

FINAL
MMRP REMEDIAL INVESTIGATION WORK PLAN
ADDENDUM #2

Remedial Investigation/Feasibility Study
Fort Hancock Formerly Used Defense Site
Monmouth County, New Jersey

Prepared for:

U.S. Army Corps of Engineers
Baltimore District

Contract: W912QR-12-D-0011, DA01



US Army Corps
of Engineers®
BUILDING STRONG®

Prepared by:

ERT, Inc.

Laurel, Maryland 20707

(301) 361-0620

November 2015



November 13, 2015

Attn: Julie Kaiser
CENAB-EN-HN
10 S. Howard Street
Baltimore, MD 21201-1715

Dear Ms Kaiser,

ERT, Inc., is pleased to present the Final Remedial Investigation Work Plan Addendum #2 for the Fort Hancock FUDS RI Addendum through Decision Document task order, Monmouth County, NJ. This Work Plan Addendum was prepared under Contract W912QR-12-D-0011, DA01. This version incorporates October 3, 2015 comments from the NJDEP (no changes needed to be made to the document as a result of the comments). A staffing change of UXO personnel, as shown on the Exhibit 1 organization chart, has been made.

Please do not hesitate to call me at 301-323-1442 if you need anything more.

Sincerely,

An electronic signature of Thomas J. Bachovchin, written in black ink. The signature is cursive and stylized. Below the signature, the words "ELECTRONIC SIGNATURE" are printed in a small, black, sans-serif font.

ELECTRONIC SIGNATURE

Thomas J. Bachovchin
Project Manager

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CENAB (Kaiser)

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MMRP REMEDIAL INVESTIGATION WORK PLAN ADDENDUM #2
FORT HANCOCK FORMERLY USED DEFENSE SITE
MONMOUTH COUNTY, NEW JERSEY

Prepared for:
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Baltimore District

Contract W912QR-12-D-0011, DA01

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Laurel, Maryland 20707
(301) 323-0620



ELECTRONIC SIGNATURE

11/13/15

Thomas Bachovchin, PG
Project Manager

Date



5/29/15

Jennifer Harlan, PMP
Program Manager

Date

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COMPLETION OF SENIOR TECHNICAL REVIEW

This document has been produced within the framework of the ERT, Inc. (ERT) quality management system. As such, a senior technical review has been conducted. This included review of all elements addressed within the document, proposed or utilized technologies and alternatives and their applications with respect to project objectives and framework of U.S. Army Corps of Engineers regulatory constraints under the current project, within which this work has been completed.



5/28/15

Sean Carney, PMP
Senior Technical Reviewer

Date

COMPLETION OF INDEPENDENT TECHNICAL REVIEW

This document has been produced within the framework of ERT's quality management system. As such, an independent technical review, appropriate to the level of risk and complexity inherent in the project, has been conducted. This included a review of assumptions; alternatives evaluated; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the project objectives. Comments and concerns resulting from review of the document have been addressed and corrected as necessary.



5/28/15

Barry Millman, PE
Independent Technical Reviewer

Date

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LIST OF ACRONYMS AND ABBREVIATIONS

APP	Accident Prevention Plan
ASR	Archive Search Report
CENAB	U.S. Army Corps of Engineers Baltimore District
CENAN	U.S. Army Corps of Engineers New York District
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DERP	Defense Environmental Restoration Program
DGM	Digital Geophysical Mapping
DoD	Department of Defense
DQO	Data Quality Objective
ECRPP	Environmental and Cultural Resource Protection Plan
EE/CA	Engineering Evaluation/Cost Analysis
ERT	ERT, Inc.
ESP	Explosive Site Plan
FUDS	Formerly Used Defense Site
GPO	Geophysical Proveout
GPS	Global Positioning System
GSV	Geophysical System Verification
ISO	Industry Standard Object
ITR	Independent Technical Review
IVS	Instrument Verification Strip
MC	Munitions Constituents
MD	Munitions Debris
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
MPPEH	Material Potentially Presenting an Explosive Hazard
MRS	Munitions Response Site
NJDEP	New Jersey Department of the Environment
NPS	National Park Service

PM	Project Manager
PPE	Personal Protective Equipment
QA	Quality Assurance
RI	Remedial Investigation
SI	Site Inspection
SOP	standard operating procedure
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
STR	Senior Technical Review
SUXOS	Senior Unexploded Ordnance Supervisor
UFP-QAPP	Uniform Federal Policy – Quality Assurance Project Plan
USACE	U.S. Army Corps of Engineer
UXO	Unexploded Ordnance
UXOSO-QC	Unexploded Ordnance Safety Officer-Quality Control Specialist
VSP	Visual Sample Plan

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1.0 INTRODUCTION

ERT, Inc. (ERT) will conduct additional Remedial Investigation (RI) field activities for the United States Army Corps of Engineers (USACE), at the Fort Hancock Formerly Used Defense Site (FUDS), located in Monmouth County, New Jersey. Additional environmental services are required and have been contracted under Environmental and Restoration Services Contract W912QR-12-D-0011. The work is to be performed under the Department of Defense (DoD) Military Munitions Response Program (MMRP), which was established under the Defense Environmental Restoration Program (DERP) and will involve munitions and explosives of concern (MEC) and munitions constituents (MC) that may be present at Fort Hancock. USACE Baltimore District (CENAB) administers this work and provides technical oversight, and the USACE New York District (CENAN) is the overall life cycle manager for the project.

This document is Addendum #2 to the *Final Remedial Investigation/Feasibility Study Work Plan, Fort Hancock Formerly Used Defense Site, December 2010* (USACE, 2010b), hereinafter referenced as the 2010 RI Work Plan. Addendum #2 includes only information that has changed or is in addition to what has already been provided in the 2010 RI Work Plan.

1.1 Purpose and Scope

1.1.1 Remedial Investigation

ERT performed the RI for USACE at Fort Hancock under the Multiple-Award Military Munitions Services (MAMMS) Contract (W912DR-09-D-0012, Delivery Order 0002). RI activities were conducted during the fall and winter of 2011 and the RI Report (*Final MMRP Remedial Investigation Report, Fort Hancock Formerly Used Defense Site, January 2014*) was finalized in January 2014 (hereinafter referenced as the 2014 RI Report). The purpose of the RI was to adequately characterize the nature and extent of any potential MC contamination or MEC hazards resulting from the past U.S. military use of Fort Hancock.

The RI included investigation of eight Munitions Response Sites (MRSs), seven land-based and one ocean MRS. Project objectives were met, nature and extent of MC and MEC was characterized and human health and ecological risks were assessed. However, based on guidance from the National Parks Service (NPS), the site manager, with regard to environmentally sensitive locations, there were NPS-identified "excluded areas" where USACE was limited in terms of field work activities that could be conducted. This impacted the ability of USACE to fully investigate MRS-7, the Livens Discovery Area, where NPS excluded areas accounted for 24.2 of 29 acres, i.e., 4.8 acres could be fully investigated.

The RI revealed detailed information about the locations and potential locations of MEC and MC across the former Fort Hancock, and areas known or suspected to contain MEC are now smaller, and MRS boundaries have thus been reduced; the eight MRS as discussed above were adjusted accordingly, resulting in the five current MRSs shown in Figure 1 (all figures are presented in Appendix A). These five MRSs replace those identified in the 2014 RI Report. The Livens Discovery Area, previously designated MRS-7, is now designated MRS 06.

1.1.2 Addendum #2 to the RI

The NPS significantly limited access to the MRS 06 Livens Discovery Area during initial RI activities, designating 24.2 of 29 acres as excluded acreage. However, more expanded access

1 has now been granted by NPS and investigation activities at MRS 06 can now be completed.
2 The purpose of this Addendum is to conduct additional investigation to adequately characterize
3 the nature and extent of any potential MC contamination or MEC hazards from the past U.S.
4 military use of Fort Hancock specific to MRS 06. The results of this effort will be presented in
5 Addendum #2 to the 2014 RI Report (USACE, 2014), which will update it by incorporating the
6 MRS 06 findings from this investigation.

7 **1.2 Site Location and Environmental Setting**

8 Fort Hancock is located on the Sandy Hook peninsula in Monmouth County, New Jersey, in the
9 Lower Bay of the Hudson River. The peninsula, which encompasses approximately 1,700 acres,
10 is known as the Sandy Hook Unit of the Gateway National Recreation Area and is a National
11 Historic Landmark. It is currently managed by the Department of the Interior (NPS) and the
12 U.S. Coast Guard, and is used for a variety of recreational purposes year-round. An active U.S.
13 Coast Guard Station is positioned on the northwest corner of the peninsula (approximately 68
14 acres). Over its long history, the U.S. military occupied much of the 1,700 acres of the Sandy
15 Hook Unit. Many military features still exist, including living quarters and administrative
16 buildings (many of which are currently in use by NPS and other tenants), gun batteries, four
17 NIKE missile silos, and a light house.

18 Fort Hancock is situated on the New Jersey Coastal Plain, a seaward-dipping wedge of
19 unconsolidated sediments. These sediments are clay, silt, sand, and gravel, and represent
20 continental, coastal, or marine deposition. Sandy Hook is a coastal spit that projects northward,
21 more than 5 miles into the bay. The spit is a continuation of a narrow offshore bar. Sandy Hook
22 is an example of an active compound recurved spit (i.e., the end of the sand bar turns landward),
23 which has lengthened about 1,000 ft in the past quarter century. Beach and dune sands make up
24 all of the Sandy Hook Unit spit. The surficial soils at Fort Hancock consist mainly of beach and
25 dune sands. A small area on the western side of the spit contains tidal marsh deposits.

26 **1.3 MRS 06 Background**

27 MRS 06 encompasses 24.2 acres surrounding the location of a former munitions storehouse
28 where a fire occurred in 1927. The MRS was identified as the Livens Discovery Area in a 1998
29 Engineering Evaluation Cost Analysis (*Draft Final Former Fort Hancock EE/CA, Fort Hancock*
30 *Formerly Used Defense Site, Monmouth County, New Jersey. December 1998*) (USACE, 1998).
31 Figure 2 shows the MRS 06 site layout.

32 There is a potential for remaining MEC in MRS 06, as MD items and a potentially live Stokes
33 mortar fuze were found during the 1998 EE/CA investigation. Most of the munitions-related
34 items were found in EE/CA investigation Grid E004 (the assumed location of the storehouse
35 fire), which was used to define the MRS in the scoping of the RI by using a hazard fragmentation
36 distance for a Livens projectile plus an investigation buffer around the former storehouse
37 location, resulting in the current MRS 06 boundary (a 600-foot radius circle with grid E004 at
38 the center). The 1998 EE/CA recommended a UXO clearance to depth for Grid E004 and
39 vicinity, but it was never conducted.

40 The conceptual site model (CSM) developed during the RI indicates that while MRS 06 was
41 defined by the storehouse fire, MEC, as UXO or from low order detonations, could exist on or

1 under the ground surface from historical proving ground operations, as MRS 06 also lies within
2 the overshot/undershot of the 3,000 yard and 3-mile target impact areas, respectively.

3 **1.4 Previous Investigations**

4 Multiple investigations have taken place at Fort Hancock. The following are brief summaries of
5 those investigations to provide context for the MRS 06 investigation.

6 **1.4.1 Engineering Evaluation/Cost Analysis**

7 In 1998, USACE conducted the EE/CA to more thoroughly investigate ordnance at the Fort
8 Hancock FUDS. Ten areas of concern were established for investigation, based on the Archives
9 Search Report and an analysis of historical aerial photographs conducted by the U.S. Army
10 Topographic Engineering Center. These included:

- 11 ■ Area A: Historic Fort Hancock;
- 12 ■ Area B: Former Proving Ground;
- 13 ■ Area C: Potential Ordnance Depositional Area;
- 14 ■ Area D: Battery Arrowsmith;
- 15 ■ Area E: Livens Discovery Area/Location of Underground Magazines;
- 16 ■ Area F: South Beach Ordnance Discovery Area;
- 17 ■ Area G: Wooden Barrels Discovery Area;
- 18 ■ Area H: Critical Zone/Location of Underground Magazines;
- 19 ■ Area I: Small Arms Range/Area of Foreign Ordnance Finds; and
- 20 ■ Area J: Plum Island.

