarra MRS 01 history and the RI objectives, DQOs, CSMs, and reporting requirements were presented and discussed. During this meeting, the project delivery team agreed that there was sufficient existing information related to the Fort Segarra MRS 01 to characterize the nature and extent of MEC, CWM, MC, and CA, and to determine if there is an unacceptable risk to human health, safety, and the environment. Meeting participants agreed that no additional fieldwork or data collection was needed to complete the RI. Because a field investigation and/or sampling was not needed, no data needs were identified for MEC, CWM, MC, or CA. The TPP memorandum, with the presentation, is provided in **Appendix B** for reference.

2.5.2 Data Quality Objectives

2.6.2.1 The DQOs are qualitative and quantitative statements that define the type, quantity, and quality of data necessary to support the decision-making process during the RI. The DQOs were developed for the Fort Segarra MRS 01 using the *Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA/G-4* (USEPA 2006). The DQOs were developed to ensure that the following conditions are met:

1. The quality of data compiled is acceptable for the intended use of the data; and

2. Valid assumptions can be inferred from the data.

2.6.2.2 The following project DQOs shown in **Table 2-2** were established for the Fort Segarra MRS 01 RI.

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Table 2-2: Data Quality Objectives

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
Explanation	*Define the problem that necessitates this study*	*Identify study questions*	*Identify data and information needed to answer study questions*	*Specify the target population and define spatial limits*	*Develop the logic for drawing conclusions from findings*	*Specify probability limits for false rejections and false acceptance decision errors*	*Select the plan that meets the performance criteria*
Fort Segarra MRS 01 (Test Areas 4, 5, and 8, and Flamingo Bay Landfill Area) MEC, CWM, MC, and CA Characterization An RI approach is planned based on existing information	While numerous studies and investigations have been conducted at the site, CERCLA-required actions to characterize the nature and extent of MEC, CWM, MC, and CA have not been completed. As such, the RI documents the type (nature) and density and distribution (extent), or lack of, for MEC, CWM, MC, and CA. Hazards and risks to human and ecological receptors were also assessed. Based on the information presented in the studies and investigations that substantiates the conclusion that MEC, CWM, MC, and CA do not exist at Fort Segarra MRS 01, the CSMs show there is no MEC, CWM, MC, or CA and pathways for human and ecological receptors are incomplete.	▪ Do historical documents and studies provide enough information to document the type (nature), density and distribution (extent), or lack of, MEC, CWM, MC, and/or CA? ▪ Can the potential risks/hazards to human and ecological receptors, if any, be evaluated using the information from the existing documents and studies? Alternative Outcomes include: ▪ A recommendation for No Further Action if no MEC, CWM, MC, and/or CA hazards are identified, and an unacceptable risk scenario does not exist. ▪ An evaluation of remedial alternatives in the FS, including alternatives for MEC, CWM, MC, and/or CA removal and for preventing receptor interaction with MEC, CWM, MC, and/or CA, if identified. The RI data will be used to determine whether areas within MRS 01 exist that present an unacceptable risk to receptors under current and future scenarios due to the presence of MEC, CWM, MC, and/or CA. The statements in the column titled "Analytical Approach" describe the overall decision logic to support answering the study questions.	Data collected during previous studies, investigations, and removal actions, including: ○ 1966 Ordnance Discovery at Flamingo Bay Landfill ○ 1989 Inventory Project Report ○ 1991 ASR ○ 1993 Scoping Study ○ 1995 Phase I Remedial Investigation Report ○ 1995 Environmental Assessment ○ 2001 Preliminary Assessment ○ 2001 Historical Photo Analysis ○ 2002 ASR ○ 2004 Site Investigation Report ○ 2005 EE/CA Report ○ 2006 EE/CA Action Memorandum ○ 2009 Site Specific Final Report ○ 2012 Five-Year Review ○ 2013 Revised INPR ○ 2016 Site Specific Final Report	▪ The horizontal input boundary is the entirety of the 17-acre Fort Segarra MRS 01, which consists of four non-contiguous areas (Test Areas 4, 5, and 8, and Flamingo Bay Landfill), all located on the southern end of Water Island, as described below: ▪ **Test Area 4** consists of 4.9 acres ▪ **Test Area 5** consists of 3.3 acres ▪ **Test Area 8** consists of 3.5 acres ▪ **Flamingo Bay Landfill Area** is located adjacent to Test Area 4 and consists of approximately 5.4 acres ▪ The vertical input boundary is depth of investigation for the previously completed studies, investigations, and removal actions. The deepest depth previously investigated was 20 feet.	• For Fort Segarra MRS 01, sufficient information exists to support completion of the RI/FS without collection of additional data. • Existing information will be used to document the lack of MEC, CWM, MC, and/or CA presence at the Fort Segarra MRS 01, including the findings presented in previous studies/reports and historical documents. • This existing information will be used to substantiate decisions regarding possible actions at the MRS, including site closure or institutional controls. *Alternative actions will be formulated in the FS, if needed, based on the RI findings; available historical information documents the lack of MEC, CWM, MC, and/or CA presence at Fort Segarra MRS 01 and will be used to support site closure or, if needed, to address remedy selection.*	Project-specific measurement performance criteria focus on determining whether the information documented in historical studies and reports satisfies the DQOs. Failure to meet the DQOs may have an impact on end uses of the RI findings. Data usability will be discussed in a section of the RI report.	The RI will be used to document the following findings presented in the previously completed studies, investigations and removal actions: ○ The limited CWM and/or CA-related use of MRS 01 is well-documented in historical documents and previous studies ○ Construction of the former Fort Segarra was not completed prior to the end of WWII, no armaments were installed, and no munitions training was conducted at the fort ○ No MEC or MD have been found during previous studies at the MRS ○ Limited sampling for MC has yielded no explosives detections and no MC metals exceedances above screening criteria ○ It has been 66 years since the Chemical Corps used the Fort Segarra MRS 01 for testing and storage of chemical munitions ○ There is historical documentation noting that CWM munitions were shipped to Dugway Proving Ground or dumped at sea following completion of the tests ○ Based on the types of activities conducted (i.e., controlled static testing only –never used as an impact area), CWM is not expected throughout the site ○ Although a few suspected CWM-related items have been found within the Fort Segarra MRS 01 in the past, the items were determined to not contain CA and have been removed ○ Limited sampling for CA has yielded no detections; CA would have degraded to non-hazardous levels in the 66 years since the site was used The RI findings will be used to support no further action if an acceptable risk, or no risk, is determined for MEC, CWM, MC, and CA, or an FS will be completed to develop and evaluate remedial alternatives. The proposed alternative and selected remedy will be documented in the Proposed Plan and Decision Document in accordance with CERCLA.

DQO Table Reference: *Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001*, February 2006

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3.0 CHARACTERIZATION OF MEC/MC AND CWM/CA

This section presents the information from previous studies and historical documents that were reviewed and are summarized in this report to characterize MEC/MC and CWM/CA, or the lack thereof, remaining at the Fort Segarra MRS 01.

3.1 IDENTIFICATION AND EVALUATION OF AREAS OF CONCERN

3.1.1 Based on the historical documents, the Fort Segarra MRS 01 includes four non-contiguous areas (Test Areas 4, 5, and 8, and the Flamingo Bay Landfill Area).

3.1.2 The Fort Segarra MRS 01 description, environmental setting, and land use are provided below. The Fort Segarra MRS 01 is shown on **Figure 1-2.**

3.1.3 Historical documents indicate the MRS was used by the Army during two historical periods. The first was for coastal defense (i.e. Fort Segarra) during WWII. Although the concrete gun positions and supporting buildings were completed, the gun armaments were never installed and Fort Segarra was deactivated in 1946. No evidence of training with MEC or MC has been found within the Fort Segarra MRS 01. The second use was by the Chemical Corps from 1948 to 1950 for static testing of CWM as part of the San Jose Project, which evaluated the performance of CWM in a tropical environment. The CWM test areas were located on the western end of St. Thomas and in a few areas on Water Island, including Test Areas 4, 5, and 8 (**Figure 1-3**). The six tests conducted on Water Island included static tests with M70 bombs filled with HD; E-23 smoke pots filled with GA, HD, and HQ; and surveillance tests with M70, M78, and M79 bombs filled with aged CK and T-3 bombs filled with H and HD. While not used for testing, the deep-water dock adjacent to the Flamingo Bay Landfill Area was used to deliver equipment and munitions during the CWM testing and came under scrutiny when two suspected chemical bombs were uncovered in the area in 1966 during excavation to bury waste, as previously mentioned.

3.1.4 No MC or CA source area have been identified within the Fort Segarra MRS 01 and none is anticipated based on the studies and investigations conducted to date. MC (explosives and metals) and CA soil sampling conducted to date at the MRS has not indicated a source area for either.

3.2 FORT SEGARRA MRS 01 CHARACTERISTICS

3.2.1 Climate

The Fort Segarra MRS 01 is located on Water Island. Water Island lies within the subtropical dry forest life zone where mean annual rainfall ranges from approximately 23.6 to 43.3 inches with the rainy season occurring from May to November. The climate is tempered by easterly trade winds, relatively low humidity, and little seasonal temperature variation (Dynamac, 1995). The island is periodically exposed to damaging hurricanes that generally occur from June through September. Hurricane Hugo in September 1989, Hurricane Marilyn in September 1995, and Hurricanes Irma and Maria in September 2017 all caused major damage to the island.

3.2.2 Terrain and Vegetation

Water Island is approximately 500 acres in size with, measuring 1.75 miles long and 0.5 miles wide (**Figure 1-1**). Water Island has steep, rocky slopes and a highly indented coast with a maximum elevation of 290 feet. A primary ridgeline, 200 to 290 feet above sea level, runs down the center of the island in a north-south direction. The southern and southeastern coastlines are characterized by steep cliffs. The remainder of the coastline includes sand and sand/gravel beaches, a number of small bays and peninsulas, and salt ponds with associated mangrove systems (USACE, 1991a).

3.2.3 Geology and Soil Conditions

Water Island is volcanic in origin. It has shallow soils of the Cramer gravelly clay loam variety, dense semiarid vegetation, and a rather steeply sloping terrain. Volcanic rock outcrops and cliffs are found along most of the south coast of the island. Limestone outcrops and soils are found primarily in Limestone Bay (Dynamac, 1995).

3.2.4 Hydrology

3.2.4.1 Very little information is available regarding groundwater on Water Island. The depth to groundwater ranges from ground level at the saltwater ponds to more than10 feet below ground surface for most of the island. Groundwater generally occurs in both the residual soils and in the fractured bedrock. Groundwater is not used by island residents; rather they collect water from rainfall using catchment basins and cisterns. When necessary (e.g., during droughts), water is brought in by trucks on a barge from the island of St. Thomas (Dynamac, 1995).

3.2.4.2 The only surface water on Water Island exists in salt ponds at various locations around the island, generally on the southeastern side. These ponds are at sea level and probably are replenished through a combination of seawater intrusion and shallow groundwater flow. No data are available on the quality of the water in these ponds. Water Island got its name from fresh water ponds where sailing ships could replenish their water supply. Fresh water ponds apparently were once found in association with the saltwater ponds (Dynamac, 1995).

3.2.5 Demographics

3.2.5.1 Water Island is the smallest of the main USVI. It is administratively a part (sub district) of the St. Thomas District, having been transferred from the US DOI to the government of the USVI in 1996. Water Island is a residential island, with a population of 182 (2010 census) and no significant commercial establishments. Among these residences are accommodations that cater to vacationers such as vacation homes, apartments, and a campground with eco-cabins. The northern end of the island is a gated community – Sprat Bay Estates, which includes Sprat Bay Beach. While the population of the USVI is predominantly black or African-American (76 percent in 2010), the population of Water Island is predominantly white. Median household income is not available for Water Island.

3.2.5.2 Water Island does not currently have taxis, public transportation, gas stations, hotels, shops, or a main town. Residents and visitors depend on St. Thomas for everything from groceries to mail service. A ferry operates between the two islands. The Water Island Civic Association acts as a de facto island government (http://www.waterislandwica.com/) and works with the USVI government agencies on St. Thomas to coordinate repairs to roads, garbage pickup, and emergency services. Membership dues for the Water Island Civic Association pay for beach cleanup and community social activities.

3.2.5.3 In September 2017, Hurricanes Irma and Maria caused wide-spread damage to the island, and the number of structures and residents still on the island may be different than what is presented here.

3.2.6 Current and Future Land Use

Currently, most of the Fort Segarra MRS 01 is undeveloped land. Access to all four areas within the MRS is unrestricted. A part of Test Area 5 is used by the residents of Water Island as a solid waste transfer station that is administered by the USVI Department of Public Works. As such, several roll-offs are staged there for collection of household garbage and bulk garbage. Test Area 8 was the approximate location of a large hotel constructed on Water Island during the early 1960's, which was destroyed by Hurricane Hugo in 1989, and demolished in 1998. This former test area is currently highly vegetated. The Flamingo Bay Landfill Area was historically used as a landfill. The area is still used by Water Island residents as a dump for vehicles, machinery, and large debris. The government of the USVI controls these former test areas and signed a lease with the Water Island Development Company, LLC in 2014 for development of a hotel/ resort on Water Island. Initial development plans call for construction of townhome residences at Test Areas 4 and 5, a hotel complex and villas at Test Area 8, and a marina complex and support buildings at the Flamingo Bay Landfill Area. Additional residential development has also taken place on the island over the last 10 years. In September 2017, Hurricanes Irma and Maria caused wide-spread damage to the island.

3.3 KNOWN OR SUSPECTED MEC AND POTENTIAL MC

3.3.1 Known or Suspected MEC

While the construction of the former Fort Segarra was begun during WWII to provide defensive support for the Roosevelt Roads Naval Facility on Puerto Rico, construction was not completed prior to the end of WWII. No armaments were installed, and no munitions training was conducted at the fort. Based on historical documentation, no MEC or MD have been encountered at the Fort Segarra MRS 01, and therefore no MEC source areas have been identified at the MRS.

3.3.2 Potential MC

No MC has been detected at the MRS. MC (explosives and metals) soil samples were collected in 2003 as part of the SI (USACE, 2004) and EE/CA (USACE, 2005). The results indicated that there are no MC issues (explosives and metals) associated with the Fort Segarra MRS 01.

3.4 KNOWN OR SUSPECTED CWM AND POTENTIAL CA

3.4.1 Known or Suspected CWM

Based on historical documents, as summarized in **Section 1.0** of this report, CWM testing (only six tests) was conducted in Test Areas 4, 5, and 8. However, no evidence of remaining CWM has been identified within the Fort Segarra MRS 01. As summarized in **Section 1.0**, the use and disposition of CWM at the MRS were documented in detail in historical documentation (San Jose Project Progress Report, 1948-1950). Although a few suspected CWM-related items have been found within the Fort Segarra MRS 01, the items did not contain CA and were removed. No CWM-related item has been found since 1994. Based on the weight of evidence provided in historical documents and previous studies, no CWM remains at the Fort Segarra MRS 01.

3.4.2 Potential CA

No CA have been detected at the MRS. CA soil samples were collected in 2003 as part of the SI (USACE, 2004) and the EE/CA (USACE, 2005). The results indicated that there are no CA issues associated with the Fort Segarra MRS 01.

3.5 DATA USABILITY

3.5.1 A data usability assessment was conducted to evaluate whether the MEC, CWM, MC, and CA data reviewed during the RI met the DQOs established for the project. The data usability assessment determined that adequate data exist to document: (1) the lack of conventional munitions (i.e., MEC) use and presence; (2) the use of CWM for limited, controlled tests and the subsequent removal of CWM following the tests; (3) the lack of MC presence, including sampling data indicating that no explosives were detected and metals were not detected above screening criteria; and (4) the lack of CA and associated breakdown products, including sampling data indicating that neither was detected at the site.

3.5.2 Historical documents, previous studies, and investigations were used to characterize the nature and extent of MEC, CWM, MC, and CA. The data are sufficient to make decisions about future actions at the site. Historical documents describing the construction of the former Fort Segarra and the tests conducted on Water Island, as well as previous studies and investigations completed over a 50-year period (i.e., 1966 to 2016) were reviewed for the RI. Detailed information was found describing the construction of the former Fort Segarra, its deactivation before guns or conventional munitions were brought to the site, the CWM and CA tests conducted, the removal of CWM/CA in the 1950s, the subsequent removal of 3X scrap, and confirmation that no MEC, CWM, MC, or CA remain at the Fort Segarra MRS 01.

3.5.3 The historical documents regarding the CWM and CA tests were descriptive in nature and provided documentation of the test procedures and protocols, as well as findings. The previous studies and investigations have included visual surveys, magnetometer sweeps, excavations/trenching, and soil sampling. There were no data limitations identified in the documents reviewed. The tables included in the documents provided enough information to determine that the data was of acceptable quality and could be used to support the RI. The documents were found to be representative and complete, and the information among documents was found to be consistent in the description and use of the site, the tests conducted, the CWM-related items found and removed, and the sampling results showing no MC or CA presence.

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4.0 REVISED CONCEPTUAL SITE MODEL

This section presents the revised CSMs for MEC/CWM and MC/CA for the Fort Segarra MRS 01. The CSMs are based on the physical and ecological profile information (as presented in **Section 3**) and integrates information from the INPR, 2002 ASR, and the 2005 EE/CA as to the nature and extent of MEC, CWM, MC, and CA. The revised CSMs for the Fort Segarra MRS 01 are depicted as flow charts summarizing the pathway and exposure analyses discussed below. The CSM for MEC/ CWM is depicted on **Figure 4-1.** The CSM for MC/CA is depicted on **Figure 4-2.**

4.1.1 MEC/CWM Exposure Pathway Analysis

This section summarizes the MEC/CWM exposure pathway analysis for the Fort Segarra MRS 01, using updated information for future land use and potential MEC/CWM sources.

4.1.1.1 Source

4.1.1.1.1 Based on historical documents, there was never a source of MEC at the Fort Segarra MRS 01.

4.1.1.1.2 As previously mentioned, only six CWM tests were conducted within the Fort Segarra MRS 01. Based on the historical documents, CWM associated with testing at the Fort Segarra MRS 01 included the following:

- M70 bombs filled with HD,
- T-3 bombs filled with H and HD,
- E-23 smoke pots filled with GA, HD, and HQ, and
- M70, M78 and M79 bombs filled with aged CK.

4.1.1.1.3 The 2005 EE/CA identified 3X scrap at the Flamingo Bay Landfill Area which could have presented a potential exposure pathway to receptors. However, the 3X scrap was removed and disposed outside of Water Island in 2009 (USACE, 2009). No CWM-related items have been found since 1994, and all items have been removed from Water Island.

4.1.1.2 Access

4.1.1.2.1 Access to Water Island is primarily by boat via two docks: one small dock located on the west side of the island and the deep-water dock on the south side of Flamingo Bay (see **Figures 1-2** and **1-3**). There is also a helicopter pad on the northern side of Flamingo Bay.

