

FINAL RECORD OF DECISION

**FUDS Property No.
D01MA0033
Projects 04 and 06
CP Wellfleet**

Wellfleet, Massachusetts

Prepared for:

**U.S. Army Corps of Engineers
Baltimore & New England Districts**



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ACRONYMS and ABBREVIATIONS

3 Rs	Recognize, Retreat, Report
AGC	Advanced Geophysical Classification
AOI	Area of Interest
ARARs	Applicable or Relevant and Appropriate Requirements
ASR	Archive Search Report
Bgs	below ground surface
CCNS	Cape Cod National Seashore
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	Conceptual Site Model
DERP	Defense Environmental Restoration Program
DGM	Digital Geophysical Mapping
DoD	Department of Defense
EE/CA	Engineering Evaluation/Cost Analysis
FS	Feasibility Study
FUDS	Formerly Used Defense Site
FUDSMIS	Formerly Used Defense Sites Management Information System
LUCs	Land Use Controls
LUCIP	Land Use Control Implementation Plan
MassDEP	Massachusetts Department of Environmental Protection
MC	Munitions Constituents
MD	Munitions Debris
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
MRSPP	Munitions Response Site Prioritization Protocol
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NHESP	Natural Heritage & Endangered Species Program
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
O&M	Operation and Maintenance
ORNL	Oak Ridge National Laboratory
RACER	Remedial Action Cost Engineering Requirements
RAO	Remedial Action Objective
RI	Remedial Investigation
RMM	Risk Management Methodology
ROD	Record of Decision
SPAs	Single Point Anomalies
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UU/UE	Unlimited Use/Unrestricted Exposure
UXO	Unexploded Ordnance

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1.0 THE DECLARATION

1.1 Site Name and Location

The subject of this Record of Decision is the CP Wellfleet Formerly Used Defense Site (FUDS) referred to herein as the Former Camp Wellfleet FUDS. The Former Camp Wellfleet FUDS is in the Town of Wellfleet, Barnstable County, Massachusetts, on the Cape Cod peninsula. The Former Camp Wellfleet FUDS originally consisted of a total of 1,738 acres - of which approximately 1,688 acres are located in the Cape Cod National Seashore (CCNS) and 49.2 acres in the Town of Wellfleet. The majority of the Former Camp Wellfleet FUDS is currently owned by the National Park Service (NPS). Figure A-1 presents the Site (all figures are contained in Appendix A).

The Former Camp Wellfleet FUDS was previously used by the U.S. Army and U.S. Navy for training purposes. The property was leased beginning in 1942 for an anti-aircraft artillery training base, with an artillery firing line located along the beach cliff, and was used as such by the U.S. Army until June 1944, when it temporarily closed. From January 1945 through the end of World War II, the U.S. Navy used the base as a mobile radar training school supporting Navy night fighter training based in Quonset Point, Rhode Island, and for Dove missile training. From 1945 to 1961 the Camp also was used for training by National Guard troops and Active Army Reserve anti-aircraft artillery training units.

1.2 Statement of Basis and Purpose

This Record of Decision presents the selected remedial actions for the Former Camp Wellfleet FUDS Military Munitions Response Program (MMRP) Munitions Response Site (MRS)-04 and MRS-06 (formerly Areas of Interest [AOIs] 01, 02, 03, 04, and 06). The United States (U.S.) Army is the lead federal agency under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) for the FUDS Program, including for the Former Camp Wellfleet FUDS. This project falls under the MMRP of the Defense Environmental Restoration Program (DERP). The U.S. Army Corps of Engineers (USACE) executes the FUDS Program on behalf of the Army, including drafting Record of Decisions and implementing selected remedial actions. Since the total cost of selected remedy is less than \$5,000,000, the signature authority for the Former Camp Wellfleet FUDS Record of Decision is the Programs Director of the North Atlantic Division of the USACE.

The AOIs were developed primarily based on areas identified in the Engineering Evaluation/Cost Analysis (EE/CA) investigation (USACE, 2000), with additional areas defined in the Formerly Used Defense Sites Management Information System (FUDSMIS) as the Munitions Response Area by USACE in 2013, prior to the start of the RI. The RI investigations were based on Areas of Interest (AOIs). The EE/CA areas and FUDSMIS areas were modified, combined, or discarded based on results of the EE/CA and subsequent investigations as described in the RI to define the AOI boundaries. The MRSs were developed and delineated based on the RI findings (USACE, 2023). See Section 2.3.

Based on this Site history and multiple investigations, it was determined that explosive risks may remain in the surface and subsurface soil or within the off-shore waters of the Former Camp Wellfleet FUDS.

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USACE hereby selects the remedial actions (also referred to as the selected remedy) for the Former Camp Wellfleet FUDS in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA) [42 U.S.C. § 9601 et seq.], the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) [40 Code of Federal Regulations (CFR) Part 300], and the Defense Environmental Restoration Program (DERP) [10 U.S.C. § 2701 et seq.]. This decision is based on the Administrative Record for the Former Camp Wellfleet FUDS.

The Massachusetts Department of Environmental Protection (MassDEP), the lead regulator at the Former Camp Wellfleet FUDS, and the NPS, currently managing the Site, concur with the selected remedy.

1.3 Assessment of the Areas of Interest

Many investigations have been performed to characterize the Site over the years. The discovery of ordnance items at various locations required the execution of risk reduction actions between 1961 and 1998. Most recently, a comprehensive RI was completed (USACE, 2019). The RI identified areas that were determined to have Munitions and Explosives of Concern (MEC), have a potential for MEC, or no potential for MEC. The determination of the nature and extent of MEC contamination at the Former Camp Wellfleet FUDS was based on the findings of the RI, which identified the following hazard to be mitigated:

- Unacceptable explosive hazards posed by the possible presence of munitions and explosives of concern (MEC).

The RI found that these unacceptable explosive hazard conditions were posed at three AOIs:

- AOI-02 and AOI-06 (MRS-04). and AOI-05 (MRS-05),

The remedial actions selected for these AOIs are necessary to protect public health and the environment from actual or threatened explosive hazards from past Department of Defense (DoD) operations and activities.

AOI-05 (MRS-05) was removed from this Record of Decision. During review of the Proposed Plan, NPS advised USACE on plans for construction of a new facility within AOI-05. USACE will reevaluate AOI-05 considering the reasonably anticipated future use and proposed construction. A separate Feasibility Study (FS), Proposed Plan (PP), and Record of Decision (ROD) will be prepared for AOI-05.

Based on the RI, the following AOIs were categorized as representing acceptable site conditions with regard to explosive hazards:

- AOI-01, AOI-03, and AOI-04 (MRS-06).

Accordingly, no action is necessary to protect public health or welfare or the environment for MRS-06.

1.4 Description of Selected Remedy

The RI results were used to develop a Feasibility Study (FS Report) (USACE, 2021) that identified remedial objectives and goals for MRS-04 at the Former Camp Wellfleet FUDS to protect human health and the environment. The recommendations of the FS were used to select remedies addressing unacceptable explosive hazards posed by the possible presence of MEC. These

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preferred alternatives were presented to the public in the Proposed Plan finalized in November 2021 (USACE, 2021a), which provided an opportunity for public comment (03 January through 06 February 2022).

RI results for MRS-06 indicated that there was no MC contaminant release. MEC risk evaluation in the RI determined that site conditions in MRS-06 are acceptable.

1.4.1 Explosive Hazards Remedy for MRS-04

Alternative 2: Land Use Controls is the selected remedy for unacceptable explosive hazards posed by the possible presence of MEC for MRS-04 (AOI-02 and AOI-06).

Alternative 2, Land Use Controls (LUCs) will modify behavior by providing awareness of potential hazards, education (training, pamphlets, flyers) concerning the hazards suspected to be present within the AOI, and periodic visual inspections to evaluate changing site conditions. These LUCs are designed for both land and ocean AOIs to limit resource use by providing information that helps modify or guide human behavior at the Site. LUCs for the Former Camp Wellfleet will include educational awareness, periodic site inspections, and warning signs. Methodologies for implementation of the LUCs will be provided in a LUC Implementation Plan (LUCIP).

The major components of the selected remedy include:

- Implementing continuing educational awareness to include advisories regarding intrusive activities, safety presentations, and community outreach, and
- Preparing a LUCIP to specify the details of the LUCs, which will include:
 - Signs: Installing signage in appropriate locations to modify and/or guide human behavior at the site. They would likely be placed at park headquarters, parking lots, and beach entrances.
 - Pamphlets/flyers: Pamphlets describing the “3 Rs” of Recognize, Retreat, Report for UXO hazard avoidance will be placed at the park (likely at headquarters and other permanent structures available to the public), and/or a scannable QR code will be accessible at the park that will allow users to access the 3R’s pamphlets. Other pamphlets would be distributed via hard copy and/or electronically to local fishermen warning of the presence of UXO in MRS-04.
 - Training: UXO awareness training will be provided by UXO Qualified Personnel to park personnel either in-person, by video, or virtually.

Note that USACE has coordinated with the National Oceanic and Atmospheric Administration (NOAA) to add the ocean portion of the MRS-04 range fan to navigational charts of Cape Cod, which will serve to warn users of those charts of the possible explosive hazard.

1.4.2 No Action Remedy for MRS-06

No response action is necessary to protect the public health or welfare or the environment from actual or threatened releases of MEC hazards into the environment associated with MRS-06.

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1.5 Statutory Determinations

The selected remedial actions for MRS-04 and MRS-06 are protective of human health and the environment, comply with federal and state requirements that are applicable or relevant and appropriate to the hazardous substances that are the subject of this response action, are cost effective, and use permanent solutions to the maximum extent possible.

The statutory preference to permanently and significantly reduce contaminants through treatment is not met by the LUCs remedy for MRS-04 in that it does not reduce the volume of MEC. The LUCs remedy does not achieve Unlimited Use/Unrestricted Exposure (UU/UE), and therefore, 5-year reviews would also be required to be completed within five years after signature of the ROD to ensure that the remedy is, or will be, protective of human health and the environment.

1.6 Data Certification Checklist

The following information is included in this Record of Decision's Summary section:

- a. Contaminants of concern and their respective concentrations.
- b. Baseline risk assessment.
- c. Cleanup levels established and the basis for these levels.
- d. How contaminants of concern will be addressed.
- e. Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and ROD.
- f. Potential land and groundwater restrictions that will be recommended as a result of the Selected Remedy.
- g. Estimated capital, annual operation and maintenance (O&M), and total CTC estimate recorded in FUDSMIS (RA-C and RA-O only) and the number of years over which the remedy cost estimates are projected.
- h. Key factor(s) that led to selecting the remedy (i.e., describe how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision).

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1.7 Authorizing Signatures

This Record of Decision presents the selected response action for CP Wellfleet FUDS projects D01MA003304 and D01MA003306. The Department of Defense is the lead agency under the Defense Environmental Restoration Program (DERP) at CP Wellfleet Formerly Used Defense Site, and U.S. Army Corps of Engineers has developed this Record of Decision for DoD consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Record of Decision will be incorporated into the larger Administrative Record File for CP Wellfleet, which is available for public view at 696 Virginia Road Concord, MA 01742. This document, presenting a selected remedy with a total CTC estimate recorded in FUDSMIS of 1,463,654.75 is approved by the undersigned and pursuant to the delegated authority in the ASA(IE&E) memorandum dated 25 May 2022 subject: Assignment of Mission Execution Functions Associated with Department of Defense Lead Agent Responsibilities for the Formerly Used Defense Sites Program, and subsequent re-delegations.

Reinhard W. Koenig, P.E., SES
Programs Director
North Atlantic Division

Date

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2.0 THE DECISION SUMMARY

2.1 Site Name, Location, and Description

The Former Camp Wellfleet FUDS is in the Town of Wellfleet, Barnstable County, Massachusetts, approximately one mile east of South Wellfleet on the Cape Cod peninsula. The Former Camp Wellfleet FUDS consists of a total of 1,738 acres - of which approximately 1,688 acres are located in the CCNS and 49.2 acres in the Town of Wellfleet, Barnstable County. The Site is accessible from U.S. Route 6, which is located just west of the Site. Figure A-1 presents the Site location (all figures are contained in Appendix A).

This project falls under the Military Munitions Response Program (MMRP) of the Defense Environmental Restoration Program (DERP). 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 Former Camp Wellfleet FUDS in accordance with CERCLA and the NCP, 40 C.F.R. Part 300. The MassDEP is the lead regulatory agency and provides oversight of USACE's work at the Former Camp Wellfleet FUDS pursuant to CERCLA and the NCP.

2.2 Site History and Enforcement Activities

2.2.1 Site History

The Former Camp Wellfleet FUDS was previously used by the U.S. Army and U.S. Navy for training purposes. The 1,738-acre property (excluding the ocean) was leased beginning in 1942 for an anti-aircraft artillery training base, with an artillery firing line located along the beach cliff. The Site was used as such by the U.S. Army until June 1944, when it temporarily closed. From January 1945 through the end of World War II, the U.S. Navy used the base as a mobile radar training school supporting Navy night fighter training based in Quonset Point, Rhode Island, and for Dove missile training. From 1945 to 1961 the Camp also was used for training by National Guard troops and Active Army Reserve anti-aircraft artillery training units.

Camp Wellfleet was declared as excess and officially closed on 30 June 1961. The Department of the Interior acquired the land through a Declaration of Taking in August 1961 to establish and develop the CCNS. The majority of the Former Camp Wellfleet FUDS is currently owned by the NPS. The Town of Wellfleet owns and manages approximately 49.2 acres.

2.2.2 Previous Investigations

Multiple historical investigations have been performed at the Site to characterize the extent of MEC. Investigation activities were performed between 1961 and 1962, and the discovery of ordnance items at various locations required the execution of risk reduction actions between 1961 and 1998. In 1991, an Inventory Project Report/Preliminary Assessment was completed, and Camp Wellfleet was determined to be eligible under the FUDS program for hazardous, toxic, and radioactive waste and MMRP evaluations. Munitions used at the Former Camp Wellfleet, based on these previous investigations, include MK 65 "Dove" practice bombs, 3.5" rockets, 76mm projectiles, 60-millimeter (mm) projectiles, 90mm projectiles, 105mm projectiles, .30 and .50 caliber ammunition, grenades, and rifle smoke grenades. MEC items including a 76mm anti-aircraft artillery cartridge have been identified at the Site to date.

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2.2.2.1 Archives Search Report and Aerial Photographic Analysis

An Archives Search Report (ASR) was compiled in 1994, with areas categorized as containing MEC, potentially containing MEC, or not containing MEC (USACE, 1994). An analysis of historical aerial photos and other documents was completed by the Topographic Engineering Center (TEC) in 1998. TEC georeferenced air photographs and included stereoscopic delineation of ground scars, excavations, new structures, and other features such as bombing targets, gun emplacements, and ammunition supply points. The TEC report was a primary source of information in the development of an Engineering Evaluation and Cost Analysis (EE/CA).

2.2.2.2 Engineering Evaluation/Cost Analysis and ORNL Survey

Based on the conclusions of the ASR, an EE/CA investigation was completed in May 2000. Identified inert munitions-related items included four 1,000-pound Dove missiles, and one 250-pound practice bomb. 80 geophysical survey grids of 30 m x 30 m size were completed using a G-858 gradiometer, followed by excavation of some or all anomalies within the grids. Only a single MEC item, a smoke grenade, determined to be UXO, was encountered. The EE/CA Action Memorandum, signed in April 2001, approved the recommended removal actions, which included Clearance to Depth for selected areas and Institutional Controls (ICs) without Access Restrictions for all the remaining areas (USACE, 2001). Prior to implementing the EE/CA Action Memorandum recommendations, Oak Ridge National Laboratory (ORNL) conducted a helicopter geophysical survey of all of the Former Camp Wellfleet in March 2002, to detect and map Unexploded Ordnance (UXO) and concentrations of metallic waste or debris that could contribute to environmental degradation or otherwise pose a safety hazard. Due to vegetation, the sensor height above ground was a limiting factor in the usefulness of the data, however, 345 single point anomalies (SPAs) were identified; this resulted in removal actions in several focused areas of the Former Camp Wellfleet.

2.2.2.3 Site Specific Final Report and Addendum, Ordnance and Explosives Removal Action

Ordnance and Explosives removal activities were conducted from approximately 2003 through 2005 (Zapata, 2006). These activities included investigations of SPAs in 2003 and 2004, investigation grids in 2004, and removal action areas in 2005. 44 geophysical investigation grids of 50 ft x 50 ft size were completed using a G-858 gradiometer, followed by excavation of all anomalies within the grids. Removal actions, carried out using analog Schonstedt magnetometers, resulted in the excavation of over 1,600 anomalies and removal of over 3,400 pounds of munitions debris (MD). A geophysical grid was installed at SPA 279, a suspected Open Burn/Open Detonation area. A series of pits were installed and 1,040 pounds of MD was removed; no MEC was encountered. A removal action was conducted in what the EE/CA identified as Area B (to the east of a large parking lot), where abundant MD (mostly rocket parts) was removed.

2.2.2.4 Remedial Investigation

More recently, a comprehensive RI was completed (USACE, 2019). The RI approach was based primarily on the ASR and EE/CA identified areas that were determined to have MEC, have a potential for MEC, or no potential for MEC. The TEC aerial photo and groundscar analysis further identified areas for investigation, and Areas of Interest (AOIs) were developed as the primary basis

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of investigation for the RI. The AOI term was used to be consistent with terminology used in the USACE FUDS Handbook on Delineation and Munitions Response Site Prioritization Protocol Implementation (USACE, 2014).

The AOI configurations considered the original ASR and EE/CA Areas, the results of subsequent removal actions, the aerial groundscar analysis, the FUDS Management Information System project acreage, and the combining of areas of common past activities (or the screening out of Areas where there was no evidence of MEC/MD). This effort resulted in the six (6) AOIs that formed the basis of the RI. Table 2.1 summarizes the resulting AOIs, indicating the conceptual site model (CSM) and munition types associated with each. Figure A-2 presents the Site layout with the current configuration of AOIs.

Table 2.1: Summary of MEC Findings

MRS	AOI	CSM	Acreage	MEC Items
MRS-06	AOI-01	Burial Pits, Possible Landfill	33.1	None
	AOI-03	Ammunition Supply Points, Groundscars	120.2	
	AOI-04	Bomb Targets and Small Burial Area	141.8	
MRS-04	AOI-02	Artillery Firing Line—for anti-aircraft artillery	275.0	76mm anti-aircraft artillery. MD indicative of MEC (high explosive frag from 3.5-in rockets and 105mm projectiles).
	AOI-06	Range Fan of Artillery Targets in Ocean	167,856.0	MEC presence assumed based on 20 years of use for firing and historical documents (USACE, 2007). Potential types: 76mm anti-aircraft artillery, 90 and 105mm projectiles, 3.5” rockets.
MRS-05	AOI-05*	Rocket Range and Small Arms Range	56.1	MD indicative of MEC (high explosive frag from 3.5-in rockets and 105mm projectiles).

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* AOI-05 will be addressed in a separate FS, PP, and ROD (see section 1.2)

2.3 Munitions Response Site Configuration

In accordance with the current USACE Handbook on Realignment, Delineation, and MRS Prioritization Protocol Implementation dated March 29, 2014, the six AOIs that were investigated during the RI were grouped into three separate MRSs. The three MRSs (MRS-04, 05, and 06) are all within the Munitions Response Area 04 (MRA-04) of Former Camp Wellfleet FUDS. MRA-04 is shown in Figure A-3.

The AOIs have been grouped together into MRSs based on similar RI findings and subsequent remedies selected in this document.

MRS-04: AOI-2 and AOI-6 were determined to require Land Use Controls and are designated MRS-04 (FUDS Project No. D01MA003304). This MRS is 168,131 acres in size and is shown in Figure A-4.

MRS-05: AOI-05 was removed from this Record of Decision until further evaluation can take place in a new FS, PP, and ROD. It is currently designated MRS-05 (FUDS Project No. D01MA003305). This MRS is 56.1 acres in size and is shown in Figure A-5.

MRS-06: AOI-1, AOI-3, and AOI-4 were determined to require no action and are designated MRS-06 (FUDS Project No. D01MA003306). This MRS is 295.1 acres in size and is shown in Figure A-6.

2.4 Community Participation

The project team has supported briefings and public meetings to discuss significant milestones and issues of concern at the Former Camp Wellfleet FUDS. A Community Relations Plan was prepared in March 2018; it is periodically updated with new information.

The Administrative Record for the Site, located at 696 Virginia Road Concord, MA 01742, and a local Information Repository at the Town of Wellfleet Public Library, 55 West Main St., Wellfleet, MA 02667, (508)349-0310, wellfleetlibrary.org, provide easy access to historical and current documents on the project progress. The USACE New England District also posts Site information and reports on its website:

<https://www.nae.usace.army.mil/Missions/Projects-Topics/Camp-Wellfleet-FUDS/>

Through these outreach mechanisms USACE has encouraged public input to ensure that the remedy selected for the Former Camp Wellfleet FUDS meets the needs of the impacted community, in addition to being an effective technical solution to the problems.

USACE specifically invited comments from the community and other interested parties, not only on the Proposed Plan which included the preferred alternatives, but also on the acceptability of all the alternatives identified in the FS Report. A public comment period was established from January 03 to February 06, 2022, and a virtual public meeting was held on January 12, 2022, for the purpose of obtaining input and feedback from the public on the selected remedies, as presented in the Proposed Plan (USACE, 2021a). The public comment period and the virtual public meeting were advertised in a public notice in the Cape Cod Times on January 03, 2022.

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A Responsiveness Summary is presented as Section 3.0 with key attachments presented in Appendix C. This Record of Decision is USACE's official record of the final remedy selection for the Former Camp Wellfleet FUDS MRS-04 and MRS-06. MRS-05 will be addressed in a separate FS, PP, and ROD

2.5 Scope and Role of Response Action

The RI Report identified the following hazard to be mitigated:

- Unacceptable explosive hazards posed by the possible presence of MEC in MRS-04.

The FS Report addressed this issue, evaluating various remedial action alternatives to mitigate explosive hazards at MRS-04. The scope of the remedial action will be to manage the potential hazards posed by MEC by preventing or minimizing human interaction with MEC through implementation of an explosives safety educational program. This will include development of education and awareness initiatives to ensure the community continues to be educated about the past history of the Former Camp Wellfleet FUDS.

This Record of Decision authorizes the selected decision of No Further Action for MRS-06 at Former Camp Wellfleet FUDS. USACE has concluded that no CERCLA action is necessary to ensure protection of human health or the environment from MEC and MC.

2.6 Site Characteristics

2.6.1 Environmental Setting

The environmental setting for the Former Camp Wellfleet FUDS comprises beaches and dunes, heathlands and grasslands, and forested areas. The area is currently used for recreational sunbathing, surfing, fishing, hiking, hunting, and picnicking. Land use at the Site is projected to remain recreational.

The Atlantic Ocean influences the climate of Cape Cod with cold ocean temperatures delaying the onset of spring and warmer ocean temperatures delaying the onset of fall. The average temperatures in the summer and winter are in the mid-60s °F and mid-40s °F, respectively. The annual average precipitation is 43.36 inches.

Lying within the New England physiographic province, Cape Cod was built primarily during the Ice Age by the advance and then retreat of the ice sheets that covered New England. The highest elevation within the uplands region of the Former Camp Wellfleet is approximately 100 feet above mean sea level. The land surface is characterized by rolling hills and bluffs along the eastern side of the Site. The sediments of Cape Cod consist of sandy terminal moraines and an assortment of thick sandy glacial till, ice-contact outwash, and glacial-lake deposits underlain by Paleozoic crystalline bedrock. Glacial deposits range in thickness from 100 feet to approximately 1,000 feet. Soils in the Former Camp Wellfleet are very deep, excessively drained coarse sandy soils that exhibit moderate to high permeability.

The Atlantic Ocean borders the Former Camp Wellfleet to the east. Blackfish Creek is in the north of the Site and there are a small unnamed lake, an unnamed stream, and two small streams (Silver Spring Brook and Hatches Creek) near the southern end of the Site. There are riverine or freshwater emergent wetlands along the stream to the south, and estuarine and marine wetland

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along the coast. The area is underlain by the Lower Cape Cod aquifer which provides drinking water for the communities of Wellfleet, Eastham, Truro, and Provincetown, and for the NPS CCNS facilities. Groundwater discharge from the Lower Cape Code aquifer provides the primary source of water for the wetlands and streams throughout Lower Cape Cod. Groundwater within the Site flows east toward the Atlantic Ocean. Precipitation recharges groundwater.

The coast, wetlands, and woodland areas contain a variety of ecosystems. The Former Camp Wellfleet is within Natural Heritage & Endangered Species Program (NHESP) Estimated Habitats of Rare Wildlife and NHESP Priority Habitats of Rare Species. Depending on the season, there are 25 Federally-listed species known to occur at the Cape Cod National Seashore, of which three have the potential to occur within the investigation area (Northern-long Eared Bat, Red Knot, and Piping Plover). In addition, there are 32 rare or endangered species protected under the Massachusetts Endangered Species Act that are known to occur at the National Seashore. Sixteen plant communities are within the boundary of the Former Camp Wellfleet. The NHESP classifies two areas within Former Camp Wellfleet as natural communities of biodiversity conservation interest, the Sandplain Heathlands and Coastal Atlantic White Cedar Swamp.

The Former Camp Wellfleet FUDS includes the Marconi Site, a historical and cultural resource.

2.6.2 Conceptual Site Model (CSM)

During the course of the various investigations, Conceptual Site Models (CSMs) were developed to communicate and describe the current state of knowledge and assumptions about risks at the Former Camp Wellfleet FUDS. At the Former Camp Wellfleet, the identified hazard to be mitigated is unacceptable explosive hazards posed by the possible presence of MEC. Therefore, the CSM integrated information on MEC source, receptors, and receptor-MEC interaction, identifying all complete, potentially complete, or incomplete pathways for both current and reasonably anticipated future land uses for a site. Using the CSM elements, the MRSs were developed based on the following:

- MRS-04 (see Exhibit 1)
 - AOI-02 includes the beach, bluff, and a narrow area west of the bluff where the artillery firing points were located. It also includes all the EE/CA investigated grids, aerial features, removal action grids, and many SPAs. The nature and quantity of MD found (90 mm fuze cans and shipping clips) in the area is consistent with the known firing points along the bluffs. A 76mm anti-aircraft artillery MEC item was found here.
 - AOI-06 is the Range Fan of Artillery Targets in Ocean. MEC is potentially present in the ocean range fan, since anti-aircraft and rocket firing at targets over the ocean was conducted for approximately 20 years (i.e., historical evidence only). This AOI could also be a source of MEC/MD to AOI-02 if munition items wash ashore following storm events, but there is no strong evidence of this occurring on a frequent basis and the more likely source of MEC findings on the beach is erosion of the bluffs.
- MRS-06 (See Exhibit 2)
 - AOI-01 includes a suspected sanitary landfill and a possible Open Burn/Open

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Detonation area, but subsequent excavations found only MD with evidence that some items had undergone demolition procedures.

- AOI-03 includes areas used as an ammunition supply point with multiple U-shaped revetments, and contains multiple ground scars of unknown origin. A MEC item (rifle smoke grenade), considered an isolated find, was found here.
- AOI-04 is centered on large diameter bomb targets and includes a known burial site. However, no MEC was found here.
- MRS-05 includes the terrestrial portions of a rocket range and small arms range. MD indicative of MEC (high explosive frag from 3.5-in rockets and 105mm projectiles) was found here. Note that AOI-05 will be addressed by a separate FS, PP, and ROD.

The RI Report concluded that there is no unacceptable Munitions Constituents (MC) contamination risk to either human or ecological receptors at the Former Camp Wellfleet FUDS. The CSM for MC is shown in Exhibit 3.