21 A total of 3,904 anomalies were identified during the geophysical investigations; of these, 1,710
22 were intrusively investigated. One of the ten areas of concern was Area E, or the Livens
23 Discovery Area, where Livens projectiles containing FM smoke were discovered by NPS
24 personnel in 1981. Currently designated MRS 06, various munitions related items were found
25 there during the EE/CA. Radiographic testing in the field indicated that the Livens projectile did
26 not contain a burster and that the filler was likely FM smoke (these conclusions were confirmed
27 at a later point in time [USACE, 1998]). An explosive risk assessment was conducted as part of
28 the EE/CA, and the Livens Discovery Area (Grid E004 and vicinity) was recommended for MEC
29 clearance to depth. Although the removal actions were never undertaken, NPS maintained a
30 protocol for public education through information sheets/signage.

31 **1.4.2 Site Inspection**

32 In 2007, USACE completed a Site Inspection (SI) as part of a Department of Defense (DoD)-
33 wide effort to evaluate the inventoried MRSs for further action. The SI served to inspect each of
34 the MRSs (as defined in the Archive Search Report supplement) for MEC on the surface and to
35 collect environmental samples to determine if there may have been a release of MC. The SI
36 recommended that an RI be conducted.

37 **1.4.3 Remedial Investigation**

38 ERT completed an RI in 2014 (USACE, 2014) that characterized the nature and extent of MEC,
39 munitions debris (MD) and MC in six of the seven land-based MRSs identified in the 2010 RI
40 Work Plan, outside of NPS excluded areas. The scope included digital geophysical mapping
41 (DGM), intrusive investigations to identify location, density, and types of MEC, and

1 environmental sampling to determine the distribution and concentrations of metals and
2 explosives in soil, sediment, surface water, and groundwater.

3 During the RI, NPS granted access to 4.8 acres of the 29-acre MRS 06 to conduct the
4 geophysical investigation, due to the absence of sensitive vegetation in this portion. The
5 geophysical investigation of the 4.8 acres included meandering path transects with intrusive
6 investigation of identified anomalies. In addition, NPS granted access to the entire 29 acres for
7 the collection of soil samples, due to the lack of disturbance to vegetation this activity entailed.
8 In accordance with the approved 2010 RI Work Plan, 21 random grab surface soil samples were
9 collected to determine the nature and extent of MC contamination in MRS 06.

10 No MEC or MD was found in the 4.8-acre portion of MRS 06, and the 2014 RI Report
11 concluded that the potential for MEC was low. No explosives compounds were detected in the
12 soil samples, and metals were found at concentrations consistent with background. The risk
13 assessment concluded that there is no unacceptable risk posed to human or ecological receptors
14 from MC. As a result of these findings, USACE has categorized the 4.8 acres as “No DoD
15 Action Indicated (NDAI),” along with other areas of the Fort Hancock FUDS where no MEC or
16 MC hazards were found or are suspected. This designation means that no additional CERCLA
17 phases are planned. If hazards are discovered in the future, however, USACE will re-evaluate
18 the site and determine if the NDAI designation should be changed and the project reopened.

19 **1.4.4 RI Addendum #1**

20 ERT conducted additional RI field activities in July 2014 as a result of recommendations from
21 the 2014 RI Report. The RI investigation concluded that in the B003 Area (within the former
22 MRS 01), arsenic and lead in soil could potentially pose a threat to human health, and that
23 antimony, arsenic, copper, lead, selenium, and thallium could pose a threat to ecological
24 receptors. RI Report Addendum #1 (USACE, 2015) was completed to further characterize this
25 area; based on additional soil sampling, the human health and ecological risk assessments were
26 updated and it was concluded that the nature and extent of MC contamination at the B003 Area
27 had been characterized and no unacceptable risk to human health or the environment was
28 present.

1 **2.0 PROJECT ORGANIZATION**

2 Several organizations are directly involved in the Fort Hancock RI/FS. The technical team is
3 shown in the Exhibit 1 Organization Chart. The team roles are described below.

4 **2.1 U.S. Army Corps of Engineers**

5 The USACE New York District (Geographic District) is the overall manager for the entire life
6 cycle (i.e., “cradle to grave”) for approved FUDS projects (except for projects involving other
7 potentially responsible parties (PRP)). Gregory J. Goepfert, PE, PMP, is the geographic military
8 District project manager who will lead and facilitate the project delivery team (PDT) towards
9 effective project development and execution. The District is responsible for managing project
10 cost, schedule, and scope to ensure quality and proper coordination with government and non-
11 government entities. The District is also responsible for programming funding and upward
12 reporting. The USACE Baltimore District (Environmental and Munitions Design Center) is
13 responsible for overall project administration and technical management services including
14 contracting and procurement, submittals management, cost and schedule management, and
15 technical oversight.

16 Ms. Julie Kaiser, PMP, is the USACE Design Team Leader responsible for serving on the PDT
17 to support the geographic Military District PM for this investigation and for developing project-
18 specific investigation reports in accordance with applicable laws, regulations, and QA/QC
19 requirements. The USACE project chemist is Alan Warminski. The USACE project
20 geophysicist is Cheryl Webster and the OESS is Paul Greene (reassignment of personnel is
21 possible, as the actual field work date is not yet known).

22 **2.2 Stakeholders**

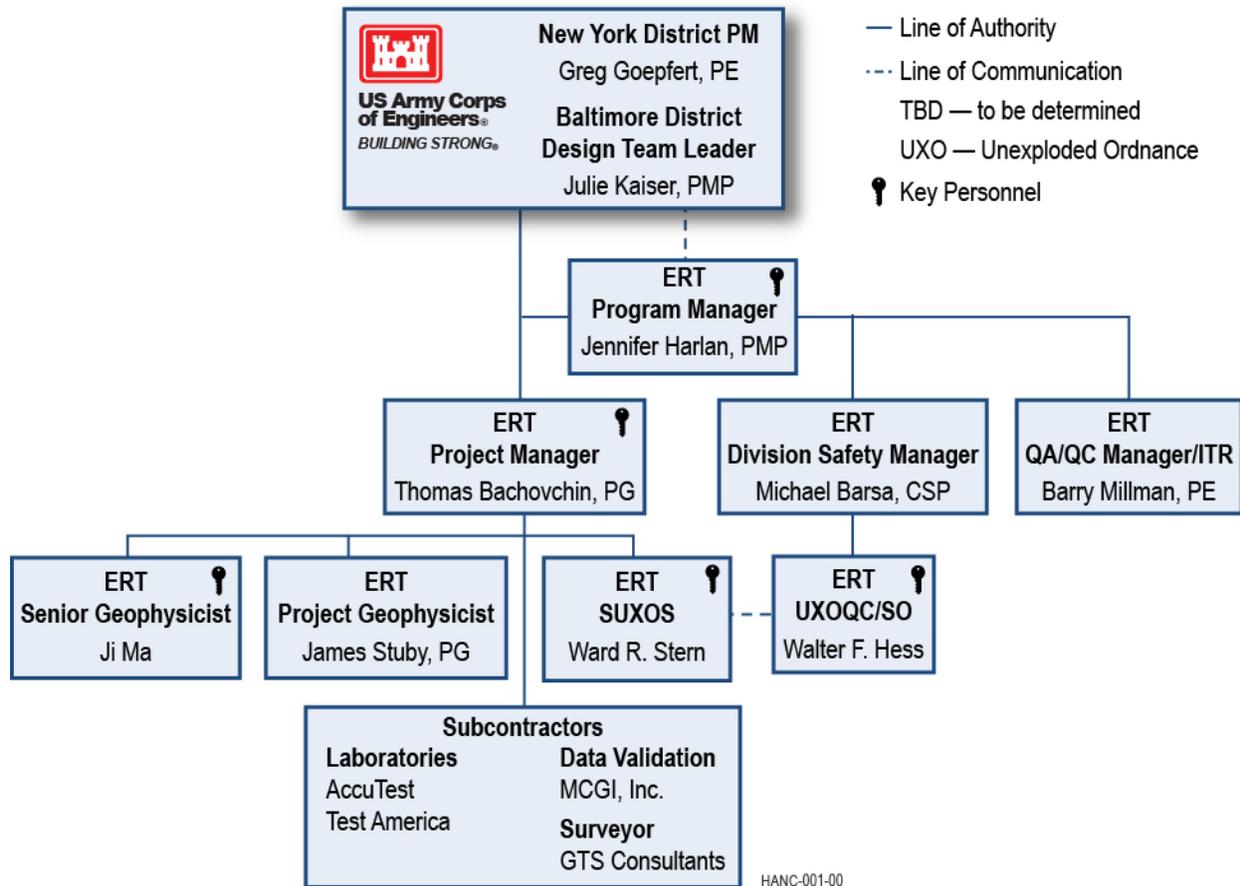
23 The lead regulatory agency involved in the RI/FS is the New Jersey Department of the
24 Environment (NJDEP). The U.S. Environmental Protection Agency (EPA) Region 2 will also
25 provide review and technical input on the RI/FS reports. In addition to USACE, USEPA, and
26 NJDEP, numerous other stakeholders are involved in the RI/FS activities for the Fort Hancock
27 FUDS, including:

- 28 ▪ National Park Service
- 29 ▪ U.S. Coast Guard
- 30 ▪ Monmouth County Health Department
- 31 ▪ Monmouth County Office of Emergency Management
- 32 ▪ National Oceanographic and Atmospheric Administration
- 33 ▪ National Marine Fisheries Services
- 34 ▪ U.S. Fish and Wildlife Service

35 **2.3 ERT**

36 ERT is the USACE A/E contractor, providing overall site management and coordination during
37 field operations, including sampling, coordination of analytical samples, geophysical anomaly
38 reacquisition and clearance, coordination of subcontractors, documentation of site activities, and
39 preparation of the RI/FS reports. ERT is employing a highly experienced team to support this
40 additional investigative effort. Key project personnel were involved with the previous RI field
41 work. Should any of these key project personnel need to be changed by the time the field effort
42 begins, they will be replaced by equally qualified personnel.

1 **Exhibit 1: Organization Chart**
 2



3
 4

5 **2.4 ERT Project Manager**

6 Thomas Bachovchin is the ERT Project Manager and is the direct point-of-contact for USACE.
 7 He will report to the ERT Program Manager, Jennifer Harlan, and he will be responsible for
 8 managing all requirements of the project, overseeing the performance of all individuals on the
 9 project team, coordinating contract work, and overseeing specific task identification and
 10 resolutions.

11 **2.5 Field Team**

12 **2.5.1 SUXOS, UXOSO, UXOQC**

13 The senior Unexploded Ordnance supervisor (SUXOS), Ward R. Stern, will be responsible for
 14 scheduling daily safety meetings, scheduling and coordinating field team activities, and
 15 submitting a daily progress report to the ERT PM. The SUXOS will have direct oversight of all
 16 field activities during the project and will coordinate with the ERT PM as necessary to take
 17 corrective actions to ensure that schedule requirements are met. SUXOS duties will also include
 18 enforcing compliance with applicable standard operating procedures (SOPs).

1 The positions of the UXO safety officer (UXOSO) and the UXO quality control specialist
2 (UXOQC) will be dual-hatted per USACE MM CX Interim Guidance Document 06-04 (Draft
3 EP 1110-1-18), as was done successfully during the initial RI field operations. The Site Safety
4 and Health Officer (SSHO) position will be the same as the UXOSO, and for purposes of this
5 document, this position will be referred to as the SSHO/UXOSO-QC. The SSHO/UXOQC-SO
6 will be Walter F. Hess, who will also be the OSHA Competent Person. UXO Technicians I, II,
7 and III will be used to support the field activities.

8 **2.5.2 Geophysicists**

9 The ERT Senior Geophysicist, Ji Ma, will oversee the field efforts, process geophysical data and
10 review data quality on a daily basis. The Project Geophysicist, Jim Stuby, will report to him. A
11 team of three geophysicists will collect the geophysical data. Two field geophysicists will be
12 directly supervised by the Project Geophysicist, who will primarily operate the G-858
13 gradiometer or EM61-MK2 (see Section 3.6.3 of this Addendum) while the other two perform
14 support functions.