4.1.1.2.2 The future land use for the Fort Segarra MRS 01 is anticipated to remain residential and/or recreational, allowing receptor access to the surface and subsurface. In 2014, the government of the USVI signed a lease with a developer to build a hotel/resort on several areas of Water Island, including the four parcels comprising the MRS. While the status of the development on Water Island is unknown because of the devastating effects of Hurricanes Irma and Maria in September 2017, future use of the island is highly likely to include residential and recreational development.

4.1.1.3 Activity

4.1.1.3.1 Current activities at Test Areas 4 and 5, and the Flamingo Bay Landfill Area consist primarily of accumulation of surface debris. Test Area 8 has occasional visitors but there are no ongoing activities. The maximum anticipated depth of activity is anticipated to be no greater than one foot, although excavation to greater depths may occur in conjunction with residential or hotel/resort development (i.e., construction/installation of utilities).

4.1.1.3.2 The anticipated future land use at the Fort Segarra MRS 01 may include residential/recreational use, as well as hotel/resort development.

4.1.1.4 Receptors

4.1.1.4.1 Human receptors identified for the Fort Segarra MRS 01 include both current and anticipated future land users. Receptors include United States and USVI government personnel, contractors, residents, and visitors.

4.1.1.4.2 Ecological receptors (biota) are identified as mammals, birds, reptiles, as well as sensitive species known to be present at the site or, based on the physical setting of the site (detailed in **Table 3-1**), reasonably anticipated to be present on either a permanent or transient basis. Several threatened and endangered species are known to occur in the USVI, including the following.

- Green sea turtle (*Chelonia mydas*)
- Roseate tern (*Sterna dougallii dougallii*)

4.1.2 MEC/CWM Exposure Pathway Conclusions

4.1.2.1 The information reviewed during the RI was used to update the preliminary MEC/CWM CSM for the Fort Segarra MRS 01 and to identify complete, potentially complete, or incomplete source-receptor interactions for current and anticipated future users. An exposure pathway is considered incomplete unless all the following elements are present: (a) MEC and/or CWM contamination; (b) a receptor that might be affected by that contamination; and (c) a method for the receptor to be exposed to (*i.e.*, come into contact with) the contamination. If all these elements are present, an exposure pathway is considered complete. If all MEC/CWM found has been rendered safe, the pathway is considered potentially complete if 1) previous MEC/CWM finds indicate the potential for MEC/CWM to remain and 2) both receptors and an exposure method are present. The exposure pathways analysis for MEC/CWM is presented on **Figure 4-1** and the exposure pathways analysis for MC/CA is presented on **Figure 4-2.**

4.1.2.2 Based on the RI findings, no MEC/CWM source areas exist; therefore, exposure pathways are considered incomplete for all receptors.

4.1.3 MC/CA Exposure Pathway Analysis

This section summarizes the RI data results for the MC/CA exposure pathway analysis for the Fort Segarra MRS 01.

4.1.3.1 Source

Based on the review of the previous investigations for the Fort Segarra MRS 01, no MC or CA were identified during the RI. Soil samples collected in 2003 during the EE/CA and analyzed for MC (explosives and metals) and CA showed no evidence of a CA or MC at the MRS.

4.1.3.2 Access

Refer to **Section 5.1.1.2**.

4.1.3.3 Activity

Refer to **Section 5.1.1.3**.

4.1.3.4 Receptors

Refer to **Section 5.1.1.4.**

4.1.4 MC/CA Exposure Pathway Conclusions

Based on the evaluation completed as part of this RI and supported by information contained in previous studies and historical documents, no MC or CA exist in the MRS, and exposure pathways are considered incomplete for all receptors in all environmental media.

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Figure 4-1: MEC and CWM Conceptual Site Exposure Model

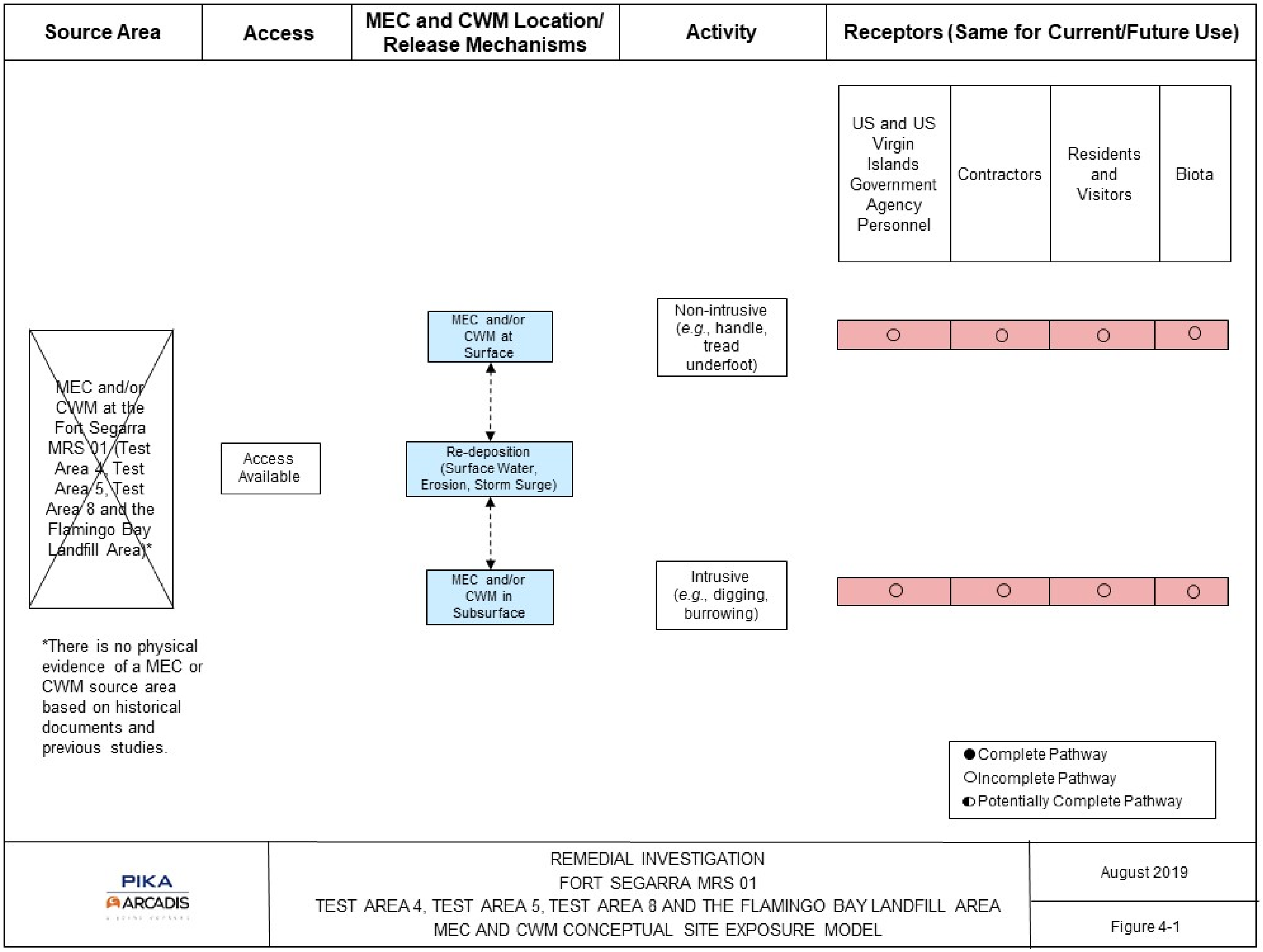
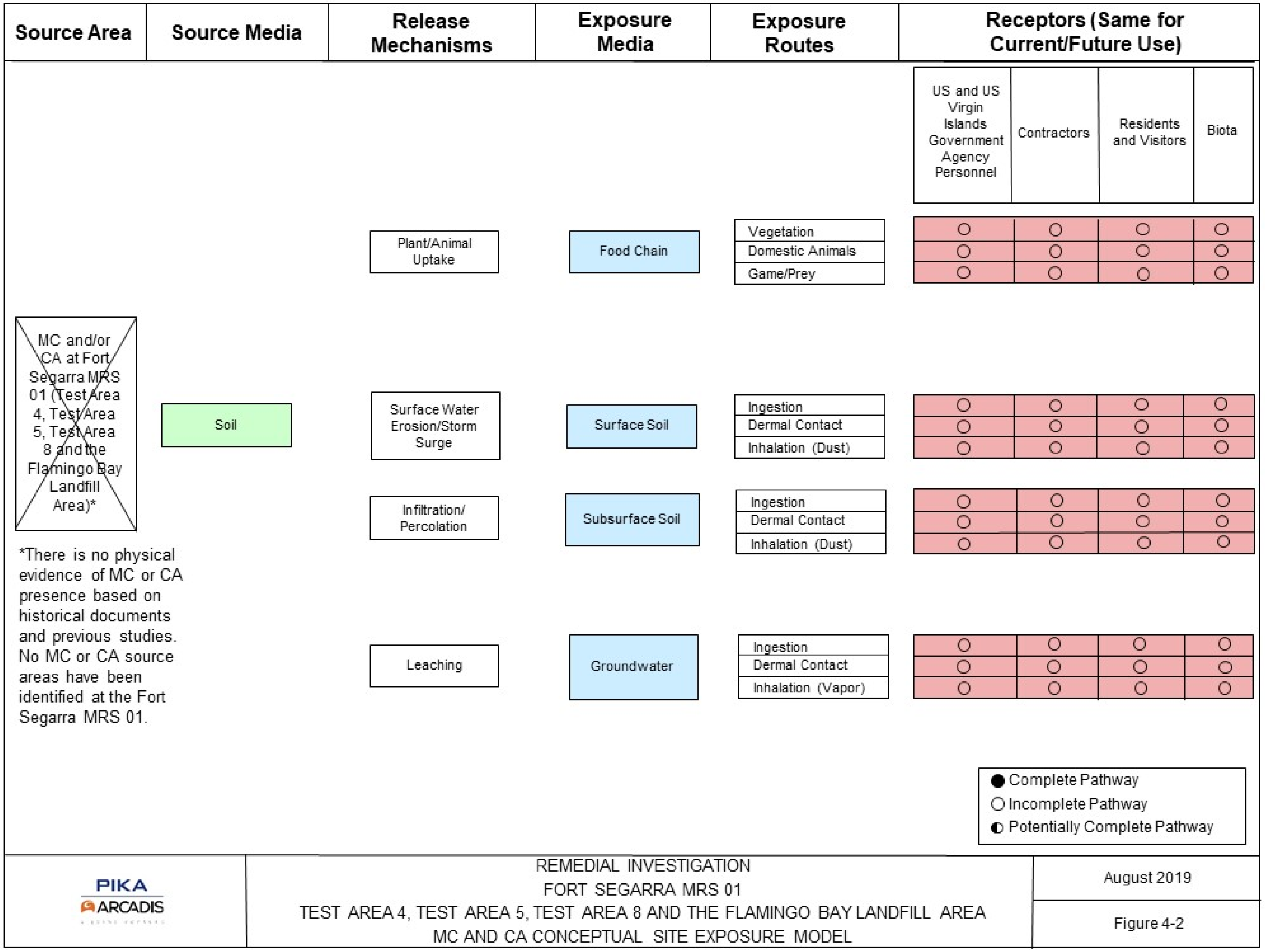


Figure 4-2: MC and CA Conceptual Site Exposure Model



5.0 RISK ASSESSMENT

5.1 FORT SEGARRA MRS 01 MEC AND CWM PROBABILITY ASSESSMENT

5.1.1 Based on the historical documents reviewed to prepare the RI, MEC was not used at the Fort Segarra MRS 01 and does not constitute a risk.

5.1.2 Review of the same historical documents indicates that M70 bombs filled with HD; E-23 smoke pots filled with GA, HD, and HQ; M70, M78 and M79 bombs filled with aged CK; and T-3 bombs filled with H and HD were used in the six tests under the San Jose Project conducted at the Fort Segarra MRS 01. However, CWM was disposed off-site at the end of the testing in the USVI, and no evidence of CWM has been identified on Water Island. Because there is no evidence that CWM remains at the Fort Segarra MRS 01, no intrusive activities are required as part of future response actions, and the preparation of a CWM risk probability assessment is not applicable for the Fort Segarra MRS 01.

5.2 FORT SEGARRA MRS 01 MC AND CA QUALITATIVE RISK DISCUSSION

5.2.1 Based on the historical documents reviewed to prepare the RI, no MC exist at the Fort Segarra MRS 01, and therefore, MC does not constitute a risk.

5.2.2 As previously discussed, CA at the Fort Segarra MRS 01 consisted of the CA fillers in the bombs and smoke pots used on site during the San Jose Project tests, but CA was removed following the tests. As such, there is no CA remaining at the Fort Segarra MRS 01. Due to a lack of CA, all pathways for CA are considered incomplete. Therefore, there is no risk posed to human or ecological receptors by CA. Thus, neither an HHRA or a SLERA are needed.

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6.0 SUMMARY OF RESULTS

This section summarizes the significant results obtained and the conclusions reached as a result of the RI prepared for the Fort Segarra MRS 01. Only the most significant findings are presented in this section and are reproduced directly or abstracted from information contained in this report. The overall goal of the RI was to determine the nature and extent of MEC, CWM, MC, and CA at the Fort Segarra MRS 01 and subsequently to determine the potential hazards and risks posed to human health and the environment by MEC, CWM, MC, and/or CA. The RI also provides additional data to assist in determining if an FS is necessary for the MRS.

6.1 NATURE AND EXTENT OF MEC AND CWM

6.1.1 While construction of the former Fort Segarra was begun during WWII to provide defensive support for the Roosevelt Roads Naval Facility on Puerto Rico, construction was not completed prior to the end of WWII. No armaments were installed, and no munitions training was conducted at the fort. Based on historical documentation and previous studies, no MEC or MD have been encountered at the Fort Segarra MRS 01, and therefore no MEC source areas have been identified at the MRS.

6.1.2 From May 1948 to September 1950, the Chemical Corps used portions of Water Island for testing and storage of CWM, to evaluate the performance of CWM in a tropical environment. Several CWM test areas were designated on Water Island, including Test Areas 4, 5, and 8. The six tests conducted on Water Island included static tests with M70 bombs filled with HD and E-23 smoke pots filled with GA, HD, and HQ; and surveillance tests of M70, M78, and M79 bombs filled with aged CK and T-3 bombs filled with H and HD. At the end of the San Jose Project in 1950, munitions were either dumped at the Naval Ammunition Dumping Ground in the Caribbean Sea south of Vieques Island (SAIC, 1993) or shipped to Dugway Proving Ground, Utah. Although the Flamingo Bay Landfill Area was not used for testing, the deep-water dock adjacent to the landfill area was used to deliver equipment and munitions during the CWM testing, and two suspected chemical bombs (identified as M70 and M78 bombs) were uncovered in this area in 1966 during excavations (SAIC, 1993). Although a few suspected CWM-related items have been found within the Fort Segarra MRS 01, the items did not contain CA and have been removed. No CWM-related items have been found since 1994. Based on historical documentation and previous studies, no CWM remains at the Fort Segarra MRS 01, and no CWM have been identified.

6.2 NATURE AND EXTENT OF MC AND CA

Because no MEC or CWM were identified at the Fort Segarra MRS, no MC or CA are anticipated, and none have been identified based on previous studies.

6.3 MEC AND CWM HAZARD AND RISK ASSESMENT

No MEC or CWM exist at the Fort Segarra MRS 01, and thus, all exposure pathways are considered incomplete. Because there is no evidence that MEC or CWM exists at the Fort

Segarra MRS 01, the preparation of a MEC and CWM risk probability assessment is not applicable for the Fort Segarra MRS 01.

6.4 MC AND CA RISK CHARACTERIZATION

No MC or CA exist at the Fort Segarra MRS 01, and thus, all exposure pathways are considered incomplete. There is no risk identified for human or ecological receptors, and a HHRA and SLERA are not required.

6.5 DATA USABILITY FINDINGS

A data usability assessment was conducted to evaluate whether the MEC, CWM, MC, and CA data reviewed during the RI met the DQOs established for the project. The data usability assessment determined that adequate data exist to document: (1) the lack of conventional munitions (i.e., MEC) use and presence; (2) the use of CWM for limited, controlled tests and the subsequent removal of CWM following the tests; (3) the lack of MC presence, including sampling data indicating that no explosives were detected and metals were not detected above screening criteria; and (4) the lack of CA and associated breakdown products, including sampling data indicating that neither was detected at the site. The data are sufficient to make decisions about future actions at the site. There were no data limitations identified in the documents reviewed. The documents were found to be representative and complete, and the information among documents was found to be consistent in the description and use of the site, tests conducted, CWM-related items found and removed, and sampling results showing no MC or CA.

6.6 RI FINDINGS

6.6.1 Based on the available historical information, previous studies, and investigations reviewed during the RI for the Fort Segarra MRS 01, the following findings were noted with respect to MEC, CWM, MC, and CA:

- The limited CWM and/or CA-related use of the Fort Segarra MRS 01 (i.e. six tests from 1948 to 1950) is well-documented in historical documents and previous studies;
- Construction of the former Fort Segarra was not completed prior to the end of WWII, no armaments were installed, and no munitions training was conducted at the fort;
- No MEC or MD have been found during previous studies at the Fort Segarra MRS 01;
- Limited sampling for MC has yielded no explosives detections and no MC metals exceedances above screening criteria;
- It has been 66 years since the Chemical Corps used the Fort Segarra MRS 01 for testing and storage of chemical munitions;

- There is historical documentation noting that CWM munitions were shipped to Dugway Proving Ground or dumped at sea following completion of the tests;
- Based on the types of activities conducted (i.e., controlled static testing only –never used as an impact area), CWM is not expected throughout the site;
- Although a few suspected CWM-related items were found within the Fort Segarra MRS 01 in the past, the items were determined to not contain CA and were removed;
- No CWM-related items have been found since 1994; and
- Limited sampling for CA has yielded no detections; CA would have degraded to non-hazardous levels in the 66 years since the site was used.

6.6.2 Since there is no MEC, CWM, MC, or CA at the Fort Segarra MRS 01, the revised CSMs reflect incomplete exposure pathways for all human and ecological receptors at the Fort Segarra MRS 01. Because there are no complete exposure pathways, no response action is required to protect human health or the environment. Therefore, the findings of the RI support no further action for MEC, CWM, MC, and CA at the Fort Segarra MRS 01.

6.6.3 Furthermore, the CERCLA response process, indicates that in cases where the RI does not require a response action, a FS is not needed. The next phase of the project is the Proposed Plan.

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7.0 REFERENCES

40 Code of Federal Regulations. Part 300. *National Oil and Hazardous Substances Pollution Contingency Plan*. 1993.

42 United States Code 9601-11050. *Comprehensive Environmental Response, Compensation, and Liability Act*.

Chemical Corps. 1947-1950. San Jose Project Progress Reports.