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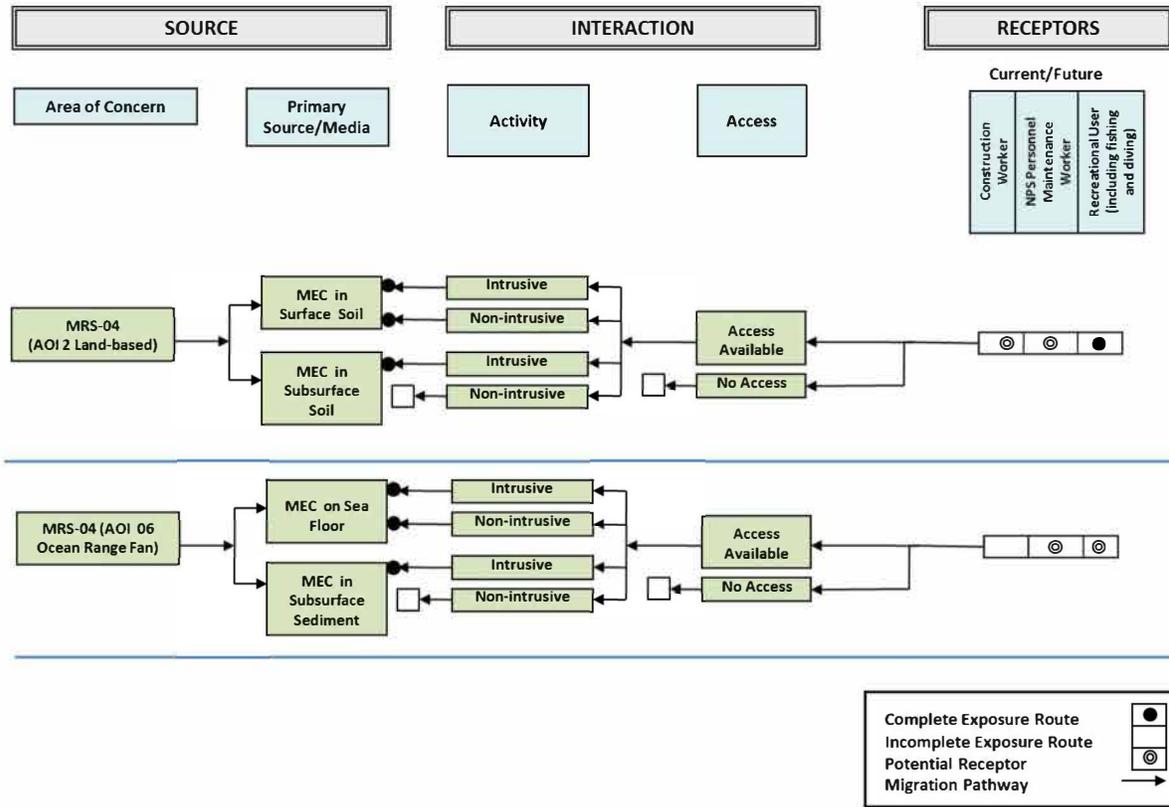


Exhibit 1 – Conceptual Site Model for MEC at MRS-04 at the Former Camp Wellfleet FUDS

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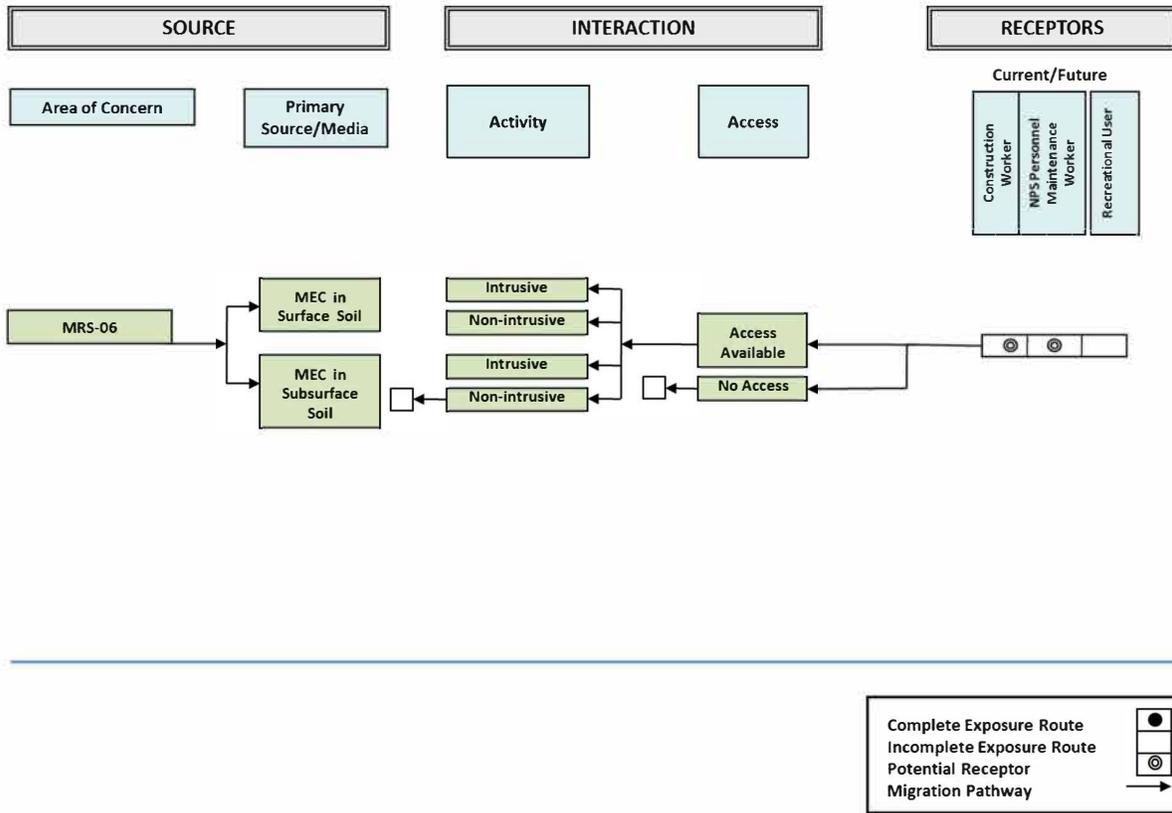


Exhibit 2 - Conceptual Site Model for MEC at MRS-06 at the Former Camp Wellfleet FUDS

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Munitions Constituents Exposure Pathway Analysis

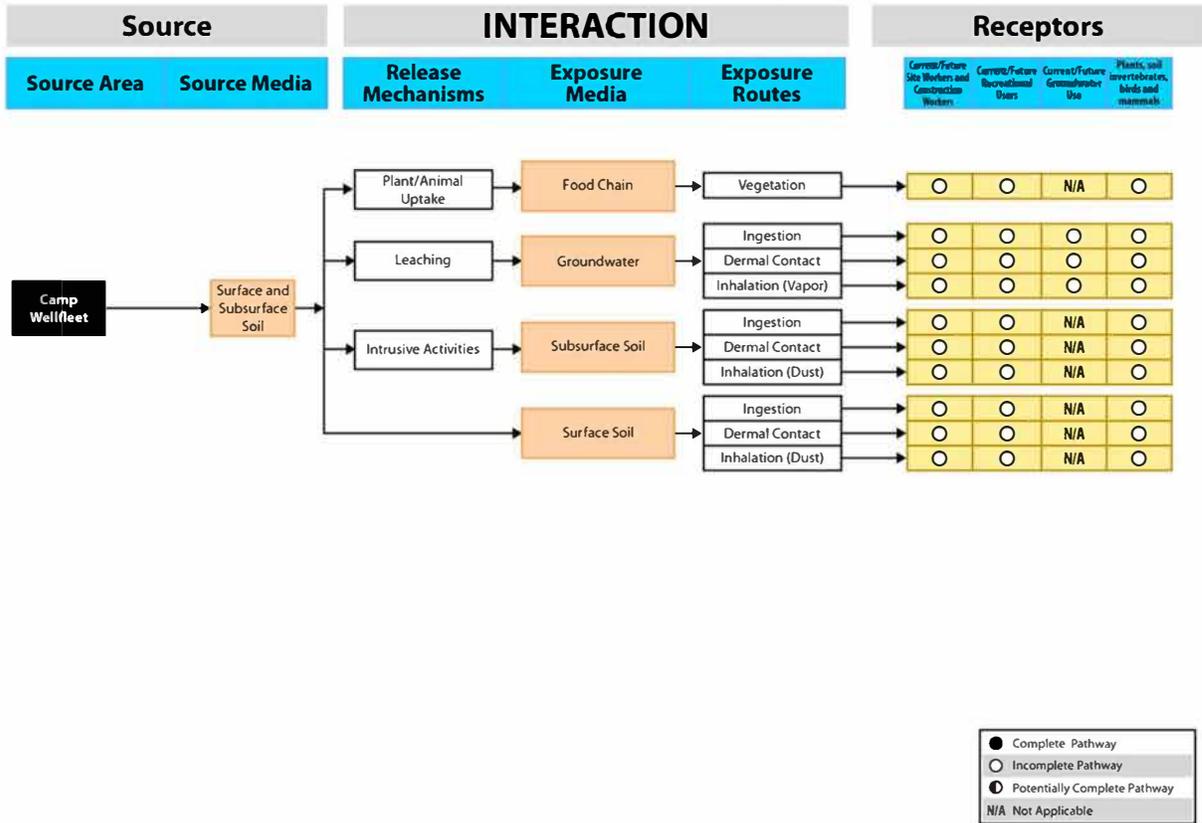


Exhibit 3 – Conceptual Site Model for Munitions Constituents at the Former Camp Wellfleet FUDS

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2.6.3 Nature and Extent

The determination of the nature and extent of contamination for the Former Camp Wellfleet FUDS is based on the findings of the RI, as discussed in Section 2.2.2. The goal of the RI was to integrate the multiple investigation phases and findings and determine the nature and extent of MEC and MC contamination for each AOI at the Former Camp Wellfleet FUDS, and to recommend whether further actions were warranted.

The ocean-based portion of MRS-04 (AOI-6) was not sampled for MC in accordance with the approved approach as sediment contamination would likely be diluted in the open ocean.

MC sampling locations and analytical parameters were based on historical use of the Former Camp Wellfleet and results for MEC and MD items found. MC soil sampling locations were collected from areas where previous investigations identified MEC/MD, portions of the site judgmentally considered to potentially contain the largest MC contaminant concentrations.

Soil sampling was conducted using the incremental sampling (IS) and discrete soil sampling methods. Each IS soil sampling unit (SU) was a defined volume of soil from which increments were collected to determine an estimate of the mean concentration for that volume of soil.

For the Former Camp Wellfleet sampling, the SUs for surface and subsurface soil were approximately ¼ acre. Surface and subsurface IS soil sampling was conducted using a step-probe. All surface IS soil samples were collected from 0 to 0.5 ft bgs, and all subsurface soil IS samples were collected from 0.5 to 3 ft bgs. Each surface IS soil sample consisted of 50 increments, and each subsurface IS soil sample consisted of 30 increments. Discrete subsurface soil samples were collected from 8 to 10 ft bgs using a hand auger.

The SU size, approximately 1/4 acre, was selected to provide ample coverage around significant finds, and provide a representative and reproducible estimate of the mean concentrations of MC within each SU. Each collected soil sample was submitted for laboratory analysis of select metals (antimony, copper, lead, manganese, nickel, and zinc) and select explosives (1,3,5-trinitroperhydro-1,3,5-triazine (RDX), 2,4,6-trinitrotoluene (TNT); nitroglycerin; 2,4-dinitrotoluene; 2,6-dinitrotoluene; tetryl; and nitroguanidine).

Because metals are found naturally in soil, IS method samples were collected in the surface (0 to 0.5 ft bgs) and subsurface (0.5 to 3 ft bgs) soil at seven background SU locations. Background sampling results were used to determine an estimate of the variability and mean of analyte concentrations in the background soil population to decrease the likelihood of false positive decisions (i.e., determining that a site soil sampling result was greater than background when it was not).

Project screening levels (PSLs) for MC contaminants in soil PSLs for IS surface and subsurface soil sampling results were determined by first selecting the lower of the USEPA RSLs and the MCP standards, and then comparing this value to the BTVs and selecting the larger value (Table 2.2). Because the BTVs were less than the USEPA RSLs and the MCPs for all metals except antimony, the PSLs for all metals, except antimony, are the lower of the USEPA RSLs and the MCP standards.

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Analyte	Unit	RSL	MCP	Surface BTV	Subsurface BTV	Surface PSL	Subsurface PSL
Antimony	mg/kg	3.1	20	3.4	3.4	3.4	3.4
Copper	mg/kg	310	NS	4.145	3.76	310	310
Lead	mg/kg	400	200	23.1	4.242	200	200
Manganese	mg/kg	180	NS	109.4	109.84	180	180
Nickel	mg/kg	150	600	1.24	2.81	150	150
Zinc	mg/kg	2,300	1,000	7.69	19.19	1,000	1,000

RSL June 2017 USEPA RSL for Residential Soil, with hazard quotient = 0.1, except for lead, which is based on blood-lead modeling (USEPA, 2017)

MCP S-1 & GW-1 Massachusetts Contingency Plan Table 2; used for screening potential impacts to groundwater.

PSLs for metals in discrete subsurface soil were determined by first selecting the lower of the USEPA RSLs and the MCP standards, and then comparing this value to the MA BKG, and then selecting the larger value. PSLs for discrete subsurface soil samples are shown in Table 2.3.

Analyte	RSL	MCP	MA BKG	PSL
Antimony	3.1	20	1	3.1
Copper	310	NS	40	310
Lead	400	200	100	200
Manganese	180	NS	300	300
Nickel	150	600	20	150
Zinc	2,300	1,000	100	1,000

MCP S-1 & GW-1 Massachusetts Contingency Plan Table 2; used for screening potential impacts to groundwater.

MA MassDEP, Technical Update Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil. 2002

NS None Specified

PSLs for explosives in soil sampling results were determined by selecting the lower of the USEPA RSLs and the MCP standards. PSLs for explosives in soil (surface and subsurface by IS or discrete sampling methods) are shown in Table 2.4.

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Analyte	RSL	MCP	PSL
2,4-Dinitrotoluene	1.7	0.7	0.7
2,6-Dinitrotoluene	0.36	NS	0.36
Nitroglycerin	0.63	NS	0.63
Nitroguanidine	630	NS	630
Tetryl	16	NS	16
TNT	3.6	NS	3.6
RDX	6.1	1	1

There were no reported results greater than the PSLs in any soil sample collected during the RI.

However, it was determined that explosive risks may remain in the surface and subsurface soil or within the off-shore waters of the Former Camp Wellfleet FUDS. Following MEC risk evaluations of explosive risks for all Site AOIs (presented in the RI), MRS-04 was found to present unacceptable explosive hazard conditions that required remedial actions to mitigate the explosive risks:

- MRS-04
 - AOI-02
 - AOI-06

MRS-05 (AOI-05) will be addressed in a separate FS, PP, and ROD. This ROD addresses AOI-02 and AOI-06. These AOIs are shown in Figures A-7 and A-8, respectively.

Three AOIs, now known as MRS-06, were categorized as presenting acceptable site conditions with regard to explosive risks (AOI-01, AOI-03, and AOI-04).

2.7 Current and Potential Future Land Use

The Department of the Interior acquired the Former Camp Wellfleet acreage in August 1961 and established the CCNS. The majority of the Former Camp Wellfleet FUDS is currently owned by the NPS. The area is a highly trafficked national park. The Town of Wellfleet owns and manages approximately 49.2 acres.

The environmental setting for the Former Camp Wellfleet FUDS comprises beaches and dunes, heathlands and grasslands, and forested areas. The area is currently used for recreational sunbathing, surfing, fishing, hiking, hunting, and picnicking. NPS has stated that the land use at the Site is projected to remain recreational, and the Town of Wellfleet did not comment on this use statement.

2.8 Site Risks/Hazards

This discussion summarizes the conclusions of the RI Report with regard to site risks or hazards that may remain within the Former Camp Wellfleet FUDS.

2.8.1 Human Health and Ecological Risk

A comprehensive MC soil sampling program was conducted during the RI, with surface and

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subsurface soil samples collected from areas of the Site considered to potentially contain the largest MC contaminant concentrations (areas where previous investigations identified MEC or MD). The analytical parameters, tailored to past Site activities, included metals and explosives compounds (see Section 2.6.3). In addition to the RI sampling program, data from soil samples collected during previous investigations (2003-2004 sampling) were also integrated into the assessment of risk. As noted in Section 2.6.3, the ocean-based AOI-06 was not sampled for MC in accordance with the approved investigative approach.

These MC sampling results indicated that there were no exceedances identified during the screening -level based risk assessments for soil media, and therefore, no quantitative human health risk assessment or ecological risk assessment was required. Accordingly, the RI Report concluded that there is no unacceptable MC risk to either human or ecological receptors at the Former Camp Wellfleet FUDS. PSLs are shown in Section 2.6.3.

2.8.2 Explosive Hazards

The Project Delivery Team (PDT) determined that there was sufficient data to make MEC nature and extent evaluations and complete risk assessments on land using the existing data, i.e., no additional MEC field investigation needed to be conducted for the RI.

For the ocean range fan portion of MRS-04 (AOI-06), the PDT assumed MEC presence and determined that no further field investigation during the RI was required. The likely presence of MEC is assumed due to the evidence in the Archives Search Report (USACE, 2007) of firing artillery into the ocean for approximately 20 years.

MEC risk was evaluated using the December 2016 USACE risk management methodology (RMM) matrix to assess explosive risks (USACE, 2017). The RMM involves the use of 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. This method is ultimately used to establish remedial action objectives and to help evaluate potential remedial action alternatives.

Table 2.5 is a summary of the detailed analysis presented in the RI Report. The project team conducted the RMM analysis using the tool to support the risk conclusions shown in the last column; these indicate whether an MRS was determined to be acceptable or unacceptable with regard to risk posed by explosive hazards.

Acceptable conditions do not warrant further actions for MEC, while Unacceptable site conditions require some type of remedial action.

Therefore, for the following AOIs (MRS-06), categorized as having acceptable site conditions, no action is necessary to protect human health or the environment:

- AOI-01
- AOI-03
- AOI-04

The following AOIs (MRS-04), categorized as having unacceptable site conditions, require remedial action to mitigate the hazards they pose:

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- AOI-02
- AOI-06

AOI-05 (MRS-05) will be addressed in a separate FS, PP, and ROD.

Table 2.5: Summary of MEC Risk Analysis

MRS	AOI	Likelihood of Encounter	Severity of Incident ¹	Likelihood of Detonation ²	Site Condition
MRS-04	AOI-02	Likely (Confirmed MEC, Regular Access)	A	2	Unacceptable
	AOI-06 ³	Likely (MD Indicative of MEC, Regular Access)	B	2	Unacceptable
MRS-06	AOI-01	Seldom (No MEC, Often Access)	D	3	Acceptable
	AOI-03	Seldom (MEC, Often Access)	C	2	Acceptable
	AOI-04	Seldom (No MEC, Often Access)	D	3	Acceptable
MRS-05	AOI-05	Seldom (MEC Suspected, Regular Access)	A	2	Unacceptable

¹ - 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.

² - 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.

³ - AOI-05 will be addressed in a separate FS, PP, and ROD (see section 1.2)

2.8.3 Summary of Site Risks/Hazards

Based on the conclusions of the RI Report, there is no unacceptable MC risk to either human or ecological receptors with the land-based portion of MRS-04 (AOI-02) or MRS-06.

Based on the RMM matrix analysis, unacceptable hazards may exist due to MEC potentially remaining within the Former Camp Wellfleet FUDS, and response actions are required to mitigate them.

The response actions selected in this Record of Decision are necessary to protect public health and the environment from actual or threatened releases of hazardous substances and/or explosive hazards from past Department of Defense (DoD) operations and activities.

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2.9 Remedial Action Objectives

Remedial Action Objectives (RAOs) describe what the preferred remedial action 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.

2.9.1 Site-Specific RAO

Remedial alternatives were developed for unacceptable explosive risks posed by MEC potentially remaining within specific AOIs of the Former Camp Wellfleet FUDS. Combining the affected media, the exposure pathways, and the project goals, the Site-specific RAOs are:

- For land-based MRS-04 (AOI-02): eliminate unacceptable risk due to the presence of MEC (see MEC items in Table 2.1) to a depth of 3 feet below ground surface (bgs) to address direct contact by park personnel and recreational users, and direct contact of MEC in the subsurface to a depth of 6 feet bgs by authorized maintenance workers, such that acceptable conditions are achieved.
- For ocean-based MRS-04 (AOI-06): eliminate unacceptable risk due to the presence of MEC (see MEC items in Table 2.1) on or beneath the sea floor (approximately 2 ft bgs) to address direct contact by park personnel, park visitors (waders or swimmers), and recreational divers, to a water depth of 120 feet, and the potential for interaction resulting from the use of fishing nets to the maximum depth of the MRS, such that acceptable conditions are achieved.

2.9.2 Applicable or Relevant and Appropriate Requirements

Applicable or Relevant and Appropriate Requirements (ARARs) are any 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. Pursuant to CERCLA, compliance with ARARs is a threshold requirement that a remedial alternative must meet in order to be eligible for selection. Table 2.6 summarizes ARARs. Note that only ARARs that are applicable to the selected remedy are shown. A complete list of ARARs for all alternatives are shown in the FS.

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Table 2.6: Summary of ARARs

Requirement	Citation	Synopsis	Evaluation/Action To Be Taken
Federal Statutes/Laws			
LOCATION-SPECIFIC:			
Federal Endangered Species Act	16 USC 1538(a)(1)(B) (1991, as amended), 1536(a)(2). 50 CFR 402.01(a), 50 CFR 402.14(i).	Remedial action must not be likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of designated critical habitat, and may not result in a "take" of a threatened or endangered species without a determination that any "take" is not likely to jeopardize the continued existence of any threatened or endangered species.	Applicable. The remedial alternative will proceed with input from the US Fish & Wildlife Service (USFWS) - New England Field Office and NPS to eliminate adverse effects to habitats or endangered species (including Piping Plovers, Red Knot, Northern Long-eared bat, Leatherback Sea turtles, Tiger Beetles, Sandplain Gerardia, and others).
Federal Migratory Bird Treaty Act of 1918	16 U.S.C. 703(a)	Protects over 800 bird species, their nests and their eggs from unlawful possession, transport, and harm. Prohibits action that would be considered a "take" of a threatened or endangered species.	Applicable. The selected remedial alternative will proceed with input from the USFWS and NPS to minimize impacts to migratory birds (including Piping Plovers, American Bitterns, Roseate Terns, and others).
State Statutes/Laws			
LOCATION-SPECIFIC:			
Massachusetts Endangered Species Act	Code of Massachusetts (CMR) regulations 321 CMR 10.04(1)	Manages and protects endangered plant species and endangered, threatened and nongame wildlife populations in Massachusetts. Prohibits action that would be considered a "take" of a threatened or endangered species	Relevant and Appropriate. State threatened or endangered species include American Bittern, Roseate Terns, Red Knot, Loggerhead Shrikes, Eastern Box Turtles, Sandplain Gerardia, and many others. Compliance with the complete list will be achieved during remedial actions. The remedial alternative will proceed with input from MassDEP to minimize impacts to estimated habitats of rare wildlife.

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2.10 Description of Alternatives

This section presents a summary of the remedial alternatives developed to meet the RAOs for the identified explosive hazards for the Former Camp Wellfleet FUDS. The alternatives were evaluated against the short and long-term aspects of three broad criteria: effectiveness, implementability, and cost.

The effectiveness criterion evaluates effectiveness in protecting human health and the environment, and providing reduction in toxicity, mobility, and volume. Short-term (construction and implementation period) and long-term effectiveness (effective period after the remedial action is complete) were also evaluated.

The implementability criterion evaluates both the technical and administrative feasibility of constructing, operating, and maintaining a remedial alternative. Technical feasibility is the ability to construct, reliably 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.

The cost of each alternative was also evaluated. Prior estimates, sound engineering judgment, and actual costs from similar sites were used to evaluate one alternative against another.

2.10.1 Explosive Hazards Remedial Alternatives

The FS Report identified and screened general categories of technologies for addressing MEC. General response actions to satisfy the RAOs were developed, including LUCs such as education awareness and informational material, and MEC Removal (geophysical investigation of anomalies followed by removal/disposal).

For MEC removal, detection process options included analog magnetometers (mag & dig process), Digital Geophysical Mapping (DGM), and Advanced Geophysical Classification (AGC). It was concluded that the analog magnetometer and AGC options were the most viable primarily because they require minimal vegetation removal and NPS maintains cutting limitations to minimize disturbance to sensitive plant communities at the Camp Wellfleet. A MEC removal depth component was also developed, with 3 feet bgs a practical maximum for park visitor activities, while an educational LUC would provide for notification to authorized park workers (utility or construction contractors), who may need to achieve greater depths (e.g., notifications of the intent to safely conduct such activities).

Based on the explosive risks mitigation technologies reviewed, four remedial alternatives were identified in the FS Report to address the unacceptable explosive risks, as described below.

2.10.1.1 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 LUCs to reduce the potential for exposure. Consequently, the FS analysis concluded that Alternative 1 failed key elements of the effectiveness and implementability criteria for MRS-04. 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.

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

LUCs, administrative and physical, can include signage, fencing, environmental covenants, and/or education to limit access and/or modify behavior. As developed for the Former Camp Wellfleet FUDS, Alternative 2 would include educational activities (3Rs [Recognize, Retreat, Report] training, pamphlets, flyers) and warning signs to modify behavior by providing awareness of potential hazards suspected to be present within the AOI, and periodic visual inspections to evaluate changing Site conditions. These LUCs are designed for both land and ocean portions of MRS-04 to modify receptor behavior and limit interactions by providing information that helps modify or guide human behavior at the Site. LUCs for the Former Camp Wellfleet will include educational awareness, periodic site inspections, and warning signs. Methodologies for implementation of the LUCs will be provided in a LUCIP.

This alternative includes the requirement to ensure the safe conduct of any intrusive activity conducted by authorized park maintenance or construction workers. The USACE does not have the authority to implement, enforce, or maintain LUCs that involve real property title restrictions or encumbrances because the property is no longer under DoD control. However, a property owner, such as NPS, may consent to the creation and placement of a restriction affecting the property. The primary responsibility for management and maintenance for such a LUC rests with the property owner. Here, NPS, as the property owner, has committed to implementing and maintaining anomaly avoidance procedures for intrusive work in areas that may be developed in the future (see the Institutional Analysis, Appendix D of the Feasibility Study, USACE, 2021).

The LUCIP, developed by USACE in coordination with NPS, will include a delineation of LUCs to be carried out by USACE and enforcement and maintenance responsibilities to be carried out by NPS. The USACE cannot require a LUC that requires the use of UXO qualified personnel during intrusive activities. However, UXO Qualified Personnel are recommended during any subsurface intrusive activities, including anomaly avoidance. The USACE has no authority to provide “as needed” or “on-call” UXO construction support or disposal. However, NPS has committed to implementing and maintaining anomaly avoidance procedures for intrusive work in areas that may be developed in the future and following the 3Rs procedure to report any munitions observed after storm events.

For the ocean portion of MRS-04, LUCs would also modify behavior by providing awareness and education (training, pamphlets, flyers) concerning the hazards potentially present within the MRS.

The FS Report 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 LUCs alternative was retained for the more detailed FS analysis because it meets key elements of the effectiveness and implementability criteria. Note that as a separate requirement under CERCLA, Five Year Reviews would also need to be conducted because UU/UE would not be achieved as MEC may remain at the AOI under this alternative.

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2.10.1.3 Explosive Hazards Alternative 3: Partial MEC Removal with LUCs

For the land portion of MRS-04, Alternative 3 entails conducting a partial MEC removal down to 3 feet bgs, with subsequent MEC destruction, utilizing a MEC detection and removal methodology based on the Site conditions of the specific removal areas. The occurrence of threatened and endangered species, or significant natural communities including wetlands may dictate whether mag & dig or AGC methods, or manual or mechanized excavation, is more appropriate. MEC removal for land-based portion of MRS-04 would not include areas where vegetation cutting is prohibited or areas that are paved and therefore have no interaction between possible MEC items and a receptor.

For AOI-02 (land portion of MRS-04), the intention is to address the potential for Discarded Military Munitions (DMM) that may have been associated with the firing line activities. This 39.2 acre partial removal area is based on a buffer zone on each side of the old firing line road: extending eastward from the old road to the top of the bluff, and extending westward 150 feet from the road (see Figure A-7). While DMM may exist in the bluff leading down to the shoreline, no removal activity on the bluff is included in this alternative based on worker safety considerations and the intent to minimize bluff erosion that such activity may promote.

For AOI-06 (ocean portion of MRS-04), the partial removal would include items on the sea floor and approximately 2 feet beneath it, and the footprint would extend to the 120 foot recreational diver depth limit. The MEC detection and removal methodology for the ocean AOI would be based on the specific sea floor depth of the removal area.

Alternative 3 also includes implementing the educational and notification requirements LUCs, as described in Alternative 2.

Alternative 3 does not allow for UU/UE for either the land or water AOIs. However, the FS Report analysis concluded that for the land portion of MRS-04, Alternative 3 met key elements of the effectiveness and implementability criteria and it was retained for a more detailed comparative analysis. Alternative 3 can also be effective and implementable for the ocean portion of MRS-04, and while it presents cost challenges, it was also retained for the detailed comparative analysis.

2.10.1.4 Explosive Hazards Alternative 4: MEC Removal to UU/UE

The DERP Manual requires consideration of an alternative to remediate a site to a condition that allows for UU/UE, and therefore Alternative 4 includes complete removal and subsequent destruction of MEC such that LUCs would not be required.

While munition items at the Former Camp Wellfleet FUDS were mostly encountered at shallower depths, for the land portion of MRS-04, achievement of the UU/UE standard under Alternative 4 would require excavations to 5 feet bgs in AOI-02, based on the maximum depths of MEC or MD finds in the area. However, a conservative depth of 6 feet bgs was used for Alternative 4 to account for utility or construction work that may require depths greater than 5 feet bgs. Areas of unstable sandy soil conditions at this depth may render the excavation necessary for MEC removal problematic, as the use of heavy excavation equipment and safety shoring, may be required. While manual excavation of shallower soils can minimize environmental impacts, a full removal that

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includes all AOI acreage to a depth of 6 feet bgs would require heavy equipment and the potential for significant environmental impacts.

For the ocean portion of MRS-04, the deepest possible interaction of receptor and source would be a deep sea fishing net, which may be deployed to depths exceeding 500 feet. Therefore, UU/UE would involve a sea floor MEC removal of the entire 167,856 acre ocean AOI.

The FS Report analysis concluded that for the land portion of MRS-04 (AOI-02), UU/UE Alternative 4 is not effective in the short term, is not technically or administratively feasible, and is excessively costly. For the ocean portion of MRS-04 (AOI-06), the FS analysis concluded that UU/UE Alternative 4 is not effective in the short term, is not implementable, and is cost prohibitive. Therefore, Alternative 4 was not retained for the detailed comparative analysis in the FS Report.

2.11 Summary of Comparative Analysis of Potential Remedial Alternatives

As described above, the broad screen of the alternatives against effectiveness, implementability, and cost criteria eliminated some remedial alternatives. The ones retained for the more detailed comparative analysis are summarized in Table 2.4.

Table 2.7: Summary of Remedial Alternatives Retained

Hazard	Remedial Alternative Retained
Explosive Hazards	Alternative 1: No Action
	Alternative 2: LUCs
	Alternative 3: Partial MEC Removal with LUCs

In the FS Report, a detailed analysis assessed each alternative against nine evaluation criteria (Exhibit 4) that were developed by the USEPA to address CERCLA requirements and technical and policy considerations that have proven to be important for selecting among remedial alternatives. The nine criteria are divided into three categories; threshold, balancing and modifying.

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**EXHIBIT 4
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*- remedial alternatives must meet substantive cleanup standards, standards of control and other requirements that have been determined to be applicable or relevant and appropriate, or waived pursuant to the law.

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 +50 to -30 percent of the actual project costs.

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.

Following this step, the FS Report analysis evaluated the individual alternatives comparatively against one another, in order to select a preferred alternative. The evaluation focused on whether the alternative was favorable, moderately favorable, or not favorable, relative to the criterion. This analysis is summarized in the discussions below.

2.11.1 Explosive Hazards Remedial Alternatives Analysis for the Land Portion of MRS-04 (AOI-02)

Each of the MRS-04 alternatives were first evaluated individually against the nine criteria, and then comparatively against one another.

2.11.1.1 Overall Protection of Human Health and the Environment

This is a threshold criterion in that it must be met. Under Alternative 1 (No Action), no remedial action would be taken, and potential explosive risks are not mitigated. Therefore, Alternative 1 does not result in acceptable conditions and it is not protective of human health and the environment. For Alternative 2 (LUCs), the post-remedy RMM (i.e., doing the RMM analysis

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under the assumption that the remedy has been applied) conclusion indicates that educational awareness designed to help modify human behavior at the Site would educate park personnel, recreational users, and maintenance workers about the likelihood of encountering and imparting energy to a potential MEC item, and how to respond if such items are encountered. Therefore, acceptable conditions are achieved. Alternative 2 is therefore protective of human health and the environment using LUCs to limit interactions with MEC in the MRS-04 land areas.

For Alternative 3 (Partial MEC Removal with LUCs), the post-remedy RMM supports the risk conclusions that MEC removal to 3 feet bgs in the areas shown in Figure A-7, reduces the likelihood of encountering and imparting energy to a potential MEC item by physically removing MEC. Consequently, acceptable conditions are achieved based on the mitigated ability of park personnel, recreational users, and maintenance workers to encounter potential MEC items. Therefore, Alternative 3 is protective of human health and the environment based on MEC removal and LUCs to educate the public.

2.11.1.2 Compliance with ARARs

This is a threshold criterion in that it must be met.

Because no actions will be taken under Alternative 1, no ARARs are triggered. Therefore, Alternative 1 complies with ARARs.

For Alternative 2, ARARs are related to the protection of wildlife species, but any minor disruptive activity of this alternative would be implemented to comply with these ARARs through coordination with NPS, USFWS, MassDEP, and the Town of Wellfleet to minimize any disturbance and not cause a take of these species. Alternative 2 complies with ARARs.

Prior to MEC removal under Alternative 3, coordination and communication with the NPS, USFWS, MassDEP, and the Town of Wellfleet to ensure that these actions would not cause a take of these species would be undertaken. Alternative 3 also complies with all ARARs.

2.11.1.3 Long-Term Effectiveness and Permanence

Alternative 1 is not favorable in providing long-term effectiveness as no actions are taken to mitigate or limit interactions with MEC.

Alternative 2 is moderately favorable in providing long-term effectiveness by informing the public of the explosive risks within the area, minimizing human exposure. But it would leave any MEC items in place, and while the access of human receptors to explosive risks is reduced, it is not eliminated.

Alternative 3 is favorable for long-term effectiveness because it removes and destroys all MEC to 3 feet bgs within the partial removal area and the LUC portion of Alternative 3 is moderately favorable in providing long-term effectiveness by informing the public of the explosive risks within the area, minimizing human interaction.

2.11.1.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

Alternative 1 is not favorable in reducing the volume of MEC as no actions are taken to reduce the volume of MEC and would leave any MEC items in place.

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Alternative 2 is not favorable in reducing the volume of MEC at the Site because it would leave any MEC items in place, without further investigation or removal.

Alternative 3 is favorable and will result in the reduction of the volume of MEC for the partial removal footprint of MRS-04 (AOI-02). During the removal, any MEC that is identified would be properly treated and disposed.

2.11.1.5 Short-Term Effectiveness

Alternative 1 is not favorable in meeting the short-term effectiveness criterion because although no time is needed to implement this alternative, MEC remedial objectives will not be met.

Alternative 2 is favorable in meeting the short-term effectiveness criterion because all required work could be completed quickly, and the community, workers, and the environment can be protected during implementation. The estimated time to meet the remedial objectives would be short.

Alternative 3 is moderately favorable for short-term effectiveness because although the community, workers, and the environment can be protected during implementation, there is an increased short-term hazard to workers and the public because MEC will be removed. While MEC removal and destruction would cause some disruption to park activities, the estimated time to meet the remedial objectives would be relatively short.

2.11.1.6 Implementability

Alternative 1 is favorable in meeting the implementability (technical and administrative feasibility, and availability of materials and services) criterion in that there are no activities proposed.

Alternative 2 is favorable in meeting the implementability criterion as it is technically feasible to produce educational materials, and 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 the materials and services are readily available and it is feasible to conduct MEC removals to 3 feet bgs, the administrative feasibility may be challenging if NPS does not permit the temporary disruption to park activities and the subsequent impacts to park workers, visitors, and the potential increased bluff erosion, that may result from MEC removal activities in the land portion of MRS-04. The LUCs portion of Alternative 3 is favorable in meeting the implementability criterion as it is technically feasible to produce educational materials, and the materials and services to implement this alternative are readily available.

2.11.1.7 Cost

Detailed cost estimates for all alternatives were developed as part of the FS Report. These costs are provided in Appendix B of this Record of Decision.

