
PROPOSED PLAN
Fort Hancock Formerly Used Defense Site
Monmouth County, New Jersey

OVERVIEW

This **Proposed Plan** was prepared for the Fort Hancock Formerly Used Defense Site (**Fort Hancock FUDS**) to satisfy Section 117 (a) of the **Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)**. The primary purpose of this Proposed Plan is to identify a preferred remedial alternative to mitigate unacceptable explosive hazards due to **munitions and explosives of concern (MEC)** that may remain within the Fort Hancock FUDS. The Proposed Plan highlights the key factors that led to identifying the preferred alternative of the U.S. Army Corps of Engineers (**USACE**).

The **Remedial Investigation Report (USACE, 2018) (RI Report)** documented the site characterization work that determined the nature and extent of contamination and identified the remaining risks/hazards, and the **Feasibility Study (FS Report) (USACE, 2020)** developed and analyzed various response actions to mitigate unacceptable explosive hazards due to MEC.

This project falls under the Military Munitions Response Program (**MMRP**) of the Defense Environmental Restoration Program (**DERP**). The Department of Defense (**DoD**) established the MMRP to address **munitions constituents (MC)**, and MEC (**unexploded ordnance [UXO]**, **discarded military munitions [DMM]**, and MC in high enough concentrations to pose an explosive threat) that are located on certain properties, including FUDS. Under the DERP, the U.S. Army is the DoD's lead Agency for FUDS, and USACE executes FUDS for the Army. USACE performs response activities throughout the Fort Hancock FUDS in accordance with CERCLA and the **National Oil and Hazardous Substances Pollution**

Contingency Plan (NCP), 40 C.F.R. Part 300. The **New Jersey Department of Environmental Protection (NJDEP)** provides oversight of USACE's work at the Fort Hancock FUDS pursuant to CERCLA and the NCP.

USACE and the NJDEP encourage the public to participate in the discussion of remedial alternatives presented in this Proposed Plan (see Exhibit 1).

The preferred alternative may be modified, or another alternative selected, based on new information acquired during the comment period.

Words and acronyms shown in **bold font** (initial use) are defined in the Acronyms List and/or the Glossary of Terms presented in Appendix A.

EXHIBIT 1

PUBLIC COMMENT PERIOD

July 8 through August 13, 2021

PUBLIC MEETING/OPEN HOUSE

To be Held the Evening of
July 29, 2021, 6-8 pm

USACE invites questions and comments on this Proposed Plan during the public comment period. These can be submitted in writing or via email to:

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**This Proposed Plan is also available at the
INFORMATION REPOSITORY:**

Eastern Branch Monmouth County Library
1001 Route 35
Shrewsbury, NJ 07702-4398
(866) 941-8188 (toll free)
<http://www.monmouthcountylib.org/>

1.0 INTRODUCTION

USACE, in coordination with the NJDEP, is proposing preferred alternatives to mitigate unacceptable explosive hazards due to MEC that may remain within the Fort Hancock FUDS.

This Proposed Plan includes:

- Overview and Introduction
- Site background information (Section 2.0)
- Site Characteristics (Section 3.0)
- Scope and role of the remedial action (Section 4.0)
- Summary of site risks (Section 5.0)
- Remedial Action Objectives (RAOs) (Section 6.0)
- Summary of alternatives analyzed (Section 7.0)
- Evaluation of the alternatives (Section 8.0)
- Selection of the preferred alternatives (Section 9.0)
- Opportunities for community participation (Section 10.0)

This Proposed Plan summarizes information that can be found in greater detail in the RI and FS Reports, as well as other documents available to the public in the designated **Information Repository** file (see Exhibit 1), as well as the New York District website at:

<https://nan.usace.afpims.mil/Missions/Environmental/Environmental-Remediation/Formerly-Used-Defense-Sites/Fort-Hancock/>

USACE will finalize the preferred alternative selection for the Fort Hancock FUDS in a **Decision Document (DD)** after evaluating comments received from the public on this Proposed Plan and in coordination with NJDEP. A “Responsiveness Summary” will be included in the DD, providing a response to all public comments received. The CERCLA sequence of events for the Fort Hancock FUDS is summarized in Exhibit 2.



2.0 SITE BACKGROUND

2.1 Site Location

Fort Hancock is located on the Sandy Hook peninsula in Monmouth County, New Jersey, in the Lower Bay of the Hudson River. Raritan Bay is north of Fort Hancock, Sandy Hook Bay borders the site on the west, and the Atlantic Ocean is east of the peninsula. The peninsula, which encompasses approximately 1,700 acres, is known as the Sandy Hook Unit of the Gateway National Recreation Area and is a National Historic Landmark. It is currently managed by the Department of the Interior's **National Park Service (NPS)** and the U.S. Coast Guard, and is used for recreational purposes year-round. An active U.S. Coast Guard Station is positioned on the northwest corner of the peninsula (approximately 68 acres). The closest city is Highlands, located on the mainland of New Jersey. Figure B-1 provides the site location (all figures are presented in Appendix B).

2.2 Site History

Over its long history, the U.S. military occupied much of the Sandy Hook Unit. From 1874 to 1918, the property was used for operation of a proving ground to test weapons and ordnance of all types manufactured in the U.S. The firing of weapons took place on the eastern side of the peninsula, from north to south, with six impact areas ranging in distance from 1,000 yards to 3.75-miles from the firing battery. Many military features still exist, including living quarters and administrative buildings (many of which are currently in use by NPS and other tenants), gun batteries, four NIKE missile silos, and a light house. In the early 1960s, the property was transferred from the U.S. Army to the State of New Jersey, which operated the Sandy Hook State Park. In 1973, the U.S. Department of Interior, NPS, took possession of the park and integrated it into the Gateway National Recreation Area.

2.3 Previous Investigations

Multiple investigations have taken place at Fort Hancock, with the primary investigation phases being the 2007 Site Inspection (SI) (USACE, 2007) and the 2014 RI (and three subsequent addenda to the RI). Review of the 2007 SI indicated that many of the **Munitions Response Site (MRS)** locations did not accurately reflect areas suspected of containing MEC. Consequently, the presence of some of the SI MRSs was considered speculative, and those locations were significantly revised during the conduct of the more detailed comprehensive 2014 RI.

The 2014 RI included geophysical and soil sampling investigations, and characterized the nature and extent of MEC, **munitions debris (MD)** and MC in six of seven land-based MRSs, and one water-based MRS. The 2014 RI Report included human health and ecological risk assessments. With regard to the nature and extent of MC, the 2014 RI Report recommended that additional soil sampling be conducted to determine the extent and source of metals contamination posed by MC found in a location known as the B003 Area. With regard to the nature and extent of MEC/MD, areas of focus were delineated based on MEC/MD densities. The 2014 RI further recommended that a portion of one land-based MRS (the Livens Discovery Area), previously excluded from investigation by NPS due to sensitive species impact concerns, be further investigated.

RI Addendum #1 was completed to further characterize the B003 area for MC; the human health and ecological risk assessments were updated and it was concluded that the nature and extent of MC contamination at the B003 Area had been characterized and that no unacceptable MC risks to human health or the environment were present. These results are documented in the *RI Addendum #1 Report* (USACE, 2016).

RI Addendum #2 was completed to further characterize the previously excluded portion of the Livens Discovery Area (MRS 06), resulting in a reduced boundary based on the findings. These results are documented in the *RI Addendum #2 Report* (USACE, 2017a).

A third RI phase was conducted in 2017 with the objective of investigating MRS 08, which was developed from acreage NPS had excluded from previous investigations based on concerns about potential impacts to plant communities. NPS ultimately concurred with a modified, species-protective investigation approach, and the field effort was completed in December 2017. The results of this investigation are documented in the *Final RI Addendum #3 Report* (USACE, 2018). RI Addendum #3 also included development of a new MRS (MRS 10, Eastern Shoreline), intended to address munitions that have historically been found on the beaches after storm events.