SAIC. 1993. *Former Fort Segarra Scoping Study.* Prepared for United States Army Chemical Materiel Destruction Agency. December.

U.S. Army. 2009. *Munitions Response Remedial Investigation/Feasibility Study Guidance.* November 2009.

USACE. 1989. DERP-FUDS *Inventory Project Report for the Former Fort Segarra, Project No. I02VI097701*. Prepared by USACE, Jacksonville District.

USACE. 1991a. *Archive Search Report for the San Jose Project in the USVI.* Prepared for USAESCH by Ebasco Environmental, Inc. 8 July 1991.

USACE. 1991b. *Area Analysis, 1948-1958, St. Thomas and Vicinity, Virgin Islands*. Prepared by Biometrics Corporation.

USACE. 1995. *Remediation of Sites in the U.S. Virgin Islands and Puerto Rico, Site Characterization, Former Fort Segarra, USVI, Phase 1 Remedial Investigation Report*. Prepared by MTA, Inc. for the USACE, Huntsville. 10 January 1995.

USACE. 2001. *St. Thomas, USVI, Water Island, Historical Photo Analysis*. Prepared for USACE, Jacksonville District by the USACE Topographic Engineering Center (TEC). September 2001.

USACE. 2002. *Defense Environmental Restoration Program for Formerly Used Defense Sites Ordnance and Explosives Chemical Warfare Materials, Archives Search Report, Water Island (Fort Segarra), USVI, Project No. I02VI097701* (Volumes I to IV). Prepared by USACE, St. Louis District. 11 March 2002.

USACE. 2004. *Environmental Quality Formerly Used Defense Sites (FUDS) Program Policy,* ER 200-3-1. 10 May 2004.

USACE. 2005. *Final Engineering Evaluation/Cost Analysis, Former Fort Segarra, Water Island, USVI.* Prepared for USAESCH by Parsons. January 2005.

USACE. 2006. *Engineering Evaluation and Cost Analysis Action Memorandum, Former Fort Segarra, Water Island, USVI.* Prepared by USACE, Jacksonville District.

USACE. 2009. *United States Army Military Munitions Response Program, Munitions Response Remedial Investigation/Feasibility Study Guidance*. November.

USACE. 2009. *Final Site-Specific Final Report Former Fort Segarra, Water Island, USVI.* Prepared for USACE, Jacksonville District by Parsons. 22 April 2009.

USACE. 2010a. DID WERS-007.01, *Geospatial Information and Electronic Submittals*. April.

USACE. 2010b. DID WERS-010.01 *EE/CA, RI, and FS Reports*. April.

USACE. 2012. EM 1110-1-1200, *Conceptual Site Models*. December.

USACE. 2012. *First Five-Year Review Report for Fort Segarra, USVI*. Prepared by Explosive Ordnance Technologies, Inc./ EA Engineering, Science, and Technology, Inc. for the USAESCH and USACE, Jacksonville District. June 2012.

USACE. 2013. *Memorandum: Approval of Defense Environmental Restoration Program-Formerly Used Defense Sites (DERP-FUDS) Revised Inventory Project Report for Property No. I02VI0977, Fort Segarra, Charlotte Amalie, St. Thomas, USVI*. 13 December 2013.

USACE. 2015. *Technical Guidance for Military Munitions Response Actions,* EM 200-1-15. 30 October 2015.

USACE. 2016a. WERS Contract No. W912DY-10-D-0025, TO 0033, Performance Work Statement Remedial Investigation/Feasibility Studies for Fort Pickens MRS01-Range Complex- FUDS Project No. I04FL006301, Fort Segarra - FUDS Project No. I02VI097701, Benedict Field, Bombing Target MRS – FUDS Project No. I02VI056401, Revision 3, 24 May 2016.

USACE. 2016b. Final Study Paper: *Decision Logic to Assess Risks Associated with Explosive Hazards, and to Develop Remedial Action Objectives (RAOs) for Munitions Response Sites*.

USAESCH. 2010. Data Item Description (DID) Worldwide Environmental Remediation Services (WERS). April 2010.

USDOI. 1995. *Level One and Level Two Site Survey and Environmental Site Assessment, Water Island, USVI*. Prepared for the USDOI, Office of Territorial and International Affairs by Dynamac.

USDOI. 2001. *Final Draft Preliminary Assessment, Site Assessment Report, Flamingo Bay Army Test Areas, Water Island, USVI*. Prepared for USDOI by URS. 17 July 2001.

USDOI. 2004. *Site Investigation Report for the Flamingo Bay Army Test Areas, Former Fort Segarra at Water Island, USVI*. Prepared for USDOI by Bureau of Reclamation Technical Service Center. 27 April 2004.

USA Environmental. 2016. *Final Site-Specific Final Report Former Fort Segarra, Water Island, USVI*. January.

USEPA. 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*. USEPA/540/G-89/004.

USEPA. 1993. *Data Quality Objectives Process for Superfund, Interim Final Guidance*. EPA/540/G-93/071.

USEPA. 2006. *Guidance on Systematic Planning Using the Data Quality Objectives Process, USEPA QA/G-4.*

USEPA. 2008. *Munitions and Explosives of Concern Hazard Assessment Methodology, Interim.* October.

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APPENDIX A
PERFORMANCE WORK STATEMENT

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Section C - Descriptions and Specifications

PWS DATED 24 MAY 2016

Performance Work Statement
Remedial Investigation / Feasibility Studies for
Fort Pickens MRS01-Range Complex- FUDS Project No. I04FL006301
Fort Segarra - FUDS Project No. I02VI097701
Benedict Field, Bombing Target MRS – FUDS Project No. I02VI056401
1 March 2016
Revision: 3 ~~2~~ ~~1~~ ~~0~~
Revision Date: 24 May 2016

Revision 3 – Summary of changes to PWS released 24 May 2016 (Changes are in bold and italic type.)
- Changed numbering in section 13 to show optional tasks are for both FT Pickens and Benedict Field
Revision 2 – Summary of changes to PWS released 03 May 2016 (Changes are in bold and italic type.)
- Changed 3c to 3d in Section 3.3.9
-Added Optional Task 13b, Treatability Study for Benedict Field in Section 13.3.1
Revision 1 – Summary of changes to PWS released 1 March 2016 (Changes are in bold and italic type.)
- Optional Advanced Classification Treatability Study has been added.
- Task 7 – Advance Classification requirement has been added. FS report requirements have been clarified.
-Added Optional Task 3b, Treatability Study UFP-QAPP
- Added Optional Task 3c, Fort Pickens Dive Plan
-Task 5- Additional performance standard requirements have been added.
-Added Optional Task 5d, Blind Seeding
-Added Optional Task 13, Fort Pickens Treatability Study Field Activities
-Added Optional Task 13a, Advanced EMI Sensor Detection Survey
-Added Optional Task 13a.1, One Acre Advanced EMI Sensor Detection Survey
-Added Optional Task 13b, Advanced EMI Sensor Cued Survey and Classification
-Added Optional Task 13b.1, Advanced EMI Sensor Cued Survey and Classification on 50 anomalies
-Added Optional Task 13c, Intrusive Investigation
-Added Optional Task 13c.1, Intrusive Investigation of 50 anomalies
-Added Optional Task 13d, Blind Seeding
-Added Optional Task 14, Treatability Study Report
-Added Optional Task 15, Underwater Innovative Technology Demonstration Support
- Attachment D has been deleted.

1.0 OBJECTIVE:
There are two objectives under this task order. The first objective of this task order is to perform and achieve United States Army Corps of Engineers (USACE) acceptance of a Remedial Investigation / Feasibility Study (RI/FS) and Decision Document(s) in compliance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and Department of Defense (DOD), Department of Army (DA), and USACE Regulations and Guidance to include Interim Guidance and Data Item Descriptions (DID) at the following Munitions Response Site (MRS):

- Fort Pickens MRS01-Range Complex- FUDS Project No. I04FL006301
- Optional, Benedict Field, Bombing Target MRS – FUDS Project No. I02VI056401, subject to the availability of funds

The second objective of this task order is to achieve United States Army Corps of Engineers (USACE) acceptance of a RI and a Decision Document(s) in compliance with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and Department of Defense (DOD), Department of Army (DA), and USACE Regulations and Guidance to include Interim Guidance and Data Item Descriptions (DID) at the MRS listed below, subject to the availability of funds.

- Fort Segarra - FUDS Project No. I02VI097701.

2.0 BACKGROUND:

2.1 Work under this Performance Work Statement (PWS), including the options, falls within the Military Munitions Response Program (MMRP) for the former FUDS sites listed above. The Contractor shall perform all work in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP), 40 CFR Part 300. All activities involving work in areas potentially containing explosive hazards shall be conducted in full compliance with United States Army Corps of Engineers (USACE), Department of the Army (DA), and Department of Defense (DOD) regulations.

2.2 Available Site Specific information will be provided with the request for proposal for contractor review and use via either a designated Internet site or delivery of recorded data on CD/DVD. This information may include but is not limited to general site history, previous investigations and other documentation.

3.0 GENERAL REQUIREMENTS:

3.0.1 Contractor Methods: This is a performance based task order. The performance objectives and standards included herein are the basis of the task order requirements. The technical approach and level of effort expended to achieve task order objectives and standards are solely up to the contractor to select and adjust as necessary through the life of the task order. Government recognizes the contractor's right to change the technical approach and level of effort from that proposed with the understanding that the contractor shall meet all project objectives and gain government Quality Assurance acceptance in order to receive payment.

3.0.2 Quality monitoring and measurement: The contractor will be evaluated periodically during performance of this task order to ensure compliance with the proposed and accepted performance goals, regulations, guidance and DIDs, and to document that acceptance criteria (AC), delivery schedule, and the overall completion date are being met. This evaluation will be performed according to a Quality Assurance Surveillance Plan (QASP). A programmatic QASP will be provided by the government as a starting point for the contractor prepared Draft QASP per Task 3. The government will finalize the contractor's Draft QASP. This final QASP will be supplied to the contractor and used by the government to evaluate the contractor's performance. Failure to adequately complete any service or submittal to at least a satisfactory level of quality or timeliness may result in a repeat of the work, and/or a poor performance evaluation, or both.

3.0.3 Performance Requirements. Performance requirements are addressed in each task and summarized in the Performance Requirements Summary (PRS) provided in Attachment A. Performance metrics are provided in Attachment B. If discrepancies or ambiguity exists between the documents, the order of precedence is 1) the Task; 2) Performance Requirements Summary; 3) Performance Metrics

3.0.4 Task pricing: A pricing schedule is provided in a separate file.

3.1 Task 1, Project Management Plan (PMP): This is a Firm Fixed Price task.

3.1.1 Objective: Prepare, submit, and gain government approval of a PMP that is detailed and comprehensive covering all aspects of the RI/FS process. This document is a living document and shall be updated as necessary.

3.1.2 Performance Standard: Prepare the PMP in accordance with Army Regulation (AR) 5-1; AR 11-2; USACE PMBP Manual, PROC2000, PMP-PgMP Development, REF8005G; PMP-PgMP Content , EM 200-1-15 (dated 30Oct15) and Data Item Description (DID) WERS-018. In addition, USACE ADR-SEDD data requirements per WERS-009.01 has other applicable DIDs.

3.1.3 Acceptance Criteria (AC): Acceptance of PMP with one revision.

3.1.4 Measurement / Monitoring: Government review of PMP per guidance to verify that a document meeting all Performance Standards and Task Specific Requirements has been provided.

3.1.5 Task specific Incentives/Disincentives: Satisfactory or greater Contractor Performance Assessment Reporting System (CPARS) rating/poor CPARS rating and re-performance of work at contractor's expense.

3.1.6 Specific Task Requirements: The intention of Section 2.3 of WERS-018 is to discuss remedy reviews (e.g. root cause analysis, corrective action plans) to address QC/QA failures. Additionally, the contract shall populate the USAESCH PMP PDF form provided by the Government, coordinating with the USAESCH Project Manager as needed. In addition to Basic Contract Section C and DID project status reporting requirements, the contractor shall include a project kick-off meeting and in-progress review (IPR) meetings. IPR meetings shall include but are not limited to, regular feedback to the Government on the progress of its work through face-to-face meetings, electronic mails, and regularly scheduled telephone conversations. Include both Fort Pickens, Benedict Field and Fort Segarra in the PMP.

3.2 Task 2, Technical Project Planning (TPP): This is a Firm Fixed Price/Unit Price task.

3.2.1. Objective: Implement the four-phase TPP process.

3.2.1.1 Optional Task 2a, Additional Meeting near Fort Pickens: This is a Firm Fixed Price task.

3.2.1.2 Optional Task 2b, Additional Meeting near Fort Segarra: This is a Firm Fixed Price task.

3.2.1.3 Optional Task 2c, Additional Meeting near Benedict Field: This is a Firm Fixed Price task.

3.2.2 Performance Standard: Achieve the objectives of each TPP phase as listed in EM 200-1-2, EM 200-1-15 and applicable Interim Guidance Documents. Facilitate meetings in a professional and organized manner.

3.2.3 Acceptance Criteria (AC): Acceptance of TPP documents (meeting presentations, agenda, handouts, Conceptual Site Model (CSM) and memorandums) with up to one (1) revision. Meetings held are organized; accomplish requirements of the TPP process; and are conducted in a professional manner. Zero letters of formal grievances or letters of concern.

3.2.4 Measurement / Monitoring: A TPP checklist for each phase, as provided in the EM 200-1-2, EM 200-1-15 and other applicable Interim Guidance Documents, will be used to measure and document progress; guidance cited will be used to evaluate content of documents for acceptance / non-acceptance. The Government will attend and evaluate organization and facilitation of the meetings, and professional nature of the meetings.

3.2.5 Incentives/Disincentives: Satisfactory or greater Contractor Performance Assessment Reporting System (CPARS) rating/poor CPARS rating and/or re-performance of work at contractor's expense.

3.2.6 Specific Task Requirements: Include all FUDS Projects in the TPP Process. The contractor shall utilize the TPP process to obtain consensus on specific Data Quality Objectives (DQO), Conceptual Site Model (CSM), and Uniform Federal Policy for Quality Assurance Project Plans (QAPP) worksheets. The contractor shall present DQOs necessary to achieve the performance standards in Task 5.0. The Contractor shall plan for meetings to occur as follows: first meeting covering all three properties, with USAESCH and the District resulting in DQOs, CSM and Draft QAPP worksheets consensus at USAESCH or Jacksonville District; second meeting, one near Ft Pickens and one near Benedict Field, with respective Project Delivery Teams (PDT), resulting in DQO, CSM and Draft QAPP worksheet consensus, and TPP Memorandum; optional third meeting, to finalize QAPP with resulting TPP addendum, one near Ft Pickens and/or one near Benedict Field; fourth meeting, one near Ft Pickens and one near Benedict Field, verify all data gaps have been filled and finalize Remedial Investigation Report with resulting TPP addendum. Third TPP meeting will be awarded if needed to resolve remaining issues presented by the regulators. Second TPP meeting shall not occur until DQOs, CSM, and Draft UFP-QAPP worksheets are accepted by the government. For Fort Segarra, the contractor shall present the planned abbreviated RI approach to the entire PDT and should include presentation of the previous investigations and removals performed there. The contractor shall organize and coordinate all meetings; identify and involve all stakeholders, upon approval by the Government; and be responsible for the logistics of these meetings to include, but not limited to, providing a facilitator, obtaining meeting location, and sending invitation letters (pending government review and acceptance). The Contractor shall prepare, submit for review and gain acceptance of a TPP memorandum or addendum for each meeting as required. If a site visit is planned prior to acceptance of a QAPP, the Contractor shall prepare and submit for acceptance an Abbreviated Accident Prevention Plan (AAPP). The Contractor shall utilize statistical methods (such as Visual Sample Plan (VSP) software) to support the decision making processes used to characterize both MEC as well as munitions constituents (MC). Starting at the TPP process the Contractor shall include process of considering, incorporating, documenting, and evaluating the benefits of green and sustainable remediation (GSR) practices Pursuant to the Department of Defense (DoD) Memorandum "Consideration of Green and Sustainable Remediation Practices in the Defense Environmental Restoration Program" (DoD, 2009) and Interim Guidance 10-01 (Decision Framework for Incorporation Of Green and Sustainable Practices Into Environmental Remediation Projects), GSR employs strategies throughout the remedial process that:

- Use natural resources and energy efficiently;
- Reduce negative impacts on the environment;
- Minimize or eliminate pollution at its source;
- Protect and benefit the community at large; and
- Reduce waste to the greatest extent possible.

3.3 Task 3, Remedial Investigation (RI)/Feasibility Study (FS), Quality Assurance Project Plan (QAPP) and Quality Assurance Surveillance Plan (QASP): This is a Firm Fixed Price task.

3.3.1 Objective: Prepare, submit and gain acceptance of a QAPP and QASP that are detailed and comprehensive plans covering all aspects of site characterization, risk assessment and methodology, and project execution.

3.3.1.1 Task 3a1, Fort Pickens - FUDS Project No. I04FL006301.

3.3.1.2 Optional Task 3a2, Benedict Field - FUDS Project No. I02VI056401.

3.3.2 Performance Standard: Prepare the QAPP in accordance with Chapter 1.0 of DID WERS-001.01; EM 200-1-15; EM 385-1-1; EM 385-1-97 including Errata Sheets and Changes; Intergovernmental Data Quality Task Force Uniform Federal Policy (UFP)-QAPP Manual: and other Interim Guidance and DIDs as appropriate. EM 200-1-15, Chapter 4 provides description of Uniform Federal Policy – Quality Assurance Project Plan contents. UFP-QAPP content shall be organized as described in EM 200-1-15; Section 4.4.5. Standard Operating Procedures shall be organized as described in EM 200-1-15; Section 4.4.4. Appendices shall be organized as described in EM 200-1-15 with the following exception, Standard Operating Procedures shall be the first Appendix. For sampling and analysis ensure the QAPP is in accordance with EM 200-1-15, DID WERS-009.01, Intergovernmental Data Quality Task Force UFP-QAPP Manual, and State regulatory guidance, as appropriate. QAPP content shall also meet the requirements of DoD Quality Systems Manual for Environmental Laboratories (current version). The Draft QASP shall include systematic methods used to monitor performance and to identify the required documentation and the resources to be employed to include monitoring Quality Control requirements in guidance, DIDs and the contractor's Quality Control measures. Prepare a risk assessment work plan as part of the overall project work plan incorporating implementation of the risk assessment and methodologies per USEPA Risk Assessment Guidance (RAGS), State regulatory guidance and USACE EM 200-1-4, Volumes I and II, as appropriate.

3.3.3 AC: Acceptance of QAPP with two revisions. Draft QASP reflects requirements of the QAPP with one revision required. One additional revision is acceptable to incorporate EM-CX. All draft deliverables may be submitted electronically.

3.3.4 Measurement/Monitoring: Review of QAPP and QASP to verify that the minimum acceptable content has been provided and meets applicable guidance.

3.3.5 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and re-performance of work at contractor's expense.