There are no costs associated with the no action alternative. The cost to implement Alternative 2 is relatively low, approximately \$153,500 in capital costs plus \$476,300 for 30-years of operation and maintenance (O&M) for a total of \$629,800. (Note that 30 years is used for estimation purposes because the actual length of the given activity cannot be determined and EPA guidance

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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 cost to implement Alternative 3 is moderate to high based on working in areas of moderate to high pedestrian traffic. The total estimated cost for Alternative 3 is approximately \$1,473,500 in capital costs plus \$476,300 for 30-years of O&M for a total of \$1,949,800.

2.11.1.8 State/Support Agency Acceptance

During review of the FS and PP, MassDEP provided minor editorial comments and ARARs recommendations. No comments were received regarding Alternative selection. All editorial comments were resolved. ARARs were addressed via consultation between agencies counsel. During review of the ROD, MassDEP requested the ROD elaborate on land use controls identified for the ocean portion of MRS-04. The USACE does not have the authority to implement, enforce, or maintain LUCs in the ocean fan as this area is not under DoD control. However, the responsible federal authority such as the National Oceanic and Atmospheric Administration (NOAA), may consent to the creation and placement of a restriction affecting the property. NOAA has identified the ocean portion of MRS-04 as a UXO Hazard Area on their nautical charts, with the following warning: This area is a former firing range active from 1952 to 1961. Mariners are cautioned against anchoring, dredging or trawling in this area due to the possible existence of unexploded ordnance. As part of the LUCIP, USACE will periodically inspect the NOAA navigational charts to confirm the UXO Hazard Area remains on the navigational charts. Community Acceptance

Comments were received from NPS through review of the FS process and NPS expressed support. However, during the review of the PP, NPS advised of plans for construction within MRS-05 (AOI-05). MRS-05 was removed from this ROD and it will be addressed in a separate FS, PP, and ROD. NPS expressed support for Alternative 2.

The Town of Wellfleet did not comment on the PP.

During the public comment period, comments were received from the public during the virtual public meeting. A Responsiveness Summary is presented as Appendix C.

2.11.1.9 Comparative Analysis of AOI-02 Alternatives

Each of the land portion MRS-04 (AOI-02) remedial alternatives were compared against each other to determine the selected alternative.

The most important evaluation is against the threshold criteria, as these must be met. With the exception of No Action Alternative 1, 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, only Alternative 3 was favorable regarding long term effectiveness due to physically removing and destroying MEC. Alternative 2 was moderately effective in the long term, because while educational awareness would mitigate interactions between MEC and human receptors, any MEC items would remain in place. Only Alternative 3 was favorable for the reduction of the volume of MEC because it is the only alternative to physically remove MEC.

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With regard to the short-term effectiveness criterion, Alternative 2 was considered favorable because the community, workers, and the environment can easily be protected during implementation. Alternative 3 was moderately favorable for this criterion because there is an increased hazard to workers and the public during MEC removal, and the estimated time to meet the remedial objectives could increase based on the number of MEC items found.

Alternative 1 is favorable for implementability, but only in that there are no activities proposed. Alternative 2 was also favorable for implementability, while Alternative 3 was ranked as moderately favorable due to the temporary disruption to park activities that would result.

Alternative 3 had the highest costs based on the need for full mag & dig or AGC teams and specially trained UXO Technicians to safely conduct the MEC removal and destruction. Alternative 2 had the next highest costs based on periodic site inspections, while Alternative 1 had no associated costs.

Alternatives 2 and 3 were both assessed as being protective of human health and the environment, and compliant with ARARs. However, while Alternative 3 had one more moderately favorable ranking, it was significantly more costly than Alternative 2.

With regard to the modifying criteria of state and community acceptance, based on review and input through the FS process, the MassDEP expressed support for the selected explosive hazard remedial alternative for AOI-02. MassDEP had no comments on the PP. During the public comment period, no comments or objections to the selected alternative as presented in the Proposed Plan were received.

Table 2.8 summarizes the detailed comparative analysis of explosive hazards remedial alternatives for the land portion of MRS-04 (AOI-02).

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Table 2.8: Summary of Detailed Analysis of Explosive Risks Remedial Alternatives – The Land Portion of MRS-04 (AOI-02)

	Screening Criterion	Alternative 1: No Action	Alternative 2: Land Use Controls	Alternative 3: Partial MEC Removal 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	●	●	◐
	Cost ³	\$0.00	\$629,800	\$1,949,800
Modifying ⁴	State Acceptance ⁵	No	Yes	No
	Community Acceptance ⁶	No	Yes	No

- 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 Remedial Action Cost Engineering and Requirements (RACER) software. O&M for a 30-year duration is included, as applicable, for an alternative. Details provided in Appendix C of the FS.

⁴ – The Modifying criteria of state and community acceptance are based on review and input from these parties.

⁵ – MassDEP provided editorial comments only on the FS and provided no further comments on the conclusions. MassDEP was provided the PP and was notified of the public comment period and the public meeting in January 2022. MassDEP provided no comments on the recommendations in the PP.

⁶ – Only one member of the public responded to the PP by attending the public meeting in January 2022, and she did not object to the conclusions.

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2.11.2 Explosive Hazards Remedial Alternatives Analysis for the Ocean Portion of MRS-04 (AOI-06)

Each of the Ocean Portion of MRS-04 (AOI-06) alternatives were first evaluated individually against the nine criteria, and then comparatively against one another.

2.11.2.1 Overall Protection of Human Health and the Environment

Under Alternative 1, potential explosive risks are not mitigated. Therefore, Alternative 1 is not protective of human health and the environment.

For Alternative 2, the post-remedy RMM supports the risk conclusions that educational awareness to modify human behavior would educate visitors about the likelihood of encountering and imparting energy to a potential MEC item, and how to respond if such items are encountered. Consequently, acceptable conditions are achieved based on the mitigated ability of park personnel, recreational users, and maintenance workers to encounter potential MEC items. Therefore, Alternative 2 is protective of human health and the environment, using LUCs to educate the public, thereby limiting interactions with potential munitions items in the ocean AOI.

For Alternative 3, the post-remedy RMM supports the risk conclusions that MEC removal, in the areas shown in Figure A-8, reduces the likelihood of encountering and imparting energy to a MEC item by removing it. Consequently, acceptable conditions are achieved based on the mitigated ability of park personnel, recreational users (waders, swimmers), recreational divers, and maintenance workers to encounter potential MEC items in the removal area. Therefore, Alternative 3 is protective of human health and the environment based on MEC removal and LUCs to educate the public.

2.11.2.2 Compliance with ARARs

Because no actions will be taken under Alternative 1, no ARARs are triggered. Therefore, Alternative 1 complies with ARARs.

For Alternative 2, ARARs are related to the protection of wildlife species within the waters of the Ocean Portion of MRS-04 (AOI-06), but any minor disruptive activity would be implemented to comply with these ARARs through coordination with NPS, USFWS, and MassDEP to minimize any disturbance and not cause a take of these marine-based species. Therefore, Alternative 2 complies with ARARs.

Under Alternative 3, while a partial MEC removal in the ocean would be challenging, all ARARs can be complied with, in coordination with the appropriate authorities, including the NHESP, the USFWS, the NOAA National Marine Fisheries Service, and others. Review of the requirements to conduct removal activities would ensure that they do not jeopardize any federally-listed and/or state-listed species or sensitive habitats. Alternative 3 complies with all ARARs.

2.11.2.3 Long-Term Effectiveness and Permanence

Alternative 1 is not favorable in providing long-term effectiveness as no actions are taken to mitigate or limit interactions with MEC.

Alternative 2 is moderately favorable in providing long-term effectiveness by informing the public of the explosive risks within the area, minimizing human exposure. But it would leave any MEC items in place and access of receptors to explosive risks is not eliminated.

Alternative 3 is moderately favorable for long-term effectiveness in addressing the explosive risks

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because it removes and destroys all MEC to 2 feet bgs (below the sea floor) to the 120 foot depth line. However, within these dynamic surf zone areas, after MEC removals were completed, MEC would still have the potential to wash up onshore or be exposed on the shallow sea floor following storm events. The LUCs, like those identified in Alternative 2, are included in Alternative 3 because of the potential for additional MEC items after partial removal is completed.

2.11.2.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

Alternative 1 is not favorable in reducing the volume of MEC as no actions are taken to reduce the volume of MEC and would leave any MEC items in place.

Alternative 2 is not favorable in reducing the volume of MEC at the Site because it would leave any MEC items in place.

Alternative 3 will result in the reduction of the volume of MEC for the partial removal footprint. Because Alternative 3 is not a complete removal of MEC, Alternative 3 is only moderately favorable for this criterion.

2.11.2.5 Short-Term Effectiveness

Alternative 1 is not favorable in meeting the short-term effectiveness criterion because although no time is needed to implement this alternative, MEC remedial objectives will not be met.

Alternative 2 is favorable for short-term effectiveness because all required work could be completed quickly and the community, workers, and the environment can easily be protected during implementation. The estimated time to meet the remedial objectives would be short.

Alternative 3 is moderately favorable for short-term effectiveness because there is an increased short-term hazard to workers and the public because MEC will be removed. While this work has been performed safely and effectively on other sites, there are considerable safety risks to the UXO teams at the ocean depths required under this alternative, and the time required to meet the RAOs would be significant for this acreage. The LUCs portion of Alternative 3 is favorable for short-term effectiveness because all required work could be completed quickly and the community, workers, and the environment can easily be protected during implementation.

2.11.2.6 Implementability

Alternative 1 is favorable in meeting the implementability (technical and administrative feasibility, and availability of materials and services) criterion in that there are no activities proposed.

Alternative 2 is favorable in meeting the implementability criterion as it is technically feasible to produce educational materials, and the materials and services to implement this alternative are readily available.

Alternative 3 is moderately favorable for implementability. Coordinating and delivering materials and services in a timely manner will be challenging, but can be accomplished, and therefore administrative feasibility is moderately favorable. However, technical feasibility is not favorable for this alternative due to the significant technical operational difficulties of completing a removal action in the open ocean to depths of 120 feet, and the reliability of the alternative to complete the work without significant schedule delays is low. The LUCs portion of Alternative 3 is favorable in meeting the implementability criterion as it is technically feasible to produce educational materials, and the materials and services to implement this alternative are readily available.

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2.11.2.7 Cost

There are no costs associated with the no action alternative.

The cost to implement Alternative 2 is relatively low, approximately \$131,700 in capital costs plus \$476,300 for 30-years of O&M for a total of \$608,000. However, the cost to implement Alternative 3 is significant based on working in water depths to 120 feet and covering 15,693 acres, with an estimated cost of approximately \$155,049,600 in capital costs plus \$476,300 for 30-years of O&M for a total of \$155,525,900.

2.11.2.8 State/Support Agency Acceptance

During review of the FS and PP, MassDEP provided minor editorial comments and ARARs recommendations. No comments were received regarding Alternative selection. All editorial comments were resolved. ARARs were addressed via consultation between agencies counsel. No further comments were received.

2.11.2.9 Community Acceptance

Comments were received from NPS through review of the FS process and NPS expressed support. However, during the review of the PP, NPS advised of plans for construction within MRS-05 (AOI-05). MRS-05 was removed from this ROD and it will be addressed in a separate FS, PP, and ROD. NPS expressed support for Alternative 2.

The Town of Wellfleet did not comment on the PP.

During the public comment period, comments were received from the public during the virtual public meeting. A Responsiveness Summary is presented as Appendix C.

2.11.2.10 Comparative Analysis of the Ocean Portion of MRS-04 (AOI-06) Alternatives

Each of the Ocean Portion of MRS-04 (AOI-06) remedial alternatives were compared against each other to determine the selected alternative.

The most important evaluation is against the threshold criteria, as these must be met. With the exception of No Action Alternative 1, 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 educational awareness would mitigate interactions between MEC and human receptors through behavior modification, any MEC items would remain in place. Alternative 3 was only moderately effective in the long term because while it removed MEC from the partial removal footprint area, after MEC removals were completed, MEC would still have the potential to wash up onshore or be exposed on the shallow sea floor following storm events. Alternative 1 was not favorable for this criterion.

Alternative 1 and Alternative 2 were not favorable for reduction of the volume of MEC. Alternative 3 was ranked as moderately favorable for this criterion because while it is the only alternative to physically remove MEC, there remains the potential for significant storm events to expose additional MEC items.

Alternative 1 was considered not favorable for short-term effectiveness.

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Alternative 2 was considered favorable because the community, workers, and the environment can easily be protected during implementation.

Alternative 3 was moderately favorable for short-term effectiveness because there are considerable safety risks to the UXO teams at the ocean depths required, and the time required to meet the RAOs would be significant for this acreage.

Alternative 1 was ranked favorable in meeting the implementability criterion, but only in that there are no activities proposed. Alternative 2 was favorable for implementability. Alternative 3 was moderately favorable for implementability. Administrative feasibility was moderately favorable. However, technical feasibility was not favorable due to the significant technical operational difficulties of completing a removal action in the open ocean to depths of 120 feet, and the reliability of the alternative to complete the work without significant schedule delays is low.

Alternative 3 had the highest costs based on the need for multiple DGM teams, multiple water craft, and specially trained UXO dive teams to safely conduct the MEC removal and destruction. Alternative 2 had the next highest costs based on periodic site inspections and signage installation, while Alternative 1 had no associated costs.

Alternatives 2 and 3 were both assessed as being protective of human health and the environment, and compliant with ARARs. However, Alternative 2 had more favorable rankings, and while the Alternative 2 cost is relatively low, the Alternative 3 cost is significant.

With regard to the modifying criteria of state and community acceptance, based on review and input through the FS process, the MassDEP expressed support for the selected explosive hazard remedial alternative for the Ocean Portion of MRS-04 (AOI-06). MassDEP had no comments on the PP. During the public comment period, comments were received from the public during the virtual public meeting. A Responsiveness Summary is presented as Appendix C.

Table 2.9 summarizes the detailed comparative analysis of explosive hazards remedial alternatives for the Ocean Portion of MRS-04 (AOI-06).

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Table 2.9: Summary of Detailed Analysis of Explosive Risks Remedial Alternatives – the Ocean Portion of MRS-04 (AOI-06)

	Screening Criterion	Alternative 1: No Action	Alternative 2: Land Use Controls	Alternative 3: Partial MEC Removal 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	●	●	◐
	Cost ³	\$0.00	\$608,000	\$155,525,900
Modifying ⁴	State Acceptance ⁵	No	Yes	No
	Community Acceptance ⁶	No	Yes	No

- 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 Remedial Action Cost Engineering and Requirements (RACER) software. O&M for a 30-year duration is included, as applicable, for an alternative. Details provided in Appendix C of the FS.

⁴ – The Modifying criteria of state and community acceptance are based on review and input from these parties.

⁵ – MassDEP provided editorial comments only on the FS and provided no further comments on the conclusions. MassDEP was provided the PP and was notified of the public comment period and the public meeting in January 2022. MassDEP provided no comments on the recommendations in the PP.

⁶ – Only one member of the public responded to the PP by attending the public meeting in January 2022, and she did not object to the conclusions.

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2.12 Selected Remedy

The RI identified unacceptable explosive hazards posed by the possible presence of MEC at the Former Camp Wellfleet FUDS:

- For MRS-04, Alternative 2: Land Use Controls, is the selected remedial alternative to achieve the explosive hazards RAOs.

2.12.1 Summary of the Rationale for the Selected Remedy

2.12.1.1 Land Portion of MRS-04 (AOI-02)

Alternative 2, Land Use Controls, is protective of human health and the environment using LUCs to limit interactions with MEC in the MRS-04 areas. It will comply with all ARARs through coordination with NPS, USFWS, MassDEP, and the Town of Wellfleet, to minimize any disturbance and not cause a take of protected species. Alternative 2 is moderately favorable for long-term effectiveness by informing the public of the explosive risks, minimizing human exposure, and is favorable in the short-term because the estimated time to meet the remedial action objectives would be short. Alternative 2 is favorable in meeting the implementability criterion as it is technically feasible to produce educational materials, and provide notifications of intrusive work, and the materials and services to implement this alternative are readily available. While Alternative 3 had one more moderately favorable ranking, it was significantly more costly than Alternative 2.

2.12.1.2 Ocean Portion of MRS-04 (AOI-06)

Alternative 2, Land Use Controls, was ranked favorable for more criteria than were the other alternatives. It is protective of human health and the environment, is compliant with ARARs, is effective in the short term, and is favorable for implementability. Alternative 3 was favorable for only two criteria. The Alternative 2 cost is relatively low while the Alternative 3 cost is significant.

2.12.2 Description of the Selected Remedy

The RAOs for the selected remedy to mitigate unacceptable explosive hazards posed by MEC potentially remaining within the Former Camp Wellfleet FUDS are:

- For land-based MRS-04: eliminate unacceptable risk due to the presence of MEC to a depth of 3 feet below ground surface (bgs) to address direct contact by park personnel and recreational users, and direct contact of MEC in the subsurface to a depth of 6 feet bgs by authorized maintenance workers, such that acceptable conditions are achieved.
- For ocean-based MRS-04: eliminate unacceptable risk due to the presence of MEC on or beneath the sea floor (approximately 2 ft bgs) to address direct contact by park personnel, park visitors (waders, swimmers), and recreational divers, to a water depth of 120 feet, and the potential for interaction resulting from the use of fishing nets to the maximum depth of the AOI, such that acceptable conditions are achieved.

2.12.2.1 Land Use Controls

As developed for the Former Camp Wellfleet FUDS, Alternative 2, Land Use Controls, would include signs and educational activities (3 Rs training, pamphlets/flyers) to limit interactions with MEC in certain areas by providing awareness of potential hazards suspected to be present within

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the MRS, and periodic visual inspections to evaluate changing site conditions. These LUCs are designed to limit resource use by providing information that helps modify or guide human behavior at the Site. Specific details of the LUCs, including type, frequency, duration, etc., will be provided in a LUCIP, but major components are listed below:

- Signs: Installing signage in appropriate locations to modify or guide human behavior at the site. They would likely be placed at park headquarters and beach entrances.
- Pamphlets/flyers: Pamphlets describing the “3 Rs” of Recognize, Retreat, Report for UXO hazard avoidance will be placed at the park (likely at headquarters and other permanent structures available to the public), and/or a scannable QR code will be accessible at the park that will allow users to access the 3R’s pamphlets. Other pamphlets would be distributed via hard copy and/or electronically to local fishermen warning of the presence of UXO in MRS-04.
- Training: UXO awareness training will be provided for park personnel either in-person, by video training, or virtually.
- Periodic sign maintenance and visual site inspections.

This alternative includes the requirement to ensure the safe conduct of any intrusive activity conducted by authorized park maintenance or construction workers. The USACE does not have the authority to implement, enforce, or maintain LUCs that involve real property title restrictions or encumbrances because the property is no longer under DoD control. However, a property owner, such as NPS, may consent to the creation and placement of a restriction affecting the property. The primary responsibility for management and maintenance for such a LUC rests with the property owner. Here, NPS, as the property owner, has committed to implementing and maintaining anomaly avoidance procedures for intrusive work in areas that may be developed in the future (see the Institutional Analysis, Appendix D of the Feasibility Study, USACE, 2021).

The LUCIP, developed by USACE in coordination with NPS, will include a delineation of LUCs to be carried out by USACE and enforcement and maintenance responsibilities to be carried out by NPS. The USACE cannot require a LUC that requires the use of UXO qualified personnel during intrusive activities. However, UXO Qualified Personnel are recommended during any subsurface intrusive activities, including anomaly avoidance. The USACE has no authority to provide “as needed” or “on-call” UXO construction support or disposal. However, NPS has committed to implementing and maintaining anomaly avoidance procedures for intrusive work in areas that may be developed in the future and following the 3Rs procedure to report any munitions observed after storm events.

For the ocean portion of MRS-04, LUCs would also modify behavior by providing awareness and education (training, pamphlets, flyers) concerning the hazards potentially present within the MRS.

USACE has coordinated with NOAA to add the ocean portion of the MRS-04 range fan to navigational charts of Cape Cod, which will serve to warn users of those charts of the possible explosive hazard. NOAA has identified the ocean portion of MRS-04 as a UXO Hazard Area on their nautical charts, with the following warning: This area is a former firing range active from 1952 to 1961. Mariners are cautioned against anchoring, dredging or trawling in this area due to

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the possible existence of unexploded ordnance.. As part of the LUCIP, USACE will periodically inspect the NOAA navigational charts to confirm the UXO Hazard Area remains on the navigational charts.

2.12.3 Summary of the Estimated Remedial Costs

Detailed cost estimates for all alternatives were developed as part of the FS Report. These costs are summarized in Appendix B of this Record of Decision.

- The estimated cost to implement Alternative 2 for the land portion of MRS-04 is approximately \$153,500 in capital costs plus \$476,300 for 30-years of O&M for a total present worth cost of \$629,800.
- The estimated cost to implement Alternative 2 for ocean portion of MRS-04 is approximately \$131,700 in capital costs plus \$476,300 for 30-years of O&M for a total present worth cost of \$608,000.

These cost estimates were developed using Remedial Action Cost Engineering Requirements (RACER) software, prior estimates, sound engineering judgment, and actual costs from implementation of these remedial alternatives on similar projects. Changes in the cost elements may occur as a result of new information and data collected during the engineering design of the remedial alternative. These are order-of-magnitude engineering cost estimates that are expected to be within +50 to -30 percent of the actual project costs.

2.12.4 Expected Outcomes of the Selected Remedy

Based on the information available at this time, the selected remedies for explosive hazards potentially present at the Former Camp Wellfleet FUDS will be protective of human health, will comply with ARARs, and will be cost-effective. NPS and the Town of Wellfleet have stated that no changes to the current land use are projected. Upon implementation of these remedies, there will be no conflicts with this statement as there will be no change in the use of the land associated with these areas. It should be noted that MRS 05 was removed from this project due to change in anticipated future use. MRS 05 will be addressed under a separate FS-ROD.

2.13 Statutory Determinations

To meet the statutory requirements of Section 121 of CERCLA, remedial actions must:

- Protect human health and the environment,
- Comply with ARARs,
- Be cost effective, and
- Use, to the maximum extent practicable, permanent solutions and alternative treatment or resource recovery technologies.
- Satisfy the preference for treatment on site as a principal element or justify the selection of an alternative remedy

The following discussions summarize those statutory requirements and how each remedy meets them.

March 2024

2.13.1 Land Use Controls

The selected remedy for MRS-04, Land Use Controls, is protective of human health and the environment. The post-remedy RMM supports the risk conclusions that educational awareness to help modify human behavior at the Site will lessen the frequency of use of the area and lessen the likelihood of encountering and imparting energy to a potential MEC item, achieving acceptable conditions.

LUCs for the Former Camp Wellfleet will include educational awareness (3 Rs training and pamphlets), periodic sign maintenance and site inspections, and installation of warning signs. Methodologies for implementation of the LUCs will be provided in a LUCIP.

The remedy is compliant with ARARs (related to the protection of wildlife species, both on the land and in the ocean). Any minor disruptive activity of this alternative would be implemented to comply with these ARARs through coordination with NPS, USFWS, and MassDEP, to minimize any disturbance and not cause a take of these species.

The costs for this remedy were lower than the other alternative (excepting the No Action alternative) evaluated. LUCs would include costs for a LUCIP, O&M, and administrative costs for development of educational and notification requirements. O&M costs are included for USEPA's suggested maximum 30 year period as it cannot be determined how long O&M will be required.

The selected remedy does not remove MEC, but it sufficiently alters behavior to limit interactions with MEC. The selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be used in a cost effective and practicable manner for explosive hazards within the Former Camp Wellfleet FUDS.

This remedy affords the best balance of tradeoffs as compared to all other evaluated alternatives for MRS-04.

This remedy does not achieve UU/UE, and therefore, a CERCLA 5-year review is required. These reviews are conducted to determine whether the selected remedy remains protective of human health, safety, and the environment.

2.14 Documentation of Significant Changes

A public comment period was established from January 03 to February 06, 2022, and a virtual public meeting was held on January 12, 2022, for the purpose of obtaining input and feedback from the public on the selected remedies, as presented in the Proposed Plan (USACE, 2021a).

Comments were received from NPS through review of the FS process and NPS expressed support for Alternative 2. However, during the review of the PP, NPS advised of plans for construction within MRS-05 (AOI-05). MRS-05 was removed from this ROD and it will be addressed in a separate FS, PP, and ROD.

Except that MRS-05 was removed from this ROD, there are no significant changes to the selected remedy presented in the PP and the ROD.

During the public comment period, comments were received from the public during the virtual public meeting. A Responsiveness Summary is presented as Appendix C.

March 2024

3.0 RESPONSIVENESS SUMMARY

3.1 Stakeholder Comments and Lead Agency Responses

USACE specifically invited comments from the community and other interested parties, not only on the Proposed Plan which included the preferred alternatives, but also on the acceptability of all the alternatives identified in the FS Report. A public comment period was established from January 03 to February 06, 2022, and a virtual public meeting was held on January 12, 2022, for the purpose of obtaining input and feedback from the public on the selected remedies, as presented in the Proposed Plan (USACE, 2021a). The public comment period and the virtual public meeting were advertised in a public notice in the Cape Cod Times on January 03, 2022 (Appendix C-3). The virtual public meeting began at 6:00 PM via Webex with representatives from the USACE, National Park Service, with limited public participation. Several questions were asked, and preliminary responses were provided, with written responses provided in Appendix C-6.

The MassDEP provided input and comment through the review cycle on the Draft-Final Proposed Plan, ultimately concurring with the selected alternatives for MRS-04 and MRS-06 at the Former Camp Wellfleet FUDS. Comments were received from NPS through review of the Proposed Plan (Appendix C-5). During the public comment period, comments were received from the public during the virtual public meeting. During review of the ROD, MassDEP requested the ROD elaborate on land use controls identified for the ocean portion of MRS-04. Based on the comment from MassDEP, USACE advised that USACE does not have the authority to implement, enforce, or maintain LUCs in the ocean fan as this area is not under DoD control. However, the responsible federal authority such as the NOAA, may consent to the creation and placement of a restriction affecting the property. NOAA has identified the ocean portion of MRS-04 as a UXO Hazard Area on their nautical charts, with the following warning: This area is a former firing range active from 1952 to 1961. Mariners are cautioned against anchoring, dredging or trawling in this area due to the possible existence of unexploded ordnance.. As part of the LUCIP, USACE will periodically inspect the NOAA navigational charts to confirm the UXO Hazard Area remains on the navigational charts.

Based on comments on the PP from NPS, MRS-05 (formerly AOI-05) was removed from this ROD. The NPS is planning construction in MRS-05 which changes the anticipated future use of MRS-05 and thus require a different remedy than that outline for MRS-04. A separate FS, PP and ROD will be prepared for MRS-05.

Key elements of the Responsiveness Summary are presented as Appendix C. These include a transcript of the virtual public meeting (C-1), the meeting slides from the virtual public meeting (C-2), the Cape Cod Times public notice (C-3), USACE correspondence with MassDEP on the FS PP and draft final ROD (C-4), the NPS comments on PP and concurrence on selected alternatives (C-5), and the USACE response to public comments (C-6).

3.2 Technical and Legal Issues

The public participation requirements set out in the NCP at 40 CFR 300.435(c) have been met for the Former Camp Wellfleet FUDS. There were no significant technical or legal issues raised in the process of developing this Record of Decision.

March 2024

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4.0 REFERENCES

- USACE, 1994. *Archive Search Report Conclusions and Recommendations for the Former Camp Wellfleet, Wellfleet Massachusetts*. 19 December.
- USACE, 2000. *Final Former Camp Wellfleet Engineering Evaluation and Cost Analysis (EE/CA)*. May.
- USACE, 2007. *Final Archives Search Report Findings for the former Camp Wellfleet*. February.
- USACE, 2014. *USACE FUDS Handbook on Delineation and Munitions Response Site Prioritization Protocol Implementation*. March.
- USACE, 2017. *Decision Logic to Assess Risks Associated with Explosive risks and to Develop Remedial Action Objectives for Munitions Response Sites*. December.
- USACE, 2019. *Final Remedial Investigation Report, Former Camp Wellfleet Formerly Used Defense Site, Wellfleet, Massachusetts*. April.
- USACE, 2021. *Final Feasibility Study, Former Camp Wellfleet Formerly Used Defense Site, Wellfleet, Massachusetts*. June.
- USACE, 2021a. *Final Proposed Plan, Former Camp Wellfleet Formerly Used Defense Site, Wellfleet, Massachusetts*. November.
- USACE, 2023. *Defense Environmental Restoration Program - Formerly Used Defense Sites (DERP-FUDS) Amended Inventory Project Report (INPR) for Property No. D01MA0033, Camp Wellfleet, Wellfleet, Massachusetts*. April.
- Zapata, 2006. *Site Specific Final Investigation Report – Addendum, Ordnance and Explosive Removal Action, Former Camp Wellfleet, Volumes I and II*. April.

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Appendix A: / Site Figures

Figure A-1: Site Location

Figure A-2: Site layout

Figure A-3: Munitions Response Area 04

Figure A-4: Munitions Response Site 04

Figure A-5: Munitions Response Site 05

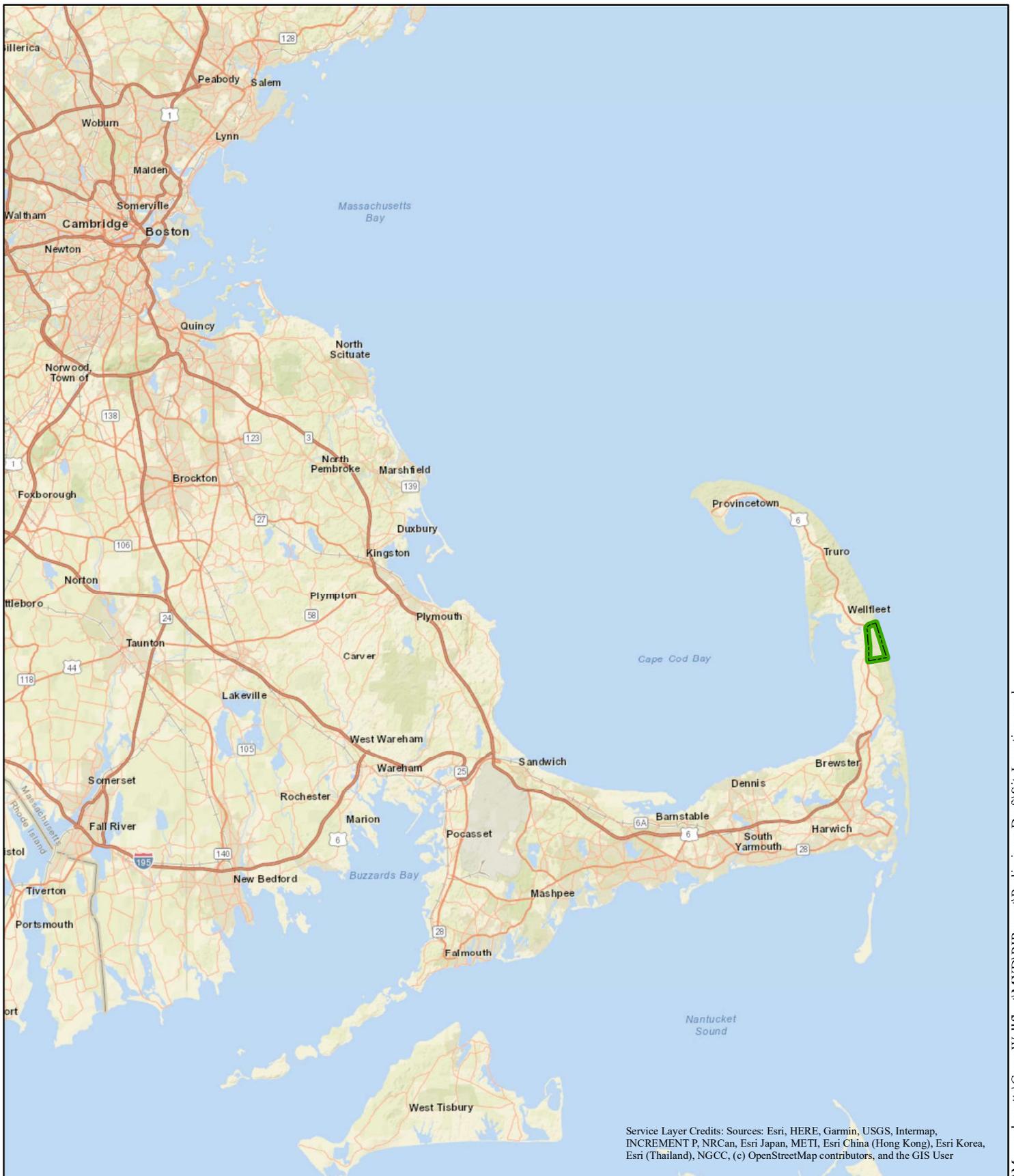
Figure A-6: Munitions Response Site 06

Figure A-7: Land portion of MRS 04 (AOI-02)

Figure A-8: Ocean portion of MRS 04 (AOI-06)

March 2024

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Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User



Legend

-  Former Camp
-  Wellfleet Boundary

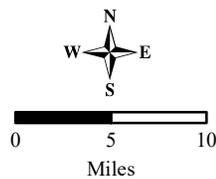


Figure A-1
Site Location
 Former Camp Wellfleet
 Wellfleet, Barnstable County,
 Massachusetts



Legend

-  MRS-04
-  MRS-05
-  MRS-06

Areas of Interest (AOIs)

-  AOI-01
-  AOI-02
-  AOI-03
-  AOI-04
-  AOI-05
-  AOI-06

 Town of Wellfleet Parcel

 Former Camp Wellfleet Boundary

Aerial Image Background:
ESRI Online

Map data updated based on revised
GIS data subsequent to the April
2019 RI Report.