3.0 SITE CHARACTERISTICS

The determination of the nature and extent of contamination at the Fort Hancock FUDS is based on the findings of the RI and its Addenda. Multiple investigations have taken place at Fort Hancock and MRS footprints have evolved as successive investigations have provided new characterization information. Following MEC risk evaluations of explosive hazards for all site MRSs (presented RI Addendum #3), five MRSs were found to represent unacceptable explosive hazard conditions. Two of them were configured into smaller MRSs as shown in Figure B-1, resulting in eight MRSs representing unacceptable site conditions:

- MRS 03
- MRS 05B, 05E, 05G
- MRS 06
- MRS 08A, 08B
- MRS 10

As a means of further organizing the eight MRSs to facilitate analysis in the FS, they were categorized using **conceptual site model (CSM)** elements such as whether they represent high pedestrian traffic areas or low pedestrian traffic areas, whether they were considered to contain MEC such that a previous MEC removal was recommended, or whether they represent special situations: MRS 10 (Eastern Shoreline) represents a special situation in that even though no MEC was found during the RI, munitions washing onto the shore or being exposed via erosion during storm events, has been historically observed; MRS 05G, a dynamic shoreline area where a single MEC item was found, represents a special situation in that it was significantly altered by Storm Sandy (2012) such that more than 5 feet of the sandy terrain was removed and it is unlikely that any MEC explosive hazard remains in this area.

Three MRS Groups were developed for the eight MRSs based on the CSM scenarios shown in the table below. Each MRS group contains MRSs with attributes similar enough that the FS analysis was able to be conducted at the MRS Group level. These MRS Groups are shown in Figures B-2, B-3, and B-4.

MRS Group	CSM Scenario	MRSs Included
MRS Group 1	MEC found, high pedestrian traffic, or areas of existing munitions, or where previous MEC removal recommendations have been made	MRS 03, MRS 05B South, MRS 06
MRS Group 2	MEC found, low/no pedestrian traffic area	MRS 05B North, MRS 05E, MRS 08A and 08B
MRS Group 3	Special situations: MEC found in high pedestrian traffic, but Storm Sandy significantly altered the area, or munitions exposed via erosion has historically been observed	MRS 05G, MRS 10

Other site characteristics impact the analysis of remedial alternatives for the MRS Groups. The Sandy Hook peninsula is characterized by a wide variety of habitats including forest, wetland, dune shrubland, dune grassland, beach, and adjacent benthic habitats. The peninsula serves as a valuable migratory flyway, stopover site, breeding site, and wintering site for many bird species. Threatened, endangered, and special concern species within or near Fort Hancock are primarily associated with beach and dune habitats. The impact of these species on the analysis of remedial alternatives to mitigate unacceptable explosive hazards that may remain within the Fort Hancock FUDS, is addressed in Section 6.2.

4.0 SCOPE AND ROLE OF THE REMEDIAL ACTION

The RI Report identified unacceptable explosive hazards posed by the possible presence of MEC at the Fort Hancock FUDS. The FS addressed this issue, evaluating various remedial action alternatives to mitigate explosive hazards at the identified MRSs. The scope of the **remedial action** that addresses potential explosive hazards posed by MEC at the identified MRSs is to reduce the potential for encountering MEC at the Fort Hancock FUDS (see Section 5.0), and return these areas to a condition that eliminates unacceptable explosive hazards to workers and visitors. This will include development of education and awareness initiatives to ensure the community continues to be educated about the past history of the Fort Hancock FUDS.

USACE anticipates the proposed remedial action will be the final action for the Fort Hancock FUDS.

5.0 SUMMARY OF SITE RISKS/HAZARDS

This discussion summarizes the conclusions of the RI Report with regard to both MC risk and MEC explosive hazards that may remain within the Fort Hancock FUDS.

5.1 MC Risks

The 2014 RI Report **Human Health Risk Assessment (HHRA)** concluded that the only unacceptable MC risk to human receptors was within the B003 Area. Consequently, the RI Addendum #1 effort of 2016 included additional MC soil sampling at B003; the subsequent updated baseline risk assessment concluded that no unacceptable risk to human health was present at B003, and therefore no unacceptable risks due to MC were present at the Fort Hancock FUDS.

The potential for ecological risk was also assessed as part of the RI Report in a **Screening Level Ecological Risk Assessment (SLERA)**. The SLERA evaluated whether unacceptable risks were posed to ecological receptors, concluding they were negligible and that no action on the basis of ecological risks was warranted.

5.2 MEC Explosive Hazards

With regard to explosive hazards that may remain at the Fort Hancock FUDS, as a means of standardization across the multiple MRSs and RI efforts, RI Addendum #3 updated MEC risk evaluations for all MRSs using the December 2016 USACE **Risk Management Matrix Methodology (RMM)** (USACE, 2017b). The RMM uses four matrices to define acceptable and unacceptable risk from MEC hazards based on the likelihood of an encounter, the severity of incident, and the sensitivity of interaction based on expected land use activities. The table below summarizes the RMM results for those MRSs that were designated as having an unacceptable MEC risk; these MRSs are

considered to require remedial actions to mitigate the explosive hazards they represent.

MRS	Likelihood of Encounter	Severity of Incident	Likelihood of Detonation	Site Condition
03	Frequent	A	1	Unacceptable
05B	Occasional	B	2	Unacceptable
05E	Occasional	B	2	Unacceptable
05G	Occasional	B	2	Unacceptable
06	Occasional	B	2	Unacceptable
08A	Occasional	B	2	Unacceptable
08B	Occasional	B	2	Unacceptable
10	Likely	A	1	Unacceptable

Letter score (from A to D) applied based on assessment of the likelihood of encounter and the severity of an unintentional detonation. 'A' represents conditions most likely to result in unacceptable risk, while 'D' represents conditions most likely to result in acceptable scenarios.

Numerical score (from 1 to 3) applied based on assessment of sensitivity of the MEC items and the likelihood for energy to be imparted to the item during an encounter. '1' represents the highest likelihood of detonation, while '3' represents the lowest likelihood.

5.3 Summary of Site Risks/Hazards

Based on the results of the HHRA and SLERA, no unacceptable MC risks are present at any of the Fort Hancock FUDS MRSs.

Based on the RMM results, the following MRSs are categorized as representing acceptable site conditions with regard to explosive hazards:

- MRS 05A, MRS 05C, MRS 05D, MRS 05F, MRS 07, MRS 08C, and MRS 08D

Accordingly, No Further Action is the preferred alternative for those MRSs.

Based on the RMM results and the historical knowledge of past practices, the following

MRSs are categorized as representing unacceptable explosive hazards due to MEC potentially remaining within the Fort Hancock FUDS:

- MRS 03, MRS 05B, MRS 05E, MRS 05G, MRS 06, MRS 08A, MRS 08B, and MRS 10

For these MRSs, it is the current judgment of USACE that the preferred alternatives identified in this Proposed Plan, or one of the other alternatives considered in the detailed analysis in Section 8.0 (other than No Action), are necessary to protect public health or the environment from the actual or threatened hazards described above.

6.0 REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) describe what the proposed site cleanup is expected to accomplish, specifying the contaminants, military munitions, and media of concern, receptors and exposure pathways, and preliminary remediation goals that permit a range of treatment alternatives to be developed.

6.1 Site-Specific RAOs

For the Fort Hancock FUDS, remedial alternatives were developed for unacceptable explosive hazards posed by MEC potentially remaining within the Fort Hancock FUDS. Combining the affected media, the exposure pathways, and the project goals, the Fort Hancock FUDS RAOs are:

- To reduce the risk due to the presence of MEC on the surface or in the subsurface to a depth of 2 feet **below ground surface (bgs)** to address direct contact by park workers and recreational users, and direct contact of MEC in the subsurface to depths greater than 2 feet bgs by authorized park workers, such that an acceptable condition (as defined by the RMM) is achieved.

6.2 Applicable or Relevant and Appropriate Requirements

Applicable or Relevant and Appropriate Requirements (ARARs) are any substantive Federal or State standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate to a CERCLA site or action. The following ARARs were identified during the development of remedial alternatives in the FS.

Federal location-specific ARARs:

- Endangered Species Act [16 USC 1538(a)(1)(B) (1991, as amended)] which prohibits action that would be considered a "take" of a threatened or endangered species. Federally Threatened and Endangered Species under this Act found or observed at Fort Hancock are Piping Plovers, Roseate Terns, Leatherback Turtles, Tiger Beetles, and Seabeach Amaranth. Since these species live, feed and nest on the beach and dunes where munitions can be found, without specific provisions, remediation through removal and subsequent destruction of MEC could cause a take of the species
- Migratory Bird Treaty Act of 1918 [16 U.S.C. 703(a)] which protects bird species, their nests and their eggs from unlawful possession, transport, and harm and prohibits action that would be considered a "take" of a protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service. Species listed in the Migratory Bird Treaty Act found and observed at Fort Hancock are Piping Plovers and Roseate Terns. Since these species live, feed and nest on the beach and dunes where munitions can be found, without specific provisions, remediation through removal and subsequent destruction of MEC could cause individual members of the species

to be killed or injured. Though not the intent of the remediation, it is a recognized effect that could occur

Federal action-specific ARARs:

- Resource Conservation and Recovery Act (RCRA) [40 CFR 264.601/602/603] which establishes requirements applicable to operators of open burning/open detonation of military munitions/explosive wastes, and applies to the possible movement of munitions.