15 **2.5.3 Environmental Sampling Technicians**

16 The field geophysicists will also act as environmental sampling technicians should there be a
17 need to collect samples (see Section 3.8). The technicians will be responsible for coordinating
18 and completing the environmental sampling per the Uniform Federal Policy – Quality Assurance
19 Project Plan (UFP-QAPP) (Appendix E of the 2010 RI Work Plan (USACE, 2010b)).

20 **2.6 Subcontractors**

21 **2.6.1 Analytical Laboratory**

22 ERT's subcontractor to perform laboratory analysis of samples (if required) is Accutest
23 Laboratories. This laboratory was previously successfully used by ERT for the RI. Accutest is
24 accredited in accordance with the National Environmental Laboratory Accreditation Conference,
25 and certified to perform the specified methods by the National Environmental Laboratory
26 Accreditation Program (New Jersey certification) and DoD ELAP, in compliance with the DoD
27 Quality System Manual.

28 **2.6.2 Surveyor**

29 ERT has subcontracted with GTS Consultants to perform all civil surveying necessary to
30 complete the field investigation. GTS, a New Jersey State registered surveyor, will perform civil
31 surveys of areas as directed by the Project Geophysicist. GTS provided the previous surveying
32 services during the RI.

33 **2.7 APP/SSHP**

34 For this field effort, the previously accepted Accident Prevention Plan and Site Safety and Health
35 Plan (APP/SSHP), Appendix D of the 2010 RI Work Plan, will be followed. Updates to this
36 document, including APP approval signature sheet, certifications, emergency contact list, and
37 resumes, are provided in Appendix C of this Addendum. All applicable certifications will be up
38 to date prior to the commencement of field activities.
39

3.0 FIELD INVESTIGATION PLAN

MEC/MD and MC investigations will be part of the MRS 06 field activities as described in the sections below. The procedures and SOPs for the field effort for MRS 06 will follow the detailed descriptions contained in the 2010 RI Work Plan. The discussions presented in this section focus on information and procedures that are specific to MRS 06 and which are not addressed in the 2010 Work Plan.

3.1 MEC/MD Investigation

The approach to the geophysical investigation of MRS 06 will proceed in three phases. Phase I will consist of brush removal and data collection along transects (yellow lines on Figure 2). The G-858 gradiometer instrument will be used for the data collection.

The central part of the MRS, centered on EE/CA Grid E004, represents an area of focus. This grid is analogous to the 1998 EE/CA B003 grid addressed in the 2014 RI Report and Addendum #1 to the 2014 RI Report. Similar to Grid E004, MEC was found in B003 (during the EE/CA), but not all items were removed at that time. The intent of the RI effort for the B003 Grid was to determine the extent of the contamination by excavating all anomalies found on the closely spaced transects (nature had been determined during the EE/CA). The same approach will be applied for Grid E004 in MRS 06. Therefore, more closely spaced DGM transects (30-foot spacing) around Grid E004 will help determine extent of MEC or MD. The tightly spaced transects are within a 300 ft diameter circle centered on the location of the former storehouse (300 ft was conservatively chosen as a means to determine the extent of MEC in this area).

Note that all anomalies mapped on the transects in this central area will be intrusively investigated (during Phase III), rather than developing grids through Visual Sample Plan (VSP) version 7.

Transects in the outer area of the MRS will be spaced at 82.5 ft (see 2010 RI Work Plan, Table 3.2b). Anomalies in the outer area will be analyzed using VSP in search of areas of elevated anomaly density, and grid locations will be identified in the areas. Grid locations will be approved by USACE and NPS.

In Phase II, these grids will be installed, brush removal will take place, and the Geonics EM61-MK2 total metal detector will be used to collect more geophysical data within the grids, at a line spacing of 2.5 ft. While this represents a change to the previous RI field procedures, it is justified by the expectation of better performance and higher quality data. The Geophysical Proveout (GPO) report (*Final Geophysical Proveout Report, Fort Hancock Formerly Used Defense Site, November 2010*) (USACE 2010a) indicated that the EM61 had better overall performance than the G-858, however, at the time, it was considered to be less maneuverable and consequently potentially more damaging to vegetation. Based on ERT's knowledge of the terrain and familiarity with the plant species gained during the RI effort, the EM61 can be successfully employed in these specific areas.

In Phase III, all intrusive work (digging of anomalies) will take place. All anomalies mapped on the transects in the central area during Phase I will be dug, and all anomalies mapped within the grids will be dug. The results of the intrusive investigation will be analyzed statistically in VSP and conclusions about MEC and MD density will be made.

1 **3.1.1 Site Set-up**

2 Right-of-Entry has been coordinated between CENAN and NPS for access to MRS 06. While
3 the areas are generally open to the public, ERT will be the responsible for security of the specific
4 work areas, as coordinated with the NPS.

5 ERT will mobilize a connex box to Parking Lot L, located just west of the Nike Missile Radar
6 Site, and this location will serve as the base of operations, equipment storage, and as rally point.
7 This location was previously used during the RI field work.

8 **3.1.2 Personal Protection Equipment**

9 As specified in the SSHP, personal protective equipment will be Level D, consisting of safety
10 boots, safety glasses, gloves, and optional Tyvek coveralls.

11 **3.1.3 MEC Surface Clearance**

12 An analog magnetometer-assisted visual survey will be performed by UXO technicians to
13 remove all surface metal debris concurrently with vegetation removal using hand-held brush
14 cutters. Transect surface clearance/vegetation removal efforts will use two teams, each
15 comprising one UXO Technician II and one UXO Technician I. A UXO Technician III will
16 directly supervise the work of these two teams (the SUXOS and SSHO/UXOSO-QC will also be
17 on site during this work). If material potentially presenting an explosive hazard (MPPEH) is
18 encountered on the surface, explosive safety management will be performed in accordance with
19 the 2010 RI Work Plan, including Chapter 6 which contains the Government provided
20 Explosives Site Plan (ESP) (*Remedial Investigation Explosive Site Plan, Fort Hancock FUDS,*
21 *USACE Baltimore District, November 2010*). There were no changes required for the ESP with
22 regard to the upcoming field effort.

23 To lay out the initial transects within the MRS, ERT will use hand-held global positioning
24 system (GPS) units of sub-meter accuracy. Waypoints will be loaded into the GPS units every
25 50 ft or less along the proposed transects, and UXO Technicians will use the waypoints as guides
26 for cutting the transects.

27 **3.1.4 Brush Cutting**

28 Brush cutting for this project is a critical component of the field work. Sensitive ecological
29 communities at Fort Hancock include a globally-rare 231-acre Maritime Holly forest, which
30 overlaps MRS 06. Due to the sensitive ecological communities, NPS imposed vegetation
31 removal or cutting restrictions on specific 'excluded areas,' and, while access to these previously
32 excluded parts of MRS 06 has been granted for this addendum effort, these cutting restrictions
33 have not been lessened. The primary excluded species are American Holly, Eastern Red Cedar,
34 Northern Bayberry, and Seabeach Amaranth. Additional sensitive plants of concern include
35 Beach Wormwood, Beach Plum, Common Hackberry, and Serviceberry.

36 Due to the cutting restrictions and the prohibition of large mechanical equipment such as brush
37 hogs for cutting transects, hand-held, gas-powered cutters and machetes will be used to cut paths
38 around sensitive species.

39 Not all of the above listed species are documented within MRS 06, but the presence of known
40 dense areas of this excluded vegetation in MRS 06 (see green shaded area on Figure 2) will
41 impact the ability to obtain complete investigation coverage. The 2010 RI Work Plan contains

1 guidelines that outline options for increasing DGM coverage in such areas, minimizing impacts
2 to the project goals. To summarize, if less than 90% of the grid can be covered by DGM, the
3 following procedures to increase coverage (approved by USACE and documented in page
4 changes to the 2010 Work Plan) will be employed:

- 5 A. Staying within the cluster, collect more data outside of the grid (around the perimeters),
6 increasing the area and the equivalent percentage covered.
- 7 B. For the larger low density clusters, if space is available, add a new grid in an area where
8 it is obvious that greater than 90% coverage could be achieved. Alternately or
9 additionally, dig the original transect anomalies within the cluster and include the transect
10 acreage as part of the coverage of that cluster.
- 11 C. When it appears in the field that enough data for the cluster has been attained, and after
12 USACE review of the DGM data, the anomalies in the grids will be dug. *If no MEC or*
13 *MD are found, the coverage will be considered sufficient whether greater than 90% or*
14 *not* because in small clusters where there is little acreage to collect additional data outside
15 of the grid perimeters, there is limited opportunities to obtain more coverage.
- 16 D. If MEC or MD are found using DGM, use mag & dig techniques (i.e., no brush cutting
17 required) to investigate the remaining portion of the grid (such that the MEC or MD-
18 containing grid is investigated with as close to 100% coverage as possible).
- 19 E. Mag & dig procedures can be performed in the grid with the intent of increasing coverage
20 in the cluster, regardless of MEC or MD presence.

21 The Environmental and Cultural Resources Protection Plan (ECRPP) was prepared as part of the
22 2010 RI Work Plan to describe the NPS guidelines for vegetation removal. Upon completion of
23 the project, all disturbed habitats will be re-established naturally, or restored to existing
24 conditions by the USACE, in consultation with NPS and other natural resource stakeholders as
25 required. Specific mitigation procedures and restoration plans, including the appropriate
26 vegetation restoration schedule, will be coordinated with NPS once anomaly grid locations are
27 identified and approved during the field effort. Overall, site restoration requirements will reflect
28 the amount and nature of surface disturbance and will account for existing habitat features and
29 topography, in order to restore the site to original conditions to the maximum practical extent.

30 While the information in the ECRPP has not changed since the 2010 RI Work Plan, Appendix B
31 presents relevant excerpts that update the information and ensures it is easily retrievable for this
32 field operation. In particular, the ECRPP has been updated with the addition of the northern
33 long-eared bat, which the U.S. Fish and Wildlife Service listed as a threatened species under the
34 Endangered Species Act (ESA) effective May 4, 2015, and the red knot bird, which is federally
35 protected under the Migratory Bird Treaty Act, and New Jersey State-listed as endangered.

36 With regard to wildlife protection, the field effort will not include beach acreage, and in any
37 case, field activities will be conducted during the winter time frame when sensitive beach nesting
38 birds are not present on-site and when impacts to other migrant and resident species are not
39 anticipated.

40 **3.1.5 MEC/MD Conceptual Site Model**

41 The geophysical investigation plan considers that the CSM indicates that MRS 06 was defined
42 by the 1927 munitions storehouse fire. The 1927 storehouse explosion would likely have

1 resulted in “kickouts” (munitions spread beyond the immediate vicinity of the storehouse by the
2 detonation). While no intact munitions are expected to be present because of the intensity of the
3 fire, it is possible that MRS 06 is a disposal area because there is no record of any cleanup that
4 occurred after the 1927 explosion. Although this area was called an underground storage
5 magazine in the 1998 EE/CA report, there is no documentation or visual evidence to date that the
6 magazines in the ordnance depot were underground.

7 However, outside of the central kickout area, MEC could also exist on or under the ground
8 surface from historical proving ground operations, as MRS 06 also lies within the
9 overshoot/undershot of the 3,000 yard and 3-mile target impact areas, respectively. Therefore,
10 the investigation will focus on the multiple ordnance types that have been documented at Fort
11 Hancock. Figure 4 presents a MEC/MD based CSM for MRS 06.