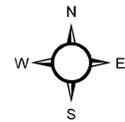
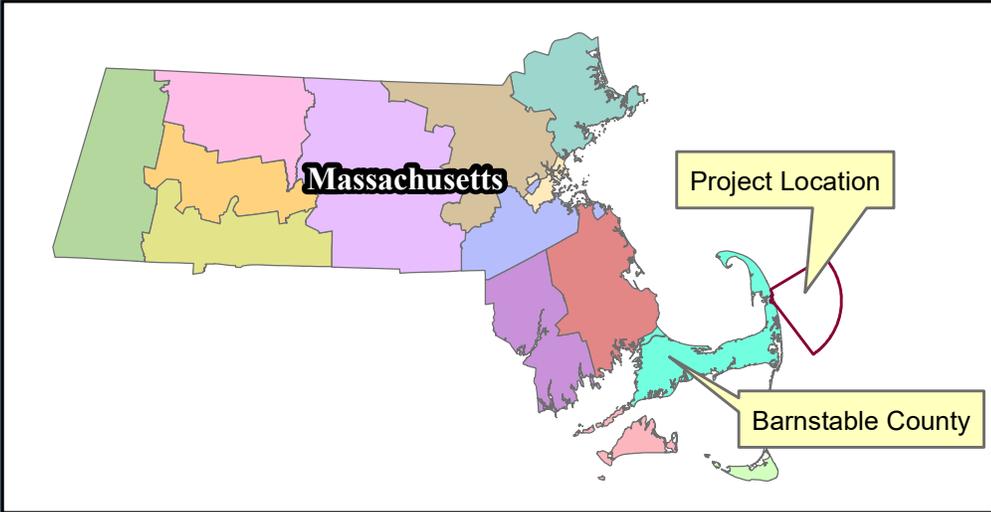


Figure A-2
Areas of Interest within
Munitions Response Sites

CP Wellfleet
Wellfleet, Barnstable County,
Massachusetts



Legend

- MRA-04
- MRS-06
- MRS-04
- MRS-05
- Former Camp Wellfleet Boundary
- Barnstable County

Aerial Image Background:
ESRI Online

Map data updated based on revised GIS data subsequent to the April 2019 RI Report.

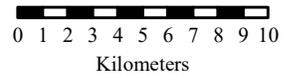
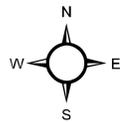
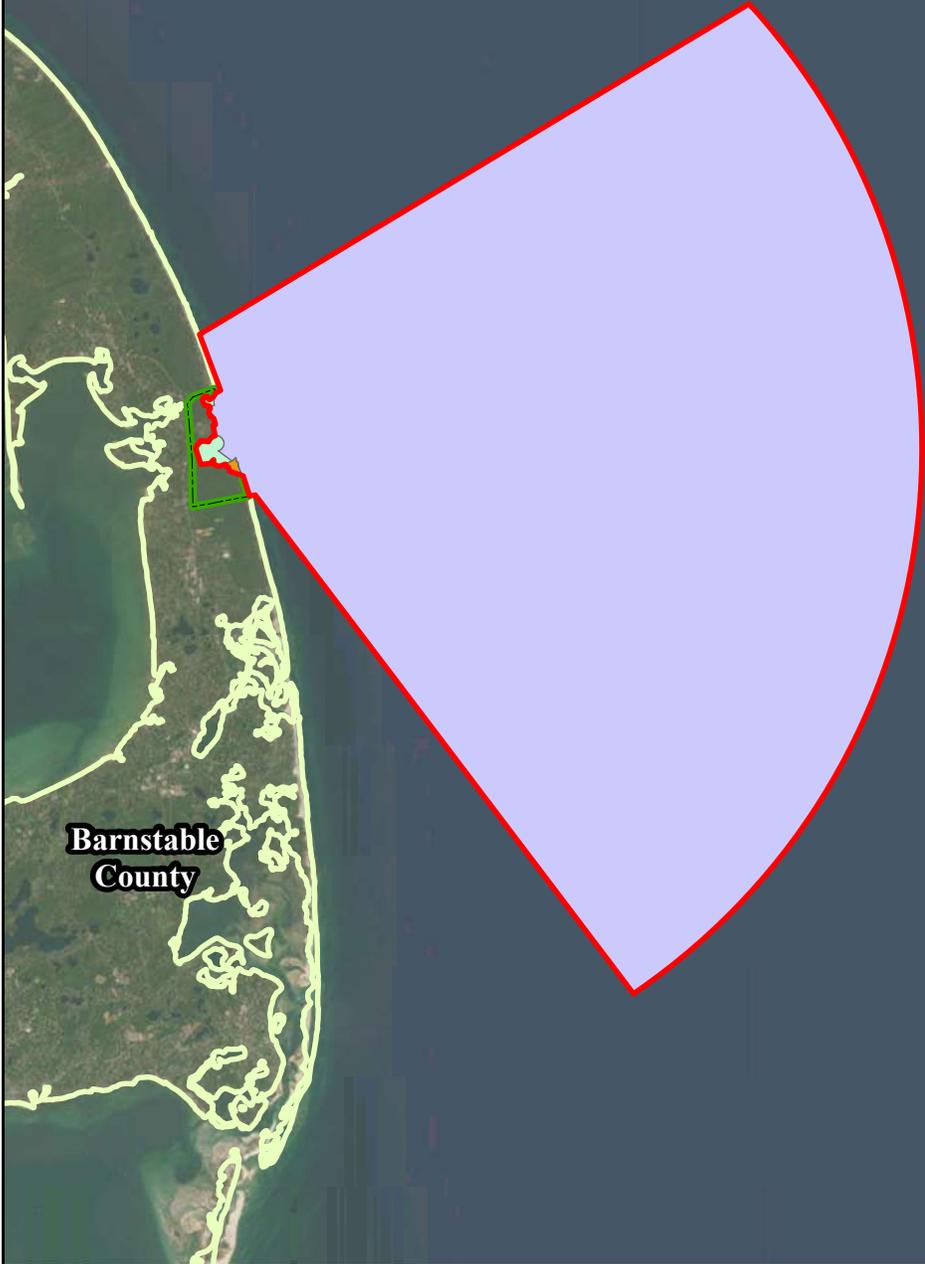
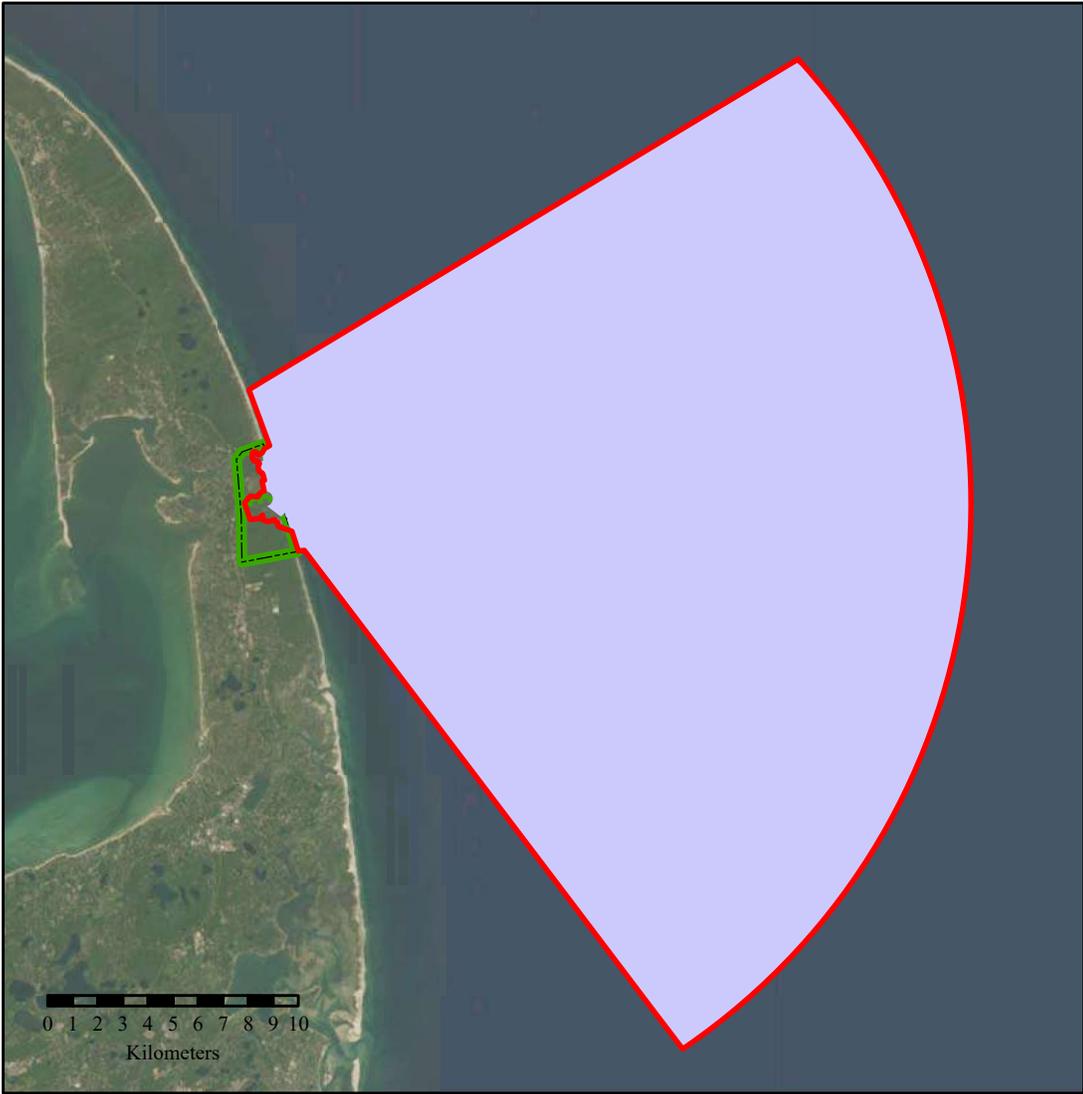


Figure A-3
Munitions Response Area 04
Property Map
FFID MA19799F178100
FUDS Property No.
D01MA0033
CP Wellfleet
Wellfleet, Barnstable County,
Massachusetts



Legend

— MRA-04

■ MRS-04

□ Town of Wellfleet Parcel

□ Former Camp Wellfleet Boundary

Aerial Image Background:
ESRI Online

Map data updated based on revised
GIS data subsequent to the April
2019 RI Report.

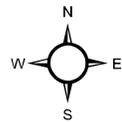
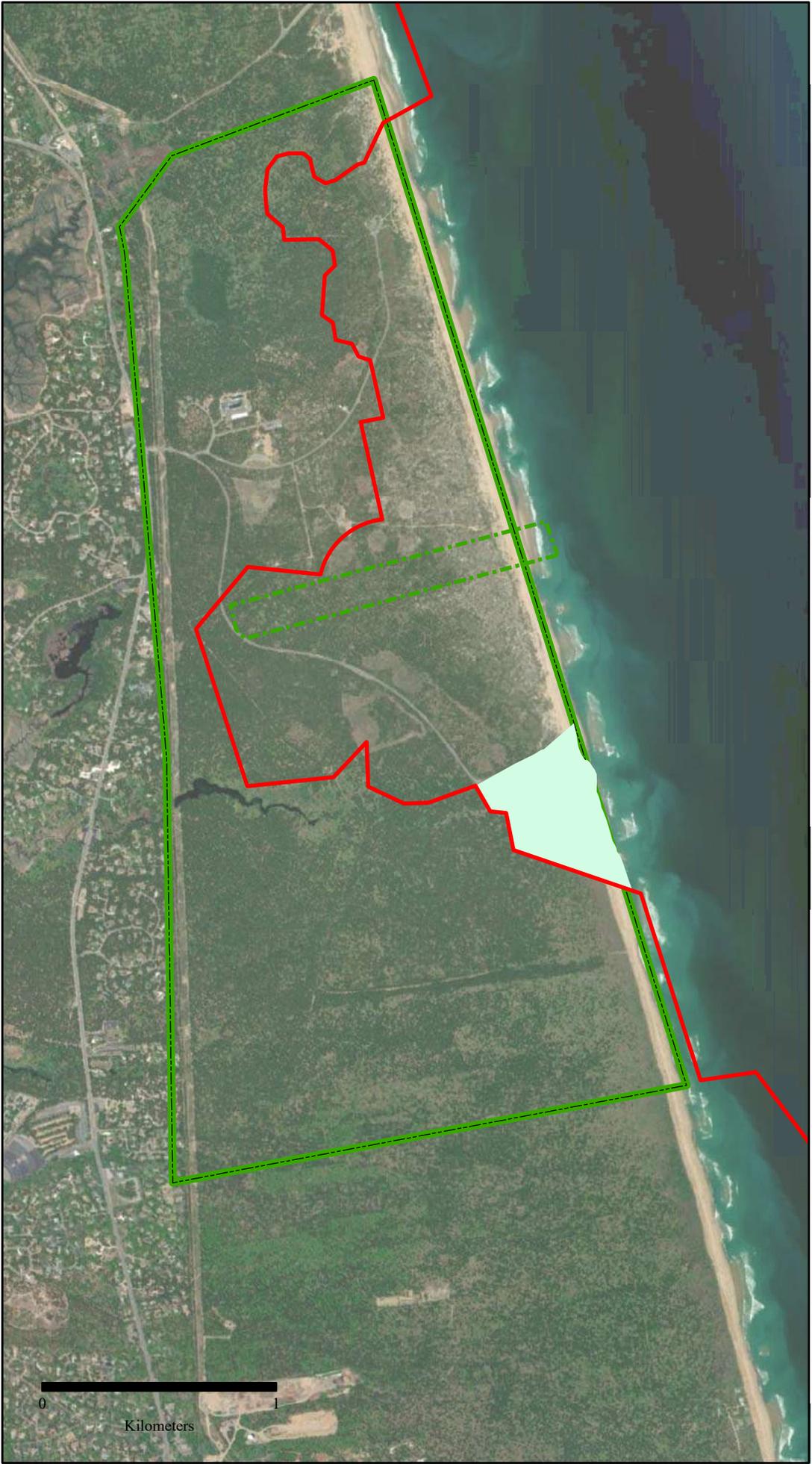


Figure A-4
Munitions Response Site 04
FFID MA19799F178100
FUDS Property No.
D01MA003304
CP Wellfleet
Wellfleet, Barnstable County,
Massachusetts



Legend

— MRA-04

■ MRS-05

--- Town of Wellfleet Parcel

■ Former Camp Wellfleet Boundary

Aerial Image Background:
ESRI Online

Map data updated based on revised GIS data subsequent to the April 2019 RI Report.

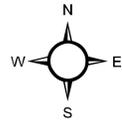
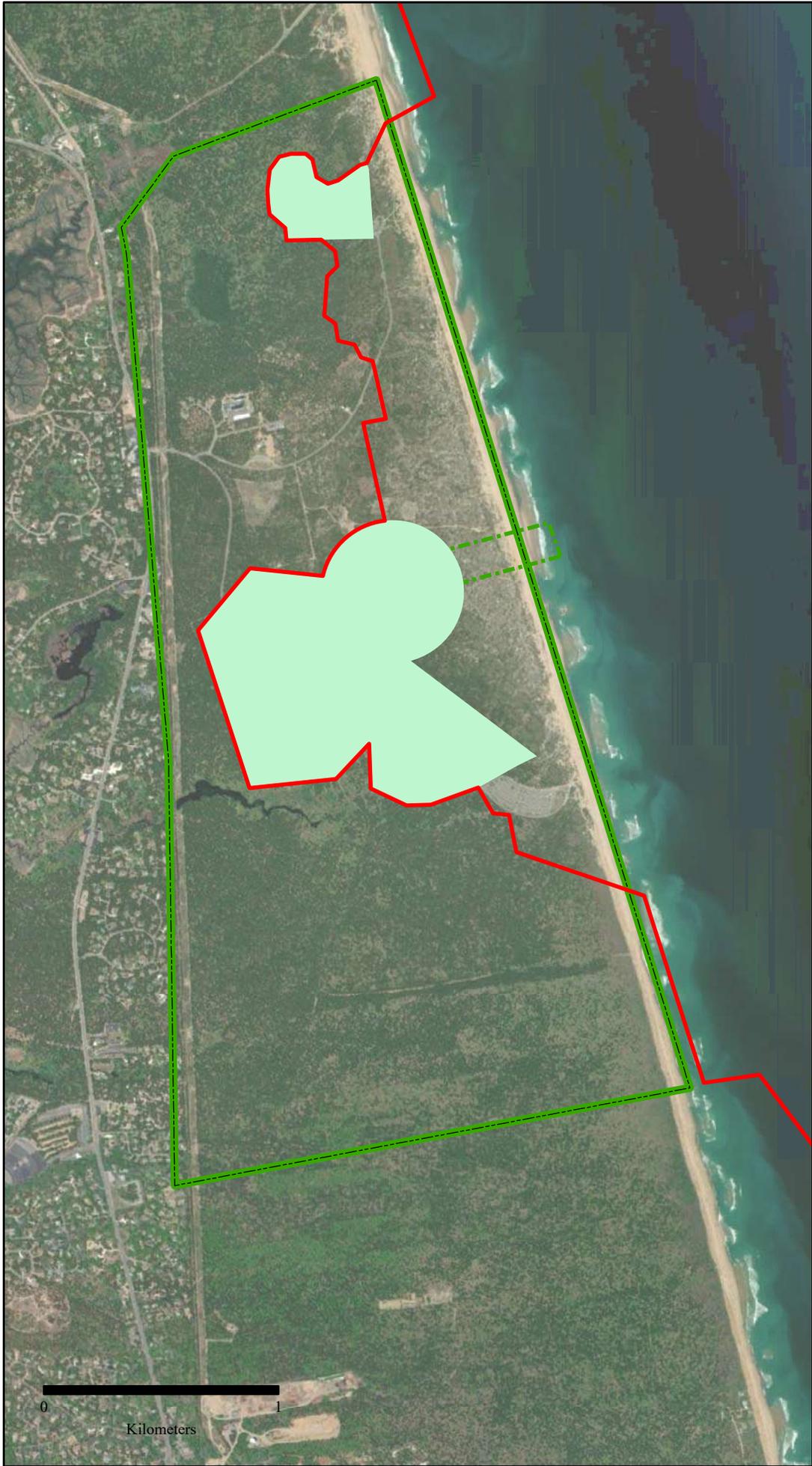


Figure A-5
Munitions Response Site 05
FFID MA19799F178100
FUDS Property No.
D01MA003305
CP Wellfleet
Wellfleet, Barnstable County,
Massachusetts



Legend

— MRA-04

■ MRS-06

⋯ Town of Wellfleet Parcel

□ Former Camp Wellfleet Boundary

Aerial Image Background:
ESRI Online

Map data updated based on revised GIS data subsequent to the April 2019 RI Report.

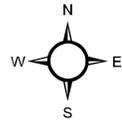
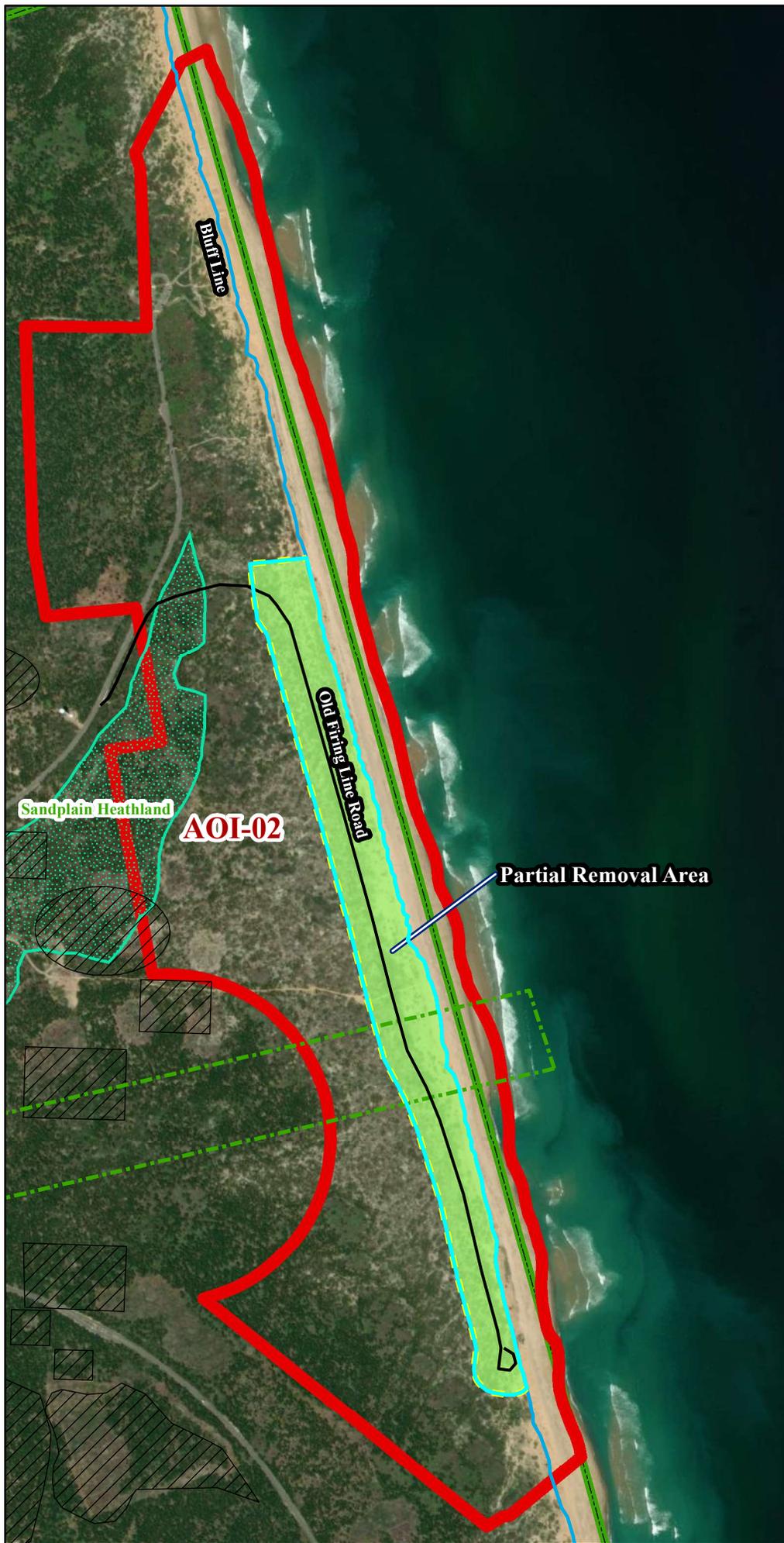


Figure A-6
Munitions Response Site 06
FFID MA19799F178100
FUDS Property No.
D01MA003306
CP Wellfleet
Wellfleet, Barnstable County,
Massachusetts



Legend

- 150 ft Partial Removal Limit (associated with Alternative 3)
- Partial Removal Area (associated with Alternative 3) (39.2 Acres)
- Historical Firing Line Road
- Approximate Bluff Location (2015)
- NHESP Natural Community Sandplain Heathland
- AOI-02 Boundary
- Areas Ineligible for Work by Request of the Cape Cod National Seashore National Park Service (CCNS NPS) due to Ongoing Research or Habitat Establishment
- Camp Wellfleet Boundary
- Town of Wellfleet Parcel

NHESP - Natural Heritage & Endangered Species Program

Aerial: ESRI Online
 Natural Communities: NHESP BioMap2 Core Habitat Priority Natural Communities

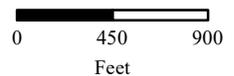
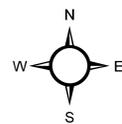
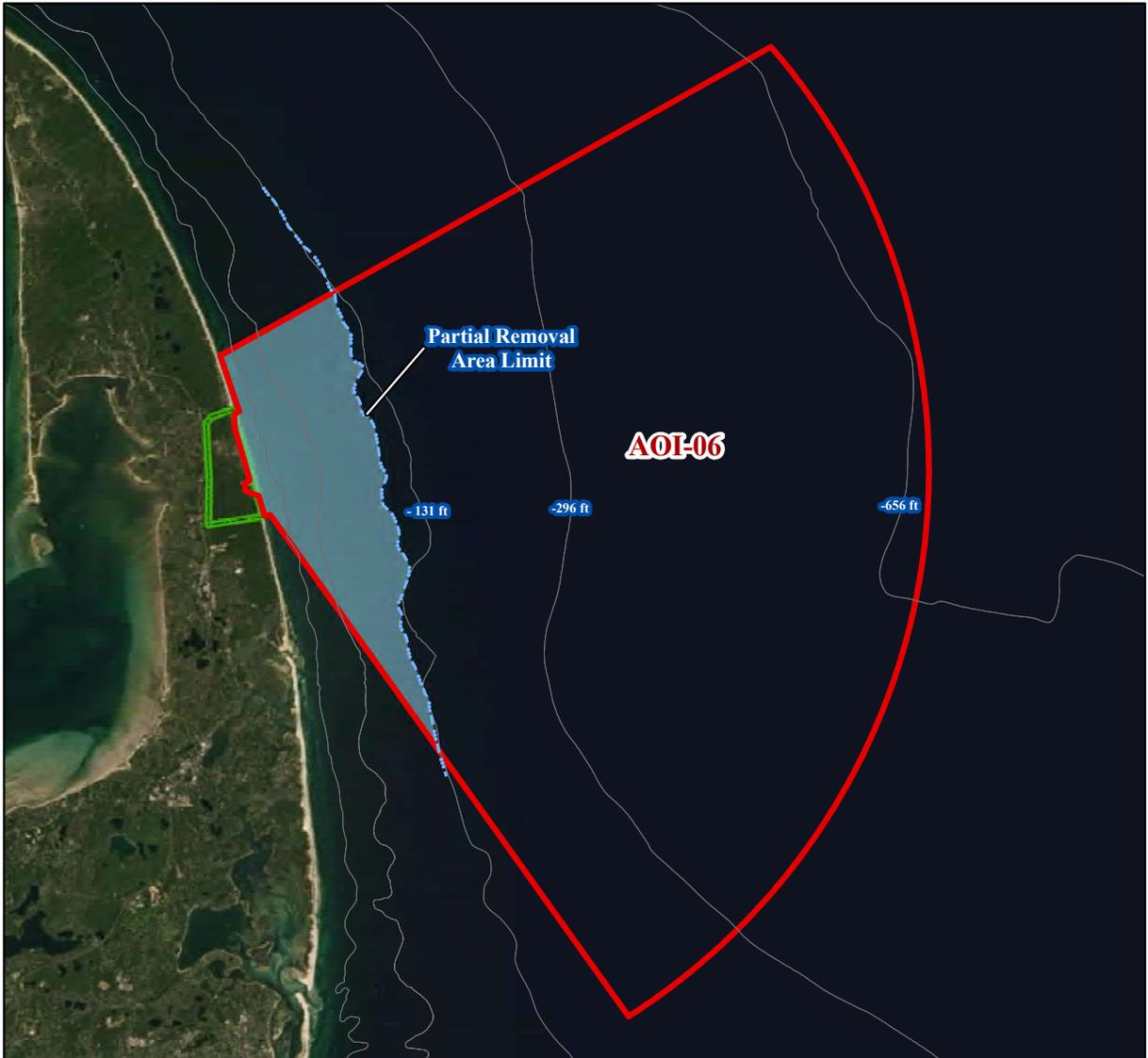


Figure A-7
Land Portion MRS 04
(AOI-02)
 Former Camp Wellfleet
 Wellfleet, Barnstable County,
 Massachusetts



Legend

- Partial Removal Area Limit (associated with Alternative 3)
- 120 ft Deep Recreational Diver's Limit (15,693 Acres)
- AOI-06
- Bathymetric Contours
- Camp Wellfleet Boundary

Aerial: ESRI Online
 Bathymetry: EOEa Coastal Zone Management - Mass GIS
<http://www.state.ma.us/mgis/>
 120 ft depth line derived from NOAA navigation chart.

Figure A-8
Ocean Portion MRS 04
AOI-06
 Former Camp Wellfleet Wellfleet,
 Barnstable County, Massachusetts

Appendix B: Costing Tables

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APPENDIX B: FORMER CAMP WELLFLEET FUDS
COST SUMMARY SHEET

	Alternative 1	Alternative 2			Alternative 3		
	No Action	Land Use Controls			Partial MEC Removal with LUCs		
		Capital	O&M	TOTAL	Capital	O&M	TOTAL
AOI-2	\$ -	\$ 153,451.00	\$ 476,332.00	\$ 629,783.00	\$ 1,473,531.00	\$ 476,332.00	\$ 1,949,863.00
AOI-6	\$ -	\$ 131,690.00	\$ 476,332.00	\$ 608,022.00	\$ 155,049,559.00	\$ 476,332.00	\$ 155,525,891.00

Assumptions:

	Number of signs	Area (acres)	Removal area (acres)
AOI-2	4	275	39.2
AOI-6	4	167,856	15,693

LUCs

Planning Document includes LUCIP of low complexity and one meeting.
Signs are assumed for costing purposes. Cost is \$531.00 each, without markup.
Periodic review for AOI-2 includes Document Review, Site Inspection, Report, and Travel. Six reviews beginning in 2024.
Periodic review for AOI-6 includes Document Review, Interviews (Staff Management, Community Groups, State Contacts, and Local Gov't Contacts), and Report. Six reviews beginning in 2024.
30-year O&M for all AOIs includes 15 site visits and reports (biennial).

Partial MEC Removal with LUCs, AOI-2 (Land)

Includes 3 meetings, 1 site visit, UFP QAPP, GIS, CRP, ESS, HASP, Cultural and Archaeological Plan, Environmental Plan.
50% with AGC, 50% Mag & Dig.
Anomaly Density 100/acre.
Removal areas shown in Figure 3.
No Onsite Donor Explosive Storage.
Topography is gently rolling, vegetation is "Heavy Grass with Numerous Shrubs." Vegetaion removal cost reflects expected limitations set by NPS (i.e., species may be prohibited from being cut).
Vegetation removal is 25% moderate removal, 50% light removal, 25% no removal (areas where cutting prohibited).
Reports include After Action Report, Independent Blind Seed Tracking, IVS Memo, Anomaly Selection Memo, TOI Memo.
Remedial Action starts June 2020.
LUCIP of low complexity to establish educational awareness measures.
30-year O&M includes 15 site visits and reports (biennial).

Partial MEC Removal with LUCs, AOI-6 (Water)

Includes 3 meetings, 1 site visit, UFP QAPP, GIS Database, CRP, ESS, PMP, QASP, HASP.
100% DGM (no AGC) in ocean with towed array of sensors (mag/EM unspecified).
Anomaly Density 20/acre (313,000 anomalies). Assuming 10 rounds/day from 16 cannons, for 5 days a week, for 15 years (16 x 10 x 5 x 52 x 15) = 624,000 rounds fired. Assume half of that is within target zone (313,000)
Removal area shown in Figure 6 (shoreline to 120 ft depth contour).
Dive team is 2 divers (one active, one safety), one tender, and one boat operator. Dive supervisor is assumed to be the SUXOS.
One dive team assumed to be able to complete 1 acre or 20 anomalies/day on average. Thus field duration is 15693 days assuming one dive team. Assuming 260 work days/year, duration is over 60 years. Assuming 10 dive teams, duration is 6 years.
Reports include After Action Report, IVS Memo, Anomaly Selection Memo.
LUCIP to establish educational awareness measures. The need for signs assumes none placed as part of AOI-02 or AOI-05.
30-year O&M includes 15 site visits and reports (biennial).