State location-specific ARARs:

- NJDEP Endangered Plant Species List Act and Non-Game Species Conservation Act [NJSA 13:1B-15.151 et seq. NJAC 7:38-5.3 for protection of endangered plant species; NJSA 23:2A-1 to 23:2A-13 et seq] which manages and protects endangered plant species and endangered, threatened and nongame wildlife populations in New Jersey. Species on this list found and observed at Fort Hancock are American Bittern, Least Terns, Osprey, Loggerhead Shrikes, Sedge Wrens, Eastern Box Turtles, Hop Sedge, and Gypsy Wort. Since these species live, feed and nest on the beach and dunes where munitions can be found, without specific provisions, remediation through removal and subsequent destruction of MEC could cause a take of the species.

Pursuant to CERCLA/NCP, compliance with ARARs is a threshold requirement that a remedial alternative must meet in order to be eligible for selection.

The application of specific ARARs to each alternative is addressed in the detailed Analysis of Alternatives discussions in 8.1, 8.2, and 8.3.

7.0 SUMMARY OF REMEDIAL ALTERNATIVES

This section presents a summary of the remedial alternatives developed to meet the RAOs for the identified explosive hazards at the Fort Hancock FUDS. As detailed in the FS, defined alternatives were evaluated against the short and long-term aspects of three broad criteria: effectiveness, implementability, and cost.

7.1 Effectiveness

This criterion was evaluated with respect to effectiveness in protecting human health and the environment, and providing reduction in toxicity, mobility, and volume. The short-term (construction and implementation period) and long-term components (effective period after the remedial action is complete) were also evaluated.

7.2 Implementability

This criterion was evaluated as a measure of both the technical and administrative feasibility of constructing, operating, and maintaining a remedial alternative. Technical feasibility is the ability to construct, operate and maintain an alternative, while administrative feasibility refers to the ability to obtain approvals from agencies, and the availability of required goods and services.

7.3 Cost

The cost of each alternative was also evaluated. Prior estimates, sound engineering judgment, and real-world costs based on previous implementation of some of the remedial alternatives on similar sites, were used to evaluate one alternative against another.

7.4 Explosive Hazards Remedial Alternatives

The FS identified and screened general categories of technologies for addressing

MEC, such as detection, removal, and disposal.

The FS review of detection process options included analog magnetometers, **Digital Geophysical Mapping (DGM)**, and **Advanced Geophysical Classification (AGC)**. The FS analysis indicated that the analog magnetometer approach (or “mag & dig”) may be the most viable MEC detection and removal technology for the Fort Hancock FUDS because it involves minimal vegetation removal and NPS has imposed cutting limitations to minimize disturbance to sensitive plant communities. However, the FS concluded that the best available geophysical technology detection process option, based on access and vegetation clearance requirements for specific site areas, would be utilized for the development of remedial alternatives.

Five remedial alternatives were identified in the FS to mitigate the potential unacceptable explosive hazards.

Explosive Hazards Alternative 1: No Further Action

This alternative would leave any MEC items potentially present, in place, without further investigation or removal. This alternative does not provide for additional investigation and does not provide for any active or passive land use controls to reduce the potential for exposure. Consequently, the FS analysis concluded that Alternative 1 failed key elements of the effectiveness and implementability criteria. However, in accordance with the NCP, this alternative must be evaluated against the threshold and balancing criteria in the detailed analysis as a baseline for comparison, and was therefore retained for further evaluation.

Explosive Hazards Alternative 2: Administrative Land Use Controls (LUCs)

This alternative would include the use of signage installed in appropriate locations to

limit access, and would provide education and awareness (pamphlets, flyers, etc.) of potential hazards suspected to be present within the MRS. These LUCs are designed to limit land or resource use by providing information that helps modify or guide human behavior at a site.

The education and awareness initiatives associated with proposed LUCs will apply to the entire Sandy Hook Gateway National Recreation Area community (to include NPS workers, tenants and Park visitors) since these receptors' activities will not be confined to specific MRS boundaries. This will ensure that potential receptors are informed about potential residual explosive safety risks that could be encountered by visitors in this high traffic National Park area.

The FS analysis concluded that while Alternative 2 is not effective in reducing the volume of MEC and does not allow for **Unlimited Use/Unrestricted Exposure (UU/UE)**, it is effective and implementable. Accordingly, the Administrative LUCs alternative was retained for the detailed analysis because it meets key elements of the effectiveness and implementability criteria.

For this alternative, USACE would develop an LUC Implementation Plan (LUCIP), which would include a delineation of enforcement and maintenance responsibilities, in coordination with NPS. This includes advising the NPS to exercise anomaly avoidance procedures for intrusive work in areas that may be developed in the future, and to perform visual inspections for uncovered munitions following storm events.

Note that as a separate requirement under CERCLA, Five Year Reviews would be conducted because MEC may remain at the MRS not allowing for UU/UE.

Explosive Hazards Alternative 3: Physical LUCs

Alternative 3 entails constructing physical LUCs, which can include fencing or paving areas to physically limit access and potential encounters with any MEC. For the Fort Hancock FUDS, this alternative would include the use of fencing installed around the MRS and notification requirements for all intrusive activities. Fencing would be constructed that meets the aesthetic requirements of the NPS while being of sufficient construction to physically prevent access to the MRS. Alternative 3 would also include education and awareness initiatives that apply to the entire Sandy Hook Gateway National Recreation Area community.

The FS analysis concluded that while Alternative 3 is not effective in reducing the volume of MEC and does not allow for UU/UE, it is effective and implementable. Accordingly, the Physical LUCs alternative was retained for the detailed analysis because it meets key elements of the effectiveness and implementability criteria. However, as it is impractical for the dynamic shoreline areas, it was screened out of the detailed analysis for MRS Group 3.

Explosive Hazards Alternative 4: MEC Removal to UU/UE

DERP requires consideration of an alternative to remediate a site to UU/UE, and Alternative 4 was developed to include complete removal and subsequent destruction of MEC such that LUCs would not be required. Achievement of UU/UE would require significant vegetation cutting for DGM operations and powered equipment to excavate to four feet bgs or greater in some areas. Where saturated or unstable soil conditions are encountered, the use of heavy equipment and elaborate shoring methods would likely be required in areas of sensitive plant communities.

The FS analysis concluded that Alternative 4 is not effective in the short term, is not technically or administratively feasible, and

is cost prohibitive. Therefore, Alternative 4 was not retained for the detailed comparative analysis.

Explosive Hazards Alternative 5: MEC Removal to 2 feet with LUCs

Alternative 5 entails conducting a MEC removal using the best available geophysical technology detection process option, based on access and vegetation clearance requirements for specific site areas, down to 2 feet bgs, and implementing an educational and notification LUC should there be a need to go deeper than that for maintenance or construction type activities.

A MEC removal to 2 feet bgs will minimize sensitive plant community impacts, and combined with educational and notification requirements to safely conduct intrusive activities to greater depths, will achieve the RAOs. Alternative 5 would also include education and awareness initiatives that apply to the entire Sandy Hook Gateway National Recreation Area community.

The FS analysis concluded that Alternative 5 meets key elements of the effectiveness and implementability criteria and it was retained for the detailed analysis.

8.0 EVALUATION OF ALTERNATIVES

The remedial alternatives retained for the detailed analysis are summarized below.

Risk or Hazard	Remedial Alternative Retained
Explosive Hazards	Alternative 1: No Action
	Alternative 2: Administrative LUCs
	Alternative 3: Physical LUCs
	Alternative 5: MEC Removal to 2 feet with LUCs

In the detailed FS analysis, each alternative was assessed against nine evaluation criteria (Exhibit 3) that have been developed by the

**EXHIBIT 3
NINE EVALUATION CRITERIA**

Threshold Criteria:

1) *Overall Protectiveness of Human Health and the Environment*- alternative shall be protective of human health and the environment.

2) *Compliance with ARARs*- alternative must meet cleanup standards, standards of control, or other requirements that pertain to the contaminants, remedial action, or the remedial location that are found in Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or a waiver must be justified.

Balancing Criteria:

3) *Long-term Effectiveness and Permanence*- considers the ability of an alternative to maintain protection of human health and the environment over time.