3.3.6 Specific Task Requirements: Incorporate all decisions pursuant to the TPP process. The QAPP shall include the Contractor's phased approach, address contaminants of interest, sample media (soil/groundwater/sediment/surface water/air), and methods that will be utilized to ensure that data generated are of an acceptable quality for its intended use. The contractor shall discuss quantity, quality and the methods used to verify adherence to the precision, accuracy, representativeness, comparability, completeness and sensitivity (PARCCS) parameters for sample collection, handling, laboratory analysis, verification and validation. The Contractor shall provide a discussion on data evaluation and fate and transport analysis. The potential for fate and transport will address all transport pathways, and it should also address future degradation products resulting from biodegradation, photolysis, and chemical reactions.

3.3.7 Optional Task 3b, Explosive Siting Plan: This is a Firm Fixed Price task. If this optional task is not awarded, an Explosive Siting Plan will be provided by the government for inclusion in the QAPP.

3.3.7.1 Objective: Prepare, submit and gain acceptance of an Explosives Siting Plan (ESP).

3.3.7.1.1 Optional Task 3b1, Fort Pickens - FUDS Project No. I04FL006301.

3.3.7.1.2 Optional Task 3b2, Benedict Field - FUDS Project No. I02VI056401.

3.3.7.2 Performance Standard: Prepare required submission in accordance with DoD 6055.09-M, EM 385-1-97, Errata Sheet #3, and DID WERS-003.01 as a standalone document for inclusion after acceptance into the QAPP.

3.3.7.3 AC: Acceptance of submission with two revisions. One additional revision is acceptable to incorporate EM-CX, USATCES and DDESB comments.

3.3.7.4 Measurement / Monitoring: Review by Government using guidance cited to determine acceptability.

3.3.7.5 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and re-performance of work at contractor's expense.

3.3.7.6 Specific Task Requirements: Once the ESP has been reviewed and acceptance by the Design Center, the document will be reviewed by the CEHNC-EM-CX, USATCES and DDESB. All comments shall be incorporated. Allow eight (8) weeks in the schedule for DDESB approval after submission of final document to the CEHNC-EM-CX.

3.3.8 Optional Task 3c, Treatability Study UFP-QAPP: This is a Firm Fixed Price task.

3.3.8.1 Objective: Prepare, submit and gain acceptance of a UFP-QAPP for the treatability study which is detailed and comprehensive and covers all aspects of dynamic detection, anomaly selection, cued detection, processing, classification, intrusive investigation and methodology, project execution, and ground truth firewall.

3.3.8.1.1 Optional Task 3c1, Fort Pickens - FUDS Project No. I04FL006301.

3.3.8.1.2 Optional Task 3c2, Benedict Field - FUDS Project No. I02VI056401.

3.3.8.2 Performance Standard:
-Prepare the UFP-QAPP in accordance with the most recent Intergovernmental Data Quality Task Force Geophysical Classification for Munitions Response (GCMR) UFP-QAPP template, provided upon request
-Prepare the UFP-QAPP in accordance with interim guidance provided by Environmental Security Technology Certification Program (ESTCP), as appropriate.

- The treatability study UFP-QAPP shall contain all elements of an ESTCP demonstration plan, such as those used in recent ESTCP demonstrations at the Former Camp Spencer, Former Camp Ellis, and Former Southwestern Proving Ground.
-The treatability study will be performed in a manner similar to recent ESTCP demonstrations such as those at Former Camp Ellis, Former Camp Spencer and Former Southwestern Proving Ground. This means 100% of the anomalies selected from the detection surveys will require excavation. The treatability study's data quality objectives and measurement quality objectives shall be based on geophysical surveys of contiguous parcels of the site, such as square or rectangular grids. Transect data shall not be used for the treatability study. All ground truth shall be delivered to the Government.
-All ground truth shall be firewalled from all contractor personnel performing any aspect of the geophysical analysis or geophysical quality control. All ground truth requests by the contractor's geophysical analysts shall be made directly to the Government. No ground truth information shall be provided to the contractor's analysis personnel from sources other than the Government unless approved in writing by the Government.

3.3.8.3 AC: Acceptance of the UFP-QAPP with two revisions.

3.3.8.4 Measurement / Monitoring: Review of the UFP-QAPP to verify that the minimum acceptable content has been provided and meets applicable guidance.

3.3.8.5 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.

3.3.8.6 Specific Task Requirements: Incorporate all decisions pursuant to the TPP process. In addition:
-Provide the government all information needed to finalize the QASP so that it appropriately reflects the UFP-QAPP.
-The contractor shall provide a firewall plan that assures all seeding and anomaly excavation results cannot be viewed or otherwise obtained by, or made available to any personnel performing classification activities or QC of classification activities.
-The treatability Study UFP-QAPP shall be a separate document from the RI/FS UFP-QAPP. The contractor can reference applicable sub-plan as needed.

3.3.9 Optional Task 3d, Fort Pickens Dive Plan: This is a Firm Fixed Price task.

3.3.9.1 Objective: Prepare, submit and gain acceptance of a Dive Plan.

3.3.9.2 Performance Standard: Prepare, submit and gain acceptance of a Dive Plan that is a detailed and comprehensive plan covering all aspects of dive operations in accordance with EM 385-1-1.

3.3.9.3 AC: Acceptance of submission with two revisions.

3.3.9.4 Measurement / Monitoring: Review by Government using guidance cited to determine acceptability.

3.3.9.5 Task specific Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.

3.3.9.6 Specific Task Requirements: None.

3.4 Task 4, GeoSpatial Data: This is a Firm Fixed Price task.

3.4.1 Objective: Utilize a geographic information system (GIS) in the development of the Conceptual Site Model (CSM) and maintain and manage all project and geospatial data.

3.4.1.1 Task 4a, Fort Pickens - FUDS Project No. I04FL006301.

3.4.1.2 Optional Task 4b, Benedict Field - FUDS Project No. I02VI056401.

3.4.1.3 Optional Task 4c, Fort Segarra - FUDS Project No. I02VI097701.

3.4.2 Performance Standard: Manage and maintain project data, and develop CSM in GIS IAW DID WERS-007.01, EM 200-1-2, EM 1110-1-1200, EM 200-1-15, and applicable Interim Guidance Documents.

3.4.3 AC: Acceptance of CSM and GeoSpatial Data submissions, which also meet quality and formatting requirements.

3.4.4 Measurement / Monitoring: Review by Government using cited guidance to determine acceptability.

3.4.5 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and re-performance of work at contractor's expense.

3.4.6 Specific Task Requirements: The GeoSpatial Data Package shall include:
- All forms of data to include raster, vector, tabular and any other form of applicable data to produce a comprehensive CSM
- A pre and post-project RI geospatial data analysis will be performed using a GIS.
- All available existing data that is applicable to the project will be consolidated into the GeoDatabase and analyzed to relay pertinent information to the Project Delivery Team (PDT).
- The analysis of data from the GIS shall support all conclusions of the CSM.
- The information attained through the pre-RI analysis will be documented in the work plan.
- The information attained in the post-RI and FS analysis will be documented in the RI and FS reports.
- The pre-RI analysis will encompass social, environmental and/or economic entities that will be or may be impacted by response-action activities and should be represented within the GIS data if possible. Data examples include census, historical sites, soil, hydrologic, transportation, etc.
- The post-RI and FS analysis will detail entities impacted by RI/FS activities and impacts of future response action activities (if applicable) and should be represented within the GIS data if possible. Data examples include city/county jurisdictions, land parcels, fauna, flora, structures, etc.
- The pre and post-RI and FS analyses may detail the fieldwork strategies, areas of concern, survey requirements, environmental concerns, milestones and/or other factors that affect product delivery and future action planning.
- Entities that may be affected by response actions should also be represented within the GIS data if possible. These data types include but are not limited to: landowners, homeowners, rental tenants, schools, utilities, roads, businesses, recreational areas, air traffic, water bodies and/or industries.
- The GeoDatabase shall be a living repository that is refined throughout the life of the project.
- Data layers that identify site discoveries such as Material Potentially Presenting Explosive Hazard (MPPEH) and Munitions Debris (MD) found during the investigation shall be included. Data examples include: subsurface anomalies, Munitions and Explosives of Concern (MEC), identifiable MD, sampling locations, cultural resources, environmental, biological, and socio-economic information.
- Archeological data will be included in the GeoDatabase, but shall not be released to the public without written permission from USACE.
- Perform civil surveys IAW EM 200-1-15 and DID WERS-007.01
- Final GIS deliverable shall include all documentation, reports, meeting minutes, databases, etc. created, developed or modified under this task order in original and PDF format. This deliverable shall meet QA acceptance prior to payment of final invoice.
- Obtain and maintain property GIS data for all landowners within the project boundaries.
- Property owner privacy will be preserved. Property owner names shall not be disseminated in any documents.
- Maintain and update property GIS data for all landowners within the project boundaries.

3.5 Task 5, RI/FS Field Activities: This is a Firm Fixed Price task.

3.5.1 Objective: Conduct a remedial investigation in accordance with CERCLA, as amended, characterizing the nature and extent of MEC at the MRS meeting the project DQOs as defined during the TPP process. This task shall include all field activities necessary to execute this task. For MC contamination, collect sufficient data that meets the project DQOs as defined during the TPP process, of known quality and quantity to determine the nature and extent of munitions constituents (MC) to support and perform a human health and ecological baseline risk assessment.

3.5.1.1 Task 5a, Fort Pickens - FUDS Project No. I04FL006301.

3.5.1.2 Optional Task 5b, Benedict Field - FUDS Project No. I02VI056401.

3.5.2 The following applies to all MRS listed above and will apply to any optional sites awarded under this Task Order as well:

3.5.2.1 Performance Standard: Field work, data quantity and quality, and analysis of said data (does not include area where Rights-of-entry were not obtained) provides the following results in the RI report:
- Demonstrate that the work was performed in accordance with the applicable laws, regulations, and guidance documents;
- Demonstrate that all areas with elevated anomaly density that have the potential to be a Concentrated Munitions Use Area (CMUA) are traversed at the completion of fieldwork and that there is at least 90% chance of detecting these areas;
- Demonstrate the MEC contaminated areas are bounded with at least 95% confidence such that areas outside of the CMUAs have less than or equal to 0.1 UXO per acre in residential areas, 0.5 UXO per acre in low use areas and 1.0 UXO per acre in areas without intrusive activities.
- Demonstrate that the boundaries of all identified CMUAs have been delineated to an accuracy of a maximum of 250 feet, and the CSM will be revised to depict the distributions of recovered items and include assessments, for each MRS, of the overburden geology to include quantitative or qualitative statements regarding likely or anticipated UXO penetration depths.
- Demonstrate that data inputs from the RI into the FS will enable remediation cost estimates with an accuracy of +50%/-30%. The work and reporting shall address the surface and sub-surface metallic anomaly density distribution (anomaly/acre) across identified MEC contaminated areas as well as other remediation cost drivers such as vegetation type and density, terrain conditions, soil type, exclusion zone evacuation costs, etc… each to a level of accuracy within the range specified herein.

Additionally:
- Perform the RI field activities in accordance with the accepted Work Plan and UFP-QAPP.
- Proper processing and disposition of UXO, DMM, and MC encountered in accordance with approved plan(s).
- All Material Potentially Presenting an Explosive Hazard (MPPEH) and munitions debris (MD) processed in accordance with EM 385-1-97 and applicable Errata Sheets.
- Meet the project DQOs as defined by the TPP process.
- All geophysics shall be IAW EM 200-1-15 and DID WERS-004.01, with the following clarifications. Geophysical System Verification, including an initial IVS and IVS memo, shall be performed in lieu of a GPO and IAW Geophysical System Verification: A Physics-Based Alternative to Geophysical Prove outs for Munitions Response, Environmental Security Technology Certification Program (ESTCP), July 2009. If the contractor proceeds with production geophysical mapping prior to the Government's acceptance of their IVS Memo, they will proceed at their own risk. The Performance Requirements Tables 11-3 and 11-4 from EM 200-1-15 shall take precedence over those in WERS-004.01, with the following changes to Table 11-3: (1)Static Repeatability applicability is for Reacquisition and Anomaly Resolution, not for data collection when IVS is collected; (2)Dynamic Positioning Repeatability, Performance Standard for Blind Seeds is <=35cm + ½ line spacing for digital positioning systems (<=50cm + ½ line spacing for fiducially positioned data); (3)Geodetic Internal Consistency applies to non-PLS surveyed grids with line-and fiducial positioning.
- Marine field work QC shall be recommended by the Contractor in the QAPP. Government QA is expected to be limited to visual observation of the Contractors intrusive work and QC operations due to the dynamics of this high energy environment. The government recognizes that submerged metallic items have the potential to move great

distances due to the local current and surf conditions and that prolonged seeding of test items may not be feasible. The government requests that the Contractor submit a modified QC Requirements table for government acceptance for the marine and beach portions of the project to meet the needs of the project and still insure acceptable data quality to meet the project objectives.

-To the maximum extent practicable the contractor should conduct the field investigation by gathering advanced geophysical classification data in addition to data that is digitally recorded and geo-referenced (geo-referencing need be no more accurate than is needed for the use of the data). Exceptions may include situations where other methods provided data and/or significant cost value in which case the contractor shall provide detailed justification in their proposal describing why the other methods provide a better value. In any case a geo-referenced permanent record of the investigation shall be delivered as part of the RI report (GIS of traverse and items located, digital geophysical data, etc…).

- MC analyses shall be performed in accordance with the requirements of the Department of Defense (DoD) QSM (current version), WERS-009.01 Munitions Constituents Chemical Data Quality Deliverables, and the approved project specific QAPP.

- As appropriate, the contractor shall implement statistical methods for its sampling plan.

If Advanced Classification (AC) is proposed the following Performance Standards apply:

- Work shall be in compliance with "The Geophysical Classification for Munitions Response Quality Assurance Project Plan (GCMR-QAPP) template produced by the Intergovernmental Data Quality Task Force (IDQTF), current version".

- The contractor shall identify personnel with experience in AC (minimum Experience described below); explain how AC will be implemented to include equipment, planning documents, site preparation, seeding programs, survey, cue and classification; provide justification for use of AC versus conventional geophysics.

AC Personnel Experience: Requirements are in addition to Base Contract requirements. Personnel identified as having AC experience may be employed by the prime contractor or the subcontractor.

1) Project Manager. At least one (1) advanced classification project to include management at the field operational level

2) Senior Geophysicist.

a) Experience with the theoretical and practical aspects of detecting and selecting a wide range of targets of interest (TOI) and non-targets of interest (non-TOI).

b) Experienced in the selection and utilization of various types of geophysical instruments and ancillary components to include high-precision global positioning systems, inertial motion sensors and the software used to control and integrate the geophysical system as a whole.

c) Shall have, at a minimum, documented experience performing advanced classification using only advanced EMI instrument survey data , to include documented experience processing and analyzing advanced EMI instrument data, and developing and performing or overseeing quality control procedures for advanced EMI data acquisition, analysis and classification processes.

3) Field Geophysicist. The field geophysicist(s) shall be responsible for proper operation of advanced geophysical EMI systems and performing quality control during advanced EMI system surveys. Field Geophysicist(s) shall have, at a minimum, the following qualifications:

a) Documented or independently verifiable experience operating an advanced geophysical EMI system to include the geophysical instruments, high-precision global positioning systems, inertial motion sensors and the software used to control and integrate the geophysical system as a whole.

3.5.3 AC: Conduct the RI in accordance with the accepted/approved QAPP and all subplans.

- Geophysical QC data submitted meets requirement described in DID WERS-004.01 and EM 200-1-15.

- Sampling field work and data meets established criteria within the accepted QAPP.

- No more than 3-4 CARs/948s for non-critical violations and/or one (1) CAR/948 for critical violation. No unresolved Corrective action requests.

- All final data and QC tests/documentation submitted. Government QA acceptance of QC tests/documentation gained.

- No Class “A” Safety accidents, contractor at fault; No Class “B”, contractor at Fault, no more than one (1) non-explosive Class “C” accident; and <2 non-explosive related Class “D” accidents, IAW AR 385-40.
- Major safety violations, no more than one (1) non-explosive related safety violation.
- Minor safety violations, no more than two (2) safety violations.
- Zero letters of formal grievances or letters of concern.

3.5.4 Measurement / Monitoring: Periodic inspection/review of field work and data. Verify compliance with accepted QAPP and all subplans. Quality control tests/documentation submitted per the QASP for government review. Boundary precision will be determined by evaluation of the sampling footprint as it relates to the reported contaminated/uncontaminated areas in question. Additionally, statistical confidence will be calculated using the Visual Sampling Plan software, UXO Estimator or some other statistical method. Anomaly density profile and other remediation cost driver precision will be verified by QA of methods used.

3.5.5 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor’s expense.

3.5.6 Specific Task Requirements:
- Restore all areas to their original condition; all access/excavation/detonation holes shall be backfilled.
- Maintain a detailed accounting of all UXO, DMM, MD and range-related debris encountered per DID WERS-004.01. This accounting shall include: amounts of UXO, DMM and MD; nomenclature; location and depth of UXO/DMM; location of MD; and final disposition. The accounting system shall also account for all demolition materials utilized on site. Digital photographs of UXO and DMM and examples of MD found during the investigation are to be taken.
- All UXO, DMM, and MC encountered during this munitions response shall be processed in accordance with the approved work and safety plans.
- The contractor shall propose on the sampling rationale, and methods that will be utilized to ensure that data generated are of an acceptable quality for its intended use, address contaminants of interest and sample media.
- The contractor shall also propose on and perform the stated quantity, quality and the methods used to verify adherence to the PARCCS parameters for sample collection, handling, laboratory analysis, verification and validation. Level 4 validations are required.
- Any deviations from the accepted UFP QAPP shall be documented in the Daily Quality Control Reports (DQCR) and conveyed to USAESCH and the District personnel immediately.
- All laboratories shall be DoD Environmental Laboratory Accreditation Program (ELAP) certified for all the laboratory methods to be used: http://www.denix.osd.mil/edqw/Accreditation/index.cfm.
- Errors such as inadequate methodologies in the laboratory processing may reflect on the contractor’s rating. All inadequacies shall be addressed prior to the acceptance of the UFP-QAPP. If they cannot be addressed to the satisfaction of the KO, the contractor shall find a laboratory that can successfully perform the requirements of the project at no additional cost to the government.
- The contractor shall provide a Principal Investigator and archaeological reconnaissance survey and monitoring personnel in accordance with the standards and guidelines set forth by Secretary of the Interior in 48 FR 190:44716-44742, 29 Sept 1983. The reconnaissance survey and monitoring shall be conducted in accordance with the Government approved AMP and shall be performed during field work including, but not limited to, brush clearing, geophysical surveys, MEC reconnaissance, MC sampling, removal and earth-disturbing activities, and implement other protective measures for sites to be affected by clearance activities. Archaeological reconnaissance survey and monitoring, recording, mapping, and sampling during fieldwork where cultural features are identified shall be oriented so as to obtain the most data available on the nature, location, and age of extant cultural deposits and other cultural features. All identified surface cultural remains and features shall be fully and systematically described, plan mapped, and documented. All subsurface cultural remains shall also be fully and systematically described, and where feasible, sampled. Archaeological reconnaissance survey and monitoring activities shall be performed in a manner so as to minimize impact on the ongoing work.
- All stages of the archaeological reconnaissance survey and monitoring shall be fully documented in daily log and photographic form.
- An appropriate level of monitoring for endangered species shall be performed.
- The contractor is responsible for evacuations.