Costs developed using RACER 11.5.99 (2018).

Estimate Documentation Detailed Report - Layout 2

Software:

RACER Version: RACER® Version 11.5.99.0
Database Location: N:\Projects_Ongoing\3752-Camp Wellfleet\06_FS
Report\RACER\Racer_Backup_7_31_2019.mdb

Folder:

Folder Name: Wellfleet

Project:

ID: Alternative 2
Name: Administrative LUC
Category: None

Location

State / Country: MASSACHUSETTS
City: CAPE COD

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	1.180	1.180	

Options

Database: System Costs
Cost Database Date: 2019
Report Option: Fiscal

Description Administrative Land Use Controls (LUCs) including signs

Estimate Documentation Detailed Report - Layout 2

Site:

ID: AOI-2
Name: Area of Interest 2
Type: None

Media/Waste Type

Primary: Ordnance (not residual)
Secondary: N/A

Contaminant

Primary: Ordnance (not residual)
Secondary: None

Phase Names

Pre-Study	<input type="checkbox"/>	
Study	<input type="checkbox"/>	
Design	<input type="checkbox"/>	
Removal/Interim Action	<input type="checkbox"/>	
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input type="checkbox"/>	
Site Closeout	<input type="checkbox"/>	

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: Area of Interest 2 (AOI-2)
Former Artillery Firing Line

Support Team: Michelle Chesnut

References: Final Remedial Investigation Report, Former Camp Wellfleet FUDS Remedial Investigation Through Decision Document, Wellfleet, Massachusetts (April 2019)

Estimator Information

Estimator Name: James Stuby
Estimator Title: Project Geophysicist
Agency/Org./Office: ERT, Inc.
Business Address: 14401 Sweitzer Lane
Suite 300
Laurel, MD 20707
Telephone Number: 301-323-1429
Email Address: james.stuby@ertcorp.com
Estimate Prepared Date: 06/24/2019

Estimator Signature: _____

Date: _____

Estimate Documentation Detailed Report - Layout 2

Reviewer Information

Reviewer Name: Thomas Bachovchin
Reviewer Title: Project Manager
Agency/Org./Office: ERT, Inc.
Business Address: 14401 Sweitzer Lane
Suite 300
Laurel, MD 20707
Telephone Number: 301-323-1442
Email Address: thomas.bachovchin@ertcorp.com
Date Reviewed: 06/24/2019

Reviewer Signature: _____

Date: _____

Estimate Costs:

<u>Phase Names</u>	<u>Marked-Up Cost</u>
Periodic Review	\$70,384
Administrative LUC (signs)	\$83,067
30-Year O&M	\$476,332
Total Cost:	\$629,782
Escalation:	\$191,354
Total Project Cost:	\$821,136

Phase Documentation:

Phase Type: Remedial Action

Phase Name: Periodic Review

Description: Periodic Review

Approach: Ex Situ

Start Date: June, 2024

Labor Rate Group: System Labor Rate

Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

Five-Year Review

<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
Yes	100	0

Total Marked-up Cost: \$70,383.52

Estimate Documentation Detailed Report - Layout 2

Technologies:

Technology Name: **Five-Year Review (#2)**

User Name: **Five-Year Review**

Description	Default	User	UOM
<i>System Definition</i>			
<u>Required Parameters</u>			
Site Complexity		Low	n/a
Document Review		Yes	n/a
Interviews		No	n/a
Site Inspection		Yes	n/a
Report		Yes	n/a
Travel		Yes	n/a
Rebound Study		No	n/a
Start Month		June	n/a
No. Reviews		6	EA
Start Year		2024	n/a
Safety Level		D	n/a
<i>Document Review</i>			
<u>Required Parameters</u>			
5-Year Review Check List		Yes	n/a
Record of Decision		No	n/a
Remedial Action Design & Construction		No	n/a
Close-Out Report		No	n/a
Operations & Maintenance Manuals & Reports		No	n/a
Consent Decree or Settlement Records		No	n/a
Groundwater Monitoring & Reports		No	n/a
Remedial Action Required		No	n/a
Previous 5-Year Review Reports		No	n/a
<i>Site Inspection</i>			
<u>Required Parameters</u>			
General Site Inspection		Yes	n/a
Containment System Inspection		No	n/a
Monitoring Systems Inspection		No	n/a
Treatment Systems Inspection		No	n/a
Regulatory Compliance		No	n/a
Site Visit Documentation (Photos, Diagrams, etc.)		Yes	n/a
<i>Report</i>			
<u>Required Parameters</u>			
Introduction		No	n/a
Remedial Objectives		No	n/a
ARARs Review		No	n/a

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Five-Year Review (#2)**

User Name: **Five-Year Review**

Description	Default	User	UOM
Report			
<u>Required Parameters</u>			
Summary of Site Visit		Yes	n/a
Areas of Non Compliance		Yes	n/a
Technology Recommendations		No	n/a
Statement of Protectiveness		No	n/a
Next Review		No	n/a
Implementation Requirements		No	n/a
Travel			
<u>Required Parameters</u>			
Number of Travelers		1	EA
Number of Days		1	EA
Air Fare Ticket Price		500.00	\$
Need a rental car?		Yes	n/a

Comments:

Phase Documentation:

Phase Type: Operations & Maintenance
Phase Name: Administrative LUC (signs)
Description: Administrative Land Use Controls including signs (4 signs)

Start Date: June, 2019
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

<u>Technology Markups</u>	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
ADMINISTRATIVE LAND USE CONTROLS	Yes	100	0

Total Marked-up Cost: \$83,066.79

Technologies:

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Administrative Land Use Controls (#1)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
<i>System Definition</i>			
<u>Required Parameters</u>			
Rename Model		ADMINISTRATIVE LAND USE CONTROLS	n/a
Planning Documents		Yes	n/a
Planning Documents: Start Date		2019	n/a
Implementation		Yes	n/a
Implementation: Start Date		2019	n/a
Monitoring & Enforcement		No	n/a
Modification/Termination		No	n/a
Type of Site		Active Government Installation	n/a
<i>Planning Documents</i>			
<u>Required Parameters</u>			
LUC Assurance Plan (LUCAP)		No	n/a
LUC Implementation Plan (LUCIP)		Yes	n/a
LUC Implementation Plan (LUCIP): Number		1	EA
LUC Implementation Plan (LUCIP): Plan Complexity		Low	n/a
Long-term Stewardship (LTS) Plan		No	n/a
Long-term Stewardship (LTS) Plan: Number		0	EA
Memorandum of Agreements (MOA)		No	n/a
Memorandum of Agreements (MOA): Number		0	EA
Installation (or City) Master Plan		No	n/a
Construction Permitting		No	n/a
Construction Permitting: Number		0	EA
Geographic Information Systems (GIS)/Overlay Maps		No	n/a
Geographic Information Systems (GIS)/Overlay Maps: Number		0	EA
<i>Planning Meetings</i>			
<u>Required Parameters</u>			
LUCAP: Number of Meetings		0	EA
LUCAP: Number of People		0	EA
LUCAP: Number of Days		0	EA
LUCAP: Airfare Cost		0.00	\$
LUCAP: Mileage to Meeting Site		0	MI
LUCIP: Number of Meetings		1	EA
LUCIP: Number of People		1	EA
LUCIP: Number of Days		1	EA
LUCIP: Airfare Cost		1.00	\$
LUCIP: Mileage to Meeting Site		100	MI
LTS: Number of Meetings		0	EA

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Administrative Land Use Controls (#1)**User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
<i>Planning Meetings</i>			
<u>Required Parameters</u>			
LTS: Number of People		0	EA
LTS: Number of Days		0	EA
LTS: Airfare Cost		0.00	\$
LTS: Mileage to Meeting Site		0	MI
MOA: Number of Meetings		0	EA
MOA: Number of People		0	EA
MOA: Number of Days		0	EA
MOA: Airfare Cost		0.00	\$
MOA: Mileage to Meeting Site		0	MI
Master Plan: Number of Meetings		0	EA
Master Plan: Number of People		0	EA
Master Plan: Number of Days		0	EA
Master Plan: Airfare Cost		0.00	\$
Master Plan: Mileage to Meeting Site		0	MI
Construction Permitting: Number of Meetings		0	EA
Construction Permitting: Number of People		0	EA
Construction Permitting: Number of Days		0	EA
Construction Permitting: Airfare Cost		0.00	\$
Construction Permitting: Mileage to Meeting Site		0	MI
GIS/Overlay Maps: Number of Meetings		0	EA
GIS/Overlay Maps: Number of People		0	EA
GIS/Overlay Maps: Number of Days		0	EA
GIS/Overlay Maps: Airfare Cost		0.00	\$
GIS/Overlay Maps: Mileage to Meeting Site		0	MI
<i>Implementation</i>			
<u>Required Parameters</u>			
Modify Installation (or City) Master Plan		No	n/a
Deed Notification		No	n/a
Deed Notification: Number		0	EA
Negotiating Easements		No	n/a
Negotiating Easements: Number		0	EA
Restrictive Covenants		No	n/a
Restrictive Covenants: Number		0	EA
Equitable Servitudes		No	n/a
Equitable Servitudes: Number		0	EA
Access Control Signs		Yes	n/a
Access Control Signs: Number		4	EA
Access Control Signs: Task Complexity		Low	n/a
Utility Notification Service		Yes	n/a

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Administrative Land Use Controls (#1)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
Implementation			
<u>Required Parameters</u>			
Access Control Signs: Number		1	EA
Access Control Signs: Task Complexity		Low	n/a
Geographic Information Systems (GIS)/Overlay Maps		No	n/a
Geographic Information Systems (GIS)/Overlay Maps: Number		0	EA
Develop Finding of Suitability to Transfer (FOST)		No	n/a

Comments:

Phase Documentation:

Phase Type: Operations & Maintenance
Phase Name: 30-Year O&M
Description: 30-Year O&M

Start Date: June, 2019
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
ADMINISTRATIVE LAND USE CONTROLS	Yes	100	0

Total Marked-up Cost: \$476,331.86

Technologies:

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Administrative Land Use Controls (#1)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
<i>System Definition</i>			
<u>Required Parameters</u>			
Rename Model		ADMINISTRATIVE LAND USE CONTROLS	n/a
Planning Documents		No	n/a
Implementation		No	n/a
Monitoring & Enforcement		Yes	n/a
Monitoring & Enforcement: Start Date		2019	n/a
Modification/Termination		No	n/a
Type of Site		Active Government Installation	n/a
<i>Monitoring & Enforcement</i>			
<u>Required Parameters</u>			
Duration of Monitoring/Enforcement		30	Years
Notice Letters		No	n/a
Notice Letters: Number		0	EA
Guard Service/Security		No	n/a
Guard Service/Security: Number		0	EA
Reports & Certifications		Yes	n/a
Reports & Certifications: Frequency		Biennially	n/a
Site Visits/Inspections		Yes	n/a
Site Visits/Inspections: Number		1	EA
Site Visits/Inspections: Safety Level		D	n/a
Site Visits/Inspections: Duration		2	Days
Site Visits/Inspections: Number of People		1	EA
Site Visits/Inspections: Frequency		Biennially	n/a
Site Visits/Inspections: Airfare		500	\$ Per Ticket
Site Visits/Inspections: Mileage		100	MI

Comments:

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Technology: ADMINISTRATIVE LAND USE CONTROLS

Element: Planning Docs

Year(s)		Cost per Year							
2019		\$38,432.02							
Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	22.00	HR	0.00	234.00	0.00	0.00	\$5,148.07	No
33220105	Project Engineer	30.00	HR	0.00	198.39	0.00	0.00	\$5,951.62	No
33220106	Staff Engineer	45.00	HR	0.00	204.33	0.00	0.00	\$9,194.80	No
33220110	QA/QC Officer	11.00	HR	0.00	160.15	0.00	0.00	\$1,761.69	No
33220114	Word Processing/Clerical	60.00	HR	0.00	109.73	0.00	0.00	\$6,584.04	No
33220115	Draftsman/CADD	30.00	HR	0.00	127.89	0.00	0.00	\$3,836.83	No
33220503	Attorney, Partner, Real Estate	22.00	HR	0.00	245.19	0.00	0.00	\$5,394.14	No
33240101	Other Direct Costs	1.00	LS	560.83	0.00	0.00	0.00	\$560.83	No
Total First Year Element Cost:								\$38,432.02	

Element: Planning Meetings

Year(s)		Cost per Year							
2019		\$13,006.55							
Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	100.00	MI	0.00	0.00	0.00	0.32	\$31.86	No
33010108	Sedan, Automobile, Rental	2.00	DAY	0.00	0.00	0.00	75.45	\$150.91	No
33010202	Per Diem (per person)	3.00	DAY	0.00	0.00	0.00	229.87	\$689.61	No
33022038	Overnight delivery service, 1 lb package	1.00	LB	0.00	0.00	0.00	72.00	\$72.00	No
33041101	Airfare	1.00	LS	0.00	0.00	0.00	1.00	\$1.00	No
33220102	Project Manager	39.00	HR	0.00	234.00	0.00	0.00	\$9,126.12	No
33220114	Word Processing/Clerical	16.00	HR	0.00	109.73	0.00	0.00	\$1,755.74	No
33220115	Draftsman/CADD	8.00	HR	0.00	127.89	0.00	0.00	\$1,023.15	No
33240101	Other Direct Costs	1.00	LS	156.15	0.00	0.00	0.00	\$156.15	No
Total First Year Element Cost:								\$13,006.55	

Element: Implementation

Year(s)

Cost per Year

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Technology: ADMINISTRATIVE LAND USE CONTROLS

2019

\$31,628.22

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
18010412	Construction Signs	72.00	SF	44.03	0.00	0.00	0.00	\$3,170.08	No
33220102	Project Manager	15.00	HR	0.00	234.00	0.00	0.00	\$3,510.05	No
33220105	Project Engineer	30.00	HR	0.00	198.39	0.00	0.00	\$5,951.62	No
33220106	Staff Engineer	45.00	HR	0.00	204.33	0.00	0.00	\$9,194.80	No
33220110	QA/QC Officer	8.00	HR	0.00	160.15	0.00	0.00	\$1,281.23	No
33220114	Word Processing/Clerical	30.00	HR	0.00	109.73	0.00	0.00	\$3,292.02	No
33220115	Draftsman/CADD	38.00	HR	0.00	127.89	0.00	0.00	\$4,859.99	No
33240101	Other Direct Costs	1.00	LS	368.43	0.00	0.00	0.00	\$368.43	No

Total First Year Element Cost: \$31,628.22

Total First Year Tech Cost: \$83,066.79

Cost Over Time Summary

Element	Year(s)	Cost per Year	Total Cost
Monitoring & Enforcement	2019	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2021	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2023	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2025	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2027	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2029	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2031	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2033	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2035	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2037	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2039	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2041	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2043	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2045	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2047	\$31,755.46	\$31,755.46

Total Marked Up Tech Cost: \$476,331.90

Technology: ADMINISTRATIVE LAND USE CONTROLS

Element: Monitoring & Enforcement

Year(s)	Cost per Year
2019	\$31,755.46
2020	\$0.00
2021	\$31,755.46

Estimate Documentation Detailed Report - Layout 2

Technology: ADMINISTRATIVE LAND USE CONTROLS

2022	\$0.00
2023	\$31,755.46
2024	\$0.00
2025	\$31,755.46
2026	\$0.00
2027	\$31,755.46
2028	\$0.00
2029	\$31,755.46
2030	\$0.00
2031	\$31,755.46
2032	\$0.00
2033	\$31,755.46
2034	\$0.00
2035	\$31,755.46
2036	\$0.00
2037	\$31,755.46
2038	\$0.00
2039	\$31,755.46
2040	\$0.00
2041	\$31,755.46
2042	\$0.00
2043	\$31,755.46
2044	\$0.00
2045	\$31,755.46
2046	\$0.00
2047	\$31,755.46
2048	\$0.00

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	100.00	MI	0.00	0.00	0.00	0.32	\$31.86	No
33010108	Sedan, Automobile, Rental	3.00	DAY	0.00	0.00	0.00	75.45	\$226.36	No
33010202	Per Diem (per person)	5.00	DAY	0.00	0.00	0.00	229.87	\$1,149.35	No
33022038	Overnight delivery service, 1 lb package	6.00	LB	0.00	0.00	0.00	72.00	\$432.01	No
33041101	Airfare	1.00	LS	0.00	0.00	0.00	500.00	\$500.00	No
33220102	Project Manager	44.00	HR	0.00	285.37	0.00	0.00	\$12,556.26	No
33220106	Staff Engineer	40.00	HR	0.00	249.18	0.00	0.00	\$9,967.26	No
33220110	QA/QC Officer	4.00	HR	0.00	160.15	0.00	0.00	\$640.61	No
33220112	Field Technician	1.00	HR	0.00	135.87	0.00	0.00	\$135.87	No
33220114	Word Processing/Clerical	26.00	HR	0.00	133.82	0.00	0.00	\$3,479.37	No

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Technology: ADMINISTRATIVE LAND USE CONTROLS

33220115	Draftsman/CADD	16.00	HR	0.00	127.89	0.00	0.00	\$2,046.31	No
33220119	Health and Safety Officer	1.00	HR	0.00	209.35	0.00	0.00	\$209.35	No
33240101	Other Direct Costs	1.00	LS	380.83	0.00	0.00	0.00	\$380.83	No

Total First Year Element Cost: \$31,755.46

Total First Year Tech Cost: \$31,755.46

Cost Over Time Summary

Element	Year(s)	Cost per Year	Total Cost
Document Review	2024	\$454.68	\$454.68
Document Review	2029	\$454.68	\$454.68
Document Review	2034	\$454.68	\$454.68
Document Review	2039	\$454.68	\$454.68
Document Review	2044	\$454.68	\$454.68
Document Review	2049	\$454.68	\$454.68
Site Inspection	2024	\$3,010.44	\$3,010.44
Site Inspection	2029	\$3,010.44	\$3,010.44
Site Inspection	2034	\$3,010.44	\$3,010.44
Site Inspection	2039	\$3,010.44	\$3,010.44
Site Inspection	2044	\$3,010.44	\$3,010.44
Site Inspection	2049	\$3,010.44	\$3,010.44
Report	2024	\$7,460.14	\$7,460.14
Report	2029	\$7,460.14	\$7,460.14
Report	2034	\$7,460.14	\$7,460.14
Report	2039	\$7,460.14	\$7,460.14
Report	2044	\$7,460.14	\$7,460.14
Report	2049	\$7,460.14	\$7,460.14
Travel	2024	\$805.32	\$805.32
Travel	2029	\$805.32	\$805.32
Travel	2034	\$805.32	\$805.32
Travel	2039	\$805.32	\$805.32
Travel	2044	\$805.32	\$805.32
Travel	2049	\$805.32	\$805.32

Total Marked Up Tech Cost: \$70,383.48

Technology: Five-Year Review

Element: Document Review

Year(s)	Cost per Year
2024	\$454.68
2025 - 2028	\$0.00
2029	\$454.68
2030 - 2033	\$0.00

Estimate Documentation Detailed Report - Layout 2

Technology: Five-Year Review

2034	\$454.68
2035 - 2038	\$0.00
2039	\$454.68
2040 - 2043	\$0.00
2044	\$454.68
2045 - 2048	\$0.00
2049	\$454.68

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220105	Project Engineer	1.00	HR	0.00	241.94	0.00	0.00	\$241.94	No
33220109	Staff Scientist	1.00	HR	0.00	212.75	0.00	0.00	\$212.75	No
Total First Year Element Cost:								\$454.68	

Element: Site Inspection

Year(s)	Cost per Year
2024	\$3,010.44
2025 - 2028	\$0.00
2029	\$3,010.44
2030 - 2033	\$0.00
2034	\$3,010.44
2035 - 2038	\$0.00
2039	\$3,010.44
2040 - 2043	\$0.00
2044	\$3,010.44
2045 - 2048	\$0.00
2049	\$3,010.44

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	3.00	HR	0.00	285.37	0.00	0.00	\$856.11	No
33220105	Project Engineer	3.00	HR	0.00	241.94	0.00	0.00	\$725.81	No
33220108	Project Scientist	3.00	HR	0.00	263.43	0.00	0.00	\$790.28	No
33220109	Staff Scientist	3.00	HR	0.00	212.75	0.00	0.00	\$638.24	No
Total First Year Element Cost:								\$3,010.44	

Element: Report

Year(s)	Cost per Year
2024	\$7,460.14
2025 - 2028	\$0.00
2029	\$7,460.14
2030 - 2033	\$0.00

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Technology: Five-Year Review

2034	\$7,460.14
2035 - 2038	\$0.00
2039	\$7,460.14
2040 - 2043	\$0.00
2044	\$7,460.14
2045 - 2048	\$0.00
2049	\$7,460.14

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	4.00	HR	0.00	285.37	0.00	0.00	\$1,141.48	No
33220105	Project Engineer	11.00	HR	0.00	241.94	0.00	0.00	\$2,661.29	No
33220108	Project Scientist	5.00	HR	0.00	263.43	0.00	0.00	\$1,317.14	No
33220109	Staff Scientist	11.00	HR	0.00	212.75	0.00	0.00	\$2,340.23	No
Total First Year Element Cost:								\$7,460.14	

Element: Travel

Year(s)	Cost per Year
2024	\$805.32
2025 - 2028	\$0.00
2029	\$805.32
2030 - 2033	\$0.00
2034	\$805.32
2035 - 2038	\$0.00
2039	\$805.32
2040 - 2043	\$0.00
2044	\$805.32
2045 - 2048	\$0.00
2049	\$805.32

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010108	Sedan, Automobile, Rental	1.00	DAY	0.00	0.00	0.00	75.45	\$75.45	No
33010202	Per Diem (per person)	1.00	DAY	0.00	0.00	0.00	229.87	\$229.87	No
33041101	Airfare	1.00	LS	0.00	0.00	0.00	500.00	\$500.00	No
Total First Year Element Cost:								\$805.32	

Total First Year Tech Cost: **\$11,730.59**

Cost Over Time Summary

Element	Year(s)	Cost per Year	Total Cost
Document Review	2024	\$454.68	\$454.68

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Document Review	2029	\$454.68	\$454.68
Document Review	2034	\$454.68	\$454.68
Document Review	2039	\$454.68	\$454.68
Document Review	2044	\$454.68	\$454.68
Document Review	2049	\$454.68	\$454.68
Site Inspection	2024	\$3,010.44	\$3,010.44
Site Inspection	2029	\$3,010.44	\$3,010.44
Site Inspection	2034	\$3,010.44	\$3,010.44
Site Inspection	2039	\$3,010.44	\$3,010.44
Site Inspection	2044	\$3,010.44	\$3,010.44
Site Inspection	2049	\$3,010.44	\$3,010.44
Report	2024	\$7,460.14	\$7,460.14
Report	2029	\$7,460.14	\$7,460.14
Report	2034	\$7,460.14	\$7,460.14
Report	2039	\$7,460.14	\$7,460.14
Report	2044	\$7,460.14	\$7,460.14
Report	2049	\$7,460.14	\$7,460.14
Travel	2024	\$805.32	\$805.32
Travel	2029	\$805.32	\$805.32
Travel	2034	\$805.32	\$805.32
Travel	2039	\$805.32	\$805.32
Travel	2044	\$805.32	\$805.32
Travel	2049	\$805.32	\$805.32

Total Marked Up Tech Cost:

\$70,383.48

AOI-02, Alternative 2: Land Use Controls
Project Assembly Level Data Report

Note: Costs are direct (no markup)

Phase Name	Tech. Key	Technology Name	Assembly No.	Assembly Description	Qty	UOM	Materials	Labor	Equipment	SubBid	Extended Cost	units	Cost	
LAND USE CONTROLS	28	LAND USE CONTROLS	18010412	Construction Signs	72	SF	29.50	0.00	0.00	0.00	2,124.00			
LAND USE CONTROLS	28	LAND USE CONTROLS	33010104	Vehicle mileage charge, car or van	100	MI	0.00	0.00	0.00	0.32	31.86			
LAND USE CONTROLS	28	LAND USE CONTROLS	33010108	Sedan, Automobile, Rental	2	DAY	0.00	0.00	0.00	62.94	125.88			
LAND USE CONTROLS	28	LAND USE CONTROLS	33010202	Per Diem (per person)	3	DAY	0.00	0.00	0.00	229.87	689.61			
LAND USE CONTROLS	28	LAND USE CONTROLS	33022038	Overnight delivery service, 1 lb package	1	LB	0.00	0.00	0.00	60.06	60.06			
LAND USE CONTROLS	28	LAND USE CONTROLS	33041101	Airfare	1	LS	0.00	0.00	0.00	1.00	1.00			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220102	Project Manager	15	HR	0.00	82.26	0.00	0.00	1,233.87			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220102	Project Manager	22	HR	0.00	82.26	0.00	0.00	1,809.67			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220102	Project Manager	39	HR	0.00	82.26	0.00	0.00	3,208.05			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220105	Project Engineer	30	HR	0.00	69.74	0.00	0.00	2,092.14			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220105	Project Engineer	30	HR	0.00	69.74	0.00	0.00	2,092.14			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220106	Staff Engineer	45	HR	0.00	71.83	0.00	0.00	3,232.20			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220106	Staff Engineer	45	HR	0.00	71.83	0.00	0.00	3,232.20			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220110	QA/QC Officer	11	HR	0.00	56.30	0.00	0.00	619.28			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220110	QA/QC Officer	8	HR	0.00	56.30	0.00	0.00	450.38			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220114	Word Processing/Clerical	30	HR	0.00	38.57	0.00	0.00	1,157.23			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220114	Word Processing/Clerical	60	HR	0.00	38.57	0.00	0.00	2,314.45			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220114	Word Processing/Clerical	16	HR	0.00	38.57	0.00	0.00	617.19			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220115	Draftsman/CADD	8	HR	0.00	44.96	0.00	0.00	359.66			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220115	Draftsman/CADD	38	HR	0.00	44.96	0.00	0.00	1,708.40			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220115	Draftsman/CADD	30	HR	0.00	44.96	0.00	0.00	1,348.74			
LAND USE CONTROLS	28	LAND USE CONTROLS	33220503	Attorney, Partner, Real Estate	22	HR	0.00	164.28	0.00	0.00	3,614.15			
LAND USE CONTROLS	28	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	246.86	0.00	0.00	0.00	246.86			
LAND USE CONTROLS	28	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	375.77	0.00	0.00	0.00	375.77			
LAND USE CONTROLS	28	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	104.62	0.00	0.00	0.00	104.62			
										Total	32,849.41	1	\$ 32,849.41	
30-Year O&M	36	LAND USE CONTROLS	33010104	Vehicle mileage charge, car or van	100	MI	0.00	0.00	0.00	0.32	31.86			
30-Year O&M	36	LAND USE CONTROLS	33010108	Sedan, Automobile, Rental	3	DAY	0.00	0.00	0.00	62.94	188.82			
30-Year O&M	36	LAND USE CONTROLS	33010202	Per Diem (per person)	5	DAY	0.00	0.00	0.00	229.87	1,149.35			
30-Year O&M	36	LAND USE CONTROLS	33022038	Overnight delivery service, 1 lb package	6	LB	0.00	0.00	0.00	60.06	360.37			
30-Year O&M	36	LAND USE CONTROLS	33041101	Airfare	1	LS	0.00	0.00	0.00	500.00	500.00			
30-Year O&M	36	LAND USE CONTROLS	33220102	Project Manager	44	HR	0.00	100.31	0.00	0.00	4,413.83			
30-Year O&M	36	LAND USE CONTROLS	33220106	Staff Engineer	40	HR	0.00	87.59	0.00	0.00	3,503.74			
30-Year O&M	36	LAND USE CONTROLS	33220110	QA/QC Officer	4	HR	0.00	56.30	0.00	0.00	225.19			
30-Year O&M	36	LAND USE CONTROLS	33220112	Field Technician	1	HR	0.00	47.76	0.00	0.00	47.76			
30-Year O&M	36	LAND USE CONTROLS	33220114	Word Processing/Clerical	26	HR	0.00	47.04	0.00	0.00	1,223.08			
30-Year O&M	36	LAND USE CONTROLS	33220115	Draftsman/CADD	16	HR	0.00	44.96	0.00	0.00	719.33			
30-Year O&M	36	LAND USE CONTROLS	33220119	Health and Safety Officer	1	HR	0.00	73.59	0.00	0.00	73.59			
30-Year O&M	36	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	255.16	0.00	0.00	0.00	255.16			
										Total	12,692.09	15	\$190,381.42	
Periodic Review	46	Periodic Review	33010108	Sedan, Automobile, Rental	1	DAY	0.00	0.00	0.00	62.94	62.94			
Periodic Review	46	Periodic Review	33010202	Per Diem (per person)	1	DAY	0.00	0.00	0.00	229.87	229.87			
Periodic Review	46	Periodic Review	33041101	Airfare	1	LS	0.00	0.00	0.00	500.00	500.00			
Periodic Review	46	Periodic Review	33220102	Project Manager	3	HR	0.00	100.31	0.00	0.00	300.94			
Periodic Review	46	Periodic Review	33220102	Project Manager	4	HR	0.00	100.31	0.00	0.00	401.26			
Periodic Review	46	Periodic Review	33220105	Project Engineer	3	HR	0.00	85.05	0.00	0.00	255.14			
Periodic Review	46	Periodic Review	33220105	Project Engineer	1	HR	0.00	85.05	0.00	0.00	85.05			
Periodic Review	46	Periodic Review	33220105	Project Engineer	11	HR	0.00	85.05	0.00	0.00	935.51			
Periodic Review	46	Periodic Review	33220108	Project Scientist	3	HR	0.00	92.60	0.00	0.00	277.80			
Periodic Review	46	Periodic Review	33220108	Project Scientist	5	HR	0.00	92.60	0.00	0.00	463.01			
Periodic Review	46	Periodic Review	33220109	Staff Scientist	3	HR	0.00	74.79	0.00	0.00	224.36			
Periodic Review	46	Periodic Review	33220109	Staff Scientist	1	HR	0.00	74.79	0.00	0.00	74.79			
Periodic Review	46	Periodic Review	33220109	Staff Scientist	11	HR	0.00	74.79	0.00	0.00	822.65			
										Total	4,633.31	6	\$27,799.85	
													Total Direct	\$251,030.67
													Mark-up	\$ 378,751.00
													TOTAL	\$629,782

Estimate Documentation Detailed Report - Layout 2

Software:

RACER Version: RACER® Version 11.5.99.0
Database Location: N:\Projects_Ongoing\3752-Camp Wellfleet\06_FS
Report\RACER\Racer_Backup_7_31_2019.mdb

Folder:

Folder Name: Wellfleet

Project:

ID: Alternative 2
Name: Administrative LUC
Category: None

Location

State / Country: MASSACHUSETTS
City: CAPE COD

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	1.180	1.180	

Options

Database: System Costs
Cost Database Date: 2019
Report Option: Fiscal

Description Administrative Land Use Controls (LUCs) including signs

Estimate Documentation Detailed Report - Layout 2

Site:

ID: AOI-6
Name: Area of Interest 6
Type: None

Media/Waste Type

Primary: Ordnance (not residual)
Secondary: N/A

Contaminant

Primary: Ordnance (not residual)
Secondary: None

Phase Names

Pre-Study	<input type="checkbox"/>	
Study	<input type="checkbox"/>	
Design	<input type="checkbox"/>	
Removal/Interim Action	<input type="checkbox"/>	
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input type="checkbox"/>	
Site Closeout	<input type="checkbox"/>	

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: Area of Interest 6 (AOI-6)
Former Artillery Range Fan (Ocean)
"Water AOI"

Support Team: Michelle Chesnut

References: Final Remedial Investigation Report, Former Camp Wellfleet FUDS Remedial Investigation Through Decision Document, Wellfleet, Massachusetts (April 2019)

Estimator Information

Estimator Name: James Stuby
Estimator Title: Project Geophysicist
Agency/Org./Office: ERT, Inc.
Business Address: 14401 Sweitzer Lane
Suite 300
Laurel, MD 20707
Telephone Number: 301-323-1429
Email Address: james.stuby@ertcorp.com
Estimate Prepared Date: 06/24/2019