4) *Reduction in Toxicity, Mobility, or Volume through Treatment*- evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

5) *Short-Term Effectiveness*- considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.

6) *Implementability*- considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

7) *Cost*- includes the estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of plus or minus 50 percent.

Modifying Criteria:

8) *State/Support Agency Acceptance*- considers the acceptance of the state or support agency of the preferred alternative.

9) *Community Acceptance*- considers the acceptance of the community of the preferred alternative.

USEPA to address CERCLA requirements and technical and policy considerations important for selecting among remedial alternatives. The nine criteria are divided into three categories; threshold, balancing and modifying, and are used to evaluate the remedial alternative individually, and then against one another, in order to select a preferred alternative. This discussion summarizes the FS analysis conclusions per each MRS Group.

8.1 MRS Group 1 - Analysis of Remedial Alternatives

Threshold Criteria

Threshold criteria must be met. Under Alternative 1, no remedial action would be taken, and potential explosive hazards are not mitigated. Therefore, Alternative 1 does not result in acceptable conditions and it is not protective of public health and the environment. For Alternative 2, the RMM indicates that by using signage to help modify human behavior at the site, the frequency of use of the area and the likelihood of encountering and imparting energy to a potential MEC item are reduced, and acceptable conditions are achieved. Similarly, for Alternative 3, the use of fencing to physically limit access to the site, achieves acceptable site conditions. For Alternative 5, MEC removal to 2 feet bgs also achieves acceptable conditions. Therefore, Alternatives 2, 3, and 5 were considered protective of human health and the environment.

For Alternative 1, since no action will be taken, no ARARs will be triggered. For Alternatives 2 and 3, ARARs are related to the protection of wildlife and plant species (Endangered Species act and Migratory Bird Treaty Act). In close coordination with NPS, the installation of signs or fencing would not cause a 'take' to any protected species, and therefore all ARARs will be complied with.

The removal of any MEC under Alternative 5 would be implemented to comply with protection of wildlife and plant species ARARs through close coordination with NPS. The employment of biologists with expertise in the identified species will eliminate any take of these species. Action-specific ARARs relating to removal of MEC items will be complied with. Therefore all four alternatives comply with ARARs.

Balancing Criteria

Alternative 1 is not favorable for the long-term effectiveness criterion because potential explosive hazards are not mitigated. It is not favorable in reducing MEC at the site, or in meeting the short-term effectiveness criterion because MEC removal objectives will not be met. Alternative 1 is favorable in meeting the implementability criterion in that there are no activities proposed.

Alternatives 2 and 3 are moderately favorable in providing long-term effectiveness by informing the public of the potential explosive hazards within the area, minimizing human exposure. Both alternatives would leave any MEC items in place, and while access of receptors is reduced, it is not eliminated. Alternative 5 is favorable for long-term effectiveness because it removes all MEC to 2 feet bgs, or greater than 2 feet in construction areas.

While Alternatives 2 and 3 are not favorable in reducing the volume of MEC at the site, Alternative 5 will result in the reduction of the volume of MEC.

Alternative 2 is favorable in meeting the short-term effectiveness criterion because no significant work would be performed beyond the installation of signs. Alternative 3 is only moderately favorable for short-term effectiveness because fencing in the high pedestrian traffic areas of MRS Group 1 could be problematic. The estimated time to meet the remedial objectives would be short for both alternatives. Alternative 5 is only

moderately favorable for short-term effectiveness because there is an increased short-term hazard to workers and the public because MEC will be intrusively removed under this alternative.

Alternative 2 is favorable for implementability as it is technically feasible to install signage, produce educational materials, provide notifications of intrusive work, and the materials and services to implement this alternative are readily available. Alternative 3 is moderately favorable for implementability because while it is feasible to install fencing, the high pedestrian traffic areas may have paths/trails to fence off, and NPS may have issues with the disruptions to park schedules, or the perception of the fencing off of areas adjacent to historical tourist attractions. Alternative 5 is favorable for implementability as it is feasible to conduct MEC removals to 2 feet bgs and provide notifications of future deeper intrusive activities. The temporary disruption to park activities in high pedestrian traffic areas will be acceptable given the physical removal of MEC and the consequent lack of need for permanent obstructions, such as fencing, to park workers and visitors.

Alternative 1 has no associated costs. The cost to implement Alternative 2 is relatively low. The estimated cost for Alternative 2 is approximately \$128,000 in capital costs plus \$353,000 for 30-years of operation and maintenance (O&M) for a total of \$481,000. (Note that 30 years is used for estimation purposes because the actual length of the given activity cannot be determined and EPA guidance allows a 30 year estimate to be used for the comparison of alternatives (e.g., how long O&M of signage must be maintained). The estimated cost for Alternative 3 is approximately \$521,000 in capital costs plus \$353,000 for 30-years of O&M for a total of \$874,000.

The cost to implement Alternative 5 is moderate to high based on working in areas of high pedestrian traffic. The estimated cost for Alternative 5 is approximately \$1,851,000 in capital costs plus \$167,000 for 30-years of O&M for a total of \$2,018,000.

Modifying Criteria

With regard to State acceptance, NJDEP will consider all comments from the community and other stakeholders on the proposed action before concurrence in the Decision Document.

With regard to Community acceptance, comments from the community on the preferred Explosive Hazards Alternative for MRS Group 1 will be evaluated after the comment period for this Proposed Plan ends. Community comments will be addressed in the Decision Document.

Comparative Analysis of Remedial Alternatives

The most important evaluation is against the threshold criteria, as these must be met. With the exception of the no action alternative, all of the alternatives achieved acceptable site conditions and were considered protective of human health and the environment.

All four alternatives were compliant with ARARs.

With regard to the balancing criteria, only Alternative 5 was favorable regarding long term effectiveness due to physically removing and destroying MEC. Alternatives 2 and 3 were moderately effective in the long term, because while signage or fencing would mitigate interactions between MEC and human receptors, any MEC items would remain in place. Alternative 5 was the only alternative to physically reduce the volume of MEC.

With regard to short-term effectiveness, Alternative 2 was favorable because no significant work would be performed beyond

the installation of signs, and the community, workers, and the environment can relatively easily be protected during implementation. Alternatives 3 and 5 were moderately favorable because while both could be effective in the short term, fencing in high pedestrian traffic areas could be disruptive and there is an increased hazard to workers and the public during MEC removal.

Alternative 5 was ranked favorable and more technically and administratively feasible than Alternative 3 because disruptions to park activity during MEC removal would be temporary and would not result in permanently fencing off park visitors from areas adjacent to historical tourist attractions. While Alternative 2 was favorable for implementability, the administrative feasibility criterion was only moderately favorable in terms of ensuring that signage alone will address the concerns of the regulatory agency.

Alternative 5 had the highest costs based on the need for full geophysical teams and specially trained UXO Technicians to safely conduct the MEC removal and destruction. Alternative 3 had the next highest costs based on designing and constructing a fence around the MRS Group 1 areas. Alternative 2 was the next highest cost. Alternative 1 had no associated costs.

Table 8.1 summarizes the above analysis for MRS Group 1.

8.2 MRS Group 2 - Analysis of Remedial Alternatives

Threshold Criteria

Under Alternative 1, no remedial action would be taken, and potential explosive hazards are not mitigated. Therefore, Alternative 1 does not result in acceptable conditions and it is not protective of public health and the environment. For Alternative 2, the RMM indicates that by using signage

to help modify human behavior at the site, the frequency of use of the area and the likelihood of encountering and imparting energy to a potential MEC item are reduced, and acceptable conditions are achieved. Similarly, for Alternative 3, the use of fencing to physically limit access to the site, achieves acceptable site conditions. For Alternative 5, MEC removal to 2 feet bgs also achieves acceptable conditions. Alternatives 2, 3, and 5 were considered protective of human health and the environment.

For Alternative 1, no ARARs will be triggered. For Alternatives 2 and 3, ARARs are related to the protection of wildlife and plant species (Endangered Species act and Migratory Bird Treaty Act). In close coordination with NPS, it is unlikely that installation of signs or fencing would cause a take to any protected species, and therefore all ARARs will be complied with. The removal of any MEC under Alternative 5 would be implemented to comply with protection of wildlife and plant species ARARs through close coordination with NPS. The employment of biologists with expertise in the identified species will eliminate any take of these species. Action-specific ARARs relating to removal of MEC items will be complied with. Therefore all four alternatives comply with ARARs.