3.5.7 Optional Task 5c, Blind Seeding: This is a Firm Fixed Price Task

3.5.7.1 Objective: Implement the blind seeding plan in accordance with the approved UFP-QAPP and as approved by the Government. All seeds shall be emplaced only after the area has been checked by a qualified UXO Technician to determine if the area is free of subsurface anomalies.

3.5.7.2 Performance Standard: Seed Plan, at a minimum, shall consist of representative inert seed rounds and Industry Standard Objects (ISO) as seeds. Additional information on ISO specifications are defined in Geophysical System Verification: A Physics-Based Alternative to Geophysical Prove outs for Munitions Response, Environmental Security Technology Certification Program (ESTCP), July 2009 and ESTCP Advanced Classification demonstration final reports.

All seeds shall be documented in accordance with Task 4, GeoSpatial Data, and provided to the government as a separate database at the conclusion of each day of seeding activities.

3.5.7.3 AC: Acceptance of implementation of the blind seed plan and acceptance of the final blind seed database by the government.

3.5.7.4 Measurement / Monitoring: Review by Government in accordance with QASP and UFP-QAPP.

3.5.7.5 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.

3.5.7.6 Specific Task Requirements:
- Validation seeds will be placed in sufficient quantity to meet all requirements of the UFP-QAPP.
- All contractor personnel involved in this seeding task shall not be part of any other task or activities associated with this PWS from the time the seeding is started to the time the contractor's final TOI list is delivered to the Government. -All personnel involved in this seeding task shall keep all knowledge of seeds blind from all other contractor project personnel performing other tasks or activities associated with this PWS during this period. The contractor shall submit for review and acceptance the contractor's blind seed firewall plan.
- All digital seed item information shall be delivered to the Government. Immediately upon receiving confirmation of delivery and a written acceptance from the Government, the contractor shall permanently delete all digital seed information from all contractor digital storage media. All original non-digital field notes and documentation shall be delivered to the Government. The contractor shall not produce copies of non-digital field notes or documentation that contain seed information unless authorized by the Government.
- Acquire and deliver to the project site all seeds required to implement the seeding plan

3.6 Task 6, Remedial Investigation Report: This task is a Firm Fixed Price task.

3.6.1 Objective: Prepare, submit and gain acceptance of a separate RI report <u>for each</u> FUDS property.

3.6.1.1 Task 6a, Fort Pickens - FUDS Project No. I04FL006301.

3.6.1.2 Optional Task 6b, Fort Segarra - FUDS Project No. I02VI097701.

3.6.1.3 Optional Task 6c, Benedict Field - FUDS Project No. I02VI056401.

3.6.2 Performance Standard: Each RI report shall document the results of the RI and previous investigations, and historical data; and the Contractor shall prepare the report in accordance with EP 1110-1-18). The ecological and human health risk assessment shall be performed in accordance with the EPA Risk Assessment Guidance (RAGS) and USACE EM 200-1-4, Volumes I and II, as appropriate.

3.6.3 AC: Acceptance of RI with two (2) revisions. One additional revision is acceptable to incorporate EM-CX.

3.6.4 Measurement / Monitoring: Review of RI against guidance to verify that the minimum acceptable content has been provided.

3.6.5 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and re-performance of work at contractor's expense.

3.6.6 Specific Task Requirements:

- Use EPA MEC Hazard Assessment, not Ordnance and Explosives Risk Impact Assessment.
- Incorporate all RI data and data from previous investigations and removals, historical documents, PA/SI into this RI report.
- Recommend changes in delineation of MRS boundaries based on RI findings.
- Prepare, as a separate document, a new or updated Munitions Response Site Prioritization Protocol (MRSPP) for each MRS dependent upon RI findings using the MRSPP worksheets, http://www.lab-data.com/MRSPP/ .
- To expedite the project the RI Report and FS Report shall be combined and submitted as one document.
- Level 4 validation packages are required.

3.7 Task 7, Feasibility Study and Report: This task is a Firm Fixed Price task.

3.7.1 Objective: Conduct a feasibility study and prepare, submit and gain acceptance of a separate FS report <u>for each</u> FUDS Property.

3.7.1.1 Task 7a, Fort Pickens - FUDS Project No. I04FL006301.

3.7.1.2 Optional Task 7b, Fort Segarra - FUDS Project No. I02VI097701.

3.7.1.3 Optional Task 7c, Benedict Field - FUDS Project No. I02VI056401.

3.7.2 Performance Standard: The FS report shall document the results of the FS and prepared in accordance with EP 1110-1-18.

3.7.3 AC: Acceptance of FS with two (2) revisions. One additional revision is acceptable to incorporate EM-CX.

3.7.4 Measurement / Monitoring: Review of FS against guidance to verify that the minimum acceptable content has been provided.

3.7.5 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and re-performance of work at contractor's expense.

3.7.6 Specific Task Requirements:
- Advanced Classification shall be a screened technology, analyzed as an alternative, and included in comparative analysis.
- Each MRS shall be fully discussed separately and in a sequential manner in the document. Multiple MRS discussions shall not be mingled within the chapters. This will require more chapters than indicated in the guidance and can be addressed as separate volumes in the FS Report.
- Only one FS Report is planned for Ft Pickens. Incorporate all data and data from previous investigations, historical documents, PA/SI into the initial awarded subtask FS report. Pricing for each optional subtask shall only include the level of effort for incorporation of FS data and analysis.
- To expedite the project the RI Report and FS Report shall be combined and submitted as one document.
- Fort Segarra FS may not be required based on results of the RI.

3.8 Task 8, Proposed Plan: This task is a Firm Fixed Price task.

3.8.1 Objective: Prepare, submit and gain acceptance of separate Proposed Plans (PP) <u>for each</u> FUDS Property.

3.8.1.1 Task 8a, Fort Pickens - FUDS Project No. I04FL006301.

3.8.1.2 Optional Task 8b, Fort Segarra - FUDS Project No. I02VI097701.

3.8.1.3 Optional Task 8c, Benedict Field - FUDS Project No. I02VI056401.

3.8.2 Performance Standard: Prepare the PP(s) in accordance with, ER 200-3-1, EP 1110-1-18, EPA 540-R-98-031 and CERCLA, as amended.

3.8.3 AC: Acceptance of PP with two (2) revisions. One additional revision is acceptable to incorporate EM-CX.

3.8.4 Measurement / Monitoring: Review of PP against guidance to verify that the minimum acceptable content has been provided.

3.8.5 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and re-performance of work at contractor's expense.

3.8.6 Specific Task Requirements: After government and regulatory review, the revised draft-final version of the Proposed Plan will be subject to a minimum 30-day public review. A public meeting shall be held to present the Proposed Plan to the public.   This public meeting falls under Task 9, Community Relations Support.

3.9 Task 9, Decision Document: This task is a Firm Fixed Price task.

3.9.1 Objective: Prepare, submit and obtain acceptance of separate DDs for each delineated MRS(s) resulting from the RI.

3.9.1.1 Task 9a, Fort Pickens - FUDS Project No. I04FL006301.

3.9.1.2 Optional Task 9b, Fort Segarra - FUDS Project No. I02VI097701.

3.9.1.3 Optional Task 9c, Benedict Field - FUDS Project No. I02VI056401.

3.9.2 Performance Standard: Prepare the DDs in accordance with ER 200-3-1; EP 1110-1-19; EP 1110-1-18; Attachment C, herein; EPA 540-R-98-031; and CERCLA, as amended.

3.9.3 AC: Acceptance of DD(s) with two (2) revisions. One additional revision is acceptable to incorporate EM-CX.

3.9.4 Measurement / Monitoring: Review of DD(s) against guidance to verify that the minimum acceptable content has been provided.

3.9.5 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and re-performance of work at contractor's expense.

3.9.6 Specific Task Requirements: For formatting of Decision Documents, PWS Attachment C provides additional instructions and requirements above that in the EP 1110-1-18.

3.10 Task 10, Community Relations Support: This task is a Firm Fixed Price task.

3.10.1 Objective: Successfully complete public meetings and support the Jacksonville District with community relations.

3.10.1.1 Task 10a, Fort Pickens - FUDS Project No. I04FL006301.

3.10.1.2 Optional Task 10b, Fort Segarra - FUDS Project No. I02VI097701.

3.10.1.3 Optional Task 10c, Benedict Field - FUDS Project No. I02VI056401.

3.10.1.4 Optional Task 10d, Additional Meeting Near Fort Pickens: This is a Firm Fixed Price task.

3.10.1.5 Optional Task 10e, Additional Meeting Near Fort Segarra: This is a Firm Fixed Price task.

3.10.1.6 Optional Task 10f, Additional Meeting Near Benedict Field: This is a Firm Fixed Price task.

3.10.2 Performance Standard: Contractor attends and participates in meetings. Meeting materials are accepted by the government as required. Meeting transcripts for PP meeting are accurate and prepared by a professional court reporter.

3.10.3 AC: Acceptance of meeting materials with two (2) revisions and acceptance of PP meeting transcripts in one revision. Meetings held are organized; and professional in nature. Contractor personnel in attendance are thoroughly familiar with the project. The contractor receives zero formal grievances or letters of concern.

3.10.4 Measurement / Monitoring: Acceptance of required materials for meetings. Government will attend and evaluate the contractor's attendance, participation and professional demeanor.

3.10.5 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at no additional cost to the government.

3.10.6 Specific Task Requirements: Work shall be executed in accordance with the accepted Community Relations Plan (CRP). The Contractor shall attend and participate in three (3) public meetings at Fort Pickens, (1) public meeting at Fort Segarra, and (2) public meetings for Benedict Field. These meetings are different from and in addition to TPP meetings. If additional public meetings are required they will be purchased per the optional Task 10a, Additional Meetings. These meetings will be held near the project site; specific location to be determined as part of the CRP development. Support shall include, but is not limited to: preparation and delivery of briefings, graphics, maps, posters, and support of question and answer sessions during public meetings, supply printing services. The Contractor shall also obtain the meeting site, provide sound equipment as needed, perform public notification and prepare any correspondence necessary to meet the objectives of this task. The government shall approve all correspondence, public notices and all other materials prior to being presented/distributed to the public. These actions are independent of the field activities that involve interaction with the community. The meeting for the Proposed Plan shall be covered under this task. Transcripts of the public meeting for the Proposed Plan shall be included without editing or deleting anything from the official document with the exception of redactions to protect Personally Identifiable Information (PII) if needed and shall be included in the Administrative Record and placed in information repositories.

3.11 Optional Task 11, Community Relations Plan (CRP): This task is a Firm Fixed Price task.

3.11.1 Objective: Prepare, submit and gain acceptance of a CRP for each FUDS property.

3.11.1.1 Optional Task 11a, Fort Pickens - FUDS Project No. I04FL006301.

3.11.1.2 Optional Task 11b, Fort Segarra - FUDS Project No. I02VI097701.

3.11.1.3 Optional Task 11c, Benedict Field - FUDS Project No. I02VI056401.

3.11.2 Performance Standard: Prepare the CRP in accordance with EP 200-3-1, ER 200-3-1, EP 1110-1-18, guidance provided in the FUDS Public Involvement Toolkit and the DENIX UXO Safety Website, http://denix.osd.mil/uxo/.

3.11.3 AC: Acceptance of CRP with two (2) revisions.

Measurement / Monitoring: Review of CRP against guidance to verify that the minimum acceptable content has been provided.

3.11.4 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and re-performance of work at contractor's expense.

3.11.5 Specific Task Requirements: This effort shall include, but is not limited to: preparation and delivery of stakeholder surveys, review and presentation of survey findings, completion of stakeholder interviews, determining a list of local, state, and federal representatives for the area, determining proposed locations for public meetings, determining best methods of communicating to the public (radio, television, mail outs, etc…). The government shall approve <u>all</u> correspondence, survey content, and all other materials prior to being presented/distributed to the public. These actions are independent of the field activities that involve interaction with the community.

3.12 Task 12, Administrative Record: This task is a Firm Fixed Price task.

3.12.1 Objective: Assist in establishing and maintaining the Administrative Record <u>for each</u> MRS throughout the period of performance of this Task Order:

3.12.1.1 Task 12a, Fort Pickens - FUDS Project No. I04FL006301.

3.12.1.2 Optional Task 12b, Fort Segarra - FUDS Project No. I02VI097701.

3.12.1.3 Optional Task 12c, Benedict Field - FUDS Project No. I02VI056401.

3.12.2 Performance Standard: Prepare in accordance with the guidance in EP 200-3-1, Chapter 4 (Establishing and Maintaining Administrative Records) and Standard Operating Procedure for Formerly Used Defense Sites (FUDS) Records Management, Revision 5, dated January 2008 (or most recent version).

3.12.3 AC: Administrative record will be evaluated against guidance for compliance with requirements, accuracy and completeness of the record, with up to one uncorrected deficiency remaining during the period of performance.

3.12.4 Measurement / Monitoring: The government will visit, at least once, the administrative record's location and check for completeness and compliance with referenced EP; electronic submissions will be evaluated randomly upon receipt as data is entered into the record.

3.12.5 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and re-performance of work at contractor's expense.

3.12.6 Specific Task Requirements: The contractor shall secure a location such as a public library for a place to house the Administrative Record in the local city or community for each MRS. This task requires close coordination with the Jacksonville District and USAESCH to secure all required documents to support the Administrative Record. Provide copies of all final documents posted to the Administrative Record on CD/DVD to USAESCH and Jacksonville District, two (2) copies each. These files shall be suitable for placement on the FRMD web site per the above SOP.

3.13 Optional Task 13, Treatability Study Field Activities: This is a Firm Fixed Price Task.
3.13.1 Objective: Conduct a treatability study in accordance with the approved Treatability Study UFP-QAPP. This task shall include all field activities necessary to execute this task. Contractor shall ensure recovery of all metallic sources associated with anomalies identified under task 13b as requiring excavation. All excavations are to be in accordance with the UFP-QAPP, ESP and the Revised June 2012 edition of ESTCP's Intrusive Investigation Data Collection Instructions, Munitions Response Live Site Demonstrations.

3.13.1.1 Optional Task 13a, Fort Pickens - FUDS Project No. I04FL006301.

3.13.1.2 Optional Task 13b, Benedict Field - FUDS Project No. I02VI056401.

3.13.2 Optional Task 13c, Advanced EMI Sensor Detection Survey: This is a Firm Fixed Price task
3.13.2 Objective: Detect all Targets of Interest (TOI). Contractor shall perform an Advanced EMI detection survey across selected and government approved grid-acres within the MRS meeting the project DQOs as defined during the TPP process. For pricing purposes, the contractor shall use 2 acres. If additional acreage is required optional tasks may be awarded.

3.13.2.1 Optional Task 13c1, Fort Pickens - FUDS Project No. I04FL006301.

3.13.2.2 Optional Task 13c2, Benedict Field - FUDS Project No. I02VI056401.

3.13.3 Optional Task 13d.1, One Acre Advanced EMI Sensor Detection Survey: This is a Firm Fixed Price task
3.13.3 Objective: This task shall include all field activities necessary to collect and analyze an additional one acre of Advanced EMI Sensor Detection Survey data.

3.13.3.1 Optional Task 13d1, Fort Pickens - FUDS Project No. I04FL006301.

3.13.3.2 Optional Task 13d2, Benedict Field - FUDS Project No. I02VI056401.

3.13.4 Optional Task 13e, Advanced EMI Sensor Cued Survey and Classification: This is a Firm Fixed Price task.
3.13.4 Objective: Correctly classify 100% of the TOI and maximize correct classification of the non-TOI throughout the study areas. Contractor shall perform an Advanced EMI cued survey on all anomalies meeting the selection criteria determined in Task 13b. All cued surveys will be in accordance with the DQOs developed during the TPP process and documented in the approved UFP-QAPP. After all cued interrogations have been completed the contractor shall develop his/her classification scheme following the process in the approved UFP-QAPP. When the contractor states its classification process is final, it shall classify all anomalies as either TOI or non- TOI within 4 weeks after completion of data collection. The Contractor shall be responsible to update the Government on any and all changes or updates to the classification scheme. The Government will perform the final analysis of the Contractor's performance using all ground truth collected during the anomaly excavations performed in the grid acres. The Government anticipates 600 anomalies will require cued survey, classification and excavation for the treatability study.

3.13.4.1 Optional Task 13e1, Fort Pickens - FUDS Project No. I04FL006301.

3.13.4.2 Optional Task 13e2, Benedict Field - FUDS Project No. I02VI056401.

3.13.5 Optional Task 13f, Advanced EMI Sensor Cued Survey and Classification on 50 anomalies: This is a Firm Fixed Price task.
3.13.5 Objective: This task shall include all field activities necessary to collect, analyze and investigated an additional 50 anomalies of Advanced EMI Cued Survey and Classification data.

3.13.5.1 Optional Task 13f1, Fort Pickens - FUDS Project No. I04FL006301.

3.13.5.2 Optional Task 13f2, Benedict Field - FUDS Project No. I02VI056401.

3.13.6 Optional Task 13g, Intrusive Investigation: This is a Firm Fixed Price task.

3.13.6 Objective: This task shall include all field activities necessary to investigate anomalies from the treatability study.

3.13.6.1 Optional Task 13g1, Fort Pickens - FUDS Project No. I04FL006301.

3.13.6.2 Optional Task 13g2, Benedict Field - FUDS Project No. I02VI056401.

3.13.7 Optional Task 13h, Intrusive Investigation of 50 anomalies: This is a Firm Fixed Price task.
3.13.7 Objective: This task shall include all field activities necessary to investigate 50 additional anomalies.

3.13.7.1 Optional Task 13h1, Fort Pickens - FUDS Project No. I04FL006301.

3.13.7.2 Optional Task 13h2, Benedict Field - FUDS Project No. I02VI056401.

3.13.8 Performance Standard:
-Field work is conducted in accordance with the UFP-QAPP and interim guidance provided by Environmental Security Technology Certification Program (ESTCP).
-The following personnel experience requirements shall be met: Personnel should have the following expertise, but may be supplemented with sub-contractor personnel with the below-listed expertise.
1) Project Manager. At least one (1) advanced classification project to include management at the field operational level
2) Senior Geophysicist.
   a) Experience with the theoretical and practical aspects of detecting and selecting a wide range of targets of interest (TOI) and non-targets of interest (non-TOI).
   b) Experienced in the selection and utilization of various types of geophysical instruments and ancillary components to include high-precision global positioning systems, inertial motion sensors and the software used to control and integrate the geophysical system as a whole.
   c) Shall have, at a minimum, documented experience performing advanced classification using only advanced EMI instrument survey data , to include documented experience processing and analyzing advanced EMI instrument data, and developing and performing or overseeing quality control procedures for advanced EMI data acquisition, analysis and classification processes.
3) Field Geophysicist. The field geophysicist(s) shall be responsible for proper operation of advanced geophysical EMI systems and performing quality control during advanced EMI system surveys. Field Geophysicist(s) shall have, at a minimum, the following qualifications:
a) Documented or independently verifiable experience operating an advanced geophysical EMI system to include the geophysical instruments, high-precision global positioning systems, inertial motion sensors and the software used to control and integrate the geophysical system as a whole.