12 **3.1.6 Data Quality Objectives**

13 Data Quality Objectives (DQOs) for geophysical surveys and intrusive work are contained in the
14 2010 RI Work Plan (Table 3.1a). The procedures in that DQO table refer to UXO Estimator,
15 which is now obsolete and VSP can be used in an equivalent way by selecting:

16 *Sampling Goals > Remedial Investigation (UXO) > Target of Interest > Estimation/Comparison*

17 The revised DQO table for this work, using VSP, is shown in Table 3-1 below.

Data Quality Objective Element	Site-Specific DQO Statement
Project Objective(s) Satisfied	To determine if further actions are required to support the continued use of the site for recreational activities
Data User Perspective(s)	To obtain data that satisfy compliance, risk, and if needed, remedy requirements
Contaminant or Characteristic of Interest	To characterize the nature and extent of MEC
Media of Interest	MEC in Soil
Required Sampling Locations or Areas and Depths	A. Use VSP in Target Search Mode to design transect placement (random parallel transect sampling). Based on identified targets, transect design ensures 100% chance of detecting a target (this is discussed in 2010 RI Work Plan and no changes are proposed from 82.5 ft spacing). B. Perform the DGM of transects. Pick anomalies. C. Use VSP to “Locate and mark target areas based on elevated anomaly density.” Select “Flag areas with density significantly > background.” The background of 40 anomalies/acre was used in the RI for the area to the southwest of the center of MRS 06. A confidence value of 95% will be used and a window diameter equivalent to the transect spacing of 82.5 ft will be used. D. Organize the MRS into the flagged areas (anomaly clusters).
Number of Samples Required	E. Test each anomaly cluster using VSP (replacing UXO Estimator as described in the text above). The area of each anomaly cluster will be entered, along with a sampling unit (grid) size of 100 ft x 100 ft, and a confidence of 95% that the MEC density will be no more than 5 items/acre, with the additional assumption that there is

Data Quality Objective Element	Site-Specific DQO Statement
	<p>no prior knowledge about the likelihood of finding MEC. VSP will output a minimum number of grids needed to accomplish this statistical goal for the anomaly cluster.</p> <p>F. Use VSP to randomly locate the grids inside the cluster.</p> <p>G. Perform DGM of the grids and <u>dig all anomalies</u>. Note that depth is whatever the associated munition depth is to a practical maximum of 4 ft bgs based on hand digging (no powered digging equipment permitted) and a shallow water table. Also note that if a cluster is identified in an area of dense excluded vegetation and no grid can be installed, at a minimum anomalies along the transects within the cluster will be dug. Further, ERT will work with NPS to see if site-specific exceptions can be made to the brush cutting prohibitions.</p> <p>H. Statistical analysis of actual DGM coverage and number of MEC or MD finds within each cluster will show the MEC or MD density at 95% confidence.</p> <p><i>Note: as an additional conservative approach, the area of the MRS outside the central kickout area was also assessed as a larger kickout area. To ensure a statistically supported equivalent coverage (acreage), VSP was used to estimate minimum coverage assuming different densities (i.e., TOI/acre) at a 95% confidence level. At the 1.0-1.5 TOI/acre range, 1.6-2.5 acres (or 7-11 grids) coverage would be required. Therefore, the mid-point of 9 grids of equivalent coverage will be completed for the MRS as a minimum. That is, if cluster analysis only requires 6 or 7 grids, that coverage will conservatively be increased to a minimum of 9 grids.</i></p>
Reference Concentration of Interest or Other Performance Criteria	DGM coverage objective (number of grids) will be determined based on the statistical goal of obtaining 95% confidence that less than 5 MEC/acre are present within each anomaly cluster. Objective may not be met due to presence of vegetation that is not permitted to be cut by NPS.
Sampling Method	VSP software tool for designing statistically based geophysical and intrusive investigations.
Analytical Method	NA

3.1.7 Geophysical System Verification

For ERT’s RI fieldwork, a conventional GPO was performed. Since then, the use of a Geophysical System Verification (GSV) is more commonly recommended. This addendum addresses a considerably smaller area where dynamic conditions such as sand movement, are unlikely to be encountered, and therefore, GSV is more appropriate for this effort.

GSV will be utilized to monitor and test geophysical data quality for the DGM survey. GSV is composed of daily surveys of an Instrument Verification Strip (IVS) and the use of a blind seed program, where metallic pipes (“seeds”) are placed in the subsurface within the MRS at locations unknown to the geophysical data collectors.

3.1.7.1 Seed Items

Seed items are inert Industry Standard Objects (ISO) that have been well characterized geophysically and are obtained easily. ISOs will be buried by the UXO Technician at various

1 depths, orientations, and locations within the IVS and within grids. ISOs are described in the
 2 *Final Geophysical Proveout Plan, Fort Hancock Formerly Used Defense Site, August 2010*
 3 (USACE, 2010).

4 3.1.7.2 Instrument Verification Strip Objective and Preparation

5 The objective of the IVS is to confirm the geophysical survey instrument selection, verify that
 6 the targets of interest will be detectable to the depth of interest, validate predetermined anomaly
 7 selection methods, and provide a daily verification of proper operation of the geophysical sensor
 8 system (sensor plus location system plus data recording approach).

9 The IVS location will be representative of the terrain, geology, and vegetation that will be
 10 encountered in MRS 06, and will have similar geophysical characteristics such as background
 11 and noise levels. The test items will be buried as specified in Table 3-2 and as shown in Figure
 12 3. The actual locations of the test items will be recorded by civil surveyors. The IVS location is
 13 in the Nike Missile Radar Site (the same location as the GPO used during the RI). The space for
 14 the IVS will be approximately 20 ft wide by 70 ft long, and small, medium, and large ISOs will
 15 be used to simulate a range of ordnance sizes. No surface vegetation or debris removal will be
 16 required for IVS construction.

17 The EM61-MK2 will be used to survey the IVS area prior to seed installation in order to locate a
 18 suitable anomaly-free area to install the seeds. The results of the survey will be communicated
 19 to USACE.

20 The civil surveyor will survey the location of the seed items. The center and ends of seed items
 21 will be surveyed for elevation. Surface elevation will be measured after seed item burial, to
 22 accurately determine depth bgs.

Table 3-2. IVS Design Summary

Seed number	Surrogate Item	Distance from start point (ft)	Depth bgs (inches)	Orientation	Simulation
1	Small ISO	10	6	Vertical	Small items (grenades, mortar fuzes, etc.)
2	Small ISO	20	9	Horizontal, perpendicular to traverse	
3	Medium ISO	30	18	Vertical	Medium items (75mm rounds, mortars, etc.)
4	Medium ISO	40	18	Horizontal, parallel to traverse	
5	Large ISO	50	24	Horizontal, parallel to traverse	Large items (105mm rounds, Livens Projectors, etc.)

23 3.1.7.3 Initial IVS Survey

24 The initial survey of the IVS is designed to confirm both the operation of the survey system and
 25 the ability of the chosen sensor to detect the items of interest at the depth of interest in the noise
 26 environment particular to the survey area. The first pass will be made with the EM61-MK2
 27 sensor 2.5 ft offset from the seed line. The next pass will be directly over the test items (“seed

1 line”). The third pass will be made with an offset of 2.5 ft on the opposite side from the first
2 pass. The final pass will be 6 ft offset from the line of test items to make a measurement of
3 electromagnetic site noise (“noise line”). In addition, a 6-line test will be performed in order to
4 quantify possible instrument lag.

5 Results of the initial IVS survey will be compiled and submitted to USACE for approval prior to
6 commencement of DGM data collection.

7 *3.1.7.4 Seeding Program*

8 A blind seed program will be implemented in the production survey areas. The seeds will be
9 used to verify that the DQOs concerning geolocation and sensor performance requirements are
10 being met. Seed placement will occur during stakeout of each area of investigation, and will be
11 performed by the civil surveyor with a UXO Technician II escort. The UXO Technician will
12 follow anomaly avoidance procedures and excavate a shallow (less than 1 ft) hole to bury a seed
13 in a clear area. The civil surveyor will capture the location and depth of the seed prior to the
14 UXO technician backfilling the hole. A blind seed will be installed in each grid and along
15 transects in open areas (transects in vegetated areas may need to go around vegetation causing
16 pre-planned blind seeds to be missed). The civil surveyor will provide the blind seed coordinates
17 to the Project Geophysicist only after data processing and target selection.

18 *3.1.7.5 Other QC Tests*

19 Other QC tests for the EM61 and G-858 include the static response, cable shake, and spike tests.
20 These are described in the 2010 RI Work Plan for the G-858 (they are also applicable equally to
21 the EM61), but are briefly reiterated below.

22 The static response test involves letting the G-858 or EM61 collect data for 3 minutes while it is
23 not moving, in order to demonstrate that no random spikes or significant drift occur in the data.

24 The cable shake test involves the operator moving cables and connections on the G-858 or EM61
25 while it collecting data and not moving, in order to demonstrate that all connections are secure
26 and that cables moving during the course of data collection will not affect data quality.

27 The spike test involves letting the G-858 or EM61 collect data for 3 minutes while it is not
28 moving and a metal object (such as an ISO) is placed below the sensor. This demonstrates that
29 the instrument records the same result under the same conditions twice daily.

30 **3.1.8 Equipment**

31
32 Equipment used during the original RI included the G-856 and G-858 magnetometers, Topcon
33 RTK GPS, and Schonstedt GA-52-CX hand-held gradiometers, and these are described in the
34 2010 RI Work Plan. The Geonics EM61-MK2 (or EM61-MK2A) is a time-domain
35 electromagnetic device consisting of a data logger (Juniper Systems Allegro CX) and cart
36 assembly that carries an upper and lower copper coil towed on wheels. This instrument
37 measures the response of the immediate area to a primary pulsed electromagnetic field, generated
38 in the lower copper coil. The EM61-MK2 is able to discriminate between surface and subsurface
39 conductive materials (metals) more efficiently than most other metal detection devices. The
40 device will be integrated with the Topcon RTK GPS and will be used in grids and for anomaly
41 reacquisition and resolution within grids.

3.1.9 Data Processing and Anomaly Selection

Data processing and anomaly selection for the G-856 and G-858 magnetometers are described in the 2010 RI Work Plan. Data processing of the EM61-MK2 uses the same basic procedures and software, with minor variations discussed below.

- No heading corrections are needed because the GPS antenna is mounted directly above the center of the coil
- No diurnal corrections are needed
- The EM61's channel 2 will be gridded rather than the analytic signal of the G-858
- Target selection value in mV (threshold) will be based on recommendations in the IVS report.

3.1.10 Intrusive Investigation Plan

The intrusive investigation will be conducted in accordance with the procedures contained in the 2010 Work Plan unless otherwise indicated below.

3.1.11 Anomaly Reacquisition

Anomaly locations along transects in the central area and within grids will initially be flagged with RTK GPS using coordinates from approved dig sheets. The anomaly locations will be refined with instruments. With either instrument, a determination of "no finds", where no anomaly can be found at the flagged location, is possible. No finds will be recorded on the dig sheet and flags removed.

3.1.11.1 *G-858*

The G-858 will be used to refine anomaly locations along transects. The nearest peak or trough to the flagged anomaly location will be located by moving the gradiometer across the flag in perpendicular directions in a radius of approximately 3 ft around the flag. The flag will be moved to the peak or trough location and the distance and direction of offset will be recorded.

3.1.11.2 *EM61-MK2*

The EM61-MK2 will be used to refine anomaly locations within grids. The nearest peak to the flagged anomaly location will be located by moving the EM61-MK2 across the flag in perpendicular directions in a radius of approximately 3 ft around the flag. The flag will be moved to the peak location and the distance and direction of offset will be recorded.

3.1.12 Intrusive Activity

All intrusive activity along transects or within grids will follow procedures outlined in the 2010 RI Work Plan (Section 3.8). The intrusive investigations will use two teams, each comprising one UXO Technician II and one UXO Technician I. A UXO Technician III will directly supervise the work of these two teams (the SUXOS and SSHO/UXOSO-QC will also be on site during this work).

The UXO team will dig all anomalies mapped along transects in the central area and all anomalies mapped within the grids.

MEC disposal will be carried out as described in Section 3.8.9 of the 2010 RI Work Plan. If MPPEH is found and deemed unsafe to move, it will be blown in place. If it is deemed safe to

1 move, it will be transported to the disposal area located at the sharp bend in Atlantic Drive north
2 of the project area. This location was previously approved for this use by NPS during the RI.