Estimator Signature: _____

Date: _____

Estimate Documentation Detailed Report - Layout 2

Reviewer Information

Reviewer Name: Thomas Bachovchin
Reviewer Title: Project Manager
Agency/Org./Office: ERT, Inc.
Business Address: 14401 Sweitzer Lane
Suite 300
Laurel, MD 20707
Telephone Number: 301-323-1442
Email Address: thomas.bachovchin@ertcorp.com
Date Reviewed: 06/24/2019

Reviewer Signature: _____

Date: _____

Estimate Costs:

<u>Phase Names</u>	<u>Marked-Up Cost</u>
Periodic Review	\$53,843
Administrative LUC (signs)	\$77,847
30-Year O&M	\$476,332
Total Cost:	\$608,022
Escalation:	\$184,190
Total Project Cost:	\$792,212

Phase Documentation:

Phase Type: Remedial Action

Phase Name: Periodic Review

Description: Periodic Review

Approach: Ex Situ

Start Date: June, 2024

Labor Rate Group: System Labor Rate

Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
Five-Year Review	Yes	100	0

Total Marked-up Cost: \$53,843.11

Estimate Documentation Detailed Report - Layout 2

Technologies:

Technology Name: **Five-Year Review (#1)**

User Name: **Five-Year Review**

Description	Default	User	UOM
<i>System Definition</i>			
<u>Required Parameters</u>			
Site Complexity		Low	n/a
Document Review		Yes	n/a
Interviews		Yes	n/a
Site Inspection		No	n/a
Report		Yes	n/a
Travel		No	n/a
Rebound Study		No	n/a
Start Month		June	n/a
No. Reviews		6	EA
Start Year		2024	n/a
Safety Level		D	n/a
<i>Document Review</i>			
<u>Required Parameters</u>			
5-Year Review Check List		Yes	n/a
Record of Decision		No	n/a
Remedial Action Design & Construction		No	n/a
Close-Out Report		No	n/a
Operations & Maintenance Manuals & Reports		No	n/a
Consent Decree or Settlement Records		No	n/a
Groundwater Monitoring & Reports		No	n/a
Remedial Action Required		No	n/a
Previous 5-Year Review Reports		No	n/a
<i>Interviews</i>			
<u>Required Parameters</u>			
Current and Previous Staff Management		Yes	n/a
Community Groups		Yes	n/a
State Contacts		Yes	n/a
Local Government Contacts		Yes	n/a
Operations & Maintenance Contractors		No	n/a
PRPs		No	n/a
Remedial Design Consultant		No	n/a
<i>Report</i>			
<u>Required Parameters</u>			
Introduction		No	n/a
Remedial Objectives		No	n/a

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Five-Year Review (#1)**

User Name: **Five-Year Review**

Description	Default	User	UOM
Report			
<u>Required Parameters</u>			
ARARs Review		No	n/a
Summary of Site Visit		No	n/a
Areas of Non Compliance		Yes	n/a
Technology Recommendations		No	n/a
Statement of Protectiveness		Yes	n/a
Next Review		No	n/a
Implementation Requirements		Yes	n/a

Comments:

Phase Documentation:

Phase Type: Operations & Maintenance
Phase Name: Administrative LUC (signs)
Description: Administrative Land Use Controls including signs
(4 signs)

Start Date: June, 2019
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

<u>Technology Markups</u>	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
ADMINISTRATIVE LAND USE CONTROLS	Yes	100	0

Total Marked-up Cost: \$77,846.90

Technologies:

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Administrative Land Use Controls (#1)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
<i>System Definition</i>			
<u>Required Parameters</u>			
Rename Model		ADMINISTRATIVE LAND USE CONTROLS	n/a
Planning Documents		Yes	n/a
Planning Documents: Start Date		2019	n/a
Implementation		Yes	n/a
Implementation: Start Date		2019	n/a
Monitoring & Enforcement		No	n/a
Modification/Termination		No	n/a
Type of Site		Active Government Installation	n/a
<i>Planning Documents</i>			
<u>Required Parameters</u>			
LUC Assurance Plan (LUCAP)		No	n/a
LUC Implementation Plan (LUCIP)		Yes	n/a
LUC Implementation Plan (LUCIP): Number		1	EA
LUC Implementation Plan (LUCIP): Plan Complexity		Low	n/a
Long-term Stewardship (LTS) Plan		No	n/a
Long-term Stewardship (LTS) Plan: Number		0	EA
Memorandum of Agreements (MOA)		No	n/a
Memorandum of Agreements (MOA): Number		0	EA
Installation (or City) Master Plan		No	n/a
Construction Permitting		No	n/a
Construction Permitting: Number		0	EA
Geographic Information Systems (GIS)/Overlay Maps		No	n/a
Geographic Information Systems (GIS)/Overlay Maps: Number		0	EA
<i>Planning Meetings</i>			
<u>Required Parameters</u>			
LUCAP: Number of Meetings		0	EA
LUCAP: Number of People		0	EA
LUCAP: Number of Days		0	EA
LUCAP: Airfare Cost		0.00	\$
LUCAP: Mileage to Meeting Site		0	MI
LUCIP: Number of Meetings		1	EA
LUCIP: Number of People		1	EA
LUCIP: Number of Days		1	EA
LUCIP: Airfare Cost		0.00	\$
LUCIP: Mileage to Meeting Site		0	MI
LTS: Number of Meetings		0	EA

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Administrative Land Use Controls (#1)**User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
<i>Planning Meetings</i>			
<u>Required Parameters</u>			
LTS: Number of People		0	EA
LTS: Number of Days		0	EA
LTS: Airfare Cost		0.00	\$
LTS: Mileage to Meeting Site		0	MI
MOA: Number of Meetings		0	EA
MOA: Number of People		0	EA
MOA: Number of Days		0	EA
MOA: Airfare Cost		0.00	\$
MOA: Mileage to Meeting Site		0	MI
Master Plan: Number of Meetings		0	EA
Master Plan: Number of People		0	EA
Master Plan: Number of Days		0	EA
Master Plan: Airfare Cost		0.00	\$
Master Plan: Mileage to Meeting Site		0	MI
Construction Permitting: Number of Meetings		0	EA
Construction Permitting: Number of People		0	EA
Construction Permitting: Number of Days		0	EA
Construction Permitting: Airfare Cost		0.00	\$
Construction Permitting: Mileage to Meeting Site		0	MI
GIS/Overlay Maps: Number of Meetings		0	EA
GIS/Overlay Maps: Number of People		0	EA
GIS/Overlay Maps: Number of Days		0	EA
GIS/Overlay Maps: Airfare Cost		0.00	\$
GIS/Overlay Maps: Mileage to Meeting Site		0	MI
<i>Implementation</i>			
<u>Required Parameters</u>			
Modify Installation (or City) Master Plan		No	n/a
Deed Notification		No	n/a
Deed Notification: Number		0	EA
Negotiating Easements		No	n/a
Negotiating Easements: Number		0	EA
Restrictive Covenants		No	n/a
Restrictive Covenants: Number		0	EA
Equitable Servitudes		No	n/a
Equitable Servitudes: Number		0	EA
Access Control Signs		Yes	n/a
Access Control Signs: Number		4	EA
Access Control Signs: Task Complexity		Low	n/a
Utility Notification Service		Yes	n/a

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Administrative Land Use Controls (#1)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
Implementation			
<u>Required Parameters</u>			
Access Control Signs: Number		1	EA
Access Control Signs: Task Complexity		Low	n/a
Geographic Information Systems (GIS)/Overlay Maps		No	n/a
Geographic Information Systems (GIS)/Overlay Maps: Number		0	EA
Develop Finding of Suitability to Transfer (FOST)		No	n/a

Comments:

Phase Documentation:

Phase Type: Operations & Maintenance
Phase Name: 30-Year O&M
Description: 30-Year O&M

Start Date: June, 2019
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
ADMINISTRATIVE LAND USE CONTROLS	Yes	100	0

Total Marked-up Cost: \$476,331.86

Technologies:

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Administrative Land Use Controls (#1)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
<i>System Definition</i>			
<u>Required Parameters</u>			
Rename Model		ADMINISTRATIVE LAND USE CONTROLS	n/a
Planning Documents		No	n/a
Implementation		No	n/a
Monitoring & Enforcement		Yes	n/a
Monitoring & Enforcement: Start Date		2019	n/a
Modification/Termination		No	n/a
Type of Site		Active Government Installation	n/a
<i>Monitoring & Enforcement</i>			
<u>Required Parameters</u>			
Duration of Monitoring/Enforcement		30	Years
Notice Letters		No	n/a
Notice Letters: Number		0	EA
Guard Service/Security		No	n/a
Guard Service/Security: Number		0	EA
Reports & Certifications		Yes	n/a
Reports & Certifications: Frequency		Biennially	n/a
Site Visits/Inspections		Yes	n/a
Site Visits/Inspections: Number		1	EA
Site Visits/Inspections: Safety Level		D	n/a
Site Visits/Inspections: Duration		2	Days
Site Visits/Inspections: Number of People		1	EA
Site Visits/Inspections: Frequency		Biennially	n/a
Site Visits/Inspections: Airfare		500	\$ Per Ticket
Site Visits/Inspections: Mileage		100	MI

Comments:

Estimate Documentation Detailed Report - Layout 2

Technology: ADMINISTRATIVE LAND USE CONTROLS
Element: Planning Docs

Year(s)
2019

Cost per Year
\$38,432.02

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	22.00	HR	0.00	234.00	0.00	0.00	\$5,148.07	No
33220105	Project Engineer	30.00	HR	0.00	198.39	0.00	0.00	\$5,951.62	No
33220106	Staff Engineer	45.00	HR	0.00	204.33	0.00	0.00	\$9,194.80	No
33220110	QA/QC Officer	11.00	HR	0.00	160.15	0.00	0.00	\$1,761.69	No
33220114	Word Processing/Clerical	60.00	HR	0.00	109.73	0.00	0.00	\$6,584.04	No
33220115	Draftsman/CADD	30.00	HR	0.00	127.89	0.00	0.00	\$3,836.83	No
33220503	Attorney, Partner, Real Estate	22.00	HR	0.00	245.19	0.00	0.00	\$5,394.14	No
33240101	Other Direct Costs	1.00	LS	560.83	0.00	0.00	0.00	\$560.83	No

Total First Year Element Cost: \$38,432.02

Element: Planning Meetings

Year(s)
2019

Cost per Year
\$7,786.66

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	1.00	DAY	0.00	0.00	0.00	229.87	\$229.87	No
33220102	Project Manager	20.00	HR	0.00	234.00	0.00	0.00	\$4,680.06	No
33220114	Word Processing/Clerical	16.00	HR	0.00	109.73	0.00	0.00	\$1,755.74	No
33220115	Draftsman/CADD	8.00	HR	0.00	127.89	0.00	0.00	\$1,023.15	No
33240101	Other Direct Costs	1.00	LS	97.83	0.00	0.00	0.00	\$97.83	No

Total First Year Element Cost: \$7,786.66

Element: Implementation

Year(s)
2019

Cost per Year
\$31,628.22

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
18010412	Construction Signs	72.00	SF	44.03	0.00	0.00	0.00	\$3,170.08	No
33220102	Project Manager	15.00	HR	0.00	234.00	0.00	0.00	\$3,510.05	No
33220105	Project Engineer	30.00	HR	0.00	198.39	0.00	0.00	\$5,951.62	No

Estimate Documentation Detailed Report - Layout 2

Technology: ADMINISTRATIVE LAND USE CONTROLS

33220106	Staff Engineer	45.00	HR	0.00	204.33	0.00	0.00	\$9,194.80	No
33220110	QA/QC Officer	8.00	HR	0.00	160.15	0.00	0.00	\$1,281.23	No
33220114	Word Processing/Clerical	30.00	HR	0.00	109.73	0.00	0.00	\$3,292.02	No
33220115	Draftsman/CADD	38.00	HR	0.00	127.89	0.00	0.00	\$4,859.99	No
33240101	Other Direct Costs	1.00	LS	368.43	0.00	0.00	0.00	\$368.43	No

Total First Year Element Cost: \$31,628.22

Total First Year Tech Cost: \$77,846.90

Cost Over Time Summary

Element	Year(s)	Cost per Year	Total Cost
Monitoring & Enforcement	2019	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2021	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2023	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2025	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2027	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2029	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2031	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2033	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2035	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2037	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2039	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2041	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2043	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2045	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2047	\$31,755.46	\$31,755.46

Total Marked Up Tech Cost: \$476,331.90

Technology: ADMINISTRATIVE LAND USE CONTROLS
Element: Monitoring & Enforcement

Year(s)	Cost per Year
2019	\$31,755.46
2020	\$0.00
2021	\$31,755.46
2022	\$0.00
2023	\$31,755.46
2024	\$0.00
2025	\$31,755.46
2026	\$0.00
2027	\$31,755.46
2028	\$0.00

Estimate Documentation Detailed Report - Layout 2

Technology: ADMINISTRATIVE LAND USE CONTROLS

2029	\$31,755.46
2030	\$0.00
2031	\$31,755.46
2032	\$0.00
2033	\$31,755.46
2034	\$0.00
2035	\$31,755.46
2036	\$0.00
2037	\$31,755.46
2038	\$0.00
2039	\$31,755.46
2040	\$0.00
2041	\$31,755.46
2042	\$0.00
2043	\$31,755.46
2044	\$0.00
2045	\$31,755.46
2046	\$0.00
2047	\$31,755.46
2048	\$0.00

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	100.00	MI	0.00	0.00	0.00	0.32	\$31.86	No
33010108	Sedan, Automobile, Rental	3.00	DAY	0.00	0.00	0.00	75.45	\$226.36	No
33010202	Per Diem (per person)	5.00	DAY	0.00	0.00	0.00	229.87	\$1,149.35	No
33022038	Overnight delivery service, 1 lb package	6.00	LB	0.00	0.00	0.00	72.00	\$432.01	No
33041101	Airfare	1.00	LS	0.00	0.00	0.00	500.00	\$500.00	No
33220102	Project Manager	44.00	HR	0.00	285.37	0.00	0.00	\$12,556.26	No
33220106	Staff Engineer	40.00	HR	0.00	249.18	0.00	0.00	\$9,967.26	No
33220110	QA/QC Officer	4.00	HR	0.00	160.15	0.00	0.00	\$640.61	No
33220112	Field Technician	1.00	HR	0.00	135.87	0.00	0.00	\$135.87	No
33220114	Word Processing/Clerical	26.00	HR	0.00	133.82	0.00	0.00	\$3,479.37	No
33220115	Draftsman/CADD	16.00	HR	0.00	127.89	0.00	0.00	\$2,046.31	No
33220119	Health and Safety Officer	1.00	HR	0.00	209.35	0.00	0.00	\$209.35	No
33240101	Other Direct Costs	1.00	LS	380.83	0.00	0.00	0.00	\$380.83	No

Total First Year Element Cost: \$31,755.46

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Total First Year Tech Cost: \$31,755.46

Cost Over Time Summary

Element	Year(s)	Cost per Year	Total Cost
Document Review	2024	\$454.68	\$454.68
Document Review	2029	\$454.68	\$454.68
Document Review	2034	\$454.68	\$454.68
Document Review	2039	\$454.68	\$454.68
Document Review	2044	\$454.68	\$454.68
Document Review	2049	\$454.68	\$454.68
Interviews	2024	\$2,282.96	\$2,282.96
Interviews	2029	\$2,282.96	\$2,282.96
Interviews	2034	\$2,282.96	\$2,282.96
Interviews	2039	\$2,282.96	\$2,282.96
Interviews	2044	\$2,282.96	\$2,282.96
Interviews	2049	\$2,282.96	\$2,282.96
Report	2024	\$6,236.21	\$6,236.21
Report	2029	\$6,236.21	\$6,236.21
Report	2034	\$6,236.21	\$6,236.21
Report	2039	\$6,236.21	\$6,236.21
Report	2044	\$6,236.21	\$6,236.21
Report	2049	\$6,236.21	\$6,236.21
Total Marked Up Tech Cost:			\$53,843.10

Technology: Five-Year Review
Element: Document Review

Year(s)	Cost per Year
2024	\$454.68
2025 - 2028	\$0.00
2029	\$454.68
2030 - 2033	\$0.00
2034	\$454.68
2035 - 2038	\$0.00
2039	\$454.68
2040 - 2043	\$0.00
2044	\$454.68
2045 - 2048	\$0.00
2049	\$454.68

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220105	Project Engineer	1.00	HR	0.00	241.94	0.00	0.00	\$241.94	No
33220109	Staff Scientist	1.00	HR	0.00	212.75	0.00	0.00	\$212.75	No

Total First Year Element Cost: \$454.68

Estimate Documentation Detailed Report - Layout 2

Element: Interviews

Year(s)	Cost per Year
2024	\$2,282.96
2025 - 2028	\$0.00
2029	\$2,282.96
2030 - 2033	\$0.00
2034	\$2,282.96
2035 - 2038	\$0.00
2039	\$2,282.96
2040 - 2043	\$0.00
2044	\$2,282.96
2045 - 2048	\$0.00
2049	\$2,282.96

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	8.00	HR	0.00	285.37	0.00	0.00	\$2,282.96	No

Total First Year Element Cost: \$2,282.96

Element: Report

Year(s)	Cost per Year
2024	\$6,236.21
2025 - 2028	\$0.00
2029	\$6,236.21
2030 - 2033	\$0.00
2034	\$6,236.21
2035 - 2038	\$0.00
2039	\$6,236.21
2040 - 2043	\$0.00
2044	\$6,236.21
2045 - 2048	\$0.00
2049	\$6,236.21

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	3.00	HR	0.00	285.37	0.00	0.00	\$856.11	No
33220105	Project Engineer	8.00	HR	0.00	241.94	0.00	0.00	\$1,935.49	No
33220108	Project Scientist	5.00	HR	0.00	263.43	0.00	0.00	\$1,317.14	No
33220109	Staff Scientist	10.00	HR	0.00	212.75	0.00	0.00	\$2,127.48	No

Total First Year Element Cost: \$6,236.21

Total First Year Tech Cost: \$8,973.85

Estimate Documentation Detailed Report - Layout 2

Cost Over Time Summary

Element	Year(s)	Cost per Year	Total Cost
Document Review	2024	\$454.68	\$454.68
Document Review	2029	\$454.68	\$454.68
Document Review	2034	\$454.68	\$454.68
Document Review	2039	\$454.68	\$454.68
Document Review	2044	\$454.68	\$454.68
Document Review	2049	\$454.68	\$454.68
Interviews	2024	\$2,282.96	\$2,282.96
Interviews	2029	\$2,282.96	\$2,282.96
Interviews	2034	\$2,282.96	\$2,282.96
Interviews	2039	\$2,282.96	\$2,282.96
Interviews	2044	\$2,282.96	\$2,282.96
Interviews	2049	\$2,282.96	\$2,282.96
Report	2024	\$6,236.21	\$6,236.21
Report	2029	\$6,236.21	\$6,236.21
Report	2034	\$6,236.21	\$6,236.21
Report	2039	\$6,236.21	\$6,236.21
Report	2044	\$6,236.21	\$6,236.21
Report	2049	\$6,236.21	\$6,236.21

Total Marked Up Tech Cost: \$53,843.10

**AOI-06, Alternative 2: Land Use Controls
Project Assembly Level Data Report**

Note:
Costs are direct (no markup)

Phase Name	Tech. Key	Technology Name	Assembly No.	Assembly Description	Qty	UOM	Materials	Labor	Equipment	SubBid	Extended Cost	units	Cost	
LAND USE CONTROLS	30	LAND USE CONTROLS	18010412	Construction Signs	72	SF	29.50	0.00	0.00	0.00	2,124.00			
LAND USE CONTROLS	30	LAND USE CONTROLS	33010202	Per Diem (per person)	1	DAY	0.00	0.00	0.00	229.87	229.87			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220102	Project Manager	15	HR	0.00	82.26	0.00	0.00	1,233.87			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220102	Project Manager	22	HR	0.00	82.26	0.00	0.00	1,809.67			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220102	Project Manager	20	HR	0.00	82.26	0.00	0.00	1,645.16			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220105	Project Engineer	30	HR	0.00	69.74	0.00	0.00	2,092.14			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220105	Project Engineer	30	HR	0.00	69.74	0.00	0.00	2,092.14			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220106	Staff Engineer	45	HR	0.00	71.83	0.00	0.00	3,232.20			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220106	Staff Engineer	45	HR	0.00	71.83	0.00	0.00	3,232.20			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220110	QA/QC Officer	8	HR	0.00	56.30	0.00	0.00	450.38			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220110	QA/QC Officer	11	HR	0.00	56.30	0.00	0.00	619.28			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220114	Word Processing/Clerical	16	HR	0.00	38.57	0.00	0.00	617.19			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220114	Word Processing/Clerical	60	HR	0.00	38.57	0.00	0.00	2,314.45			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220114	Word Processing/Clerical	30	HR	0.00	38.57	0.00	0.00	1,157.23			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220115	Draftsman/CADD	38	HR	0.00	44.96	0.00	0.00	1,708.40			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220115	Draftsman/CADD	30	HR	0.00	44.96	0.00	0.00	1,348.74			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220115	Draftsman/CADD	8	HR	0.00	44.96	0.00	0.00	359.66			
LAND USE CONTROLS	30	LAND USE CONTROLS	33220503	Attorney, Partner, Real Estate	22	HR	0.00	164.28	0.00	0.00	3,614.15			
LAND USE CONTROLS	30	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	246.86	0.00	0.00	0.00	246.86			
LAND USE CONTROLS	30	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	65.55	0.00	0.00	0.00	65.55			
LAND USE CONTROLS	30	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	375.77	0.00	0.00	0.00	375.77			
										Total	30,568.89	1	\$30,568.89	
Periodic Review	33	Periodic Review	33220102	Project Manager	8	HR	0.00	100.31	0.00	0.00	802.52			
Periodic Review	33	Periodic Review	33220102	Project Manager	3	HR	0.00	100.31	0.00	0.00	300.94			
Periodic Review	33	Periodic Review	33220105	Project Engineer	1	HR	0.00	85.05	0.00	0.00	85.05			
Periodic Review	33	Periodic Review	33220105	Project Engineer	8	HR	0.00	85.05	0.00	0.00	680.37			
Periodic Review	33	Periodic Review	33220108	Project Scientist	5	HR	0.00	92.60	0.00	0.00	463.01			
Periodic Review	33	Periodic Review	33220109	Staff Scientist	1	HR	0.00	74.79	0.00	0.00	74.79			
Periodic Review	33	Periodic Review	33220109	Staff Scientist	10	HR	0.00	74.79	0.00	0.00	747.86			
										Total	3,154.53	6	\$18,927.17	
30-Year O&M	36	LAND USE CONTROLS	33010104	Vehicle mileage charge, car or van	100	MI	0.00	0.00	0.00	0.32	31.86			
30-Year O&M	36	LAND USE CONTROLS	33010108	Sedan, Automobile, Rental	3	DAY	0.00	0.00	0.00	62.94	188.82			
30-Year O&M	36	LAND USE CONTROLS	33010202	Per Diem (per person)	5	DAY	0.00	0.00	0.00	229.87	1,149.35			
30-Year O&M	36	LAND USE CONTROLS	33022038	Overnight delivery service, 1 lb package	6	LB	0.00	0.00	0.00	60.06	360.37			
30-Year O&M	36	LAND USE CONTROLS	33041101	Airfare	1	LS	0.00	0.00	0.00	500.00	500.00			
30-Year O&M	36	LAND USE CONTROLS	33220102	Project Manager	44	HR	0.00	100.31	0.00	0.00	4,413.83			
30-Year O&M	36	LAND USE CONTROLS	33220106	Staff Engineer	40	HR	0.00	87.59	0.00	0.00	3,503.74			
30-Year O&M	36	LAND USE CONTROLS	33220110	QA/QC Officer	4	HR	0.00	56.30	0.00	0.00	225.19			
30-Year O&M	36	LAND USE CONTROLS	33220112	Field Technician	1	HR	0.00	47.76	0.00	0.00	47.76			
30-Year O&M	36	LAND USE CONTROLS	33220114	Word Processing/Clerical	26	HR	0.00	47.04	0.00	0.00	1,223.08			
30-Year O&M	36	LAND USE CONTROLS	33220115	Draftsman/CADD	16	HR	0.00	44.96	0.00	0.00	719.33			
30-Year O&M	36	LAND USE CONTROLS	33220119	Health and Safety Officer	1	HR	0.00	73.59	0.00	0.00	73.59			
30-Year O&M	36	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	255.16	0.00	0.00	0.00	255.16			
										Total	12,692.09	15	\$190,381.42	
													Grand Total	\$239,877.48
													Mark-up	\$ 368,144.00
													TOTAL	\$608,021

Estimate Documentation Detailed Report - Layout 2

Software:

RACER Version: RACER® Version 11.5.99.0
Database Location: N:\Projects_Ongoing\3752-Camp Wellfleet\06_FS
Report\RACER\Racer_Backup_7_31_2019.mdb

Folder:

Folder Name: Wellfleet

Project:

ID: Alternative 3
Name: Partial MEC Removal with LUC
Category: None

Location

State / Country: MASSACHUSETTS
City: CAPE COD

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	1.180	1.180	

Options

Database: System Costs
Cost Database Date: 2019
Report Option: Fiscal

Description

Partial Munitions and Explosives of Concern (MEC) Removal with Administrative Land Use Controls (LUCs) including signs

Estimate Documentation Detailed Report - Layout 2

Site:

ID: AOI-2
Name: Area of Interest 2
Type: None

Media/Waste Type

Primary: Ordnance (not residual)
Secondary: N/A

Contaminant

Primary: Ordnance (not residual)
Secondary: None

Phase Names

Pre-Study	<input type="checkbox"/>	
Study	<input type="checkbox"/>	
Design	<input type="checkbox"/>	
Removal/Interim Action	<input type="checkbox"/>	
Remedial Action	<input checked="" type="checkbox"/>	Safety Level: D
Operations & Maintenance	<input checked="" type="checkbox"/>	Safety Level: D
Long Term Monitoring	<input type="checkbox"/>	
Site Closeout	<input type="checkbox"/>	

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: Area of Interest 2 (AOI-2)
Former Artillery Firing Line

AOI-2 is 275 acres. Partial Removal Area is 39.2 acres.

Support Team: Michelle Chesnut

References: Final Remedial Investigation Report, Former Camp Wellfleet FUDS Remedial Investigation Through Decision Document, Wellfleet, Massachusetts (April 2019)

Estimator Information

Estimator Name: James Stuby
Estimator Title: Project Geophysicist
Agency/Org./Office: ERT, Inc.
Business Address: 14401 Sweitzer Lane
Suite 300
Laurel, MD 20707
Telephone Number: 301-323-1429
Email Address: james.stuby@ertcorp.com
Estimate Prepared Date: 06/24/2019

Estimator Signature: _____

Date: _____

Estimate Documentation Detailed Report - Layout 2

Reviewer Information

Reviewer Name: Thomas Bachovchin
Reviewer Title: Project Manager
Agency/Org./Office: ERT, Inc.
Business Address: 14401 Sweitzer Lane
Suite 300
Laurel, MD 20707
Telephone Number: 301-323-1442
Email Address: thomas.bachovchin@ertcorp.com
Date Reviewed: 06/24/2019

Reviewer Signature: _____

Date: _____

Estimate Costs:

<u>Phase Names</u>	<u>Marked-Up Cost</u>
Partial Removal Action	\$1,320,080
Periodic Review	\$70,384
Administrative LUC (signs)	\$83,067
30-Year O&M	\$476,332
<hr/>	
Total Cost:	\$1,949,863
Escalation:	\$191,354
Total Project Cost:	\$2,141,217

Phase Documentation:

Phase Type: Remedial Action
Phase Name: Partial Removal Action
Description: Removal Action in 39.2 acres. Area is defined as area between bluff and former firing line road as well as 150 ft wide area west of former firing line road.

Approach: Ex Situ
Start Date: June, 2019
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
MEC Removal Action with AGC	Yes	100	0

Total Marked-up Cost: \$1,320,080.47

Estimate Documentation Detailed Report - Layout 2

Technologies:

Technology Name: **MEC Removal Action with AGC (#1)**

User Name: **MEC Removal Action with AGC**

Description	Default	User	UOM
<i>System Definition</i>			
<u>Required Parameters</u>			
Surface and Subsurface Removal		39	Acres
SSR Topography 1		Gently Rolling	n/a
SSR Topography 1 Pct		100.00	%
SSR Topography 2		N/A	n/a
SSR Vegetation 1		Heavy grass with numerous shrubs	n/a
SSR Vegetation 1 Pct		100.00	%
SSR Vegetation 2		N/A	n/a
SSR Vegetation 2 Pct		0.00	%
Surface Removal Only		0	Acres
SR Topography 1		N/A	n/a
SR Topography 1 Pct		0.00	%
SR Topography 2		N/A	n/a
SR Vegetation 1		N/A	n/a
SR Vegetation 1 Pct		0.00	%
SR Vegetation 2		N/A	n/a
SR Vegetation 2 Pct		0.00	%
Site Complexity		Low	n/a
<i>Systematic Project Planning</i>			
<u>Secondary Parameters</u>			
Number of Meetings	3	3	n/a
Site Visit	1	1	n/a
UFP QAPP	Yes	Yes	n/a
Establish and Management of GIS Database	Yes	Yes	n/a
Community Relation Plan	Yes	Yes	n/a
Explosives Safety Submission	Yes	Yes	n/a
PMP / Quality Assurance Surveillance Plan	Yes	Yes	n/a
Health and Safety Plan	Yes	Yes	n/a
Cultural and Archaeological Plan	Yes	Yes	n/a
Environmental / Biological Plan	No	Yes	n/a
<i>SSR Site Preparation</i>			
<u>Secondary Parameters</u>			
Heavy Removal	0	0	Acres
Moderate Removal	9.75	9.75	Acres
Light Removal	19.5	19.5	Acres

Estimate Documentation Detailed Report - Layout 2

Technology Name: **MEC Removal Action with AGC (#1)**

User Name: **MEC Removal Action with AGC**

Description	Default	User	UOM
SSR Site Preparation			
<u>Secondary Parameters</u>			
No Removal	9.75	9.75	Acres
Total Vegetation Removal Area	39	39	Acres
Archaeological Survey	39	39	Acres
Flora / Fauna Survey	39	39	Acres
Daily Travel Distance to Site	0 - 50 Miles	0 - 50 Miles	n/a
SR Site Preparation			
<u>Secondary Parameters</u>			
Heavy Removal	0	0	Acres
Moderate Removal	0	0	Acres
Light Removal	0	0	Acres
No Removal	0	0	Acres
Total Vegetation Removal Area	0	0	Acres
Archaeological Survey	0	0	Acres
Flora / Fauna Survey	0	0	Acres
RA Field Activities			
<u>Secondary Parameters</u>			
Mag & Flag (analog Geophysics)	0	19.5	Acres
Digital Geophysical Mapping with Single Sensor	39	19.5	Acres
Digital Geophysical Mapping with Array of Sensors	0	0	Acres
Anomaly Density	500	100	Anomalies / Acre
Investigation			
<u>Secondary Parameters</u>			
Advanced Geophysics Classification Cueing	975	1950	Anomalies
Number of Digs	10248	2145	Anomalies
Onsite Donor Explosive Storage	Yes	No	n/a

Comments:

Phase Documentation:

Phase Type: Remedial Action
Phase Name: Periodic Review
Description: Periodic Review
Approach: Ex Situ
Start Date: June, 2024
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate

Estimate Documentation Detailed Report - Layout 2

Phase Markup Template: System Defaults

Technology Markups

Five-Year Review

Markup % Prime % Sub.