3.13.9 AC: Conduct the Treatability Study in accordance with the accepted/approved UFP-QAPP and QASP. QC data submitted meets requirement described in the QAPP. All final data and QC tests/documentation submitted and Government QA acceptance of QC tests/documentation gained. Acceptance of IVS memorandum with one revision.

3.13.10 Measurement / Monitoring: Periodic inspection/review of field work and data. Verify compliance with accepted UFP-QAPP and QASP. Quality control tests/documentation submitted per the QASP for government review.

3.13.11 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor’s expense.

3.13.12 Specific Task Requirements:

- Contractor shall provide an appropriate data delivery system (DVDs, SharePoint, external hard drives, etc..) to deliver all electronic data in accordance with DID WERS-004.01 and the UFP-QAPP to USACE.
- Contractor shall provide the following data deliverables: raw advanced sensor data in .csv ASCII format that can be imported directly into UX-Analyze (latest version) without need of external or additional formatting; final, background-corrected, cued data shall be delivered in Geosoft databases that can be opened and viewed using UX-Analyze Version (latest version) without need of external or additional formatting; inversion results shall be delivered in Geosoft database(s) that can be opened and viewed using UX-Analyze Version (latest version) without need of external or additional formatting and as portable document files (.pdf) illustrating, at a minimum, the three estimated primary axis polarizabilities, the polarizabilities of the best library match, quality indicators for the measured data, quality indicators for the inversion results, all quantitative classification metrics used in the contractors classification scheme.

Additional requirements for Intrusive Investigation work are as follows:
- Restore all areas to their original condition; all access/excavation/detonation holes shall be backfilled.
- Maintain a detailed accounting of all UXO, DMM, MD and range-related debris encountered per DID WERS-004.01. This accounting shall include: amounts of UXO, DMM and MD; nomenclature; location and depth of UXO/DMM; location of MD; and final disposition. The accounting system shall also account for all demolition materials utilized on site. Digital photographs of UXO and DMM and examples of MD found during the investigation shall be taken.
- All MEC encountered during this munitions response shall be processed in accordance with the approved work and safety plans.
-All contractor personnel involved in anomaly excavations that will be used in the treatability study shall not be part of any other task or activities associated with this PWS until Task 8 is complete. All personnel involved in the excavations shall keep all knowledge of recovered items from all other contractor project personnel performing other tasks or activities associated Task 8 until Task 8 is complete. The contractor shall submit for review and acceptance the firewall plan that will preclude treatability study personnel from learning any details about recovered items.

3.13.13 Optional Task 13i, Blind Seeding: This is a Firm Fixed Price Task
3.13.13 Objective: Implement the blind seeding plan in accordance with the approved UFP-QAPP and as approved by the Government. All seeds shall be emplaced only after the area has been checked by a qualified UXO Technician to determine if the area is free of subsurface anomalies.

3.13.13.1 Optional Task 13i1, Fort Pickens - FUDS Project No. I04FL006301.

3.13.13.2 Optional Task 13i2, Benedict Field - FUDS Project No. I02VI056401.

3.13.13.2 Performance Standard: Seed Plan, at a minimum, shall consist of representative inert seed rounds and Industry Standard Objects (ISO) as seeds. All seed items shall be submitted to the government for approval. Additional information on ISO specifications are defined in Geophysical System Verification: A Physics-Based Alternative to Geophysical Prove outs for Munitions Response, Environmental Security Technology Certification Program (ESTCP), July 2009.

All seeds shall be documented in accordance with Task 4, GeoSpatial Data, and provided to the government as a separate database at the conclusion of each day of seeding activities.

3.13.13.3 AC: Acceptance of implementation of the blind seed plan and acceptance of the final blind seed database by the government.

3.13.13.4 Measurement / Monitoring: Review by Government in accordance with QASP and UFP-QAPP.

3.13.13.5 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor’s expense.

3.13.13.6 Specific Task Requirements:
- Seeds will be placed in sufficient quantity to meet all requirements of the UFP-QAPP.
- All contractor personnel involved in this seeding task shall not be part of any other task or activities associated with this PWS from the time the seeding is started to the time the contractor's final TOI list is delivered to the Government. All personnel involved in this seeding task shall keep all knowledge of seeds blind from all other contractor project personnel performing other tasks or activities associated with this PWS during this period. The contractor shall submit for review and acceptance the contractor's blind seed firewall plan.
- All digital seed item information shall be delivered to the Government. Immediately upon receiving confirmation of delivery and a written acceptance from the Government, the contractor shall permanently delete all digital seed information from all contractor digital storage media. All original non-digital field notes and documentation shall be delivered to the Government. The contractor shall not produce copies of non-digital field notes or documentation that contain seed information unless authorized by the Government.
- Acquire and deliver to the project site all seeds required to implement the seeding plan

3.14 Optional Task 14, Treatability Study Report: This task is a Firm Fixed Price task.

3.14.1 Objective: Prepare, submit and gain acceptance of a Treatability Study Report.

3.14.2 Performance Standard: The Treatability Study report shall document the results of the field work (Task 13 of this Task Order), and the Contractor shall prepare the report in accordance with ESTCP Classification Demonstration reporting requirements or as established through TPP.

3.14.3 AC: Acceptance of Treatability Study with two revisions.

3.14.4 Measurement / Monitoring: Review of results against guidance and DQOs to verify that the minimum acceptable content has been provided.

3.14.5 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.

3.14.6 Specific Task Requirements:
- An in depth advanced classification processes report shall be included as an appendix providing a separate post-analysis of the detection and cued surveys.
- An in depth analysis of the classification performance once all ground truth (including the identity of all Non-TOI identified by the Contractor in Task 8) is provided to the analyst, to include recommendations, if any, for improving the process.
- An in depth analysis of lessons learned during the process of building and assessing the classification process.
- Any lessons learned from RCAs.
- Provide modified costing for advanced sensor use and classification to supplement the FS report.
-Update CSM as necessary and provide complete CSM in the format agreed upon during the TPP process.

3.15 Optional Task 15, Fort Pickens Underwater Innovative Technology Demonstration Support: This is a Cost Plus Fixed Fee (CPFF) Task.

3.15.1 Objective: Provide field support for a demonstration of underwater detection and/or classification technology. This task shall include boat(s), boat operator(s), and divers to support conducting the field demonstration of an innovative underwater technology to be determined by ESTCP. Support is expected to include providing the dive vessel, installation and removal of seeds, and other support to the ESTCP demonstrator(s) as needed. The contractor should estimate that the demonstration field activities will take 2 weeks.

3.15.2 AC: Acceptance of demonstration support by the government.

3.15.3 Measurement / Monitoring: Review by Government in accordance with QASP, Dive Plan and ESTCP Demonstration Plan.

3.15.4 Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.

3.15.5 Specific Task Requirements: None

4.0 SUBMITTALS:

Even though draft and draft final submittals are requested, the term "draft" shall not reflect upon the quality of the submittal being provided by the Contractor. Submittals shall include all supporting materials including supporting data whether electronic or hardcopy. Submittals not meeting the requirements of referenced guidance or Data Item Descriptions or missing supporting data may be rejected and revised by the contractor at the contractor's own expense.

4.1 The Contractor shall deliver the specified number of copies shown in Table 4.2 of each report listed in Table 4-1 to the following addressees (addresses to be verified by Contractor):

US Army Engineering & Support Center, Huntsville
Attn: CEHNC-OE-DC (Becky Terry) (COR)
Suite 19 White Tiger BLDG
Huntsville, AL 35807-4301
4820 University Square
Huntsville, AL 35816-1822

U.S. Army Corps of Engineers, Jacksonville District
Attn: Francisco Araico (Project Manager)
701 San Marco BLVD
Jacksonville, FL 32207

Contractor to obtain and/or verify addresses.

4.2 Submittals and Due Dates.
The Contractor shall submit one (1) copy of the entire submittal on a CD with each hard copy of a submittal (Reports, Plans, etc…) in accordance with DID WERS-007.01. Hardcopies shall be printed on both sides of the paper whenever possible. Submit electronic documents for Draft and Draft Final submittals. Regulatory reviewers may require hardcopies.

Table 4-1 List of Submittals

Submittal	Due Date (Calendar Days)
Meeting minutes for Kickoff phone conference	7 days after Kickoff phone conference
Proposed Schedule	7 days after kickoff conference call
Draft Project Management Plan (PMP)	30 days after project award
Final PMP	14 days after acceptance of comment responses
Pre-TPP Meeting Materials	14 Days prior to TPP meetings
DQOs, Draft QAPP, and CSM	With Pre-TPP materials
AAPP (If required)	7 days prior to site visit
Draft TPP Memorandum	14 days after first TPP meeting
Final TPP Memorandum	7 days after acceptance of comment responses
Draft TPP Memorandum Addendum	7 days after second/third TPP meeting
Final TPP Memorandum Addendum	7 days after acceptance of comment responses
Draft Community Relations Plan	TBD

Draft-Final Community Relations Plan	14 days after acceptance of comment responses
Final Community Relations Plan	7 days after acceptance of comment responses
Pre-Public Meeting Materials	14 Days prior to public meetings
Final Public Meeting Materials	no later than 3 days before Meeting
Draft QAPP/ESP	21 days after acceptance of TPP memorandum
GIS on DVD	
Draft Final QAPP/ESP	14 days after acceptance of comment responses
Draft QASP	With Draft Final Work Plan
Final QAPP/ESP	14 days after acceptance of comment responses and TPP
meeting	
Quality Control Documents	As required by Regulation, guidance, DIDs, QAPP, QASP, or agreed to in project schedule, to include the following:
Daily QC Report for Field Work	Daily during Field Work Activities
Analytical Data Submittal for QA Evaluation	30-60 days after completion of fieldwork
Electronic Laboratory Data Submittal	30-60 days after completion of fieldwork
Monthly Status Report	For the Duration of the Project
Draft RI/FS Report (GIS on DVD)	60-81 days after completion of field work
Draft Final RI/FS Report	21 days after acceptance of comment responses
Final RI/FS Report	14 days after acceptance of comment responses and TPP meeting
Draft Treatability Study Report	30-45 days after completion of field work
Draft Final Treatability Study Report	14 days after acceptance of comment responses
Final Treatability Study Report	14 days after acceptance of comment responses
Draft Proposed Plan	14 days after acceptance of the FS Report
Draft Final Proposed Plan	14 days after acceptance of comment responses
Final Proposed Plan	14 days after PP public meeting
PP Meeting Transcripts	with final Proposed Plan
Responsiveness Summary	with Decision Document Submittal
Draft Decision Document	14 days after acceptance of Proposed Plan
Draft Final Decision Document	7 days after acceptance of comment responses
Final Decision Document	7 days after acceptance of comment responses
Final Administrative Record (On CD/DVD)	Upon completion of the Record
Final GIS Files on CD	End of Project

4.3 Submittal Quantities

Provide the number of submittals shown in Table 4-2 to the addressees given in Section 4.2. No draft documents shall be released to the regulatory community until reviewed by the government.

Table 4-2 Submittal Guidance

	Draft Documents	Draft Final/Final Documents
KO/COR	1 each	1 each
USAESCH	1	1 DF/ 5 final
Jacksonville	1	5

4.4 Review Period: The contractor shall include at least a minimum 14 calendar day review period for USAESCH, 21 calendar day review period for the EM-CX, 30 calendar day review period for the regulators.

4.5 Period of Performance: The Completion Date for this Task Order is 1 July 2020.

5.0 MILESTONE PAYMENTS (for firm fixed price tasks): Milestones will be considered met or completed when the required QC documentation has been submitted, QA completed and the submittal and/or product is accepted. Any payment vouchers submitted that do not coincide with the final accepted milestones or do not have the appropriate QC documentation will be rejected. All payments will be made utilizing an agreed upon Payment Milestone Schedule. The Contractor shall provide suggested milestones for payment. Milestones for payment shall be shown on the project schedule.

5.1 The following is a list of potential milestones for payment:
- Final Submittals: upon government acceptance, for example: Final QAPP
- Field Work: for defined units and activities completed and QA review and acceptance, for example: Final QC density data package.
- Meetings: after completion of meetings with government acceptance of meeting minutes, for example: Final PP meeting transcripts.

6.0 REFERENCES:

6.1 Refer to “Base Contract.”

6.2 Data Items Descriptions at the following website:

http://www.hnc.usace.army.mil/Missions/Engineering.aspx.

6.3 Site Specific References

Site specific references will be provided with the request for proposal for contractor review and use via either a designated Internet site or delivery of recorded data on CD/DVD.

7.0 GENERAL CONDITIONS: See the Base Contract Section C, Section 10 General Conditions and the following addendums:

7.1 This is a performance based task order.

7.2 Government acceptance of the proposed technical approach and/or price does not relieve the Contractor from full responsibility for the viability, productivity, and efficiency of the approach used to meet the performance requirements of the PWS at the price proposed. The task order is for the provision of services that ultimately meet the performance requirements of this task. If the contractor must adjust its technical approach or perform more field work than anticipated in order to achieve the proposed performance goal then the contractor will do so with no change in task order price.

7.3 If the Government at its sole discretion chooses to modify the performance standard, the parties to this task order will assess the impact on the estimated amount of field work required to achieve the new performance standard and will negotiate a price adjustment.

7.4 The Contractor attests that it applied due diligence in the research and development of its proposal, and has priced reasonable estimates of the site conditions and the associated risks into the price. The Contractor accepts full and sole responsibility for identifying and considering all factors that may affect the cost to execute the work. The act of signing this task order signifies that the Contractor has been given ample opportunity to assess the conditions under which the work will be performed and the Contractor either fully understands those conditions or has factored the risk into the price.

7.5 The Government provided the Contractor with historical documents and documents from previous site activities. The Contractor attests it interpreted the data utilizing an experienced understanding of how the data of this type is collected, analyzed, interpreted, and presented.

8.0 ARMY CONTRACTOR MANPOWER REPORTING:

8.1 Implementation.

8.1.1 The Office of the Assistant Secretary of the Army (Manpower & Reserve Affairs) operates and maintains a secure Army data collection site where the contractor will report contractor manpower information (including subcontractor manpower information) required for performance of this contract. The contractor shall submit all the information required in the format specified at the following web address: https://cmra.army.mil/default.aspx

8.1.2 The Contractors shall fill in the required information on the website, fields are shown below:

- Contract Number
- Delivery Order Number (if applicable)
- Task Order Number (if applicable)
- Requiring Activity Unit Identification Code (UIC)
- Command
- Contractor Contact Information
- Federal Service Code (FSC)
- Direct Labor Hours
- Direct Labor Dollars
- Location Information (where contractor and subcontractors (if applicable) performed the services

8.1.3 Reporting period will be the period of performance not to exceed 12 months ending September 30 of each government fiscal year and must be reported by 15 October of each calendar year.

8.1.4 If your particular contract crosses fiscal years, 2 entries must be made to capture the data for the contract period; for example if the contract start date is 1 January 2016 and ends 31 December 2016, the data for the period from 1 January 2016 through 30 September 2016 shall be entered not later than 15 October 2016 and the period 1 October 2016 through 31 December 2016 shall be entered not later than 15 January 2017.

8.1.5 USAESCH UIC code is W2V6AA.

Attachment A
Performance Requirements Summary:

A.1 The Contractor shall meet the following performance requirements. Performance requirements are addressed in each task and summarized in the following Performance Requirements Summary. If discrepancies or ambiguity exists between the documents, the order of precedence is 1) the Task; 2) Performance Requirements Summary; 3) Performance Metrics

Table A-1 Performance Requirements Summary

Task	Objective	Performance Standard	Minimum Acceptable Criteria	Measurement / Monitoring	Incentive/ Disincentive
1	Prepare, submit, and gain government approval of a PMP that is detailed and comprehensive covering all aspects of the RI/FS process. This document is a living document and shall be updated as necessary.	Prepare the PMP in accordance with Army Regulation (AR) 5-1; AR 11-2; USACE PMBP Manual, PROC2000, PMP-PgMP Development, REF8005G; PMP-PgMP Content, EM 200-1-15 and Data Item Description (DID) WERS-018. In addition, USACE ADR-SEDD data requirements per WERS-009.01, as well has other applicable DIDs.	Acceptance of PMP with one revision.	Government review of PMP per guidance to verify that a document meeting all Performance Standards and Task Specific Requirements has been provided.	Satisfactory or greater CPARS rating/poor CPARS rating re-performance work at contractor's expense.
2	Implement the four-phase TPP process.	Achieve the objectives of each TPP phase as listed in EM 200-1-2, EM 200-1-15 and applicable Interim Guidance	Acceptance of TPP documents (meeting presentations, agenda,	A TPP checklist for each phase, as provided in the EM 200-1-2, EM 200-1-15 and other	Satisfactory or greater CPARS rating/poor