3 **3.1.13 Anomaly Resolution**

4 General anomaly resolution procedures are described in section 3.6.20 of the 2010 RI Work
5 Plan. Additional comments are discussed below:

- 6 ■ The G-858 will be used for anomaly resolution along transects. All anomalies (100%)
7 will be checked. The gradient reading (nT/m) should drop by at least 75% to be
8 considered resolved unless the object causing the anomaly was left in place.
- 9 ■ The EM61-MK2 will be used for anomaly resolution within grids. VSP will be used to
10 determine the minimum number of anomalies to check per grid, using the *Anomaly*
11 *Sampling for UXO* module with 70% confidence that at least 90% of the anomaly
12 locations do not contain detectable MEC (for example, this means that if 50 anomalies
13 were dug in a grid, at least 11 of them should be checked). The channel 2 reading (mV)
14 should drop by at least 75% to be considered resolved unless the object causing the
15 anomaly was left in place.

16 With regard to the 300 foot diameter area of focus centered around the old E004 grid, the
17 possibility exists for portions of the foundation of the old storehouse to impact the geophysical
18 results. That is, it may be difficult to determine whether individual anomalies represent
19 munitions or parts of the old foundation. However, a review of the geophysical data from the
20 EE/CA investigation shows scattered anomalies, with no indications of a foundation. In any
21 case, all anomalies identified in this area of focus will be excavated, and the potential for a
22 foundation to mask a burial pit of munitions is unlikely.

23 **3.2 MC Sampling**

24 The results of randomly located surface soil samples collected at MRS 06 for the 2014 RI
25 concluded that no explosive compounds were detected and that there was no unacceptable MC
26 risk. However, since 24.2 of the 29 acres that make up MRS 06 were excluded from the
27 investigation by the NPS, no geophysical investigation could be conducted and it is unknown
28 whether any breached or damaged munitions, posing potential MC risks, are present in MRS 06.

29 Therefore, in accordance with the soil sampling DQO contained in the 2010 RI Work Plan,
30 biased grab soil samples will be collected in areas where there is visible evidence of energetic
31 material, e.g., munitions items that are breached. Also, soil samples will be collected in areas of
32 significant MD, where at least 50% of the munition could be identified by UXO Technicians
33 such that an assumption of MC in the vicinity could be tested by taking a sample. The depth will
34 be relative to the orientation of the breached item and field observations of energetic materials.
35 Should any soil samples be collected, analysis will be performed for:

- 36 ■ Metals (antimony, arsenic, barium, cadmium, chromium, copper, lead, manganese,
37 mercury, thallium, titanium, vanadium, and zinc) by SW-846 Method 6010B/7470A (or
38 6020A)
- 39 ■ Explosives (8330B or 8321 for explosives)

40 Should these biased grab soil samples indicate the presence of contamination, follow-on
41 sampling using decision units to characterize extent of contamination will be completed. The
42 soil sampling procedures (Worksheets 17 and 18) and DQOs (Worksheet 11) are contained in the
43 UFP-QAPP (Appendix E of the 2010 RI Work Plan). More sensitive analytical methods for

1 metals (6020A) and explosives (8321) will be used if sampling is required. Sample
2 identification and nomenclature procedures (Worksheet 27) will follow the outline as presented
3 in the UFP-QAPP.

4 There are no surface water bodies within the MRS and therefore no surface water or sediment
5 samples will be collected.

6 With regard to groundwater, baseline conditions were characterized in the 2014 RI and the risk
7 assessment concluded there were no unacceptable risks posed. However, the 2010 RI Work Plan
8 groundwater DQO specifies a screening level evaluation to assess the potential for possible soil
9 “hot spots” to impact groundwater. Based on ERT’s knowledge of the site, and the results from
10 the RI, it is unlikely that any further soil findings will trigger the need for a more detailed
11 groundwater investigation. However, to ensure complete nature and extent characterization,
12 ERT will perform the screening level evaluation if additional soil samples are collected, and
13 conduct all the other steps listed in the DQO, including installation of shallow monitoring wells,
14 if necessary.

15 If MC samples are collected during the investigation of MRS 06, human health and ecological risk
16 will be re-assessed for MRS 06; for metals, background comparisons to the NJ background values
17 (95% upper tolerance limits) will be conducted as described in the RI Report Addendum #1 (and
18 its Work Plan Addendum).

19 These new conclusions will be presented in RI Addendum #2. The new risk conclusions will be
20 specific to MRS 06; the risk conclusions for the other MRSs, as presented in the 2014 RI Report,
21 will not change.

1 **4.0 REFERENCES**

2 USACE. 1998. Draft Final Former Fort Hancock EE/CA, Fort Hancock Formerly Used Defense
3 Site, Monmouth County, New Jersey. December.

4 USACE. 2007. Site Inspection Report for Fort Hancock, Fort Hancock Formerly Used Defense
5 Site, Monmouth County, New Jersey. August.

6 USACE, 2010. Final Geophysical Proveout Plan, Fort Hancock Formerly Used Defense Site,
7 Monmouth County, New Jersey. August.

8 USACE, 2010a. Final Geophysical Proveout Report, Fort Hancock Formerly Used Defense Site,
9 Monmouth County, New Jersey. November.

10 USACE 2010b. Final Remedial Investigation/Feasibility Study Work Plan, Fort Hancock
11 Formerly Used Defense Site, Monmouth County, New Jersey. December.

12 USACE 2014. Final MMRP Remedial Investigation Report, Fort Hancock Formerly Used
13 Defense Site, Monmouth County, New Jersey. January.

14 USACE 2015. Draft-Final MMRP Remedial Investigation Report (#1), Fort Hancock Formerly
15 Used Defense Site, Monmouth County, New Jersey. May.

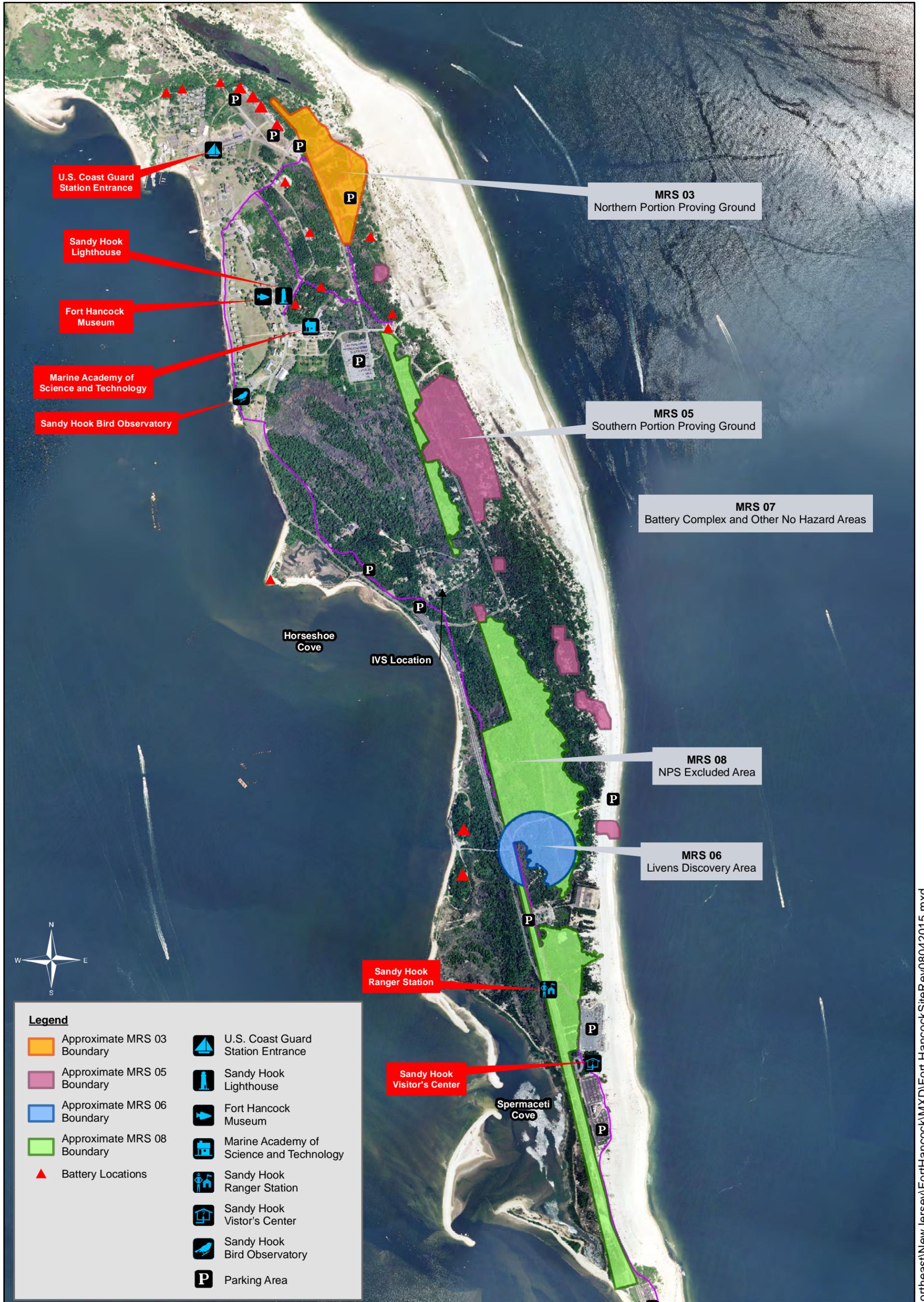
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Appendix A: Figures

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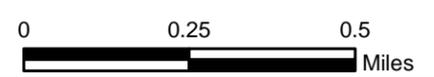
Legend

Approximate MRS 03 Boundary	U.S. Coast Guard Station Entrance
Approximate MRS 05 Boundary	Sandy Hook Lighthouse
Approximate MRS 06 Boundary	Fort Hancock Museum
Approximate MRS 08 Boundary	Marine Academy of Science and Technology
Battery Locations	Sandy Hook Ranger Station
	Sandy Hook Visitor's Center
	Sandy Hook Bird Observatory
	Parking Area