Balancing Criteria

Alternative 1 is not favorable for long-term effectiveness because potential explosive hazards are not mitigated. It is not favorable in reducing MEC, or in meeting the short-term effectiveness criterion because MEC removal objectives will not be met.

Alternatives 2 and 3 are moderately favorable in providing long-term effectiveness by informing the public of the potential explosive hazards within the area, minimizing human exposure. Both alternatives would leave MEC items in place,

and while access of receptors is reduced, it is not eliminated. Alternative 5 is favorable for long-term effectiveness because it removes all MEC to 2 feet bgs, or greater than 2 feet in construction areas. While Alternatives 2 and 3 are not favorable in reducing the volume of MEC at the site, Alternative 5 will result in the reduction of the volume of MEC.

Alternative 2 is favorable for short-term effectiveness because no significant work would be performed beyond the installation of signs. Alternative 3 is also favorable for short-term effectiveness because the community, workers, and the environment can relatively easily be protected during fencing construction, and fencing in these low/no pedestrian traffic areas would likely not be problematic (as opposed to the high pedestrian traffic areas of MRS Group 1). The estimated time to meet the remedial objectives would be short for both alternatives. Alternative 5 is moderately favorable for short-term effectiveness because there is an increased short-term hazard to workers and the public during MEC removal.

Alternative 2 is favorable for implementability. It is technically feasible and the materials and services to implement this alternative are readily available. Alternative 3 is moderately favorable for implementability because while it is feasible to install fencing, there exist paths/trails to fence off even in these low/no pedestrian traffic areas. NPS may have issues with the disruptions to park schedules, and the perception of permanently fencing off nature areas along walking paths may not be fully acceptable. Alternative 5 is favorable for implementability as it is feasible to conduct the MEC removals. However, it will involve temporary disruptions to park activities that may be slightly less administratively acceptable in these low/no pedestrian traffic areas; that is, while active MEC removal may be deemed more understandable in high

traffic areas, it may be considered more disruptive than necessary in the low/no pedestrian traffic areas of MRS Group 2.

Alternative 1 has no associated costs. The cost to implement Alternative 2 is relatively low. The estimated cost for Alternative 2 is approximately \$133,000 in capital costs plus \$353,000 for 30-years of O&M for a total of \$486,000. The estimated cost for Alternative 3 is approximately \$1,326,000 in capital costs plus \$353,000 for 30-years of O&M for a total of \$1,680,000.

The cost to implement Alternative 5 is significant based on the acreage of MRS Group 2 and accessing some of the high vegetation, low/no pedestrian traffic areas. The total estimated cost for Alternative 5 is approximately \$3,379,000 in capital costs plus \$167,000 for 30-years of O&M for a total of \$3,546,000.

Modifying Criteria

With regard to State acceptance, NJDEP will consider all comments from the community and other stakeholders on the proposed action before concurrence in the Decision Document.

With regard to Community acceptance, comments from the community on the preferred Explosive Hazards Alternative for MRS Group 2 will be evaluated after the comment period for this Proposed Plan ends. Community comments will be addressed in the Decision Document.

Comparative Analysis of Remedial Alternatives

The most important evaluation is against the threshold criteria, as these must be met. With the exception of the no action alternative, all of the alternatives achieved acceptable site conditions and were considered protective of human health and the environment. All four alternatives were compliant with ARARs.

With regard to the balancing criteria, only Alternative 5 was favorable regarding long term effectiveness due to physically removing and destroying MEC. Alternatives 2 and 3 were moderately effective in the long term, because while signage or fencing would mitigate interactions between MEC and human receptors, any MEC items would remain in place. Alternative 5 was the only alternative to physically reduce the volume of MEC.

With regard to short-term effectiveness, Alternative 2 was considered favorable because the community, workers, and the environment can relatively easily be protected during implementation. Alternative 3 was also favorable in the short term because the disruptions of fencing in these low/no pedestrian traffic areas would not be problematic. Alternative 5 was moderately favorable because there is an increased hazard to workers and the public during MEC removal.

Alternative 2 and Alternative 5 were ranked as favorable in meeting the implementability criterion, while Alternative 3 was ranked moderately favorable overall in meeting the implementability criterion.

Alternative 2 had the lowest costs. Alternative 5 had the highest costs based on the need for full geophysical teams and specially trained UXO Technicians to safely conduct the MEC removals, and Alternative 3 had the next highest costs based on designing and constructing a fence around the MRS Group 2 areas. Alternative 1 had no associated costs.

Table 8.2 summarizes the above analysis for MRS Group 2.

8.3 MRS Group 3 - Analysis of Remedial Alternatives

Note that as physical LUCs (fencing) is impractical for the dynamic shoreline areas,

it was screened out of the detailed analysis for MRS Group 3.

Threshold Criteria

Under Alternative 1, no remedial action would be taken, and potential explosive hazards are not mitigated. Therefore, Alternative 1 does not result in acceptable conditions and it is not protective of public health and the environment. For Alternative 2, the RMM indicates that by using signage to help modify human behavior at the site, the frequency of use of the area and the likelihood of encountering and imparting energy to a potential MEC item are reduced, and acceptable conditions are achieved. For Alternative 5, MEC removal to 2 feet bgs also achieves acceptable conditions. Alternatives 2 and 5 were considered protective of human health and the environment.

For Alternative 1, no ARARs will be triggered. For Alternative 2, ARARs are related to the protection of wildlife and plant species (Endangered Species act and Migratory Bird Treaty Act). In close coordination with NPS, the installation of signs would not cause a take to any protected species, and therefore all ARARs will be complied with. The removal of any MEC under Alternative 5 would be implemented to comply with protection of wildlife and plant species ARARs through close coordination with NPS. The employment of biologists with expertise in the identified species will eliminate any take of these species. Action-specific ARARs relating to removal of MEC items will be complied with. Therefore all three alternatives comply with ARARs.

Balancing Criteria

Alternative 1 is not favorable for long-term effectiveness because potential explosive hazards are not mitigated. It is not favorable in reducing MEC, or in meeting the short-term effectiveness criterion because MEC removal objectives will not be met.

Alternative 2 is moderately favorable in providing long-term effectiveness by informing the public of the potential explosive hazards within the area, minimizing human exposure. This alternative would leave MEC items in place, and while access of receptors is reduced, it is not eliminated. Alternative 5 is moderately favorable for long-term effectiveness in addressing the potential explosive hazards because it removes all MEC to 2 feet bgs, or greater than 2 feet through notification to conduct such activity safely. However, this alternative does not mitigate the potential for MEC to continue to wash up onshore or be exposed via erosion after MEC removals were completed.

While Alternative 2 is not favorable in reducing the volume of MEC at the site, Alternative 5 will result in the partial reduction of the volume of MEC for the MRS Group 3 areas as MEC would potentially continue to wash up onshore or be exposed via erosion in these dynamic shoreline areas.

While Alternative 2 is favorable in meeting the short-term effectiveness criterion because no significant work would be performed beyond the installation of signs, Alternative 5 is moderately favorable because there is an increased short-term hazard to workers and the public during MEC removal.

Alternative 2 is favorable for implementability as it is technically feasible to install signage, and the materials and services to implement this alternative are readily available. Alternative 5 is moderately favorable for implementability. The materials and services are readily available. However, while it is technically and administratively feasible to conduct the MEC removals, the disruption to park activities in these high pedestrian traffic areas and the post-removal potential for MEC to continue to wash up onshore or be exposed via erosion, makes this alternative only moderately feasible.

Alternative 1 has no associated costs. The cost to implement Alternative 2 is relatively low. The estimated cost for Alternative 2 is approximately \$151,000 in capital costs plus \$353,000 for 30-years of O&M for a total of \$504,000.

The cost to implement Alternative 5 is significant based on the acreage of the MRS Group 3 shoreline portions, and completing removal actions in high pedestrian traffic areas. Costs include geophysical teams and specially trained UXO Technicians to safely conduct the MEC removal. The total estimated cost for Alternative 5 is approximately \$4,735,000 in capital costs plus \$167,000 for 30-years of O&M for a total of \$4,902,000.

Modifying Criteria

With regard to State acceptance, NJDEP will consider all comments from the community and other stakeholders on the proposed action before concurrence in the Decision Document.

With regard to Community acceptance, comments from the community on the preferred Explosive Hazards Alternative for MRS Group 3 will be evaluated after the comment period for this Proposed Plan ends. Community comments will be addressed in the Decision Document.

Comparative Analysis of Remedial Alternatives

The most important evaluation is against the threshold criteria, as these must be met. With the exception of the no action alternative, all of the alternatives achieved acceptable site conditions and were considered protective of human health and the environment. All three alternatives were compliant with ARARs.