		Documents. Facilitate meetings in a professional and organized manner.	handouts, Conceptual Site Model (CSM) and memorandums) with up to one (1) revision. Meetings held are organized; accomplish requirements of the TPP process; and are conducted in a professional manner. Zero letters of formal grievances or letters of concern.	applicable Interim Guidance Documents, will be used to measure and document progress; guidance cited will be used to evaluate content of documents for acceptance / non-acceptance. The Government will attend and evaluate organization and facilitation of the meetings, and professional nature of the meetings.	CPARS rating and/or re-performance of work at contractor's expense.
3	Prepare, submit and gain acceptance of a QAPP and QASP that are detailed and comprehensive plans covering all aspects of site characterization, risk assessment and methodology, and project execution.	Prepare the QAPP in accordance with Chapter 1.0 of DID WERS-001.01; EM 200-1-15; EM 385-1-1; EM 385-1-97 including Errata Sheets and Changes; Intergovernmental Data Quality Task Force Uniform Federal Policy (UFP)-QAPP Manual: and other Interim Guidance and DIDs as appropriate. Prepare the sampling and analysis plan, field sampling, and QAPP in accordance with EM 200-1-15, DID WERS-009.01, Intergovernmental Data Quality Task Force UFP-QAPP Manual, and State regulatory guidance, as appropriate. Prepare a risk assessment work plan as part of the overall project work plan incorporating implementation of the risk assessment and methodologies per USEPA Risk Assessment Guidance (RAGS), State regulatory guidance and USACE EM 200-1-4, Volumes I and II, as appropriate. QAPP content shall also meet the requirements of DoD Quality Systems Manual for Environmental Laboratories (current version). The Draft QASP shall include systematic methods used to monitor performance and to identify the required documentation and the resources to be employed to include monitoring Quality Control requirements in guidance, DIDs and the contractor's Quality Control measures.	Acceptance of QAPP with two revisions. Draft QASP reflects requirements of the QAPP with one revision required. One additional revision is acceptable to incorporate EM-CX.	Review of QAPP and QASP to verify that the minimum acceptable content has been provided and meets applicable guidance.	Satisfactory or greater CPARS rating/poor CPARS rating re-performance work at contractor's expense.
3a	Prepare, submit and gain acceptance of an Explosives Siting Plan (ESP).	Prepare required submission in accordance with DoD 6055.09-M, EM 385-1-97, Errata Sheet #3, and DID WERS-003.01 as a standalone document for inclusion after acceptance into the QAPP.	Acceptance of submission with two revisions. One additional revision is acceptable to incorporate EM-CX, USATCES and DDESB comments.	Review by Government using guidance cited to determine acceptability.	Satisfactory or greater CPARS rating/poor CPARS rating re-performance work at contractor's expense.
3b	Prepare, submit and gain acceptance of a UFP-QAPP for the treatability study which is detailed and comprehensive and covers all aspects of dynamic detection, anomaly selection, cued detection, processing, classification, intrusive investigation and methodology, project execution, and ground truth firewall.	-Prepare the UFP-QAPP in accordance with the most recent Intergovernmental Data Quality Task Force Geophysical Classification for Munitions Response (GCMR) UFP-QAPP template, provided upon request -Prepare the UFP-QAPP in accordance with interim guidance provided by Environmental Security Technology Certification Program (ESTCP), as appropriate. - The treatability study UFP-QAPP shall contain all elements of an ESTCP demonstration plan, such as those used	Acceptance of the UFP-QAPP with two revisions.	Review of the UFP-QAPP to verify that the minimum acceptable content has been provided and meets applicable guidance.	Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.

		in recent ESTCP demonstrations at the Former Camp Spencer, Former Camp Ellis, and Former Southwestern Proving Ground. -The treatability study will be performed in a manner similar to recent ESTCP demonstrations such as those at Former Camp Ellis, Former Camp Spencer and Former Southwestern Proving Ground. This means 100% of the anomalies selected from the detection surveys will require excavation. The treatability study's data quality objectives and measurement quality objectives shall be based on geophysical surveys of contiguous parcels of the site, such as square or rectangular grids. Transect data shall not be used for the treatability study. All ground truth shall be delivered to the Government. -All ground truth shall be firewalled from all contractor personnel performing any aspect of the geophysical analysis or geophysical quality control. All ground truth requests by the contractor's geophysical analysts shall be made directly to the Government. No ground truth information shall be provided to the contractor's analysis personnel from sources other than the Government unless approved in writing by the Government.			
4	Utilize a geographic information system (GIS) in the development of the CSM and maintain and manage all project and geospatial data.	Manage and maintain project data, and develop CSM in GIS IAW DID WERS-007.01, EM 200-1-2, EM 1110-1-1200, EM 200-1-15, and applicable Interim Guidance Documents.	Acceptance of CSM and GeoSpatial Data submissions, which also meet quality and formatting requirements.	Review by Government using cited guidance to determine acceptability.	Satisfactory or greater CPARS rating/poor CPARS rating re-performance work at contractor's expense.
5	Conduct a remedial investigation in accordance with CERCLA, as amended, characterizing the nature and extent of MEC at the MRSs meeting the project DQOs as defined during the TPP process. This task shall include all field activities necessary to execute this task. For MC contamination, collect sufficient data that meets the project DQOs as defined during the TPP process, of known quality and quantity to determine the nature and extent of munitions constituents (MC) to support and perform a human health and ecological baseline risk assessment.	See Task 5	Conduct the RI in accordance with the accepted/approved QAPP and all subplans. - Geophysical QC data submitted meets requirement described in DID WERS-004.01 and EM 200-1-15. - Sampling field work and data meets established criteria within the accepted UFP-QAPP, SAP, and Work Plan. - No more than 4 CARs/948s for non-critical violations and/or 1 CAR/948 for critical violation. No unresolved Corrective action requests. - All final data and QC tests/documentation submitted. Government QA acceptance of QC tests/documentation gained. - No Class "A" Safety accidents, contractor at fault; No Class "B", contractor at Fault, no more than 1 non-	Periodic inspection/review of field work and data. Verify compliance with accepted QAPP and all subplans. Quality control tests/documentation submitted for government review. Boundary precision will be determined by evaluation of the sampling footprint as it relates to the reported contaminated/uncontaminated areas in question. Additionally, statistical confidence will be calculated using the Visual Sampling Plan software, as applicable. Anomaly density profile and other remediation cost driver precision will be verified by QA of methods used.	Satisfactory or greater CPARS rating/poor CPARS rating re-performance work at contractor's expense.

			explosive Class "C" accident; and <2 non-explosive related Class "D" accidents, IAW AR 385-40. - Major safety violations, no more than 1 non-explosive related safety violation. - Minor safety violations, no more than 2 safety violations. - Zero letters of formal grievances or letters of concern.		
6	Prepare, submit and gain acceptance of a separate RI report for each FUDS property	The RI report shall document the results of the RI and previous investigations, and the Contractor shall prepare the report in accordance with EM CX Interim Guidance 06-04 (EP 1110-1-18). The ecological and human health risk assessment shall be performed in accordance with the EPA Risk Assessment Guidance (RAGS) and USACE EM 200-1-4, Volumes I and II, as appropriate.	Acceptance of RI with two revisions. One additional revision is acceptable to incorporate EM-CX.	Review of RI against guidance to verify that the minimum acceptable content has been provided.	Satisfactory or greater CPARS rating/poor CPARS rating re-performance work at contractor's expense.
7	Conduct a feasibility study and prepare, submit and gain acceptance of a separate FS report for each FUDS property	The FS report shall document the results of the FS and prepared in accordance with EM CX Interim Guidance 06-04 (EP 1110-1-18).	Acceptance of FS with two revisions. One additional revision is acceptable to incorporate EM-CX.	Review of FS against guidance to verify that the minimum acceptable content has been provided.	Satisfactory or greater CPARS rating/poor CPARS rating re-performance work at contractor's expense.
8	Prepare, submit and gain acceptance of separate Proposed Plans (PP) for each FUDS property	Prepare the PP(s) in accordance with, ER 200-3-1, EM CX Interim Guidance 06-04 (EP 1110-1-18), EPA 540-R-98-031 and CERCLA, as amended.	Acceptance of PP with two revisions. One additional revision is acceptable to incorporate EM-CX.	Review of PP against guidance to verify that the minimum acceptable content has been provided.	Satisfactory or greater CPARS rating/poor CPARS rating re-performance work at contractor's expense.
9	Prepare, submit and obtain acceptance of separate DDs for each delineated MRS(s) resulting from the RI.	Prepare the DDs in accordance with ER 200-3-1; EP 1110-1-19; EM CX Interim Guidance 06-04 (EP 1110-1-18); Attachment C, herein; EPA 540-R-98-031; and CERCLA, as amended.	Acceptance of DD(s) with two revisions. One additional revision is acceptable to incorporate EM-CX.	Review of DD(s) against guidance to verify that the minimum acceptable content has been provided.	Satisfactory or greater CPARS rating/poor CPARS rating re-performance work at contractor's expense.
10	Successfully complete public meetings and support the Jacksonville District with community relations.	Contractor attends and participates in meetings. Meeting materials are accepted by the government as required. Meeting transcripts for PP meeting are accurate and prepared by a professional court reporter.	Acceptance of meeting materials with two revisions and acceptance of PP meeting transcripts in one revision. Meetings held are organized; and professional in nature. Contractor personnel in attendance are thoroughly familiar with the project. The contractor receives zero formal grievances or letters of concern.	Acceptance of required materials for meetings. Government will attend and evaluate the contractor's attendance, participation and professional demeanor.	Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at no additional cost the government
11	Prepare, submit and gain acceptance of a CRP for each FUDS property	Prepare the CRP in accordance with EP 200-3-1, ER 200-3-1, EM-CX Interim Guidance 06-04, guidance provided in the FUDS Public Involvement Toolkit and the DENIX UXO Safety Website, http://denix.osd.mil/uxo/.	Acceptance of CRP with two revisions.	Review of CRP against guidance to verify that the minimum acceptable content has been provided.	Satisfactory or greater CPARS rating/poor CPARS rating re-performance work at contractor's expense.

12	Assist in establishing and maintaining the Administrative Record for each MRS throughout the period of performance of this Task Order.	Prepare in accordance with the guidance in EP 200-3-1, Chapter 4 (Establishing and Maintaining Administrative Records) and Standard Operating Procedure for Formerly Used Defense Sites (FUDS) Records Management, Revision 5, dated January 2008 (or most recent version).	Administrative record will be evaluated against guidance for compliance with requirements, accuracy and completeness of the record, with up to one uncorrected deficiency remaining during the period of performance.	The government will visit, at least once, the administrative record's location and check for completeness and compliance with referenced EP; electronic submissions will be evaluated randomly upon receipt as data is entered into the record.	Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.
13	Conduct a treatability study in accordance with the approved Treatability Study UFP-QAPP. This task shall include all field activities necessary to execute this task. Contractor shall ensure recovery of all metallic sources associated with anomalies identified under task 13b as requiring excavation. All excavations are to be in accordance with the UFP-QAPP, ESP and the Revised June 2012 edition of ESTCP's Intrusive Investigation Data Collection Instructions, Munitions Response Live Site Demonstrations.	See Task	Conduct the Treatability Study in accordance with the accepted/approved UFP-QAPP and QASP. QC data submitted meets requirement described in the QAPP. All final data and QC tests/documentation submitted and Government QA acceptance of QC tests/documentation gained. Acceptance of IVS memorandum with one revision.	Periodic inspection/review of field work and data. Verify compliance with accepted UFP-QAPP and QASP. Quality control tests/documentation submitted per the QASP for government review.	Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.
13d	Implement the blind seeding plan in accordance with the approved UFP-QAPP and as approved by the Government. All seeds shall be emplaced only after the area has been checked by a qualified UXO Technician to determine if the area is free of subsurface anomalies.	Seed Plan, at a minimum, shall consist of representative inert seed rounds and Industry Standard Objects (ISO) as seeds. All seed items shall be submitted to the government for approval. Additional information on ISO specifications are defined in Geophysical System Verification: A Physics-Based Alternative to Geophysical Prove outs for Munitions Response, Environmental Security Technology Certification Program (ESTCP), July 2009. All seeds shall be documented in accordance with Task 4, GeoSpatial Data, and provided to the government as a separate database at the conclusion of each day of seeding activities.	Acceptance of implementation of the blind seed plan and acceptance of the final blind seed database by the government.	Review by Government in accordance with QASP and UFP-QAPP.	Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.
14	Prepare, submit and gain acceptance of a Treatability Study Report.	The Treatability Study report shall document the results of the field work (Task 13 of this Task Order), and the Contractor shall prepare the report in accordance with ESTCP Classification Demonstration reporting requirements or as established through TPP.	Acceptance of Treatability Study with two revisions.	Review of results against guidance and DQOs to verify that the minimum acceptable content has been provided.	Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.
15	Provide field support for a demonstration of underwater detection and/or classification technology.	See Task	Acceptance of demonstration support by the government	Review by Government in accordance with QASP, Dive Plan and ESTCP Demonstration Plan.	Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.

Attachment B
PERFORMANCE METRICS

B.1 Performance Metrics for Performance Assessment Record (PAR)

	Exceptional	Very Good	Satisfactory	Marginal	Unsatisfactory
PAR Category: Quality of Product or Service					
Performance indicator: Document reviews					
Draft Plans, Reports, and documents [Plans, documents and reports are considered draft until accepted as final by the Government]	All contract-milestone documents accepted as submitted	No substantive comments (i.e. limited to grammar, spelling, terminology) to any of the documents, but a few exceptions were noted and corrected	Contractor met Acceptance Criteria	One or more documents required revisions to be resubmitted for approval prior to proceeding. Two backchecks were required on one or more documents before original comments were resolved satisfactorily.	One or more documents did not comply with contract requirements, or one or more documents required more than two backchecks before original comments were resolved satisfactorily, or more than one document was rejected.
Performance indicator: Project Execution					
Process Compliance	Zero Corrective Action Requests (CAR) or 948s	1-2 CARs/948s for non-critical violations to WP requirements	Contractor met Acceptance Criteria	5-6 CARs/948s for non-critical violations and/or 2 CARs/948 for critical violations	>6 CARS for non-critical violations and/or >2 CARs/948s for critical violations, or any unresolved CARs
Project Execution	Zero letters of formal grievances or letters of concern AND one or more unsolicited letters of commendation		Contractor met Acceptance Criteria	One (1) letter of formal grievances or letters of concern that was resolved through negotiation	More than one (1) letter of formal grievances or letters of concern that were resolved through negotiation
Task Completion			Contractor met Acceptance Criteria		Final data and QC documentation submitted but not accepted
PAR Category: Schedule					
Performance indicator: Timely completion of tasks					
Final Plans and Reports, project milestones, T.O. invoices	All document submittals and task order milestones and invoices complete and accepted by T.O date, project closed out/final invoice approved ahead of	Project closed out/final invoice accepted ahead of schedule	Project closed out/final invoice accepted on T.O. date	Project closed out/final invoice accepted within 30 calendar days after T.O. date.	Project closed out/final invoice accepted more than 30 calendar days after T.O. date.

	Exceptional	Very Good	Satisfactory	Marginal	Unsatisfactory
	schedule				
Project status reports accurate			Yes		No
Performance indicator: Impacts to schedule					
Impacts caused by Contractor or other causes identified, in writing to HNC CO/ PM, in a timely manner to apply acceptable corrective actions.			Yes		No
PAR Category: Cost Control (Not Applicable for Firm Fixed Price)					
Performance indicator: No unauthorized cost overruns					
Unauthorized cost overruns			No		Yes
Total Project Costs	Total contract invoices less than 98% of T.O. authorized amount	Total contract invoices greater than 98% but less than 99.99%of T.O. authorized amount	Total contract invoices between 99.99% and 100% of T.O. authorized amount	Total contract invoices greater than 100% but less than 105% of T.O. authorized amount	Total contract invoices greater than or equal to 105% of T.O. authorized amount
Performance indicator: Monthly cost report					
Monthly cost reports accurate			Yes		No
Performance indicator: Impacts to cost					
Impacts caused by Contractor or other causes identified, in writing to HNC CO/PM, in a timely manner to apply acceptable corrective actions.			Yes		No
PAR Category: Business Relations					
Performance indicator: Met contractual obligations					
Corrective Actions taken were timely and effective (Refer to CARs issued to Contractor)			Yes		No
Performance indicator: Professional and Ethical Conduct					
Meetings and correspondences with Public, project delivery team and other stakeholders	Zero letters of formal grievances or letters of concern AND one or more unsolicited letters of commendation		Contractor met Acceptance Criteria	One letter of formal grievances or letters of concern that was resolved through negotiation	More than one letter of formal grievances or letters of concern that were resolved through negotiation OR removal of one or more project personnel as a results of a letter of formal grievances or

	Exceptional	Very Good	Satisfactory	Marginal	Unsatisfactory
					letters of concern.
Performance indicator: Customer has overall satisfaction with work performed					
Customer survey results for rating period	4.0-5.0	3.0-3.9	2.0-2.9	1.0-1.9	<1.0
Performance indicator: Personnel responsive and cooperative					
Key personnel responsive, and cooperative	Always		Most Times		Almost Never
PAR Category: Management of Key Personnel and Resources					
Performance indicator: Personnel knowledgeable and effective in their areas of responsibility					
Personnel assigned to tasks	All personnel proposed by Contractor were assigned to project, some personnel were substituted by higher qualified individuals.		All personnel proposed by Contractor were assigned to project, some personnel were substituted by equally qualified individuals.	All personnel proposed by Contractor were assigned to project, some personnel were substituted by equally qualified individuals, Letter of formal grievance or letter of concern received for personnel conduct from HNC.	All personnel proposed by Contractor were assigned to project, some personnel were substituted by lesser qualified individuals or HNC requested, in writing, removal of assigned personnel for poor performance.
Performance indicator: Personnel able to manage resources efficiently					
Instances when resource management had negative impact on project execution	0	1-2	3-4	5-6	>6
PAR Category: Safety					
Performance indicator: Accidents and Violations					
*No Class A Accidents, Contractor at fault	0 No class A accidents IAW AR 385-40	No class A accidents IAW AR 385-40	Contractor met Acceptance Criteria	<3 non-explosive related Class "D" accidents, <3 non-explosive related Class C accidents, or 1 non-explosive Class B accident, IAW AR 385-10 2 non-explosive safety violations.	1 Any Class A accident IAW AR-385-10, or Any explosive related accident.
*Major safety violations	0 accidents/injuries No safety violations	0 accidents/injuries No safety violations		3 safety violations	>1 any violation of procedures for handling, storage, transportation, or use of explosives IAW the WP, and all Federal, State and local laws/ordinanc

	Exceptional	Very Good	Satisfactory	Marginal	Unsatisfactory
*Minor safety violations	No safety violations	1 safety violation			es >3 safety violations

Classes of Accidents:

- Class A: Fatality or permanent total disability (Government Civilian, Military Personnel, and/or Contractor), or >$2,000,000 property damage.

- Class B: Permanent partial disability or impatient hospitalization of 3 or more persons (Government Civilian, Military Personnel, and/or Contractor), $500,000< $2,000,000 property damage.

- Class C: Lost Workday (Contractor) or Lost Time (Government Civilians), $50,000< $500,000 property damage.

- Class D: $2000 < $50,000 property damage.

* From Section C of Solicitation Number W912DY-04-R-0003, Amendment 000 W912DY-08-R-0016, Amendment 0007 (may be included but are not limited to these).

The following guidelines are provided for issuing ratings that are subjective in nature, these ratings will be supported by the weight of evidence documented during the government's surveillance efforts:

<u>Exceptional:</u> Performance meets contractual requirements and exceeds many to the Government's benefit. The contractual performance of the element or sub-element being assessed was accomplished with few minor problems for which corrective actions taken by the Contractor were highly effective.

<u>Very Good:</u> Performance meets contractual requirements and exceeds some to the Government's benefit. The contractual performance of the element or sub-element being assessed was accomplished with some minor problems for which corrective actions taken by the Contractor were effective.

<u>Satisfactory:</u> Performance meets contractual requirements. The contractual performance of the element or sub-element contains some minor problems for which corrective actions taken by the Contractor appear or were satisfactory.

<u>Marginal:</u> Performance does not meet all contractual requirements. The contractual performance of the element or sub-element being assessed reflects a serious problem for which the Contractor has not yet identified corrective actions. The Contractor's proposed actions appear only marginally effective or were not fully implemented.