**Remedial Investigation Addendum #2
Fort Hancock Formerly Used Defense Site,
Monmouth County, New Jersey**

Contract No.: W912QR-12-D-0011

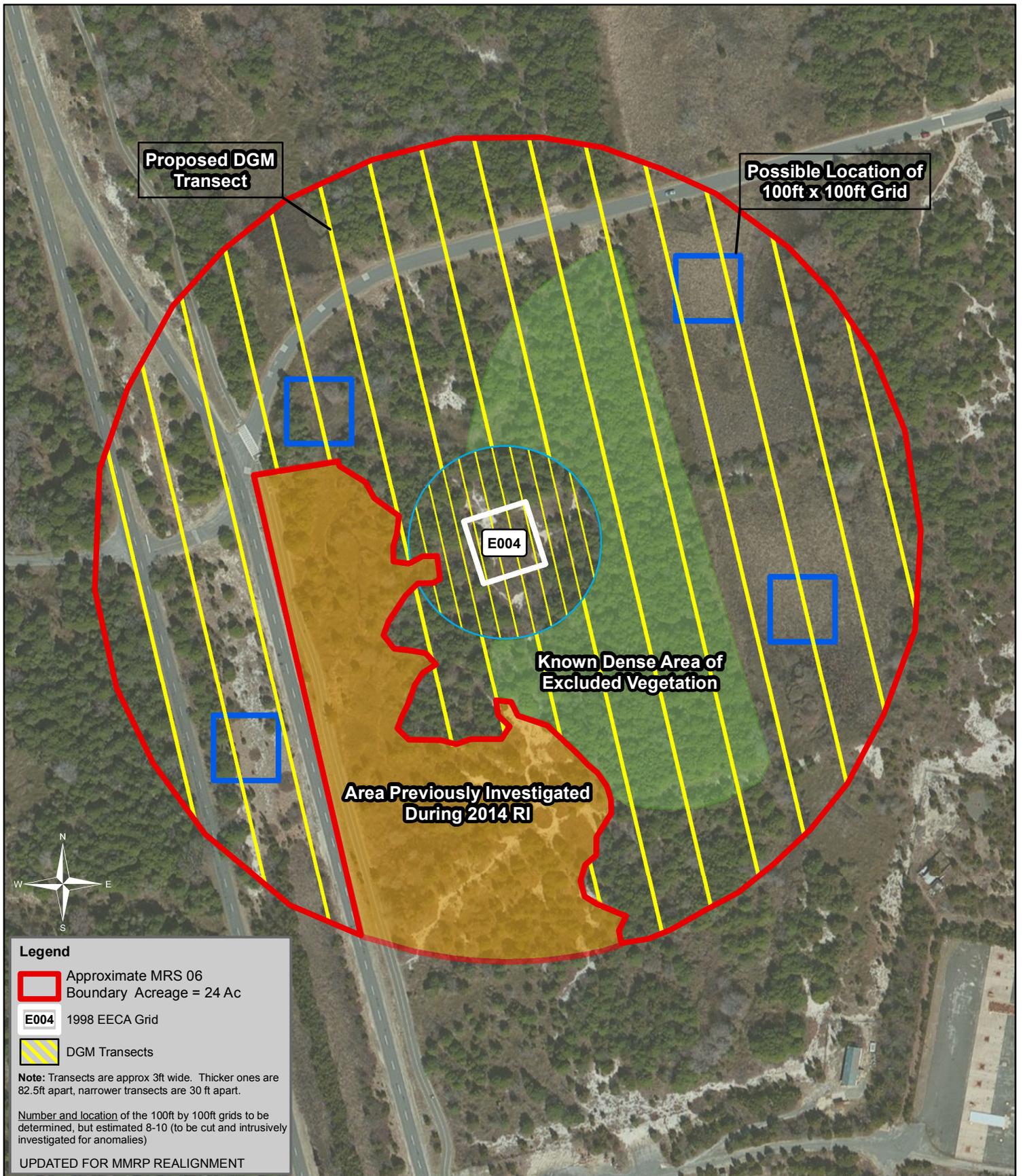
**Figure 1
Fort Hancock
MRS Locations**



Date: August 2015

Data Sources: National Oceanic and Atmospheric Administration (NOAA), 2014 and 2010 National Park Service

Document Path: N:\GIS\Northeast\New Jersey\Fort Hancock\MXD\Fort Hancock Site Rev 08042015.mxd



Legend

- Approximate MRS 06 Boundary Acreage = 24 Ac
- E004 1998 EECA Grid
- DGM Transects

Note: Transects are approx 3ft wide. Thicker ones are 82.5ft apart, narrower transects are 30 ft apart.

Number and location of the 100ft by 100ft grids to be determined, but estimated 8-10 (to be cut and intrusively investigated for anomalies)

UPDATED FOR MMRP REALIGNMENT



Remedial Investigation Addendum #2
Fort Hancock Formerly Used Defense Site,
Monmouth County, New Jersey

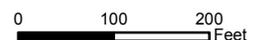
Contract No.: W912QR-12-D-0011

Date: May 2015

Service Layer Credits: Imagery Date: 07/30/2013 Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

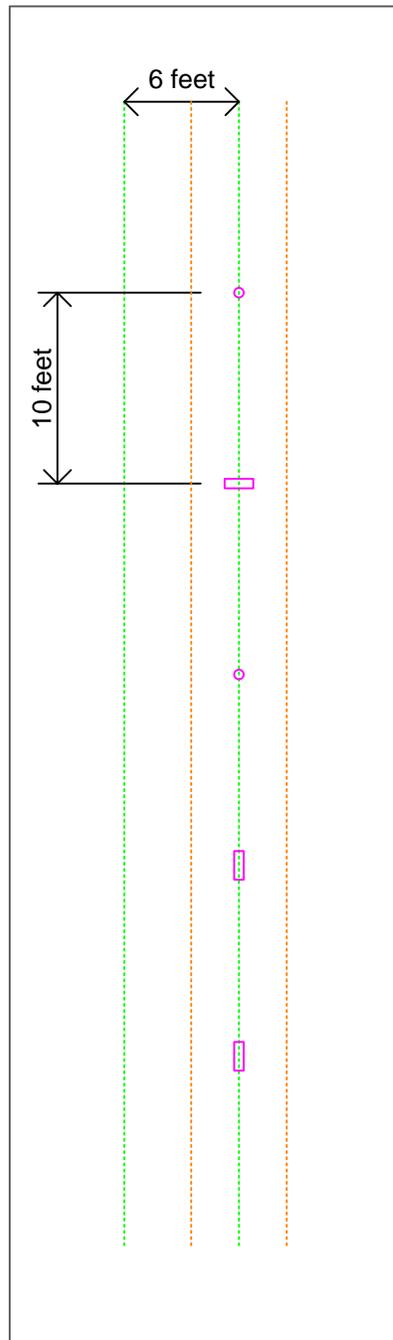
Figure 2

MRS 06
Site Layout



- vertical ISO
- horizontal ISO, perpendicular to traverse
- horizontal ISO, parallel to traverse

ISOs are not shown to scale



1
Small ISO
depth: 6 in.

2
Small ISO
depth: 9 in.

3
Medium ISO
depth: 18 in.

4
Medium ISO
depth: 18 in.

5
Large ISO
depth: 24 in.

IVS boundary
approximately 20.5 ft x 70 ft



IVS will be located within yellow rectangle shown in air photo to left.



US Army Corps
of Engineers
BUILDING STRONG

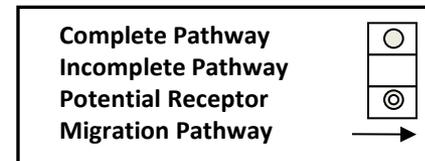
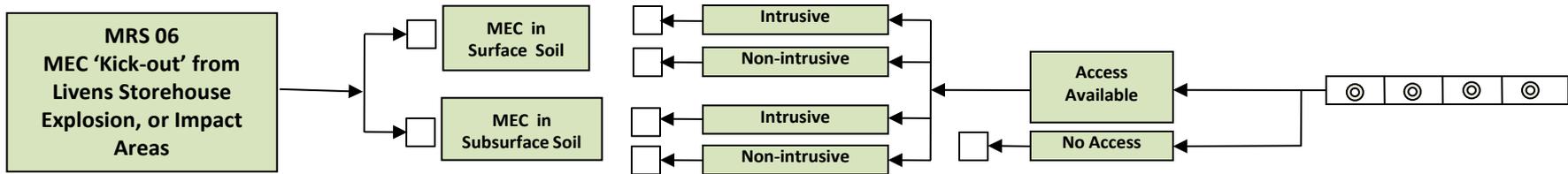
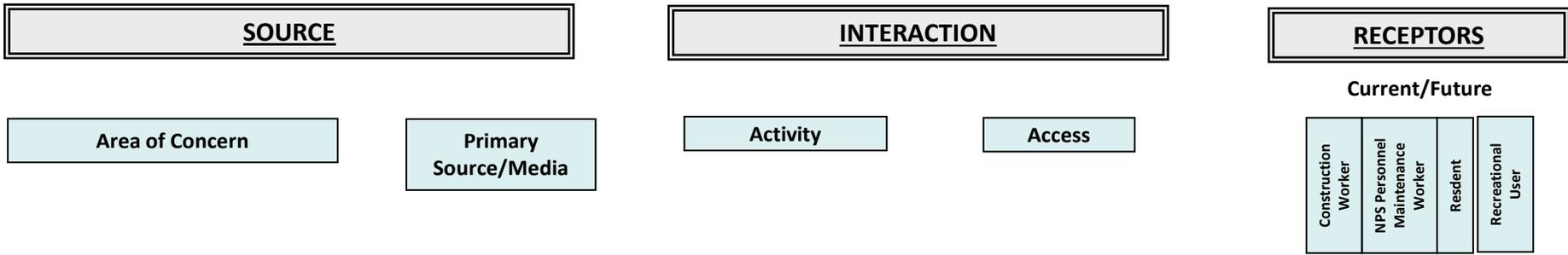
Proposed Instrument Verification Strip Design
Fort Hancock FUDS
Sandy Hook, New Jersey

FIGURE 3

May 2015

Scale: 1" = 10'

Figure 4. CSM for MRS 06 (MEC/MD)



**Appendix B: Environmental and Cultural Resources Protection
Plan Excerpt**

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EXCERPT OF 2010 RI WORK PLAN ECRPP

1.1 MITIGATION PROCEDURES

Investigation activities at the site have been designed in collaboration with the NPS, and other natural resource stakeholders such as the USFWS and NJDEP DF&W Endangered and Nongame Species Program to avoid, minimize and/or mitigate any potential impacts to sensitive resources. For this reason, extensive mitigation is not anticipated. However, the following general mitigation procedures and engineering controls will be used during all field activities.

1.1.1 Personnel Training

1.1.1.1 All ERT field personnel will be trained to identify sensitive plants of concern in the field, with emphasis on American Holly, Eastern Red Cedar, Northern Bayberry, and Seabeach Amaranth. Personnel will also be trained to identify Eastern Poison Ivy to minimize skin, clothing and equipment contact with this irritant. Plant identification resources detailing the key characteristics of each species will be provided to field personnel to ensure accurate avoidance of sensitive plants during field work. Photographs of these species of concern are included below.

1.1.1.2 NPS personnel will provide guidance in the field during brush cutting, as described in Subchapter 7.4.2.1., ERT will perform beach reconnaissance to detect the presence of Seabeach Amaranth and other sensitive herbaceous species.



Photo sources: ForestryImages.com (USDA and University of Georgia)

EXCERPT OF 2010 RI WORK PLAN ECRPP

American Holly (*Ilex opaca*): Tree and Closeup View



Photo sources: ForestryImages.com (USDA and University of Georgia) and Maine Forest Service

Eastern Red Cedar (*Juniperus virginiana*): Tree at Sandy Hook and Closeup View



Photo sources: Duke University and Wildflower.org

Northern Bayberry (*Morella pensylvanica*): Shrub and Closeup View

EXCERPT OF 2010 RI WORK PLAN ECRPP



Photo by Mark Burtiss
U.S. Army Corps of Engineers
New York District

Photo sources: WikimediaCommons.org

Seabeach Amaranth (*Amaranthus pumilus*) on Beach



Photo sources: WikimediaCommons.org

Eastern Poison Ivy (*Toxicodendron radicans*): Variable Leaf Shapes and Seasonal Colors

EXCERPT OF 2010 RI WORK PLAN ECRPP

1.1.2 Tree, Shrub and Landscape Protection and Restoration

1.1.2.1 NPS has provided guidance for conducting the field activities including establishment of excluded areas. Prior to conducting the investigation, ERT will review NPS guidance and restrictions to ensure that environmental impacts are minimized during brush cutting and other field activities. During brush cutting, NPS personnel will provide guidance in the field to ground-truth existing vegetation maps and to identify specific areas containing sensitive habitat (NPS 2010a). If a sensitive habitat patch is identified, all vegetation clearance will cease until NPS has fully assessed the potential impacts to the associated floral communities, so that the most appropriate habitat protection and mitigation measures can be determined (NPS 2010a). Note however that NPS has established the excluded areas where much of the sensitive habitats exist. Therefore, it is not anticipated that significant areas of sensitive habitat will be encountered in the approved areas of the investigation.

1.1.2.2 To the extent possible, disturbance to vegetation will be avoided during field activities by cutting only those plants necessary to implement this work plan. Environmental impacts will be minimized by limiting the width and spacing of geophysical transects and the extent of vegetation cutting within transects. Only vegetation between 6 inches and 6 feet above ground surface will be cut, and trees larger than 1 inch dbh will be preserved. Transects and meandering paths will not exceed 3 feet in width, and grids containing anomaly clusters proposed for intrusive investigation will not exceed 100 feet by 100 feet, with proposed grid locations to be approved by USACE and NPS. Vegetation will not be cut within the excluded globally-rare Maritime Holly forest as defined by NPS, and geophysical surveys in this excluded habitat may be limited to existing multi-use paths and hiking trails. Any additional American Holly, Eastern Red Cedar and Northern Bayberry thickets throughout the investigation area will not be cut to further minimize disturbance to sensitive ecological communities. In areas where a geophysical transect passes through or near roads or trails that may permit visitor entry, a 30-foot buffer zone of undisturbed vegetation will be created to mitigate future environmental impacts by visitors. All field vehicles will be parked on existing roads or established parking areas to minimize habitat destruction, and construction of temporary facilities is not planned. Potential environmental impacts to the Fort Hancock investigation area will be limited to the accessible forest, wetland, shrubland/grassland, dune and beach habitats as defined by NPS.