With regard to the balancing criteria, Alternative 2 was moderately effective in the long term, because while signage would mitigate interactions between MEC and human receptors, any MEC items would

remain in place. Alternative 5 was also moderately effective in the long term, because while MEC is removed, it does not mitigate the potential for MEC to continue to wash up onshore or be exposed via erosion after MEC removals were completed.

With regard to short-term effectiveness, Alternative 2 was considered favorable because the community, workers, and the environment can easily be protected during implementation. Alternative 5 was moderately favorable because there is an increased hazard to workers and the public during MEC removal.

Alternative 2 was ranked as favorable in meeting the implementability criterion, while Alternative 5 was ranked moderately favorable overall for implementability because of the disruption to park activities in these high pedestrian traffic areas and the potential for MEC to continue to wash up onshore or be exposed via erosion following removal.

Alternative 2 had the lowest costs. Alternative 5 had significantly higher costs based on the need for full geophysical teams and specially trained UXO Technicians to safely conduct the MEC removals. Alternative 1 had no associated costs.

Table 8.3 summarizes the above analysis for MRS Group 3.

Table 8.1: Summary of Detailed Analysis of Explosive Hazards Remedial Alternatives – MRS Group 1

	Screening Criterion	Alternative 1: No Further Action	Alternative 2: Administrative Land Use Controls	Alternative 3: Physical Land Use Controls	Alternative 5: MEC Removal to 2 feet with LUCs
Threshold	Overall Protection of Human Health and Environment ¹	○	●	●	●
	Compliance with ARARs	●	●	●	●
Balancing	Long-Term Effectiveness	○	◐	◐	●
	Reduction of Toxicity, Mobility and Volume Through Treatment ²	○	○	○	●
	Short-Term Effectiveness	○	●	◐	◐
	Implementability:				
	Technical Feasibility	●	●	◐	●
	Administrative Feasibility	●	◐	◐	●
	Availability of Materials and Services	●	●	●	●
	Cost ³	\$0.00	\$481,000	\$874,000	\$2,018,000
Modifying ⁴	State Acceptance	TBD	TBD	TBD	TBD
	Community Acceptance	TBD	TBD	TBD	TBD

● Favorable ('YES' for threshold criteria)

◐ Moderately Favorable

○ Not Favorable ('NO' for threshold criteria)

¹ – Favorable for this criterion requires achieving 'Acceptable' site conditions using the RMM (see Appendix B of the FS Report).

² – For MEC, this criterion addresses reduction of volume of MEC.

³ - Costs were developed using RACER. O&M for a 30-year duration is included, as applicable, for an alternative.

⁴ – The Modifying criteria of state and community acceptance are 'To Be Determined (TBD)' following review and input from these parties.

Table 8.2: Summary of Detailed Analysis of Explosive Hazards Remedial Alternatives – MRS Group 2

	Screening Criterion	Alternative 1: No Further Action	Alternative 2: Administrative Land Use Controls	Alternative 3: Physical Land Use Controls	Alternative 5: MEC Removal to 2 feet with LUCs
Threshold	Overall Protection of Human Health and Environment ^{\1}	○	●	●	●
	Compliance with ARARs	●	●	●	●
Balancing	Long-Term Effectiveness	○	◐	◐	●
	Reduction of Toxicity, Mobility and Volume Through Treatment ^{\2}	○	○	○	●
	Short-Term Effectiveness	○	●	●	◐
	Implementability:				
	Technical Feasibility	●	●	◐	●
	Administrative Feasibility	●	◐	◐	◐
	Availability of Materials and Services	●	●	●	●
	Cost ^{\3}	\$0.00	\$486,000	\$1,680,000	\$3,546,000
Modifying ^{\4}	State Acceptance	TBD	TBD	TBD	TBD
	Community Acceptance	TBD	TBD	TBD	TBD

● Favorable ('YES' for threshold criteria)

◐ Moderately Favorable

○ Not Favorable ('NO' for threshold criteria)

\1 – Favorable for this criterion requires achieving 'Acceptable' site conditions using the RMM (see Appendix B of the FS Report).

\2 – For MEC, this criterion addresses reduction of volume of MEC.

\3 - Costs were developed using RACER. O&M for a 30-year duration is included, as applicable, for an alternative.

\4 – The Modifying criteria of state and community acceptance are 'To Be Determined (TBD)' following review and input from these parties.

Table 8.3: Summary of Detailed Analysis of Explosive Hazards Remedial Alternatives – MRS Group 3

	Screening Criterion	Alternative 1: No Further Action	Alternative 2: Administrative Land Use Controls	Alternative 5: MEC Removal to 2 feet with LUCs
Threshold	Overall Protection of Human Health and Environment ¹	○	●	●
	Compliance with ARARs	●	●	●
Balancing	Long-Term Effectiveness	○	◐	◐
	Reduction of Toxicity, Mobility and Volume Through Treatment ²	○	○	◐
	Short-Term Effectiveness	○	●	◐
	Implementability:			
	Technical Feasibility	●	●	◐
	Administrative Feasibility	●	◐	◐
	Availability of Materials and Services	●	●	●
	Cost ³	\$0.00	\$504,000	\$4,902,000
Modifying ⁴	State Acceptance	TBD	TBD	TBD
	Community Acceptance	TBD	TBD	TBD

● Favorable ('YES' for threshold criteria)

◐ Moderately Favorable

○ Not Favorable ('NO' for threshold criteria)

¹ – Favorable for this criterion requires achieving 'Acceptable' site conditions using the RMM (see Appendix B of the FS Report).

² – For MEC, this criterion addresses reduction of volume of MEC.

³ – Costs were developed using RACER. O&M for a 30-year duration is included, as applicable, for an alternative.

⁴ – The Modifying criteria of state and community acceptance are 'To Be Determined (TBD)' following review and input from these parties.

9.0 PREFERRED ALTERNATIVE

9.1 MRS Group 1 - Preferred Remedial Alternative

Alternative 5: MEC Removal to 2 feet with LUCs, is the recommended preferred remedial alternative to achieve the explosive hazards RAOs for MRS Group 1.

Alternative 5, MEC Removal to 2 feet with LUCs, was ranked favorable for more CERCLA criteria than were the other alternatives. It is protective of human health and the environment, is compliant with ARARs in that it would be implemented to comply with protection of wildlife and plant species ARARs through close coordination with NPS. Action-specific ARARs relating to removal of MEC items will be complied with. It is effective in the long term, and is the only alternative to reduce the volume of MEC. It is moderately favorable relative to short term effectiveness, and favorable for implementability. While Alternative 5 is the most costly alternative, it is also the only one that will physically reduce the volume of MEC in these high pedestrian traffic areas.

9.2 MRS Group 2 - Preferred Remedial Alternative

Alternative 2: Administrative LUCs, is the recommended preferred remedial alternative to achieve the explosive hazards RAOs for MRS Group 2.

Alternative 2, Administrative LUCs, is protective of human health and the environment, is compliant with ARARs (related to the protection of wildlife and plant species) in that close coordination with NPS regarding the installation of signs would not cause a take to any protected species. It is effective in the short term, is favorable overall for implementability, and is the lowest cost alternative. While this alternative

does not remove MEC, it sufficiently alters behavior to limit interactions, and state and community acceptance is likely achievable given that these are low/no pedestrian traffic areas. Alternative 5 is favorable for as many CERCLA criteria as Alternative 2, but it costs more than seven times as much, and there may be some consideration that active MEC removal and destruction is more disruptive to the park than necessary for these low/no pedestrian traffic areas.

9.3 MRS Group 3 - Preferred Remedial Alternative

Alternative 2: Administrative LUCs, is the recommended preferred remedial alternative to achieve the explosive hazards RAOs for MRS Group 3.

Alternative 2, Administrative LUCs, was ranked favorable for more CERCLA criteria than were the other alternatives. It is protective of human health and the environment, is compliant with ARARs (related to the protection of wildlife and plant species) in that close coordination with NPS regarding the installation of signs would not cause a take to any protected species. It is effective in the short term, and is favorable overall for implementability. While it does not remove MEC (or mitigate the potential for MEC to continue to wash up onshore or be exposed via erosion), it educates the public concerning the potential hazards suspected to be present, and is relatively low cost. While Alternative 5 was also moderately effective in the long term, it was only moderately favorable overall for implementability because of the potential for MEC to continue to wash up onshore or be exposed via erosion following removal, and it costs almost ten times more than Alternative 2.