<u>Unsatisfactory:</u> Performance does not meet most contractual requirements and recovery is not likely in a timely manner. The contractual performance of the element or sub-element contains serious problems for which the Contractor's corrective actions appear or were ineffective.

Attachment C

1. Decision Document Requirements:

1.1 Format and content of ALL MMRP decision documents and action memoranda, regardless of signature authority shall be in accordance with EP 1110-1-18 with additional requirements listed below.

1.1.1 Each document will contain:

(1) A title page,

(2) A table of contents,

(3) List of acronyms,

(4) Page numbers on each page indicating page number and total number of pages in the document, e.g., “1 of 25”.

(5) Header in the upper right-hand corner of each page including; document type (“Decision Document”, “Time Critical Removal Actions (TCRA) Action Memorandum”, or “Non-time Critical Removal Action (TCRA) Action Memorandum”), project name (“Sitka Naval Operating Base”), project location (“Sitka, Alaska”), and project number to include MRS number.

1.1.2 All decision documents or action memoranda, regardless of level of signature authority, will be accompanied by an Executive Summary that for Headquarters (HQ). USACE will forward to ACSIM-ISE and DASA (ESOH). The Executive Summary shall be kept to a single page, whenever possible, and will include:

(1) Title, including project name and project number, date DD (or AM) was signed and by whom,

(2) Brief description of the Munitions Response Sites (MRS), covered by the decision,

(3) Brief description of selected response action and its relationship to other cleanup actions,

(4) Degree of risk reduction,

(5) Present worth cost of selected response action, and the contribution to the cost-to-complete of all remedies for the FUDS Property,

(6) Amounts and fiscal year(s) that funds are required for remedial/removal action design and construction,

(7) Duration of any remedial action-operation (RA-O), removal action construction (RmA-C) and/or Long Term Monitoring (LTM) actions,

(8) Land use controls (LUC) required and means of maintaining them,

(9) Other potential response actions considered, and

(10) Expected result of the action.

1.1.3 Additional requirements for PART 1: THE DECLARATION, 7.0 Authorizing Signatures

1.1.3.1 The contractor shall include the following requirements and text:

7. AUTHORIZING SIGNATURE.

The following general paragraph and signature block. (Note: Signature block may not appear alone on a page – it must be on the same page with the preceding paragraph):

“This Decision Document presents the selected response action at [place]. The U.S. Army Corps of Engineers is the lead agency under the Defense Environmental Restoration Program (DERP) at the [FUDS property name] Formerly Used Defense Site, and has developed this Decision Document consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision document will be incorporated into the larger Administrative Record file for [FUDS property name], which is available for public view at [address]. This document, presenting a selected remedy with a present worth cost estimate of [$$], is approved by the undersigned, pursuant to Memorandum, DAIM-ZA, September 9, 2003, subject: Policies for Staffing and Approving Decision Documents (DDs), and to Engineer Regulation 200-3-1, Formerly Used Defense Sites (FUDS) Program Policy."

APPROVED:

(insert individual's signature block here) Date_________________________

For present worth cost estimate of $2M or less:
District Commander" Signature Block

For present worth cost estimate of more than $2M and less than or equal to $10M:
HQUSACE signature block for:
Chief, Department of Defense
Support Team
Directorate of Military Programs

For present worth cost estimate of more than $10M:
Signature block for ACSIM or DASA(ESOH) or both

APPENDIX B
TECHNICAL PROJECT PLANNING MEETING PRESENTATION AND MEMORANDUM

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REMEDIAL INVESTIGATION/FEASIBILITY STUDY

FORT SEGARRA MUNITIONS RESPONSE SITE 01
WATER ISLAND, UNITED STATES VIRGIN ISLANDS
FUDS PROJECT # I02VI097701

TECHNICAL PROJECT PLANNING MEETING

MEMORANDUM

SUBJECT: Formerly Used Defense Site (FUDS) Military Munitions Response Program (MMRP) documentation of the Technical Project Planning (TPP) meeting for the Remedial Investigation/Feasibility Study (RI/FS) for the Fort Segarra Munitions Response Site (MRS) 01 (also referred to as Project 01).

MEETING LOCATION, TIME, AND PARTICIPANTS: The TPP meeting was held at the United States Virgin Islands (USVI) Department of Planning and Natural Resources (DPNR) office on St. Croix, USVI on 17 May 2017 from approximately 1400 to 1600 Atlantic Standard Time. Individuals present from the Project Delivery Team (PDT) included representatives from the United States Army Corps of Engineers (USACE), DPNR, and the PIKA-Pirnie Joint Venture (JV). Meeting participants introduced themselves at the beginning of the meeting.

PARTICIPANTS:

USACE
Ms. Rebecca Terry, Contract Officer Representative
Mr. Frank Araico, Project Manager
Mr. Mike Malone, Technical Manager
Ms. Donna West-Barnhill, Principal Information Specialist

DPNR
Dr. Clanicia Pelle, Environmental Protection

PIKA-Pirnie JV
Ms. Susan Burtnett, Project Manager
Mr. Dan Hains, UXO Safety Officer *(by telephone)*

MEETING DISCUSSION SUMMARY: The purpose of the meeting was to introduce the members of the PDT and begin the TPP process for the RI/FS project for Fort Segarra MRS 01, located on Water Island in the USVI. Following introductions, Ms. Burtnett opened the meeting with a presentation highlighting the TPP meeting goals; project stakeholders and communication tools; background information, including historical studies and documents; project objectives, tasks and approach; and next steps and schedule.

Ms. Burtnett noted that several historical documents and previous studies have been completed for Fort Segarra and the information presented in the documents and studies is sufficient to complete an RI/FS without the need for additional field work. She noted that previous studies have focused on conventional munitions (including munitions and explosives of concern [MEC]), chemical warfare material (CWM), munitions constituents (MC), and chemical agents (CA). The meeting participants also reviewed planning documents, including the preliminary conceptual site models (CSMs), draft data quality objectives (DQOs), and TPP worksheets for Fort Segarra MRS 01. A summary of key discussion points follows, organized by presentation slide number(s). The TPP presentation is included at the end of the memorandum for reference.

Key discussion points:

1. Slides 1 – 4, Meeting Information, Agenda, Introductions, and Goals: As noted above, Ms. Burtnett began the meeting with the information presented in slides 1 – 4.

2. Slide 5, Project Stakeholders and Communication Tools: Ms. Burtnett reviewed the list of project stakeholders involved in the RI/FS project, including the USACE, DPNR, and PIKA-Pirnie JV. Ms. Burtnett asked whether there were other agencies or entities with whom the project team should coordinate. Dr. Pelle noted that there are multimillion dollar homes located on Water Island and there is an active homeowner's association (Water Island Civic Association) that would be good to contact. Dr. Pelle added that the association maintains a website, and this would be a good place to post information about the project and/or public notices. Ms. West-Barnhill noted that the public is encouraged to participate in the FUDS projects. Required public outreach includes solicitation for a Restoration Advisory Board, notice of the planned RI/FS, and notice of the Proposed Plan public review period. Dr. Pelle confirmed that a Restoration Advisory Board is not needed given the remote location of the island and suggested, instead, that coordination focus on the association. Ms. West-Barnhill added that public notices are typically placed in the local newspaper(s), but the association's website likely will be the best place to post notices for this project. An Administrative Record is typically established at the local public library; however, for this project it may also make sense to post documents to the association's website. Meeting participants agreed, and Ms. West-Barnhill noted that she would follow-up with the association. Ms. West-Barnhill also added that a public meeting in conjunction with the Proposed Plan public review can be offered but does not need to be held if there is no interest from the community.

3. Slides 6 – 8, Background: Ms. Burtnett discussed the background and history of Fort Segarra and Fort Segarra MRS 01. Mr. Araico noted that, while gun emplacements were constructed at Fort Segarra, no guns were placed at the batteries and, as such, there was no conventional munitions use. Meeting participants also discussed the wide-spread damage that resulted from Hurricane Hugo, which destroyed the Water Island Hotel. In addition to residential development, future land use likely will include re-development of the hotel property and other areas for use as a hotel or resort. Dr. Pelle

stated that another key item that should be included relative to site history is the transfer of Water Island from the Department of the Interior to the USVI on 12 December 1996. Meeting participants agreed that the details noted above would be included with the information discussed in the RI report.

4. Slides 9 and 10, Background (continued): Ms. Burtnett continued with a discussion of the four areas comprising the Fort Segarra MRS 01. As part of the discussion regarding the CWM static tests, Mr. Araico clarified that the M70 bomb was a 100-pound chemical bomb. Mr. Araico added that, although it had been reported that M70 bombs were used in conjunction with the tests, the M70 bombs found at the site turned out to be empty bomb casings that were set upright and used to collect cigarette butts (butt cans) outside of buildings. Mr. Araico also clarified that the "toxic storage yard" located at Test Area 8 was used to specifically test the effects of the tropical climate on the bombs stored outdoors during the study. The study was well-documented, and all other CWM was stored inside the buildings located at Fort Segarra. Ms. Burtnett added that the stored items were subsequently removed following completion of the Tropical Test Program in 1950; these items were either dumped at sea or sent to Dugway Proving Ground in Utah. Meeting participants agreed that the details noted above would also be included with the information discussed in the RI report.

5. Slides 11 - 14, Historical Studies and Documents: Ms. Burtnett reviewed the list of historical studies and documents regarding Fort Segarra and Fort Segarra MRS 01. The list includes documents covering a 50-year period, dated from 1966 through 2016. These documents will be used to support the RI/FS project; findings will be summarized in the RI report. Dr. Pelle asked if electronic copies of the reports could be provided. Ms. West-Barnhill noted that electronic copies would be included with the Administrative Record.

6. Slide 15, Summary of Existing Findings: Ms. Burtnett summarized the findings presented in the historical studies and documents. She noted that the limited CWM/CA-related use of Fort Segarra MRS 01 is well-documented, as is the subsequent removal following completion of the Tropical Test Program. The few suspected CWM-related items found at the site have been determined to not contain CA. Sampling for CA has yielded no detections. Mr. Araico added that there is also no evidence of MEC or MC.

7. Slides 16 – 17, Project Objectives and RI/FS Tasks: Ms. Burtnett provided an overview of the project objectives and RI/FS project tasks. She noted that the project includes completing CERCLA-required actions to document characterization of MEC, CWM, MC, and CA. Ms. Burtnett added that there is sufficient existing information, based on the information contained in the historical studies and documents discussed during the

meeting, to complete the characterization effort. She noted that no additional field work is planned. Meeting participants agreed that this was a good approach and that the available information likely will support that there is no MEC, CWM, MC, or CA hazard or risk associated with the site.

8. Slide 18, CSMs: Ms. Burtnett provided a brief explanation of the CSMs, which were provided as a separate handout from the presentation (and are included in the RI report). Ms. Burtnett noted that incomplete pathways are supported for MEC, CWM, MC, and CA since no sources are present at Fort Segarra MRS 01. Receptors noted include United States and USVI government agency personnel, contractors, residents, visitors, and biota. Ms. Burtnett inquired whether there are other receptors that should be considered. The meeting participants agreed that the receptors noted are accurate.

9. Slide 19, DQOs: Ms. Burtnett provided an overview of the DQOs, which were provided as a separate handout from the presentation (and are included in the RI report). Ms. Burtnett noted that the DQOs present the problem statement, project goals, required information inputs, input boundaries, analytical approach, performance criteria, and plan for obtaining data. As noted above, previously completed studies and investigation findings will be used to support characterization of MEC, CWM, MC, and CA. Ms. Burtnett added that there will be no work plan completed for the site since no field work is planned. She noted that the DQOs and CSMs will be included in the RI report.

10. Slide 20, TPP Worksheets: Ms. Burtnett reviewed the key elements of the TPP worksheets. She noted that updated natural resource information for Fort Segarra would be helpful to ensure protected species and habitats are correctly identified and considered in the RI report. Dr. Pelle added that the DPNR and USFWS should have this information available.

11. Slide 21, Next Steps and Timeline: Ms. Burtnett highlighted the major deliverables and approximate timeline for review. In addition to DPNR, Dr. Pelle suggested that the RI report be provided to the Water Island Civic Association for review. Ms. West-Barnhill noted that the public will have an opportunity to review project documents as they are completed and placed in the Administrative Record, and to provide comments on the Proposed Plan.

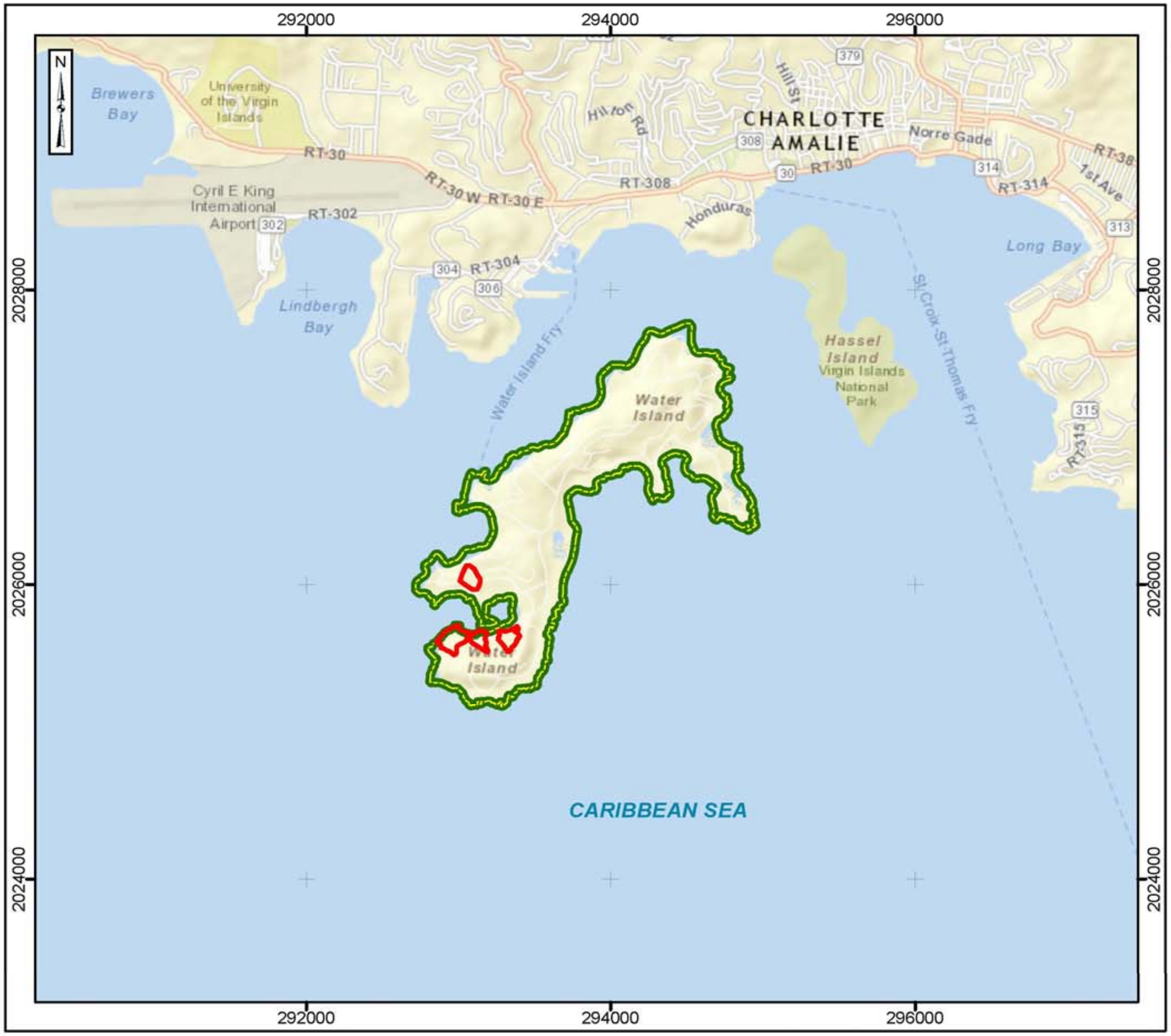
12. Slides 22 and 23, Questions, Other Discussion Topics, Action Items, and Remember the 3Rs: Ms. Burtnett asked if the meeting participants had questions or other discussion topics; none were noted. Ms. Burtnett reviewed the consensus decisions and action items (noted below) and, then, ended the meeting with a reminder of the 3Rs.

CONCENSUS DECISIONS:

Consensus Decision
Meeting participants agreed that, given the remote location of Water Island and limited services, public notices and the Administrative Record may be more accessible if available through the Water Island Civic Association's website.
Meeting participants agreed that the details discussed regarding the lack of guns at the gun emplacements, future hotel or resort use, the transfer of Water Island to the USVI in 1996, and the area-specific CWM tests should be included in the information discussed in the RI report.
Meeting participants agreed that there is sufficient existing information, based on the information contained in the historical studies and documents discussed during the meeting, to complete the RI/FS characterization effort and that no additional field work is needed. Meeting participants also agreed that the available information likely will support that there is no MEC, CWM, MC, or CA hazard or risk associated with the site.
Meeting participants agreed that receptors noted in the CSMs are accurate; these include United States and USVI government agency personnel, contractors, residents, visitors, and biota.

ACTION ITEMS:

Action Item Description	**Responsible Party**	**Target Due Date**
Contact the Water Island Civic Association regarding posting public notices and about having the Administrative Record available through their website.	USACE (Ms. West-Barnhill)	Following the meeting (completed)
Clarify historical use in the RI report with the additional information shared during the meeting (i.e., no guns placed at the gun emplacements, future hotel or resort use, transfer of Water Island from the Department of the Interior to the USVI in 1996, and details regarding the area-specific CWM tests).	PIKA-Pirnie JV (Ms. Burtnett)	Prior to submittal of the Draft RI report (completed)
Provide electronic copies of the historical studies and documents for the project as part of the Administrative Record.	USACE (Ms. West-Barnhill)	Following the meeting as part of the Administrative Record setup (completed)
Obtain updated natural resource information from DPNR and USFWS for the RI report.	PIKA-Pirnie JV (Ms. Burtnett)	Prior to submittal of the Draft RI report (completed)



Remedial Investigation / Feasibility Study
Fort Pickens MRS01-Range Complex, Fort Segarra, and Benedict Field Bombing Target MRS

PIKA
ARCADIS
a joint venture

Fort Segarra
Site Location
(FUDS# I02VI097701)

Legend

Approximate Fort Segarra Boundary (FUDS Property Boundary)

Flamingo Bay Landfill and Test Areas MRA

0 0.5 1
Kilometers

0 0.2 0.4
Miles

Data Source: ESRI, ArcGIS Online, StreetMap Data

Coordinate System: UTM, Zone 20N
Datum: NAD 83
Units: Meters

APPENDIX C
RI GEOGRAPHIC INFORMATION SYSTEMS DATA DELIVERABLE

Appendix C will be submitted as a separate deliverable in conjunction with the RI Report for the Fort Segarra MRS 01.

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