Yes 100 0

Total Marked-up Cost: \$70,383.52

Technologies:

Technology Name: **Five-Year Review (#2)**

User Name: **Five-Year Review**

Description	Default	User	UOM
<i>System Definition</i>			
<u>Required Parameters</u>			
Site Complexity		Low	n/a
Document Review		Yes	n/a
Interviews		No	n/a
Site Inspection		Yes	n/a
Report		Yes	n/a
Travel		Yes	n/a
Rebound Study		No	n/a
Start Month		June	n/a
No. Reviews		6	EA
Start Year		2024	n/a
Safety Level		D	n/a
<i>Document Review</i>			
<u>Required Parameters</u>			
5-Year Review Check List		Yes	n/a
Record of Decision		No	n/a
Remedial Action Design & Construction		No	n/a
Close-Out Report		No	n/a
Operations & Maintenance Manuals & Reports		No	n/a
Consent Decree or Settlement Records		No	n/a
Groundwater Monitoring & Reports		No	n/a
Remedial Action Required		No	n/a
Previous 5-Year Review Reports		No	n/a
<i>Site Inspection</i>			
<u>Required Parameters</u>			
General Site Inspection		Yes	n/a
Containment System Inspection		No	n/a

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Five-Year Review (#2)**

User Name: **Five-Year Review**

Description	Default	User	UOM
Site Inspection			
<u>Required Parameters</u>			
Monitoring Systems Inspection		No	n/a
Treatment Systems Inspection		No	n/a
Regulatory Compliance		No	n/a
Site Visit Documentation (Photos, Diagrams, etc.)		Yes	n/a
Report			
<u>Required Parameters</u>			
Introduction		No	n/a
Remedial Objectives		No	n/a
ARARs Review		No	n/a
Summary of Site Visit		Yes	n/a
Areas of Non Compliance		Yes	n/a
Technology Recommendations		No	n/a
Statement of Protectiveness		No	n/a
Next Review		No	n/a
Implementation Requirements		No	n/a
Travel			
<u>Required Parameters</u>			
Number of Travelers		1	EA
Number of Days		1	EA
Air Fare Ticket Price		500.00	\$
Need a rental car?		Yes	n/a

Comments:

Phase Documentation:

Phase Type: Operations & Maintenance
Phase Name: Administrative LUC (signs)
Description: Administrative Land Use Controls including signs (4 signs)

Start Date: June, 2019
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

<u>Technology Markups</u>	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
ADMINISTRATIVE LAND USE CONTROLS	Yes	100	0

Estimate Documentation Detailed Report - Layout 2

Total Marked-up Cost: \$83,066.79

Technologies:

Technology Name: **Administrative Land Use Controls (#2)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
<i>System Definition</i>			
<u>Required Parameters</u>			
Rename Model		ADMINISTRATIVE LAND USE CONTROLS	n/a
Planning Documents		Yes	n/a
Planning Documents: Start Date		2019	n/a
Implementation		Yes	n/a
Implementation: Start Date		2019	n/a
Monitoring & Enforcement		No	n/a
Modification/Termination		No	n/a
Type of Site		Active Government Installation	n/a
<i>Planning Documents</i>			
<u>Required Parameters</u>			
LUC Assurance Plan (LUCAP)		No	n/a
LUC Implementation Plan (LUCIP)		Yes	n/a
LUC Implementation Plan (LUCIP): Number		1	EA
LUC Implementation Plan (LUCIP): Plan Complexity		Low	n/a
Long-term Stewardship (LTS) Plan		No	n/a
Long-term Stewardship (LTS) Plan: Number		0	EA
Memorandum of Agreements (MOA)		No	n/a
Memorandum of Agreements (MOA): Number		0	EA
Installation (or City) Master Plan		No	n/a
Construction Permitting		No	n/a
Construction Permitting: Number		0	EA
Geographic Information Systems (GIS)/Overlay Maps		No	n/a
Geographic Information Systems (GIS)/Overlay Maps: Number		0	EA
<i>Planning Meetings</i>			
<u>Required Parameters</u>			
LUCAP: Number of Meetings		0	EA
LUCAP: Number of People		0	EA
LUCAP: Number of Days		0	EA

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Administrative Land Use Controls (#2)**User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
<i>Planning Meetings</i>			
<u>Required Parameters</u>			
LUCAP: Airfare Cost		0.00	\$
LUCAP: Mileage to Meeting Site		0	MI
LUCIP: Number of Meetings		1	EA
LUCIP: Number of People		1	EA
LUCIP: Number of Days		1	EA
LUCIP: Airfare Cost		1.00	\$
LUCIP: Mileage to Meeting Site		100	MI
LTS: Number of Meetings		0	EA
LTS: Number of People		0	EA
LTS: Number of Days		0	EA
LTS: Airfare Cost		0.00	\$
LTS: Mileage to Meeting Site		0	MI
MOA: Number of Meetings		0	EA
MOA: Number of People		0	EA
MOA: Number of Days		0	EA
MOA: Airfare Cost		0.00	\$
MOA: Mileage to Meeting Site		0	MI
Master Plan: Number of Meetings		0	EA
Master Plan: Number of People		0	EA
Master Plan: Number of Days		0	EA
Master Plan: Airfare Cost		0.00	\$
Master Plan: Mileage to Meeting Site		0	MI
Construction Permitting: Number of Meetings		0	EA
Construction Permitting: Number of People		0	EA
Construction Permitting: Number of Days		0	EA
Construction Permitting: Airfare Cost		0.00	\$
Construction Permitting: Mileage to Meeting Site		0	MI
GIS/Overlay Maps: Number of Meetings		0	EA
GIS/Overlay Maps: Number of People		0	EA
GIS/Overlay Maps: Number of Days		0	EA
GIS/Overlay Maps: Airfare Cost		0.00	\$
GIS/Overlay Maps: Mileage to Meeting Site		0	MI
<i>Implementation</i>			
<u>Required Parameters</u>			
Modify Installation (or City) Master Plan		No	n/a
Deed Notification		No	n/a
Deed Notification: Number		0	EA
Negotiating Easements		No	n/a
Negotiating Easements: Number		0	EA

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Administrative Land Use Controls (#2)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
Implementation			
<u>Required Parameters</u>			
Restrictive Covenants		No	n/a
Restrictive Covenants: Number		0	EA
Equitable Servitudes		No	n/a
Equitable Servitudes: Number		0	EA
Access Control Signs		Yes	n/a
Access Control Signs: Number		4	EA
Access Control Signs: Task Complexity		Low	n/a
Utility Notification Service		Yes	n/a
Access Control Signs: Number		1	EA
Access Control Signs: Task Complexity		Low	n/a
Geographic Information Systems (GIS)/Overlay Maps		No	n/a
Geographic Information Systems (GIS)/Overlay Maps: Number		0	EA
Develop Finding of Suitability to Transfer (FOST)		No	n/a

Comments:

Phase Documentation:

Phase Type: Operations & Maintenance
Phase Name: 30-Year O&M
Description: 30-Year O&M

Start Date: June, 2019
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
ADMINISTRATIVE LAND USE CONTROLS	Yes	100	0

Total Marked-up Cost: \$476,331.86

Technologies:

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Administrative Land Use Controls (#2)**User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
<i>System Definition</i>			
<u>Required Parameters</u>			
Rename Model		ADMINISTRATIVE LAND USE CONTROLS	n/a
Planning Documents		No	n/a
Implementation		No	n/a
Monitoring & Enforcement		Yes	n/a
Monitoring & Enforcement: Start Date		2019	n/a
Modification/Termination		No	n/a
Type of Site		Active Government Installation	n/a
<i>Monitoring & Enforcement</i>			
<u>Required Parameters</u>			
Duration of Monitoring/Enforcement		30	Years
Notice Letters		No	n/a
Notice Letters: Number		0	EA
Guard Service/Security		No	n/a
Guard Service/Security: Number		0	EA
Reports & Certifications		Yes	n/a
Reports & Certifications: Frequency		Biennially	n/a
Site Visits/Inspections		Yes	n/a
Site Visits/Inspections: Number		1	EA
Site Visits/Inspections: Safety Level		D	n/a
Site Visits/Inspections: Duration		2	Days
Site Visits/Inspections: Number of People		1	EA
Site Visits/Inspections: Frequency		Biennially	n/a
Site Visits/Inspections: Airfare		500	\$ Per Ticket
Site Visits/Inspections: Mileage		100	MI

Comments:

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Technology: MEC Removal Action with AGC

Element: Systematic Project Planning

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010108	Sedan, Automobile, Rental	30.00	DAY	0.00	0.00	0.00	75.45	\$2,263.62	No
33010202	Per Diem (per person)	36.00	DAY	0.00	0.00	0.00	229.87	\$8,275.32	No
33040947	MEC: Systematic Project Planning Meeting, includes labor and facility rental expenses, per EA	3.00	EA	0.00	22,652.99	0.00	1,379.22	\$72,096.62	No
33040948	MEC: Systematic Project Planning, Site Visit, includes labor expenses, per EA	1.00	EA	0.00	6,745.48	0.00	0.00	\$6,745.48	No
33040949	MEC: Systematic Project Planning, UFP QAPP, includes labor expenses, per EA	1.00	EA	0.00	73,034.81	0.00	0.00	\$73,034.81	No
33040950	MEC: Systematic Project Planning, Establish and Management of GIS Database, includes labor expenses, per EA	1.00	EA	0.00	23,448.13	0.00	0.00	\$23,448.13	No
33040951	MEC: Systematic Project Planning, Community Relation Plan, includes labor expenses, per EA	1.00	EA	0.00	13,429.74	0.00	0.00	\$13,429.74	No
33040953	MEC: Systematic Project Planning, PMP/Quality Assurance Surveillance Plan, includes labor expenses, per EA	1.00	EA	0.00	10,494.89	0.00	0.00	\$10,494.89	No
33040954	MEC: Systematic Project Planning, Health and Safety Plan, includes labor expenses, per EA	1.00	EA	0.00	16,486.44	0.00	0.00	\$16,486.44	No
33040955	MEC: Systematic Project Planning, Cultural and Archeological Plan, includes labor expenses, per EA	1.00	EA	0.00	11,338.70	0.00	0.00	\$11,338.70	No
33040956	MEC: Systematic Project Planning, Environmental and Biological Plan, includes labor expenses, per EA	1.00	EA	0.00	11,430.23	0.00	0.00	\$11,430.23	No
33040961	Explosive Safety	1.00	EA	0.00	30,862.89	0.00	0.00	\$30,862.89	No

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Technology: MEC Removal Action with AGC

Submission, includes
labor and equipment
expenses, per EA

33041101	Airfare	6.00	LS	0.00	0.00	0.00	575.00	\$3,450.00	No
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	7,004.82	\$7,004.82	No

Total Element Cost: \$290,361.68

Element: Surface and Sub Removal - Site Prep

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
17010401	Chipping brush, light brush	19.50	ACR	0.00	1,682.20	571.11	0.00	\$43,939.59	No
17010402	Chipping brush, medium brush	9.75	ACR	0.00	2,162.74	734.24	0.00	\$28,245.55	No
33010108	Sedan, Automobile, Rental	2.00	DAY	0.00	0.00	0.00	75.45	\$150.91	No
33010114	Mobilization Equipment (Soils)	1.00	LS	0.00	2,485.84	2,431.63	0.00	\$4,917.47	No
33010202	Per Diem (per person)	108.00	DAY	0.00	0.00	0.00	229.87	\$24,825.96	No
33040651	4 X 4 Truck-Rental/Lease	69.00	DAY	0.00	0.00	302.92	0.00	\$20,901.41	No
33040934	UXO Technician II	100.00	HR	0.00	70.41	0.00	0.00	\$7,041.11	No
33040935	UXO Technician III (UXO Supervisor)	80.00	HR	0.00	83.18	0.00	0.00	\$6,654.36	No
33040958	MEC: Surface Clearance , includes labor and equipment expenses, per Day	15.00	DAY	0.00	3,648.24	0.00	94.98	\$56,148.18	No
33040959	MEC: Archeological Survey, includes labor and equipment expenses, per Day	1.00	DAY	0.00	1,736.22	0.00	135.72	\$1,871.93	No
33040960	MEC: Flora/Fauna Survey, includes labor and equipment expenses, per Day	1.00	DAY	0.00	1,736.22	0.00	135.72	\$1,871.93	No
33041101	Airfare	14.00	LS	0.00	0.00	0.00	575.00	\$8,050.00	No
33220212	Surveying - 2-man Crew	2.00	DAY	0.00	1,304.24	23.67	0.00	\$2,655.82	No
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	5,395.62	\$5,395.62	No

Total Element Cost: \$212,669.85

Element: RA Field Activities

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010114	Mobilization Equipment (Soils)	2.00	LS	0.00	2,485.84	2,431.63	0.00	\$9,834.93	No

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Technology: MEC Removal Action with AGC

33010202	Per Diem (per person)	105.00	DAY	0.00	0.00	0.00	229.87	\$24,136.35	No
33040170	MEC: Instrument Verification Strip Installation, per EA	1.00	EA	625.09	5,227.55	14.19	740.76	\$6,607.60	No
33040171	MEC: UXO Seeding, Quality Seeding Installation, per EA	105.00	EA	7.22	60.09	0.00	151.26	\$22,950.15	No
33040173	MEC: UXO Mag and Flag Grid Team, per HR	70.00	HR	0.00	400.40	0.00	135.72	\$37,528.00	No
33040182	Land-Based Advanced Classification Survey Grid Team, MEC Removal Action, per HR	100.00	HR	0.00	269.26	0.00	226.23	\$49,549.77	No
33040270	Geometrics MetalMapper Mobilization Fee	1.00	EA	0.00	0.00	0.00	1,460.13	\$1,460.13	No
33040651	4 X 4 Truck-Rental/Lease	24.00	DAY	0.00	0.00	302.92	0.00	\$7,270.06	No
33041101	Airfare	5.00	LS	0.00	0.00	0.00	575.00	\$2,875.00	No
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	4,525.68	\$4,525.68	No

Total Element Cost: \$166,737.68

Element: Investigation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	195.00	DAY	0.00	0.00	0.00	229.87	\$44,824.65	No
33040181	UXO Anomaly Dig Crew, MEC Removal Action, includes Labor and Equipment, per HR	206.00	HR	0.00	306.99	0.00	67.86	\$77,218.04	No
33040184	Advanced Geophysics Classification Cueing, MEC Investigation, per EA	1,950.00	EA	0.00	13.24	0.00	5.94	\$37,411.05	No
33040185	UXO Anomaly Explosive Demolition, MEC Activities, includes Labor, Material and Equipment, per EA	43.00	EA	273.28	614.36	0.00	0.00	\$38,168.55	No
33040186	Munitions Deemed As Safe (MDAS) Disposal, bulk solid waste, includes materials, documentation, transport and disposal fees, per LB	2,896.00	LB	0.00	0.00	0.00	9.65	\$27,939.05	No
33040651	4 X 4 Truck-Rental/Lease	52.00	DAY	0.00	0.00	302.92	0.00	\$15,751.79	No

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Technology: MEC Removal Action with AGC

33041101	Airfare	10.00	LS	0.00	0.00	0.00	575.00	\$5,750.00	No
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	6,869.39	\$6,869.39	No

Total Element Cost: **\$253,932.52**

Element: Site Management

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
16019934	Temporary Office 50' X 12'	2.00	MO	860.33	0.00	0.00	0.00	\$1,720.65	No
16019935	Field office expense, office supplies, average, per month	2.00	MO	140.89	0.00	0.00	0.00	\$281.79	No
20020310	1/C #2 Aluminum, Bare, Wire	500.00	LF	0.63	1.36	0.12	0.00	\$1,056.69	No
20020403	40' Class 3 Treated Power Pole	5.00	EA	774.91	897.24	129.96	0.00	\$9,010.52	No
20020431	Terminal Structure, 15 KV Pole Top	2.00	EA	2,931.45	2,906.56	371.46	0.00	\$12,418.94	No
33010202	Per Diem (per person)	250.00	DAY	0.00	0.00	0.00	229.87	\$57,467.50	No
33010475	Toilet, portable, chemical, rent per month	2.00	MO	174.35	0.00	0.00	0.00	\$348.71	No
33040651	4 X 4 Truck-Rental/Lease	250.00	DAY	0.00	0.00	302.92	0.00	\$75,729.75	No
33040699	Storage boxes, rent per month, 40' x 8'	2.00	MO	190.20	0.00	0.00	0.00	\$380.41	No
33040921	Senior UXO Supervisor (SUXOS)	579.00	HR	0.00	111.18	0.00	0.00	\$64,374.29	No
33040923	UXO Project Manager	145.00	HR	0.00	162.04	0.00	0.00	\$23,496.39	No
33040930	UXO QC Specialist	356.00	HR	0.00	98.92	0.00	0.00	\$35,217.01	No
33040931	UXO Safety Officer	356.00	HR	0.00	99.51	0.00	0.00	\$35,423.91	No
33040940	GIS Manager (UXO)	145.00	HR	0.00	116.84	0.00	0.00	\$16,941.10	No
33041101	Airfare	5.00	LS	0.00	0.00	0.00	575.00	\$2,875.00	No
33220101	Senior Project Manager	12.00	HR	0.00	244.21	0.00	0.00	\$2,930.49	No
33220113	Secretarial/Administrative	12.00	HR	0.00	120.71	0.00	0.00	\$1,448.53	No
33222006	Electrician	40.00	HR	0.00	114.58	0.00	0.00	\$4,583.23	No

Total Element Cost: **\$345,704.91**

Element: RA Reporting

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33041324	MEC After Action Report - Site Complexity (Low), per	1.00	EA	0.00	16,089.90	0.00	0.00	\$16,089.90	No

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Technology: MEC Removal Action with AGC

EA

33041325	MEC: Independent Blind Seed Tracking, per EA	1.00	EA	0.00	5,498.68	0.00	0.00	\$5,498.68	No
33041326	MEC: IVS Memo, per EA	1.00	EA	0.00	9,517.86	0.00	0.00	\$9,517.86	No
33041330	MEC: Anomaly Selection Memo, per EA	1.00	EA	0.00	9,517.86	0.00	0.00	\$9,517.86	No
33041331	MEC: TOI Memo, per EA	1.00	EA	0.00	9,517.86	0.00	0.00	\$9,517.86	No
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	531.69	\$531.69	No

Total Element Cost: \$50,673.84

Total Tech Cost: \$1,320,080.47

Cost Over Time Summary

Element	Year(s)	Cost per Year	Total Cost
Planning Docs	2019	\$38,432.02	\$38,432.02
Planning Meetings	2019	\$13,006.55	\$13,006.55
Implementation	2019	\$31,628.22	\$31,628.22

Total Marked Up Tech Cost: \$83,066.79

Technology: ADMINISTRATIVE LAND USE CONTROLS

Element: Planning Docs

Year(s)	Cost per Year
2019	\$38,432.02

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	22.00	HR	0.00	234.00	0.00	0.00	\$5,148.07	No
33220105	Project Engineer	30.00	HR	0.00	198.39	0.00	0.00	\$5,951.62	No
33220106	Staff Engineer	45.00	HR	0.00	204.33	0.00	0.00	\$9,194.80	No
33220110	QA/QC Officer	11.00	HR	0.00	160.15	0.00	0.00	\$1,761.69	No
33220114	Word Processing/Clerical	60.00	HR	0.00	109.73	0.00	0.00	\$6,584.04	No
33220115	Draftsman/CADD	30.00	HR	0.00	127.89	0.00	0.00	\$3,836.83	No
33220503	Attorney, Partner, Real Estate	22.00	HR	0.00	245.19	0.00	0.00	\$5,394.14	No
33240101	Other Direct Costs	1.00	LS	560.83	0.00	0.00	0.00	\$560.83	No

Total First Year Element Cost: \$38,432.02

Element: Planning Meetings

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Technology: ADMINISTRATIVE LAND USE CONTROLS

Year(s)
2019
Cost per Year
\$13,006.55

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	100.00	MI	0.00	0.00	0.00	0.32	\$31.86	No
33010108	Sedan, Automobile, Rental	2.00	DAY	0.00	0.00	0.00	75.45	\$150.91	No
33010202	Per Diem (per person)	3.00	DAY	0.00	0.00	0.00	229.87	\$689.61	No
33022038	Overnight delivery service, 1 lb package	1.00	LB	0.00	0.00	0.00	72.00	\$72.00	No
33041101	Airfare	1.00	LS	0.00	0.00	0.00	1.00	\$1.00	No
33220102	Project Manager	39.00	HR	0.00	234.00	0.00	0.00	\$9,126.12	No
33220114	Word Processing/Clerical	16.00	HR	0.00	109.73	0.00	0.00	\$1,755.74	No
33220115	Draftsman/CADD	8.00	HR	0.00	127.89	0.00	0.00	\$1,023.15	No
33240101	Other Direct Costs	1.00	LS	156.15	0.00	0.00	0.00	\$156.15	No
Total First Year Element Cost:								\$13,006.55	

Element: Implementation

Year(s)
2019
Cost per Year
\$31,628.22

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
18010412	Construction Signs	72.00	SF	44.03	0.00	0.00	0.00	\$3,170.08	No
33220102	Project Manager	15.00	HR	0.00	234.00	0.00	0.00	\$3,510.05	No
33220105	Project Engineer	30.00	HR	0.00	198.39	0.00	0.00	\$5,951.62	No
33220106	Staff Engineer	45.00	HR	0.00	204.33	0.00	0.00	\$9,194.80	No
33220110	QA/QC Officer	8.00	HR	0.00	160.15	0.00	0.00	\$1,281.23	No
33220114	Word Processing/Clerical	30.00	HR	0.00	109.73	0.00	0.00	\$3,292.02	No
33220115	Draftsman/CADD	38.00	HR	0.00	127.89	0.00	0.00	\$4,859.99	No
33240101	Other Direct Costs	1.00	LS	368.43	0.00	0.00	0.00	\$368.43	No
Total First Year Element Cost:								\$31,628.22	

Total First Year Tech Cost: \$83,066.79

Cost Over Time Summary

Element	Year(s)	Cost per Year	Total Cost
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Monitoring & Enforcement	2019	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2021	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2023	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2025	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2027	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2029	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2031	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2033	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2035	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2037	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2039	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2041	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2043	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2045	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2047	\$31,755.46	\$31,755.46

Total Marked Up Tech Cost: \$476,331.90

Technology: ADMINISTRATIVE LAND USE CONTROLS

Element: Monitoring & Enforcement

Year(s)	Cost per Year
2019	\$31,755.46
2020	\$0.00
2021	\$31,755.46
2022	\$0.00
2023	\$31,755.46
2024	\$0.00
2025	\$31,755.46
2026	\$0.00
2027	\$31,755.46
2028	\$0.00
2029	\$31,755.46
2030	\$0.00
2031	\$31,755.46
2032	\$0.00
2033	\$31,755.46
2034	\$0.00
2035	\$31,755.46
2036	\$0.00
2037	\$31,755.46
2038	\$0.00
2039	\$31,755.46
2040	\$0.00
2041	\$31,755.46
2042	\$0.00
2043	\$31,755.46

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Technology: ADMINISTRATIVE LAND USE CONTROLS

2044	\$0.00
2045	\$31,755.46
2046	\$0.00
2047	\$31,755.46
2048	\$0.00

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	100.00	MI	0.00	0.00	0.00	0.32	\$31.86	No
33010108	Sedan, Automobile, Rental	3.00	DAY	0.00	0.00	0.00	75.45	\$226.36	No
33010202	Per Diem (per person)	5.00	DAY	0.00	0.00	0.00	229.87	\$1,149.35	No
33022038	Overnight delivery service, 1 lb package	6.00	LB	0.00	0.00	0.00	72.00	\$432.01	No
33041101	Airfare	1.00	LS	0.00	0.00	0.00	500.00	\$500.00	No
33220102	Project Manager	44.00	HR	0.00	285.37	0.00	0.00	\$12,556.26	No
33220106	Staff Engineer	40.00	HR	0.00	249.18	0.00	0.00	\$9,967.26	No
33220110	QA/QC Officer	4.00	HR	0.00	160.15	0.00	0.00	\$640.61	No
33220112	Field Technician	1.00	HR	0.00	135.87	0.00	0.00	\$135.87	No
33220114	Word Processing/Clerical	26.00	HR	0.00	133.82	0.00	0.00	\$3,479.37	No
33220115	Draftsman/CADD	16.00	HR	0.00	127.89	0.00	0.00	\$2,046.31	No
33220119	Health and Safety Officer	1.00	HR	0.00	209.35	0.00	0.00	\$209.35	No
33240101	Other Direct Costs	1.00	LS	380.83	0.00	0.00	0.00	\$380.83	No

Total First Year Element Cost: \$31,755.46

Total First Year Tech Cost: \$31,755.46

Cost Over Time Summary

Element	Year(s)	Cost per Year	Total Cost
Document Review	2024	\$454.68	\$454.68
Document Review	2029	\$454.68	\$454.68
Document Review	2034	\$454.68	\$454.68
Document Review	2039	\$454.68	\$454.68
Document Review	2044	\$454.68	\$454.68
Document Review	2049	\$454.68	\$454.68
Site Inspection	2024	\$3,010.44	\$3,010.44
Site Inspection	2029	\$3,010.44	\$3,010.44
Site Inspection	2034	\$3,010.44	\$3,010.44
Site Inspection	2039	\$3,010.44	\$3,010.44
Site Inspection	2044	\$3,010.44	\$3,010.44

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Site Inspection	2049	\$3,010.44	\$3,010.44
Report	2024	\$7,460.14	\$7,460.14
Report	2029	\$7,460.14	\$7,460.14
Report	2034	\$7,460.14	\$7,460.14
Report	2039	\$7,460.14	\$7,460.14
Report	2044	\$7,460.14	\$7,460.14
Report	2049	\$7,460.14	\$7,460.14
Travel	2024	\$805.32	\$805.32
Travel	2029	\$805.32	\$805.32
Travel	2034	\$805.32	\$805.32
Travel	2039	\$805.32	\$805.32
Travel	2044	\$805.32	\$805.32
Travel	2049	\$805.32	\$805.32

Total Marked Up Tech Cost: \$70,383.48

Technology: Five-Year Review
Element: Document Review

Year(s)	Cost per Year
2024	\$454.68
2025 - 2028	\$0.00
2029	\$454.68
2030 - 2033	\$0.00
2034	\$454.68
2035 - 2038	\$0.00
2039	\$454.68
2040 - 2043	\$0.00
2044	\$454.68
2045 - 2048	\$0.00
2049	\$454.68

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220105	Project Engineer	1.00	HR	0.00	241.94	0.00	0.00	\$241.94	No
33220109	Staff Scientist	1.00	HR	0.00	212.75	0.00	0.00	\$212.75	No

Total First Year Element Cost: \$454.68

Element: Site Inspection

Year(s)	Cost per Year
2024	\$3,010.44
2025 - 2028	\$0.00
2029	\$3,010.44
2030 - 2033	\$0.00
2034	\$3,010.44
2035 - 2038	\$0.00

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Technology: Five-Year Review

2039	\$3,010.44
2040 - 2043	\$0.00
2044	\$3,010.44
2045 - 2048	\$0.00
2049	\$3,010.44

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	3.00	HR	0.00	285.37	0.00	0.00	\$856.11	No
33220105	Project Engineer	3.00	HR	0.00	241.94	0.00	0.00	\$725.81	No
33220108	Project Scientist	3.00	HR	0.00	263.43	0.00	0.00	\$790.28	No
33220109	Staff Scientist	3.00	HR	0.00	212.75	0.00	0.00	\$638.24	No
Total First Year Element Cost:								\$3,010.44	

Element: Report

Year(s)	Cost per Year
2024	\$7,460.14
2025 - 2028	\$0.00
2029	\$7,460.14
2030 - 2033	\$0.00
2034	\$7,460.14
2035 - 2038	\$0.00
2039	\$7,460.14
2040 - 2043	\$0.00
2044	\$7,460.14
2045 - 2048	\$0.00
2049	\$7,460.14

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	4.00	HR	0.00	285.37	0.00	0.00	\$1,141.48	No
33220105	Project Engineer	11.00	HR	0.00	241.94	0.00	0.00	\$2,661.29	No
33220108	Project Scientist	5.00	HR	0.00	263.43	0.00	0.00	\$1,317.14	No
33220109	Staff Scientist	11.00	HR	0.00	212.75	0.00	0.00	\$2,340.23	No
Total First Year Element Cost:								\$7,460.14	

Element: Travel

Year(s)	Cost per Year
2024	\$805.32
2025 - 2028	\$0.00
2029	\$805.32
2030 - 2033	\$0.00

Estimate Documentation Detailed Report - Layout 2

Technology: Five-Year Review

2034	\$805.32
2035 - 2038	\$0.00
2039	\$805.32
2040 - 2043	\$0.00
2044	\$805.32
2045 - 2048	\$0.00
2049	\$805.32

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010108	Sedan, Automobile, Rental	1.00	DAY	0.00	0.00	0.00	75.45	\$75.45	No
33010202	Per Diem (per person)	1.00	DAY	0.00	0.00	0.00	229.87	\$229.87	No
33041101	Airfare	1.00	LS	0.00	0.00	0.00	500.00	\$500.00	No

Total First Year Element Cost: \$805.32

Total First Year Tech Cost: \$11,730.59

Cost Over Time Summary

Element	Year(s)	Cost per Year	Total Cost
Document Review	2024	\$454.68	\$454.68
Document Review	2029	\$454.68	\$454.68
Document Review	2034	\$454.68	\$454.68
Document Review	2039	\$454.68	\$454.68
Document Review	2044	\$454.68	\$454.68
Document Review	2049	\$454.68	\$454.68
Site Inspection	2024	\$3,010.44	\$3,010.44
Site Inspection	2029	\$3,010.44	\$3,010.44
Site Inspection	2034	\$3,010.44	\$3,010.44
Site Inspection	2039	\$3,010.44	\$3,010.44
Site Inspection	2044	\$3,010.44	\$3,010.44
Site Inspection	2049	\$3,010.44	\$3,010.44
Report	2024	\$7,460.14	\$7,460.14
Report	2029	\$7,460.14	\$7,460.14
Report	2034	\$7,460.14	\$7,460.14
Report	2039	\$7,460.14	\$7,460.14
Report	2044	\$7,460.14	\$7,460.14
Report	2049	\$7,460.14	\$7,460.14
Travel	2024	\$805.32	\$805.32
Travel	2029	\$805.32	\$805.32
Travel	2034	\$805.32	\$805.32
Travel	2039	\$805.32	\$805.32
Travel	2044	\$805.32	\$805.32
Travel	2049	\$805.32	\$805.32

Estimate Documentation Detailed Report - Layout 2

Total Marked Up Tech Cost:

\$70,383.48

**AOI-02, Alternative 3: Partial MEC Removal with LUCs
Project Assembly Level Data Report**

Note:
Costs are direct (no markup)