10.0 COMMUNITY PARTICIPATION

Since 2009, the project team has supported briefings and public meetings to discuss significant milestones and issues of concern at the Fort Hancock FUDS. These public meetings have been advertised in local papers.

The Administrative Record for the site and a local Information Repository at the Eastern Branch Monmouth County Library provide easy access to historical and current documents on the project progress. The USACE New York District posts site information and reports on its website: <https://nan.usace.afpims.mil/Missions/Environmental/Environmental-Remediation/Formerly-Used-Defense-Sites/Fort-Hancock/>

Through these outreach mechanisms USACE encourages public input to ensure that the remedy selected for the Fort Hancock FUDS meets the needs of the impacted community, in addition to being an effective technical solution to the problems.

USACE specifically invites comments from the community and other interested parties, not only on the preferred alternatives but also on the acceptability of all the alternatives identified in the FS Report.

Public comments that support an alternative other than the USACE preferred alternative, or that suggest improvements to the USACE preferred alternative, will be given appropriate consideration in the final

selection process; the USACE preferred alternative may be modified based on any new information acquired during the public comment period. In coordination with NJDEP, the final selection of remedial action for the Fort Hancock FUDS will be included in a Decision Document after evaluating comments received from the public on this Proposed Plan.

The dates for the public comment period, the location, date, and time of the public meeting, and the variety of ways to access copies of the Proposed Plan and supporting documents are provided in Exhibit 1 on the front page of this document.

At the public meeting, the conclusions of the RI and FS Reports will be discussed along with a summary of the preferred alternative. At this virtual meeting, attendees may officially submit or provide oral comments. Written comments may also be mailed to the USACE address in Exhibit 1 throughout the public comment period. Comments will be summarized and responses provided in the responsiveness summary section of the Decision Document.

The Decision Document will be USACE's official record of the final remedy selection for the Fort Hancock FUDS that will be submitted for approval by the Department of the Army.

11.0 REFERENCES

- DoD, 2012. *Defense Environmental Restoration Program (DERP) Management*, NUMBER 4715.20. March.
- USACE, 2007. *Site Inspection Report for Fort Hancock*. August.
- USACE, 2014. *Final Remedial Investigation/Feasibility Study*, Fort Hancock Formerly Used Defense Site, Monmouth County, New Jersey. January.
- USACE, 2016. *Final Remedial Investigation Addendum #1 Report*, Fort Hancock Formerly Used Defense Site, Monmouth County, New Jersey. September.
- USACE, 2017a. *Final Remedial Investigation Addendum #2 Report*, Fort Hancock Formerly Used Defense Site, Monmouth County, New Jersey. June.
- USACE, 2017b. *Decision Logic to Assess Risks Associated with Explosive Hazards and to Develop Remedial Action Objectives for Munitions Response Sites*. December.
- USACE, 2018. *Final Remedial Investigation Addendum #3 Report*, Fort Hancock Formerly Used Defense Site, Monmouth County, New Jersey. November.
- USACE, 2020. *Final Feasibility Study*, Fort Hancock Formerly Used Defense Site, Monmouth County, New Jersey. April.

APPENDIX A – ACRONYMS/GLOSSARY OF TERMS

ACRONYMS

AGC	Advanced Geophysical Classification
ARARs	Applicable or Relevant and Appropriate Requirements
Bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	Conceptual Site Model
DD	Decision Document
DERP	Defense Environmental Restoration Program
DGM	Digital Geophysical Mapping
DMM	Discarded Military Munitions
DoD	Department of Defense
FS	Feasibility Study
FUDS	Formerly Used Defense Site
HHRA	Human Health Risk Assessment
LUCs	Land Use Controls
MC	Munitions Constituents
MD	Munitions Debris
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
MRS	Munitions Response Site
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NJDEP	New Jersey Department of Environmental Protection
NPS	National Park Service
O&M	Operation and Maintenance
RAO	Remedial Action Objective
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
SLERA	Screening Level Ecological Risk Assessment
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
UU/UE	Unlimited Use/Unrestricted Exposure
UXO	Unexploded Ordnance

GLOSSARY OF TERMS

Administrative Record - A collection of documents containing all the information and reports generated during the entire phase of investigation and cleanup at a site, which are used to make a decision on the selection of a response action under CERCLA. This file is to be available for public review and a copy maintained near the site at the Tenley-Friendship Library.

Applicable or Relevant and Appropriate Requirements (ARARs) - Applicable requirements are cleanup standards, standards of control, and other substantive environmental protection

requirements promulgated under Federal or state environmental law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location or other circumstance found at a CERCLA site. Relevant and appropriate requirements are cleanup standards that, while not “applicable”, address situations sufficiently similar to those encountered at a CERCLA site that their use is well suited to the particular site. Pursuant to the NCP, the term “State” includes the District of Columbia (DC). 40 C.F.R. § 300.5.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - A Federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act that concerns hazardous substances.

Decision Document (DD) - The Department of Defense has adopted the term Decision Document for the documentation of remedial action decisions at non-National Priorities List FUDS Properties. It is a public document that describes the cleanup action or remedy selected for a site, the basis for the choice of that remedy, and responds to public comments. The DD is based on information and technical analysis generated during the RI/FS.

Discarded Military Munitions (DMM) - Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include unexploded ordnance, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of, consistent with applicable environmental laws and regulations. (10 U.S.C. 2710(e)(2))

Feasibility Study (FS) - The FS serves as the mechanism for the development, screening, and detailed evaluation of alternative remedial actions to address issues identified in the RI.

Formerly Used Defense Site (FUDS) - A Formerly Used Defense Site Project is a unique name given to an area of an eligible FUDS property containing one or more releases or threatened releases of a similar response nature, treated as a discrete entity or consolidated grouping for response purposes. This may include buildings, structures, impoundments, landfills, storage containers, or other areas where hazardous substance are or have come to be located, including FUDS eligible unsafe buildings or debris. Projects are categorized by actions described under installation restoration (hazardous, toxic, and radioactive waste [HTRW]), military munitions response program, or building demolition/debris removal.

Land Use Controls (LUCs) - Physical, legal, or administrative mechanisms that restrict the use of, or limit access to, real property to prevent or reduce risks to human health and the environment.

Munitions Constituents (MC) - Any materials originating from UXO, DMM, or other military munitions, including explosive and nonexplosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions. (10 U.S.C. 2710(e)(3))

Munitions Debris (MD) - Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization or disposal.

Munitions and Explosives of Concern (MEC) - This term distinguishes specific categories of military munitions that may pose unique explosive safety risks, including:

- UXO,
- DMM, or
- MC present in high enough concentrations to pose an explosive hazard.

Munitions Response Site (MRS) - A discrete location within an MRA that is known to require a munitions response (DoD, 2012).

National Oil and Hazardous Substance Pollution Contingency Plan (NCP) - Revised in 1990, the NCP provides the regulatory framework for responses under CERCLA. The NCP designates the Department of Defense as the removal response authority for ordnance and explosives hazards.

Proposed Plan - The purpose of the proposed plan is to supplement the RI/FS and provide the public with a reasonable opportunity to comment on the preferred alternative for remedial action, as well as alternative plans under consideration, and to participate in the selection of remedial action at a site.

Remedial Action - Those actions consistent with permanent remedy taken instead of, or in addition to, removal actions, in the event of a release or threatened release of a hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health, welfare or the environment.

Remedial Action Objective (RAO) - Objectives established for remedial actions to guide the development of alternatives and focus the comparison of acceptable remedial action alternatives, if warranted. RAOs also assist in clarifying the goal of minimizing risk and achieving an acceptable level of protection for human health and the environment.

Remedial Investigation (RI) - A study of a site that provides information supporting the evaluation for the need for a remedy and/or selection of a remedy for a site where hazardous substances have been disposed of. The RI identifies the nature and extent of contamination at the site.

Removal Action - The cleanup or removal of released hazardous substances from the environment. Such actions may be taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release.

Unexploded Ordnance (UXO) - Military munitions that (A) have been primed, fuzed, armed, or otherwise prepared for action; (B) have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (C) remain unexploded whether by malfunction, design, or any other cause. (10 U.S.C. 101(e)(5)(A) through (C)).