1.1.2.3 Disturbance to sensitive herbaceous plants will be minimized by the investigation time frame and recognition and avoidance during field activities. The Seabeach Amaranth, described in Section 7.3.7.3, is an annual plant that germinates during spring and dies in early winter (NJDEP 2010c; USFWS 2009b), and significant impacts to the surrounding beach and dune habitats are not anticipated during intrusive investigations. Sea-beach Knotweed may not be encountered during the investigation, as it was previously documented in restricted locations within U.S. Coast Guard property and along the eastern peninsula within or north of the Fort Hancock investigation area (Foster Wheeler 1999).

1.1.2.4 Disturbance to vegetation and habitats within 100 ft by 100 ft anomaly removal grids will be minimized via consultation with NPS and other natural resource stakeholders as required. A portion of the vegetation within these grids will be removed for the purpose of locating and hand-digging anomalies. Although most sensitive habitats have been excluded from the RI Phase 1 investigation areas (i.e., NPS Excluded Area), it is possible that a grid location that needs to be

EXCERPT OF 2010 RI WORK PLAN ECRPP

intrusively investigated may create a ground disturbance or negatively impact sensitive habitats within these areas or vegetation such as native wetland plants. An alternative set of grid locations can be generated to preferentially avoid sensitive habitats without compromising statistical conclusions about what other items may be present (NPS 2010b), and restoration considerations are described in Section 7.4.2.6.

1.1.2.5 Measures for controlling the transfer of invasive species throughout the study site will be coordinated with NPS. Many of these invasive species spread via underground root rhizomes as well as seeds. Of particular concern is *Phragmites*, whose seeds are shed during late winter and remain dormant until they germinate in spring. Potential control measures may include the use of appropriate footwear and clothing that reduce the likelihood of invasive seed attachment; regular inspection of clothing, footwear, and field equipment that come in direct contact with invasive vegetation; and placing removed soil and plants back into their respective anomaly removal locations or into locations where MEC items are detonated in place. Specific control measures will be further developed as required based on actual field conditions encountered and in consultation with NPS and USACE, and will be reflected in an amended version of this plan. Note that invasive species such as *Phragmites* and Tree of Heaven are common throughout the peninsula in appropriate habitats, and introduction of these species into areas dominated by native vegetation is unlikely. All MRSs are partially comprised of beach areas with none or limited vegetation, and areas containing denser vegetation typically do not represent distinct habitats that differ between MRSs. Additionally, highly-sensitive habitats have already been excluded from the investigation area.

1.1.2.6 Upon completion of the project, all disturbed habitats will be re-established naturally, or restored to existing conditions by the USACE, in consultation with NPS and other natural resource stakeholders as required. Specific mitigation procedures and restoration plans, including the appropriate vegetation restoration schedule, will be coordinated with NPS once anomaly grid locations are identified and approved during the field effort (NPS 2010b). The detailed mitigation and restoration approach will differ depending on existing habitat in the anomaly grid location (e.g., beach, wetland vegetation, dune shrubland), and some grids may be dominated by invasive species. This plan will be amended as necessary to better capture observed site conditions and specific restoration procedures identified via coordination with NPS. Overall, site restoration requirements will reflect the amount and nature of surface disturbance and will account for existing habitat features and topography, in order to restore the site to original conditions to the maximum practical extent.

1.1.3 Wildlife Protection

1.1.3.1 Field activities will be conducted during the winter time frame when sensitive beach-nesting birds are not present on-site and when impacts to other migrant and resident species are not anticipated. To the extent possible, disturbance to wildlife will be minimized by limiting impacts to ecological habitats as described in Section 7.4.1. Disturbance to winter food sources, roosting areas and future breeding habitat will be minimized by limiting the location and extent of cut vegetation, the creation of vegetation buffers surrounding geophysical transects, and limiting the time frame spent in each section of habitat.

EXCERPT OF 2010 RI WORK PLAN ECRPP

1.1.3.2 All beach efforts will be completed prior to March 15 to prevent disturbance to sensitive beach-nesting birds such as Piping Plovers. Geophysical transects and intrusive investigations on beaches will, to the extent possible, minimize disturbance to potentially-present larval Northeastern Beach Tiger Beetles overwintering in burrows. Disturbance to other beach wildlife (e.g., wintering shorebirds) will be minimized by limiting the time frame spent in any given location.

1.1.3.3 Sensitive and protected beach-nesting birds such as Piping Plovers may arrive at Sandy Hook in late February or early March, prior to the March 15 cutoff date previously established for completion of all field efforts (NPS 2010b). ERT field personnel will coordinate with NPS biologists starting on March 1, 2011 (or earlier if a mild winter), to determine whether sensitive species have arrived early so that disturbance to nesting areas can be minimized. Specific details of this protocol will be coordinated with NPS before mid-February 2011, and this plan can be amended to reflect this information as it becomes available.

1.1.3.4 Intrusive investigations on beaches will be completed prior to inland intrusive investigations to facilitate the schedule noted above. Field work progress can be assessed during early stages of the geophysical field effort to determine whether a second geophysical team is needed for timely completion of all efforts. If intrusive investigations in sensitive beach areas cannot be completed prior to the arrival of beach-nesting birds, the path forward will be determined via consultation with NPS, NJDEP, and USFWS (NPS 2010b).

1.1.4 Minimizing Areas of Disturbance

1.1.4.1 Procedures for minimizing areas of disturbance are described throughout this ECRPP. These include measures such as walking on existing paths and openings through vegetation as much as possible and limiting the volume and locations of cut vegetation.



EXCERPT OF THE ADDENDUM TO THE ECRPP

April 6, 2011

Attn: Julie Kaiser
CENAB-EN-HN
10 S. Howard Street
Baltimore, MD 21201-1715

Dear Ms Kaiser,

Earth Resources Technology, Inc. (ERT) is pleased to provide this Draft Letter Addendum to the Environmental and Cultural Resources Protection Plan (ECRPP). This document has been prepared for the ongoing Fort Hancock Remedial Investigation (RI) to provide updated procedures for avoiding, minimizing, and mitigating potential impacts to environmental and cultural resources near the investigation area during field activities. This addendum describes methods for addressing additional natural resource concerns, as discussed by stakeholders following distribution of the Final RI/FS Work Plan and commencement of field work.

This addendum primarily addresses four natural resource issues:

- **Additional plant species of concern were identified and will not be cut to further minimize disturbance to sensitive ecological communities.**

Additions and modifications to the current version of the ECRPP (found in the Final RI/FS Work Plan dated December 31, 2010) are indicated in bold within the applicable subchapter (see below). Please do not hesitate to call me at 301-323-1442 if you need anything more.

Sincerely,

An electronic signature of Thomas J. Bachovchin, consisting of a stylized cursive script in black ink. Below the signature, the words "ELECTRONIC SIGNATURE" are printed in a small, black, sans-serif font.

ELECTRONIC SIGNATURE

Thomas J. Bachovchin
Project Manager

DISTRIBUTION:
CENAB (Kaiser)
CENAN (Goepfert)



LETTER ADDENDUM TO ECRPP

7.3.1.5 Invasive herbaceous plants at Fort Hancock include Japanese Sedge and the widespread Common Reed, also known as Phragmites or Foxtail, which flourishes in disturbed habitats and reduces biological diversity. Invasive shrubs and vines include Tree of Heaven, Asian Bittersweet and Japanese Honeysuckle. **Japanese Black Pine is planted around a few buildings and other cultural features on the northern portion of the site, but has not naturalized on the site.**

7.4.1.1 All ERT field personnel will be trained to identify sensitive plants of concern in the field, with emphasis on American Holly, Eastern Red Cedar, Northern Bayberry, and Seabeach Amaranth. **Four additional plant species of concern within the investigation area were identified by NPS during personnel training and during the first phase of field work. These species include Beach Plum, Beach Wormwood, Common Hackberry (also known as American Hackberry), and Serviceberry (also known as Shadbush or Juneberry). More than one closely-related species of Serviceberry may be found in the investigation area. Photographs and scientific names of these species of concern are provided in Attachment A of this letter addendum.** Personnel will also be trained to identify Eastern Poison Ivy to minimize skin, clothing and equipment contact with this irritant. Plant identification resources detailing the key characteristics of each species will be provided to field personnel to ensure accurate avoidance of sensitive plants during field work. Photographs of these species of concern are included below.

7.4.2.2 To the extent possible, disturbance to vegetation will be avoided during field activities by cutting only those plants necessary to implement this work plan. Environmental impacts will be minimized by limiting the width and spacing of geophysical transects and the extent of vegetation cutting within transects. Only vegetation between 6 inches and 6 feet above ground surface will be cut, and trees larger than 1 inch dbh will be preserved. Transects and meandering paths will not exceed 3 feet in width, and grids containing anomaly clusters proposed for intrusive investigation will not exceed 100 feet by 100 feet, with proposed grid locations to be approved by USACE and NPS. Vegetation will not be cut within the excluded globally-rare Maritime Holly forest as defined by NPS, and geophysical surveys in this excluded habitat may be limited to existing multi-use paths and hiking trails. Any additional American Holly, Eastern Red Cedar, Northern Bayberry, **Beach Plum, Common Hackberry, and Serviceberry thickets (along with the herbaceous Beach Wormwood)** throughout the investigation area will not be cut to further minimize disturbance to sensitive ecological communities. **Experimental vegetation plots associated with NPS research on Asiatic Sand Sedge and American Beachgrass will not be cut to minimize disturbance.** In areas where a geophysical transect passes through or near roads or trails that may permit visitor entry, a 30-foot buffer zone of undisturbed vegetation will be created to mitigate future environmental impacts by visitors. All field vehicles will be parked on existing roads or established parking areas to minimize habitat destruction, and construction of temporary facilities is not planned. Potential environmental

impacts to the Fort Hancock investigation area will be limited to the accessible forest, wetland, shrubland/grassland, dune and beach habitats as defined by NPS.

7.4.2.3 Disturbance to sensitive herbaceous plants will be minimized by the investigation time frame and recognition and avoidance during field activities. The Seabeach Amaranth, described in Section 7.3.7.3, is an annual plant that germinates during spring and dies in early winter (NJDEP 2010c; USFWS 2009b), and significant impacts to the surrounding beach and dune habitats are not anticipated during intrusive investigations. **There are no proposed grids to be investigated within the recorded habitat of Seabeach Amaranth or in the immediate vicinity of this plant, based on all locations observed by NPS in 2010 (which were limited to MRS 6).** Sea-beach Knotweed may not be encountered during the investigation, as it was previously documented in restricted locations within U.S. Coast Guard property and along the eastern peninsula within or north of the Fort Hancock investigation area (Foster Wheeler 1999).

7.4.2.4 Disturbance to vegetation and habitats within 100 ft by 100 ft anomaly removal grids will be minimized via consultation with NPS and other natural resource stakeholders as required. A portion of the vegetation within these grids will be removed for the purpose of locating and hand-digging anomalies. Although most sensitive habitats have been excluded from the RI Phase 1 investigation areas (i.e., NPS Excluded Area), it is possible that a grid location that needs to be intrusively investigated may create a ground disturbance or negatively impact sensitive habitats within these areas or vegetation such as native wetland plants. **Alternative grid locations are generated to preferentially avoid dense vegetation and sensitive habitats without compromising statistical conclusions about what other items may be present (NPS 2010b), and restoration considerations are described in Section 7.4.2.6.**

7.4.2.5 Measures for controlling the transfer of invasive species throughout the study site will be coordinated with NPS. Many of these invasive species spread via underground root rhizomes as well as seeds. Of particular concern is *Phragmites*, whose seeds are shed during late winter and remain dormant until they germinate in spring. Potential control measures may include the use of appropriate footwear and clothing that reduce the likelihood of invasive seed attachment; regular inspection of clothing, footwear, and field equipment that come in direct contact with invasive vegetation; and placing removed soil and plants back into their respective anomaly removal locations or into locations where MEC items are detonated in place. **Field procedures include best management practices to ensure no transfer of invasive species by thorough cleaning of boots and lower clothing following brush cutting or DGM activities.** Note that invasive species such as *Phragmites* and Tree of Heaven are common throughout the peninsula in appropriate habitats, and introduction of these species into areas dominated by native vegetation is unlikely. All MRSs are partially comprised of beach areas with none or limited vegetation, and areas containing denser vegetation typically do not represent distinct habitats that differ between MRSs. Additionally, highly-sensitive habitats have already been excluded from the investigation area.

ATTACHMENT A



Photo sources: ERT (J. Stuby), Wikimedia Commons

Beach Plum (*Prunus maritima*)



Photo source: ERT (J. Stuby)

Beach Wormwood (*Artemisia campestris caudata*): First Year and Second Year



Photo sources: www.tree-pictures.com, www.discoverlife.org

Common Hackberry (*Celtis occidentalis*)



Photo source: Wikimedia Commons

Serviceberry (*Amelanchier* spp.)



Photo source: www.nps.gov

Asiatic Sand Sedge (*Carex kobomugi*) in Experimental Research Plots



Photo source: Wikipedia

American Beachgrass (*Ammophila breviligulata*) in Experimental Research Plots

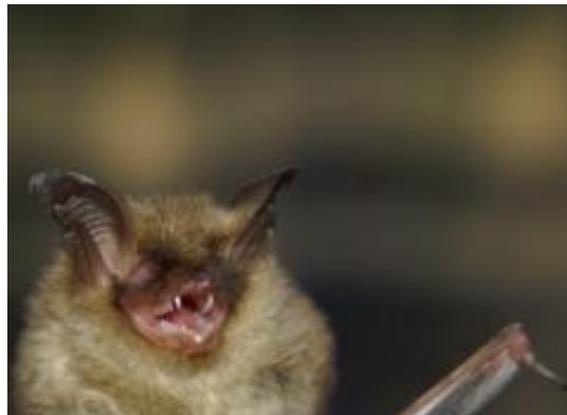
UPDATE TO THE ECRPP ADDENDUM

The Fort Hancock FUDS Environmental and Cultural Resources Protection Plan (ECRPP), as updated in April 2011, is further updated with the following additions:

In 2013, the New Jersey Endangered and Nongame Advisory Committee recommended an Endangered status for the northern long-eared bat (a.k.a. *northern myotis*). Effective May 4, 2015, the U.S. Fish and Wildlife Service listed the northern myotis as a threatened species under the Endangered Species Act (ESA), primarily due to the threat posed by white-nose syndrome, a fungal disease that has devastated many bat populations.

The northern long-eared bat (*Myotis septentrionalis*) is one of four New Jersey bat species belonging to the *Myotis* genus. It is similar in size and appearance to the little brown bat (*M. lucifugus*) and Indiana bat (*M. sodalis*), with an average weight of 6 to 9 grams, a body length of around 3 inches, and a 9 to 10 inch wingspan. The northern long-eared bat's rounded ears are longer than those of its relatives, though not dramatically. The northern's tail and wings are also generally longer than those of other *Myotis* species. Its fur is brown with a dull yellow hue and a darker spotting pattern on its shoulders. Females of this species are usually larger than males.

In accordance with the ECRPP, the investigative work described in this Work Plan Addendum will follow the procedures outlined to avoid, minimize, and/or mitigate any potential impacts to this and other sensitive resources.



Northern long-eared bat (*Myotis septentrionalis*)

The red knot was added to the list of Federal candidate species in 2006. A final rule to list the rufa subspecies as threatened under the Endangered Species Act was published on December 11, 2014, with an effective date of January 12, 2015. Red knots are federally protected under the Migratory Bird Treaty Act, and are New Jersey State-listed as endangered.

At 9 to 10 inches long, the red knot is a large, bulky sandpiper with a short, straight, black bill. During the breeding season, the legs are dark brown to black, and the breast and belly are a characteristic russet color that ranges from salmon-red to brick-red. Males are generally brighter shades of red, with a more distinct line through the eye. When not breeding, both sexes look alike—plain gray above and dirty white below with faint, dark streaking. As with most shorebirds, the long-winged, strong-flying knots fly in groups, sometimes with other species.

Small numbers of red knots may occur in New Jersey year-round, while large numbers of birds rely on New Jersey's coastal stopover habitats during the spring (mid-May through early June) and fall (late-July through November) migration periods. Smaller numbers of knots may spend all or part of the winter in New Jersey (*US Fish & Wildlife Service, New Jersey Field Office Website*)



Red knot



United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609-646-9310 Fax: 609-646-0352
<http://www.fws.gov/northeast/njfieldoffice>



IN REPLY REFER TO:
11-CPA-0074b

SEP 21 2015

Gregory J. Goepfert, Project Manager
Programs and Project Management Division
U.S. Army Corps of Engineers
Jacob K. Javits Federal Building
New York, New York 10278-0090
Email: Gregory.J.Goepfert@usace.army.mil

Reference: Munitions Investigation at MRS-6 (Livens Area), at the Former Fort Hancock, Gateway National Recreation Area, Sandy Hook Unit, Monmouth County, New Jersey

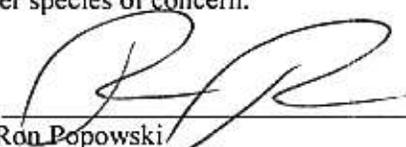
The U.S. Fish and Wildlife Service (Service) has reviewed the above-referenced proposed project pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) (ESA) to ensure the protection of federally listed endangered and threatened species. The following comments do not address all Service concerns for fish and wildlife resources and do not preclude separate review and comment by the Service as afforded by other applicable environmental legislation.

A known occurrence or potential habitat for the following federally listed or candidate species is located on or near the project's impact area. However, the Service concurs that the proposed project is not likely to adversely affect federally listed or candidate species for the reasons listed below.

Species	Basis for Determination
Northeastern beach tiger beetle (<i>Cicindela dorsalis dorsalis</i>), Threatened; Piping plover (<i>Charadrius melodus</i>), Threatened; Red knot (<i>Calidris canutus rufa</i>), Threatened; and Seabeach amaranth (<i>Amaranthus pumilus</i>), Threatened, Northern long-eared bat (<i>Myotis septentrionalis</i>), Threatened	Based on your September 1, 2015 letter and the work plan, the proposed activities include measures to avoid disturbance to environmental sensitive areas. The project is occurring outside any habitat known to be used by the federally listed species. The effects are discountable.

Except for the above-mentioned species, no other federally listed or proposed threatened or endangered flora or fauna under Service jurisdiction are known to occur within the proposed project's impact area. Therefore, no further consultation pursuant to the ESA is required. If additional information on federally listed species becomes available, or if project plans change, this determination may be reconsidered.

Please refer to this office's web site at <http://www.fws.gov/northeast/njfieldoffice/Endangered/> for further information including federally listed and candidate species lists, procedures for requesting ESA review, the National Bald Eagle Management Guidelines, and contacts for obtaining information from the New Jersey Natural Heritage and Endangered and Nongame Species Programs regarding State-listed and other species of concern.

Authorizing Supervisor: 
Ron Popowski



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF FISH AND WILDLIFE

Mail Code 501-03

PO BOX 420

Trenton, NJ 08625-0420

David Chanda, Director

www.NJFishandWildlife.com

(609) 292-2965

11 September 2015

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

Gregory Goepfert
Army Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Goepfert:

We received your proposal to conduct investigation work in Munitions Response Site 6 on Sandy Hook's Fort Hancock area. We agree with your determination of "Not Likely to Adversely Affect" for wildlife species of concern in New Jersey.

Sincerely,

A handwritten signature in blue ink that reads "Kathleen E. Clark".

Kathleen E. Clark
Supervising Zoologist
Endangered & Nongame Species Program



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

NJ STATE FORESTRY SERVICES

OFFICE OF NATURAL LANDS MANAGEMENT

Mail Code: 501-04

PO Box 420

Trenton, New Jersey 08625-0420

Tel (609) 984-1339 Fax (609) 984-1427

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

October 22, 2015

Gregory J. Goepfert
U.S. Army Corps of Engineers
New York District
26 Federal Plaza
Room 1811 (CENAP-PP-E)
New York, NJ 10278

Dear Mr. Goepfert:

I have reviewed the Draft-Final MMRP Remedial Investigation Work Plan Addendum #2 involving remedial investigation work proposed for Munitions Response Site 6 (MRS 06) located in the Fort Hancock Area of Sandy Hook, Gateway National Recreation Area.

Based on this review I concur with the USACOE's determination that this investigation work is "Not Likely to Adversely Affect" endangered plant species or plant species of concern in New Jersey.

Sincerely,

Robert J. Cartica
Administrator

c: Greg Zalaskus

Appendix C: Updated APP/SSHP Information

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Attachment A: Updated Signature Sheet

SIGNATURE SHEET

ACCIDENT PREVENTION PROGRAM (APP) APPROVAL

By their specific signature, the undersigned certify that they approve this APP for utilization during field activities in support of Contract No. W912QR-12-D-0011, DA01.

Approved by:



May 26, 2015

Michael Barsa, CSP
Board of Certified Safety Professionals No. 24437
ERT Program Safety and Health Manager

Date

Plan Concurrence:



May 29, 2015

Jennifer Harlan, PMP
(301) 323-1394
ERT Division Manager

Date



ELECTRONIC SIGNATURE

May 26, 2015

Thomas Bachovchin, PG
(301) 323-1442
ERT Project Manager

Date

Attachment B: Updated Emergency Contact List

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Emergency Contact List

Service/Contact	Agency/Position	Telephone No.
Emergency Service (fire, ambulance, police)	NPS Dispatch Center	732-872-5900
Monmouth Medical Center	Hospital	(732) 923-7300
Spill Response	CHEMTREC	(800) 424-9300
United States Environmental Protection Agency (USEPA) National Response Center	24-hour hotline	(800) 424-8802
Poison Control	Poison Control Center	(800) 962-1253
USEPA Region 2	General Information Number	(212) 637-5000
Greg Goepfert	CENAN Project Manager	(917) 790-8235
Julie Kaiser	CENAB Project Manager	(410) 962-2227
TBD	CENAB OE Safety Specialist	TBD
Jennifer Harlan	ERT Division Manager	(301) 323-1394
Thomas Bachovchin	ERT PM	(301) 323-1442 (o) (703) 389-3938 (c)
Michael Barsa	ERT SHM	(410) 703-6213 (c)
Ward R. Stern	ERT SUXOS	(256) 731-9151
Walt F. Hess	ERT SSHO/UXOSO-QC	(540) 287-0081
Jim Stuby	ERT Project Geophysicist	(410) 598-8747 (c)
Robert Koroncai	ERT Field Geophysicist/ Sample Technician	(267) 481-5567 (c)

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Attachment C: Updated Personnel Resumes

All applicable certifications will be up to date prior to the commencement of field activities.

Note: Table indicates field personnel and status of required/updated certifications to perform the field work. Actual copies of certifications available upon request.

PERSONNEL	TITLE	UPDATED RESUME	UPDATED TRAINING CERTIFICATIONS					
			40-Hr HAZ WOPER	8-Hr Refresher	Supervisor Training	CPR-First Aid	Medical Monitoring	EOD Certification
Stuby	ERT Field Geophysicist / Sample Technician	Yes	Yes	Yes	Yes	Yes	Yes	NA
Barsa	ERT Safety & Health Manager	Yes	Yes	Yes	Yes	Yes	Yes	NA
Koroncai	ERT Field Geophysicist / Sample Technician	Yes	Yes	Yes	Yes	Yes	Yes	NA
Hack	ERT Field Geophysicist / Sample Technician	Yes	Yes	No (not required)	No (not required)	No	Yes	NA
Stern	SUXOS	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hess	SSHO-UXOSO-QC	Yes	Yes	Yes	Yes	No	Yes	Yes

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Attachment D: Updated Training Certifications

All applicable certifications will be up to date prior to the commencement of field activities.

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