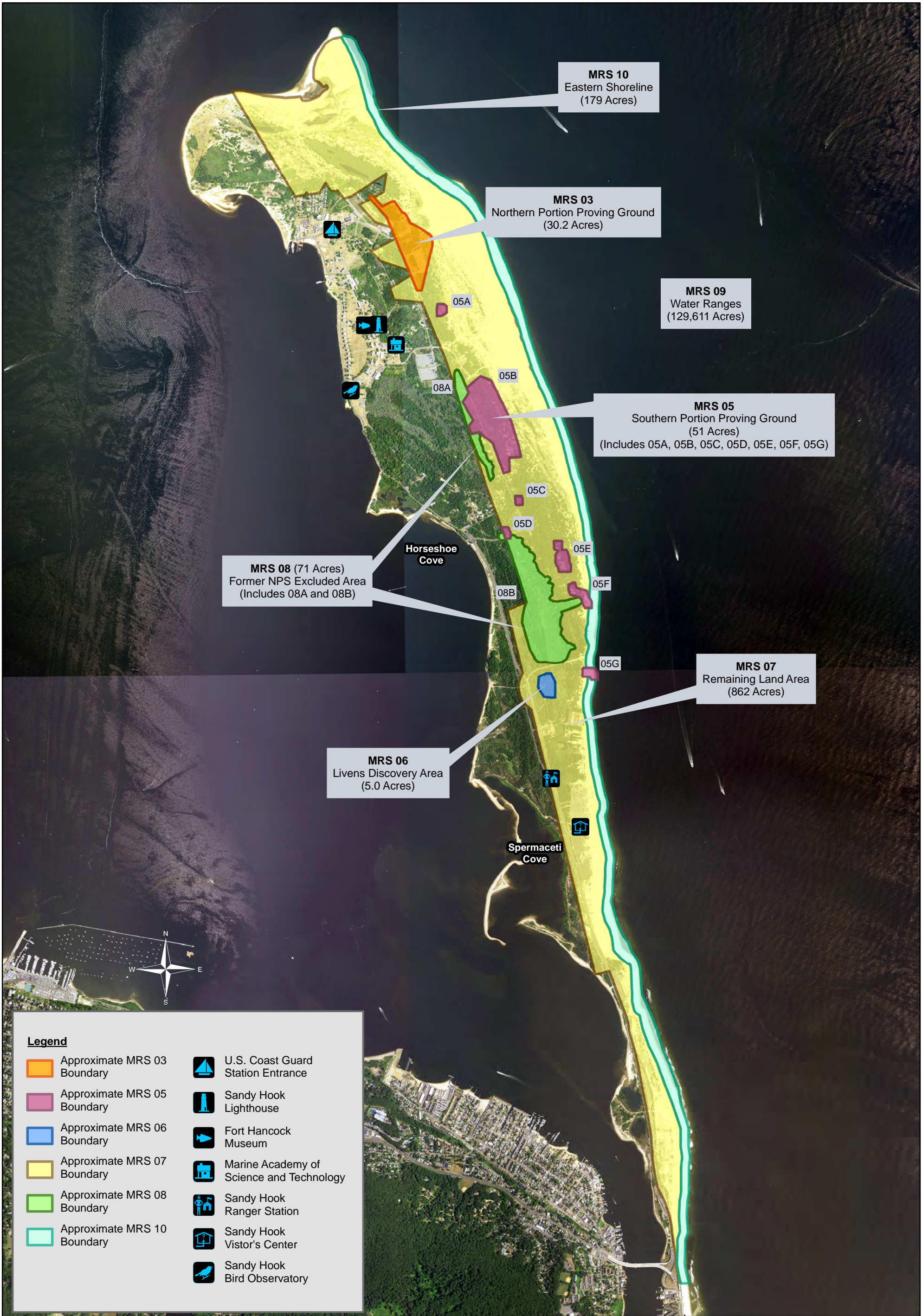
APPENDIX B – LIST OF FIGURES

Figure B-1: Fort Hancock FUDS MRS Locations

Figure B-2: MRS Group 1

Figure B-3: MRS Group 2

Figure B-4: MRS Group 3





Feasibility Study
Fort Hancock Formerly Used Defense Site,
Monmouth County, New Jersey
Contract No.: W912QR-12-D-0011



Figure B-2
MRS Group 1

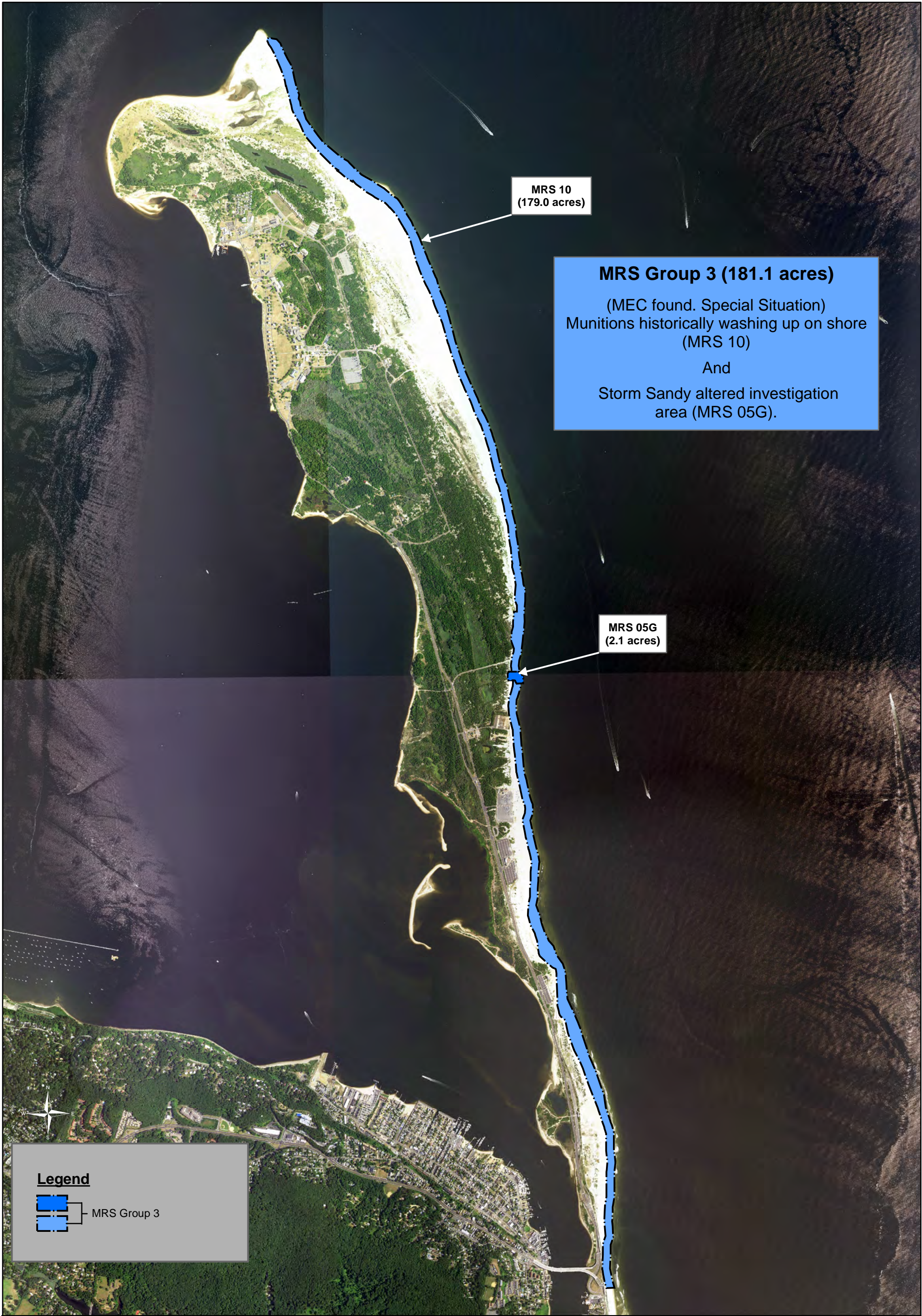
Date: September 2020

Data Sources: 2014 Imagery Provided by NOAA


0 500 1,000
Feet



  <p>Date: September 2020</p>	<p>Feasibility Study Fort Hancock Formerly Used Defense Site, Monmouth County, New Jersey Contract No.: W912QR-12-D-0011</p> <p>Data Sources: 2014 Imagery Provided by NOAA</p>	<p>Figure B-3 MRS Group 2</p> <p>0 500 1,000 Feet</p>
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Legend

 MRS Group 3




Feasibility Study
Fort Hancock Formerly Used Defense Site,
Monmouth County, New Jersey
Contract No.: W912QR-12-D-0011

Date: October 2020

Data Sources: ESRI Online

**Figure B-4
MRS Group 3**

0 1,125 2,250
 Feet