Phase Name	Tech. Key	Technology Name	Assembly No.	Assembly Description	Qty	UOM	Materials	Labor	Equipment	SubBid	Extended Cost	units	Cost
Partial Removal Action	39	MEC Removal Action with AGC	16019934	Temporary Office 50' X 12'	2	MO	576.43	0.00	0.00	0.00	1,152.86		
Partial Removal Action	39	MEC Removal Action with AGC	16019935	Field office expense, office supplies, average, per month	2	MO	94.40	0.00	0.00	0.00	188.80		
Partial Removal Action	39	MEC Removal Action with AGC	17010401	Chipping brush, light brush	19.5	ACR	0.00	1,127.10	382.65	0.00	29,440.14		
Partial Removal Action	39	MEC Removal Action with AGC	17010402	Chipping brush, medium brush	9.75	ACR	0.00	1,449.06	491.95	0.00	18,924.92		
Partial Removal Action	39	MEC Removal Action with AGC	20020310	1/C #2 Aluminum, Bare, Wire	500	LF	0.42	0.91	0.08	0.00	708.00		
Partial Removal Action	39	MEC Removal Action with AGC	20020403	40' Class 3 Treated Power Pole	5	EA	519.20	601.16	87.07	0.00	6,037.17		
Partial Removal Action	39	MEC Removal Action with AGC	20020431	Terminal Structure, 15 KV Pole Top	2	EA	1,964.11	1,947.44	248.89	0.00	8,320.86		
Partial Removal Action	39	MEC Removal Action with AGC	33010108	Sedan, Automobile, Rental	2	DAY	0.00	0.00	0.00	62.94	125.88		
Partial Removal Action	39	MEC Removal Action with AGC	33010108	Sedan, Automobile, Rental	30	DAY	0.00	0.00	0.00	62.94	1,888.24		
Partial Removal Action	39	MEC Removal Action with AGC	33010114	Mobilization Equipment (Soils)	1	LS	0.00	1,665.55	1,629.23	0.00	3,294.77		
Partial Removal Action	39	MEC Removal Action with AGC	33010114	Mobilization Equipment (Soils)	2	LS	0.00	1,665.55	1,629.23	0.00	6,589.54		
Partial Removal Action	39	MEC Removal Action with AGC	33010202	Per Diem (per person)	36	DAY	0.00	0.00	0.00	229.87	8,275.32		
Partial Removal Action	39	MEC Removal Action with AGC	33010202	Per Diem (per person)	108	DAY	0.00	0.00	0.00	229.87	24,825.96		
Partial Removal Action	39	MEC Removal Action with AGC	33010202	Per Diem (per person)	195	DAY	0.00	0.00	0.00	229.87	44,824.65		
Partial Removal Action	39	MEC Removal Action with AGC	33010202	Per Diem (per person)	105	DAY	0.00	0.00	0.00	229.87	24,136.35		
Partial Removal Action	39	MEC Removal Action with AGC	33010202	Per Diem (per person)	250	DAY	0.00	0.00	0.00	229.87	57,467.50		
Partial Removal Action	39	MEC Removal Action with AGC	33010475	Toilet, portable, chemical, rent per month	2	MO	116.82	0.00	0.00	0.00	233.64		
Partial Removal Action	39	MEC Removal Action with AGC	33040170	MEC: Instrument Verification Strip Installation, per EA	1	EA	418.82	3,502.53	9.51	617.92	4,548.78		
Partial Removal Action	39	MEC Removal Action with AGC	33040171	MEC: UXO Seeding, Quality Seeding installation, per EA	105	EA	4.84	40.26	0.00	126.18	17,984.08		
Partial Removal Action	39	MEC Removal Action with AGC	33040173	MEC: UXO Mag and Flag Grid Team, per HR	70	HR	0.00	268.27	0.00	113.21	26,703.75		
Partial Removal Action	39	MEC Removal Action with AGC	33040181	UXO Anomaly Dig Crew, MEC Removal Action, includes Labor and Equipment, per HR	206	HR	0.00	205.69	0.00	56.60	54,031.82		
Partial Removal Action	39	MEC Removal Action with AGC	33040182	Land-Based Advanced Classification Survey Grid Team, MEC Removal Action, per HR	100	HR	0.00	180.41	0.00	188.72	36,912.76		
Partial Removal Action	39	MEC Removal Action with AGC	33040184	Advanced Geophysics Classification Cueing, MEC Investigation, per EA	1950	EA	0.00	8.87	0.00	4.96	26,967.72		
Partial Removal Action	39	MEC Removal Action with AGC	33040185	UXO Anomaly Explosive Demolition, MEC Activities, includes Labor, Material and Equipment, per EA	43	EA	183.10	411.63	0.00	0.00	25,573.47		
Partial Removal Action	39	MEC Removal Action with AGC	33040186	Munitions Deemed As Safe (MDAS) Disposal, bulk solid waste, includes materials, documentation, transport and disposal fees, per LB	2896	LB	0.00	0.00	0.00	8.05	23,305.85		
Partial Removal Action	39	MEC Removal Action with AGC	33040270	Geometrics MetalMapper Mobilization Fee	1	EA	0.00	0.00	0.00	1,218.00	1,218.00		
Partial Removal Action	39	MEC Removal Action with AGC	33040651	4 X 4 Truck- Rental/Lease	52	DAY	0.00	0.00	202.96	0.00	10,553.92		
Partial Removal Action	39	MEC Removal Action with AGC	33040651	4 X 4 Truck- Rental/Lease	69	DAY	0.00	0.00	202.96	0.00	14,004.24		
Partial Removal Action	39	MEC Removal Action with AGC	33040651	4 X 4 Truck- Rental/Lease	24	DAY	0.00	0.00	202.96	0.00	4,871.04		
Partial Removal Action	39	MEC Removal Action with AGC	33040651	4 X 4 Truck- Rental/Lease	250	DAY	0.00	0.00	202.96	0.00	50,740.00		
Partial Removal Action	39	MEC Removal Action with AGC	33040699	Storage boxes, rent per month, 40' x 8'	2	MO	127.44	0.00	0.00	0.00	254.88		
Partial Removal Action	39	MEC Removal Action with AGC	33040921	Senior UXO Supervisor (SUXOS)	579	HR	0.00	74.49	0.00	0.00	43,131.68		
Partial Removal Action	39	MEC Removal Action with AGC	33040923	UXO Project Manager	145	HR	0.00	108.57	0.00	0.00	15,742.91		
Partial Removal Action	39	MEC Removal Action with AGC	33040930	UXO QC Specialist	356	HR	0.00	66.28	0.00	0.00	23,595.89		
Partial Removal Action	39	MEC Removal Action with AGC	33040931	UXO Safety Officer	356	HR	0.00	66.67	0.00	0.00	23,734.52		
Partial Removal Action	39	MEC Removal Action with AGC	33040934	UXO Technician II	100	HR	0.00	47.18	0.00	0.00	4,717.64		
Partial Removal Action	39	MEC Removal Action with AGC	33040935	UXO Technician III (UXO Supervisor)	80	HR	0.00	55.73	0.00	0.00	4,458.51		
Partial Removal Action	39	MEC Removal Action with AGC	33040940	GIS Manager (UXO)	145	HR	0.00	78.28	0.00	0.00	11,350.77		
Partial Removal Action	39	MEC Removal Action with AGC	33040947	MEC: Systematic Project Planning Meeting, includes labor and facility rental expenses, per EA	3	EA	0.00	15,177.82	0.00	1,150.50	48,984.96		
Partial Removal Action	39	MEC Removal Action with AGC	33040948	MEC: Systematic Project Planning, Site Visit, includes labor expenses, per EA	1	EA	0.00	4,519.56	0.00	0.00	4,519.56		
Partial Removal Action	39	MEC Removal Action with AGC	33040949	MEC: Systematic Project Planning, UFP QAPP, includes labor expenses, per EA	1	EA	0.00	48,934.35	0.00	0.00	48,934.35		
Partial Removal Action	39	MEC Removal Action with AGC	33040950	MEC: Systematic Project Planning, Establish and Management of GIS Database, includes labor expenses, per EA	1	EA	0.00	15,710.58	0.00	0.00	15,710.58		
Partial Removal Action	39	MEC Removal Action with AGC	33040951	MEC: Systematic Project Planning, Community Relation Plan, includes labor expenses, per EA	1	EA	0.00	8,998.11	0.00	0.00	8,998.11		
Partial Removal Action	39	MEC Removal Action with AGC	33040953	MEC: Systematic Project Planning, PMP/Quality Assurance Surveillance Plan, includes labor expenses, per EA	1	EA	0.00	7,031.73	0.00	0.00	7,031.73		
Partial Removal Action	39	MEC Removal Action with AGC	33040954	MEC: Systematic Project Planning, Health and Safety Plan, includes labor expenses, per EA	1	EA	0.00	11,046.14	0.00	0.00	11,046.14		

**AOI-02, Alternative 3: Partial MEC Removal with LUCs
Project Assembly Level Data Report**

Note:
Costs are direct (no markup)

Phase Name	Tech. Key	Technology Name	Assembly No.	Assembly Description	Qty	UOM	Materials	Labor	Equipment	SubBid	Extended Cost	units	Cost
Partial Removal Action	39	MEC Removal Action with AGC	33040955	MEC: Systematic Project Planning, Cultural and Archeological Plan, includes labor expenses, per EA	1	EA	0.00	7,597.09	0.00	0.00	7,597.09		
Partial Removal Action	39	MEC Removal Action with AGC	33040956	MEC: Systematic Project Planning, Environmental and Biological Plan, includes labor expenses, per EA	1	EA	0.00	7,658.41	0.00	0.00	7,658.41		
Partial Removal Action	39	MEC Removal Action with AGC	33040958	MEC: Surface Clearance , includes labor and equipment expenses, per Day	15	DAY	0.00	2,444.37	0.00	79.23	37,853.93		
Partial Removal Action	39	MEC Removal Action with AGC	33040959	MEC: Archeological Survey, includes labor and equipment expenses, per Day	1	DAY	0.00	1,163.29	0.00	113.21	1,276.50		
Partial Removal Action	39	MEC Removal Action with AGC	33040960	MEC: Flora/Fauna Survey, includes labor and equipment expenses, per Day	1	DAY	0.00	1,163.29	0.00	113.21	1,276.50		
Partial Removal Action	39	MEC Removal Action with AGC	33040961	Explosive Safety Submission, includes labor and equipment expenses, per EA	1	EA	0.00	20,678.57	0.00	0.00	20,678.57		
Partial Removal Action	39	MEC Removal Action with AGC	33041101	Airfare	6	LS	0.00	0.00	0.00	575.00	3,450.00		
Partial Removal Action	39	MEC Removal Action with AGC	33041101	Airfare	5	LS	0.00	0.00	0.00	575.00	2,875.00		
Partial Removal Action	39	MEC Removal Action with AGC	33041101	Airfare	5	LS	0.00	0.00	0.00	575.00	2,875.00		
Partial Removal Action	39	MEC Removal Action with AGC	33041101	Airfare	10	LS	0.00	0.00	0.00	575.00	5,750.00		
Partial Removal Action	39	MEC Removal Action with AGC	33041101	Airfare	14	LS	0.00	0.00	0.00	575.00	8,050.00		
Partial Removal Action	39	MEC Removal Action with AGC	33041324	MEC: After Action Report - Site Complexity (Low), per EA	1	EA	0.00	10,780.46	0.00	0.00	10,780.46		
Partial Removal Action	39	MEC Removal Action with AGC	33041325	MEC: Independent Blind Seed Tracking, per EA	1	EA	0.00	3,684.20	0.00	0.00	3,684.20		
Partial Removal Action	39	MEC Removal Action with AGC	33041326	MEC: IVS Memo, per EA	1	EA	0.00	6,377.10	0.00	0.00	6,377.10		
Partial Removal Action	39	MEC Removal Action with AGC	33041330	MEC: Anomaly Selection Memo, per EA	1	EA	0.00	6,377.10	0.00	0.00	6,377.10		
Partial Removal Action	39	MEC Removal Action with AGC	33041331	MEC: TOI Memo, per EA	1	EA	0.00	6,377.10	0.00	0.00	6,377.10		
Partial Removal Action	39	MEC Removal Action with AGC	33220101	Senior Project Manager	12	HR	0.00	85.84	0.00	0.00	1,030.14		
Partial Removal Action	39	MEC Removal Action with AGC	33220113	Secretarial/ Administrative	12	HR	0.00	42.43	0.00	0.00	509.19		
Partial Removal Action	39	MEC Removal Action with AGC	33220212	Surveying - 2-man Crew	2	DAY	0.00	873.86	15.86	0.00	1,779.44		
Partial Removal Action	39	MEC Removal Action with AGC	33220006	Electrician	40	HR	0.00	76.77	0.00	0.00	3,070.83		
Partial Removal Action	39	MEC Removal Action with AGC	33240101	Other Direct Costs	1	LS	0.00	0.00	0.00	443.52	443.52		
Partial Removal Action	39	MEC Removal Action with AGC	33240101	Other Direct Costs	1	LS	0.00	0.00	0.00	5,843.19	5,843.19		
Partial Removal Action	39	MEC Removal Action with AGC	33240101	Other Direct Costs	1	LS	0.00	0.00	0.00	5,730.22	5,730.22		
Partial Removal Action	39	MEC Removal Action with AGC	33240101	Other Direct Costs	1	LS	0.00	0.00	0.00	4,500.85	4,500.85		
Partial Removal Action	39	MEC Removal Action with AGC	33240101	Other Direct Costs	1	LS	0.00	0.00	0.00	3,775.18	3,775.18		
										Total	965,681.79	1	\$965,681.79
Periodic Review	43	Periodic Review	33010108	Sedan, Automobile, Rental	1	DAY	0.00	0.00	0.00	62.94	62.94		
Periodic Review	43	Periodic Review	33010202	Per Diem (per person)	1	DAY	0.00	0.00	0.00	229.87	229.87		
Periodic Review	43	Periodic Review	33041101	Airfare	1	LS	0.00	0.00	0.00	500.00	500.00		
Periodic Review	43	Periodic Review	33220102	Project Manager	4	HR	0.00	100.31	0.00	0.00	401.26		
Periodic Review	43	Periodic Review	33220102	Project Manager	3	HR	0.00	100.31	0.00	0.00	300.94		
Periodic Review	43	Periodic Review	33220105	Project Engineer	1	HR	0.00	85.05	0.00	0.00	85.05		
Periodic Review	43	Periodic Review	33220105	Project Engineer	11	HR	0.00	85.05	0.00	0.00	935.51		
Periodic Review	43	Periodic Review	33220105	Project Engineer	3	HR	0.00	85.05	0.00	0.00	255.14		
Periodic Review	43	Periodic Review	33220108	Project Scientist	3	HR	0.00	92.60	0.00	0.00	277.80		
Periodic Review	43	Periodic Review	33220108	Project Scientist	5	HR	0.00	92.60	0.00	0.00	463.01		
Periodic Review	43	Periodic Review	33220109	Staff Scientist	1	HR	0.00	74.79	0.00	0.00	74.79		
Periodic Review	43	Periodic Review	33220109	Staff Scientist	3	HR	0.00	74.79	0.00	0.00	224.36		
Periodic Review	43	Periodic Review	33220109	Staff Scientist	11	HR	0.00	74.79	0.00	0.00	822.65		
										Total	4,633.31	6	\$27,799.85
LAND USE CONTROLS	47	LAND USE CONTROLS	18010412	Construction Signs	72	SF	29.50	0.00	0.00	0.00	2,124.00		
LAND USE CONTROLS	47	LAND USE CONTROLS	33010104	Sample collection, vehicle mileage charge, car or van	100	MI	0.00	0.00	0.00	0.32	31.86		
LAND USE CONTROLS	47	LAND USE CONTROLS	33010108	Sedan, Automobile, Rental	2	DAY	0.00	0.00	0.00	62.94	125.88		
LAND USE CONTROLS	47	LAND USE CONTROLS	33010202	Per Diem (per person)	3	DAY	0.00	0.00	0.00	229.87	689.61		
LAND USE CONTROLS	47	LAND USE CONTROLS	33022038	Overnight delivery service, 1 lb package	1	LB	0.00	0.00	0.00	60.06	60.06		
LAND USE CONTROLS	47	LAND USE CONTROLS	33041101	Airfare	1	LS	0.00	0.00	0.00	1.00	1.00		
LAND USE CONTROLS	47	LAND USE CONTROLS	33220102	Project Manager	15	HR	0.00	82.26	0.00	0.00	1,233.87		
LAND USE CONTROLS	47	LAND USE CONTROLS	33220102	Project Manager	22	HR	0.00	82.26	0.00	0.00	1,809.87		
LAND USE CONTROLS	47	LAND USE CONTROLS	33220102	Project Manager	39	HR	0.00	82.26	0.00	0.00	3,208.05		
LAND USE CONTROLS	47	LAND USE CONTROLS	33220105	Project Engineer	30	HR	0.00	69.74	0.00	0.00	2,092.14		
LAND USE CONTROLS	47	LAND USE CONTROLS	33220105	Project Engineer	30	HR	0.00	69.74	0.00	0.00	2,092.14		

**AOI-02, Alternative 3: Partial MEC Removal with LUCs
Project Assembly Level Data Report**

Note:
Costs are direct (no markup)

Phase Name	Tech. Key	Technology Name	Assembly No.	Assembly Description	Qty	UOM	Materials	Labor	Equipment	SubBid	Extended Cost	units	Cost	
LAND USE CONTROLS	47	LAND USE CONTROLS	33220106	Staff Engineer	45	HR	0.00	71.83	0.00	0.00	3,232.20			
LAND USE CONTROLS	47	LAND USE CONTROLS	33220106	Staff Engineer	45	HR	0.00	71.83	0.00	0.00	3,232.20			
LAND USE CONTROLS	47	LAND USE CONTROLS	33220110	QA/QC Officer	8	HR	0.00	56.30	0.00	0.00	450.38			
LAND USE CONTROLS	47	LAND USE CONTROLS	33220110	QA/QC Officer	11	HR	0.00	56.30	0.00	0.00	619.28			
LAND USE CONTROLS	47	LAND USE CONTROLS	33220114	Word Processing/Clerical	16	HR	0.00	38.57	0.00	0.00	617.19			
LAND USE CONTROLS	47	LAND USE CONTROLS	33220114	Word Processing/Clerical	30	HR	0.00	38.57	0.00	0.00	1,157.23			
LAND USE CONTROLS	47	LAND USE CONTROLS	33220114	Word Processing/Clerical	60	HR	0.00	38.57	0.00	0.00	2,314.45			
LAND USE CONTROLS	47	LAND USE CONTROLS	33220115	Draftsman/CADD	8	HR	0.00	44.96	0.00	0.00	359.66			
LAND USE CONTROLS	47	LAND USE CONTROLS	33220115	Draftsman/CADD	30	HR	0.00	44.96	0.00	0.00	1,348.74			
LAND USE CONTROLS	47	LAND USE CONTROLS	33220115	Draftsman/CADD	38	HR	0.00	44.96	0.00	0.00	1,708.40			
LAND USE CONTROLS	47	LAND USE CONTROLS	33220503	Attorney, Partner, Real Estate	22	HR	0.00	164.28	0.00	0.00	3,614.15			
LAND USE CONTROLS	47	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	375.77	0.00	0.00	0.00	375.77			
LAND USE CONTROLS	47	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	104.62	0.00	0.00	0.00	104.62			
LAND USE CONTROLS	47	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	246.86	0.00	0.00	0.00	246.86			
										Total	32,849.41	1	\$32,849.41	
30-Year O&M	36	LAND USE CONTROLS	33010104	Vehicle mileage charge, car or van	100	MI	0.00	0.00	0.00	0.32	31.86			
30-Year O&M	36	LAND USE CONTROLS	33010108	Sedan, Automobile, Rental	3	DAY	0.00	0.00	0.00	62.94	188.82			
30-Year O&M	36	LAND USE CONTROLS	33010202	Per Diem (per person)	5	DAY	0.00	0.00	0.00	229.87	1,149.35			
30-Year O&M	36	LAND USE CONTROLS	33022038	Overnight delivery service, 1 lb package	6	LB	0.00	0.00	0.00	60.06	360.37			
30-Year O&M	36	LAND USE CONTROLS	33041101	Airfare	1	LS	0.00	0.00	0.00	500.00	500.00			
30-Year O&M	36	LAND USE CONTROLS	33220102	Project Manager	44	HR	0.00	100.31	0.00	0.00	4,413.83			
30-Year O&M	36	LAND USE CONTROLS	33220106	Staff Engineer	40	HR	0.00	87.59	0.00	0.00	3,503.74			
30-Year O&M	36	LAND USE CONTROLS	33220110	QA/QC Officer	4	HR	0.00	56.30	0.00	0.00	225.19			
30-Year O&M	36	LAND USE CONTROLS	33220112	Field Technician	1	HR	0.00	47.76	0.00	0.00	47.76			
30-Year O&M	36	LAND USE CONTROLS	33220114	Word Processing/Clerical	26	HR	0.00	47.04	0.00	0.00	1,223.08			
30-Year O&M	36	LAND USE CONTROLS	33220115	Draftsman/CADD	16	HR	0.00	44.96	0.00	0.00	719.33			
30-Year O&M	36	LAND USE CONTROLS	33220119	Health and Safety Officer	1	HR	0.00	73.59	0.00	0.00	73.59			
30-Year O&M	36	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	255.16	0.00	0.00	0.00	255.16			
										Total	12,692.09	15	\$190,381.42	
													Grand Total	\$1,216,712.46
													Mark-up	\$ 733,150.00
													TOTAL	\$1,949,862

Estimate Documentation Detailed Report - Layout 2

Software:

RACER Version: RACER® Version 11.5.99.0
Database Location: N:\Projects_Ongoing\3752-Camp Wellfleet\06_FS
Report\RACER\Racer_Backup_7_31_2019.mdb

Folder:

Folder Name: Wellfleet

Project:

ID: Alternative 3
Name: Partial MEC Removal with LUC
Category: None

Location

State / Country: MASSACHUSETTS
City: CAPE COD

<u>Location Modifier</u>	<u>Default</u>	<u>User</u>	<u>Reason for changes</u>
	1.180	1.180	

Options

Database: System Costs
Cost Database Date: 2019
Report Option: Fiscal

Description

Partial Munitions and Explosives of Concern (MEC) Removal with Administrative Land Use Controls (LUCs) including signs

Estimate Documentation Detailed Report - Layout 2

Site:

ID: AOI-6
Name: Area of Interest 6
Type: None

Media/Waste Type

Primary: Ordnance (not residual)
Secondary: N/A

Contaminant

Primary: Ordnance (not residual)
Secondary: None

Phase Names

Pre-Study
Study
Design
Removal/Interim Action
Remedial Action **Safety Level:** D
Operations & Maintenance **Safety Level:** D
Long Term Monitoring
Site Closeout

In the RACER Preferences the default value for the Safety Level is established. This sets the default value for the safety level for each technology model based on the type of work being completed. Note: RACER Technologies that safety level is not appropriate to change from the default are hard-coded to estimate costs without a safety level productivity factor, which is Safety Level E.

Documentation

Description: Area of Interest 6 (AOI-6)
Former Artillery Range Fan (Ocean)
"Water AOI"

AOI-6 is 167,856 acres. The partial removal area, from the shoreline to the 120 ft bathymetric contour, is 15,693 acres.

Support Team: Michelle Chesnut

References: Final Remedial Investigation Report, Former Camp Wellfleet FUDS Remedial Investigation Through Decision Document, Wellfleet, Massachusetts (April 2019).

Navigational Chart 13246, Cape Cod Bay. 40th Edition, Oct. 2013. Last Correction 2/8/2019. National Oceanic and Atmospheric Administration, National Ocean Service, Coast Survey.

Estimator Information

Estimator Name: James Stuby
Estimator Title: Project Geophysicist
Agency/Org./Office: ERT, Inc.
Business Address: 14401 Sweitzer Lane
Suite 300

Estimate Documentation Detailed Report - Layout 2

Laurel, MD 20707

Telephone Number: 301-323-1429

Email Address: james.stuby@ertcorp.com

Estimate Prepared Date: 06/24/2019

Estimator Signature: _____

Date: _____

Reviewer Information

Reviewer Name: Thomas Bachovchin

Reviewer Title: Project Manager

Agency/Org./Office: ERT, Inc.

Business Address: 14401 Sweitzer Lane

Suite 300

Laurel, MD 20707

Telephone Number: 301-323-1442

Email Address: thomas.bachovchin@ertcorp.com

Date Reviewed: 06/24/2019

Reviewer Signature: _____

Date: _____

Estimate Costs:

Phase Names

Marked-Up Cost

DGM and Removal	\$154,923,763
Periodic Review	\$49,534
Administrative LUC (signs)	\$76,262
30-Year O&M	\$476,332

Total Cost: \$155,525,891

Escalation: \$3,079,399

Total Project Cost: \$158,605,289

Phase Documentation:

Phase Type: Remedial Action

Phase Name: DGM and Removal

Description: Marine Digital Geophysical Mapping (DGM) with Target Removal by UXO Dive Teams

Approach: Ex Situ

Start Date: June, 2020

Labor Rate Group: System Labor Rate

Analysis Rate Group: System Analysis Rate

Estimate Documentation Detailed Report - Layout 2

Phase Markup Template: System Defaults

Technology Markups

	<u>Markup</u>	<u>% Prime</u>	<u>% Sub.</u>
MEC Removal Action with AGC	Yes	100	0

Total Marked-up Cost: \$154,923,762.55

Technologies:

Technology Name: **MEC Removal Action with AGC (#1)**

User Name: **MEC Removal Action with AGC**

Description	Default	User	UOM
System Definition			
<u>Required Parameters</u>			
Surface and Subsurface Removal		15693	Acres
SSR Topography 1		Flat	n/a
SSR Topography 1 Pct		100.00	%
SSR Topography 2		N/A	n/a
SSR Vegetation 1		Barren or low grass	n/a
SSR Vegetation 1 Pct		100.00	%
SSR Vegetation 2		N/A	n/a
SSR Vegetation 2 Pct		0.00	%
Surface Removal Only		0	Acres
SR Topography 1		N/A	n/a
SR Topography 1 Pct		0.00	%
SR Topography 2		N/A	n/a
SR Vegetation 1		N/A	n/a
SR Vegetation 1 Pct		0.00	%
SR Vegetation 2		N/A	n/a
SR Vegetation 2 Pct		0.00	%
Site Complexity		Low	n/a
Systematic Project Planning			
<u>Secondary Parameters</u>			
Number of Meetings	3	3	n/a
Site Visit	1	1	n/a
UFP QAPP	Yes	Yes	n/a
Establish and Management of GIS Database	Yes	Yes	n/a
Community Relation Plan	Yes	Yes	n/a
Explosives Safety Submission	Yes	Yes	n/a
PMP / Quality Assurance Surveillance Plan	Yes	Yes	n/a

Estimate Documentation Detailed Report - Layout 2

Technology Name: **MEC Removal Action with AGC (#1)**

User Name: **MEC Removal Action with AGC**

Description	Default	User	UOM
Systematic Project Planning			
<u>Secondary Parameters</u>			
Health and Safety Plan	Yes	Yes	n/a
Cultural and Archaeological Plan	Yes	No	n/a
Environmental / Biological Plan	No	No	n/a
SSR Site Preparation			
<u>Secondary Parameters</u>			
Heavy Removal	0	0	Acres
Moderate Removal	0	0	Acres
Light Removal	3923.25	0	Acres
No Removal	11769.75	15693	Acres
Total Vegetation Removal Area	1	15693	Acres
Archaeological Survey	0	0	Acres
Flora / Fauna Survey	0	0	Acres
Daily Travel Distance to Site	0 - 50 Miles	0 - 50 Miles	n/a
SR Site Preparation			
<u>Secondary Parameters</u>			
Heavy Removal	0	0	Acres
Moderate Removal	0	0	Acres
Light Removal	0	0	Acres
No Removal	0	0	Acres
Total Vegetation Removal Area	0	0	Acres
Archaeological Survey	0	0	Acres
Flora / Fauna Survey	0	0	Acres
RA Field Activities			
<u>Secondary Parameters</u>			
Mag & Flag (analog Geophysics)	0	0	Acres
Digital Geophysical Mapping with Single Sensor	1569.3	0	Acres
Digital Geophysical Mapping with Array of Sensors	14123.7	15693	Acres
Anomaly Density	500	20	Anomalies / Acre
Investigation			
<u>Secondary Parameters</u>			
Advanced Geophysics Classification Cueing	313860	1	Anomalies
Number of Digs	31786	313860	Anomalies
Onsite Donor Explosive Storage	Yes	Yes	n/a

Comments: RA area is 15693 acres. Anomaly density assumed to be 20/acre. Total anomalies 313860.

Dive team is 2 divers (one active, one safety), one tender, and one boat operator. Dive supervisor is assumed to be the SUXOS.

Estimate Documentation Detailed Report - Layout 2

One dive team assumed to be able to complete 1 acre or 20 anomalies/day on average. Thus field duration is 15693 days assuming one dive team. Assuming 260 work days/year, duration is over 60 years. Assuming 10 dive teams, duration is 6 years.

Phase Documentation:

Phase Type: Remedial Action

Phase Name: Periodic Review

Description: Periodic Review

Approach: Ex Situ

Start Date: June, 2024

Labor Rate Group: System Labor Rate

Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

Markup % Prime % Sub.

Five-Year Review	Yes	100	0
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Total Marked-up Cost: \$49,534.45

Technologies:

Technology Name: **Five-Year Review (#2)**

User Name: **Five-Year Review**

Description	Default	User	UOM
System Definition			
<u>Required Parameters</u>			
Site Complexity		Low	n/a
Document Review		Yes	n/a
Interviews		Yes	n/a
Site Inspection		No	n/a
Report		Yes	n/a
Travel		No	n/a
Rebound Study		No	n/a
Start Month		June	n/a
No. Reviews		6	EA
Start Year		2024	n/a
Safety Level		D	n/a

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Five-Year Review (#2)**

User Name: **Five-Year Review**

Description	Default	User	UOM
Document Review			
<u>Required Parameters</u>			
5-Year Review Check List		Yes	n/a
Record of Decision		No	n/a
Remedial Action Design & Construction		No	n/a
Close-Out Report		No	n/a
Operations & Maintenance Manuals & Reports		No	n/a
Consent Decree or Settlement Records		No	n/a
Groundwater Monitoring & Reports		No	n/a
Remedial Action Required		No	n/a
Previous 5-Year Review Reports		No	n/a
Interviews			
<u>Required Parameters</u>			
Current and Previous Staff Management		Yes	n/a
Community Groups		Yes	n/a
State Contacts		Yes	n/a
Local Government Contacts		Yes	n/a
Operations & Maintenance Contractors		No	n/a
PRPs		No	n/a
Remedial Design Consultant		No	n/a
Report			
<u>Required Parameters</u>			
Introduction		No	n/a
Remedial Objectives		No	n/a
ARARs Review		No	n/a
Summary of Site Visit		No	n/a
Areas of Non Compliance		Yes	n/a
Technology Recommendations		No	n/a
Statement of Protectiveness		Yes	n/a
Next Review		No	n/a
Implementation Requirements		No	n/a

Comments:

Phase Documentation:

Phase Type: Operations & Maintenance
Phase Name: Administrative LUC (signs)
Description: Administrative Land Use Controls including signs
 (2 signs)

Estimate Documentation Detailed Report - Layout 2

Start Date: June, 2019

Labor Rate Group: System Labor Rate

Analysis Rate Group: System Analysis Rate

Phase Markup Template: System Defaults

Technology Markups

Markup % Prime % Sub.

ADMINISTRATIVE LAND USE CONTROLS Yes 100 0

Total Marked-up Cost: \$76,261.86

Technologies:

Technology Name: **Administrative Land Use Controls (#2)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
<i>System Definition</i>			
<u>Required Parameters</u>			
Rename Model		ADMINISTRATIVE LAND USE CONTROLS	n/a
Planning Documents		Yes	n/a
Planning Documents: Start Date		2019	n/a
Implementation		Yes	n/a
Implementation: Start Date		2019	n/a
Monitoring & Enforcement		No	n/a
Modification/Termination		No	n/a
Type of Site		Active Government Installation	n/a
<i>Planning Documents</i>			
<u>Required Parameters</u>			
LUC Assurance Plan (LUCAP)		No	n/a
LUC Implementation Plan (LUCIP)		Yes	n/a
LUC Implementation Plan (LUCIP): Number		1	EA
LUC Implementation Plan (LUCIP): Plan Complexity		Low	n/a
Long-term Stewardship (LTS) Plan		No	n/a
Long-term Stewardship (LTS) Plan: Number		0	EA
Memorandum of Agreements (MOA)		No	n/a
Memorandum of Agreements (MOA): Number		0	EA
Installation (or City) Master Plan		No	n/a

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Administrative Land Use Controls (#2)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
<i>Planning Documents</i>			
<u>Required Parameters</u>			
Construction Permitting		No	n/a
Construction Permitting: Number		0	EA
Geographic Information Systems (GIS)/Overlay Maps		No	n/a
Geographic Information Systems (GIS)/Overlay Maps: Number		0	EA
<i>Planning Meetings</i>			
<u>Required Parameters</u>			
LUCAP: Number of Meetings		0	EA
LUCAP: Number of People		0	EA
LUCAP: Number of Days		0	EA
LUCAP: Airfare Cost		0.00	\$
LUCAP: Mileage to Meeting Site		0	MI
LUCIP: Number of Meetings		1	EA
LUCIP: Number of People		1	EA
LUCIP: Number of Days		1	EA
LUCIP: Airfare Cost		0.00	\$
LUCIP: Mileage to Meeting Site		0	MI
LTS: Number of Meetings		0	EA
LTS: Number of People		0	EA
LTS: Number of Days		0	EA
LTS: Airfare Cost		0.00	\$
LTS: Mileage to Meeting Site		0	MI
MOA: Number of Meetings		0	EA
MOA: Number of People		0	EA
MOA: Number of Days		0	EA
MOA: Airfare Cost		0.00	\$
MOA: Mileage to Meeting Site		0	MI
Master Plan: Number of Meetings		0	EA
Master Plan: Number of People		0	EA
Master Plan: Number of Days		0	EA
Master Plan: Airfare Cost		0.00	\$
Master Plan: Mileage to Meeting Site		0	MI
Construction Permitting: Number of Meetings		0	EA
Construction Permitting: Number of People		0	EA
Construction Permitting: Number of Days		0	EA
Construction Permitting: Airfare Cost		0.00	\$
Construction Permitting: Mileage to Meeting Site		0	MI
GIS/Overlay Maps: Number of Meetings		0	EA
GIS/Overlay Maps: Number of People		0	EA

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Administrative Land Use Controls (#2)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
<i>Planning Meetings</i>			
<u>Required Parameters</u>			
GIS/Overlay Maps: Number of Days		0	EA
GIS/Overlay Maps: Airfare Cost		0.00	\$
GIS/Overlay Maps: Mileage to Meeting Site		0	MI
<i>Implementation</i>			
<u>Required Parameters</u>			
Modify Installation (or City) Master Plan		No	n/a
Deed Notification		No	n/a
Deed Notification: Number		0	EA
Negotiating Easements		No	n/a
Negotiating Easements: Number		0	EA
Restrictive Covenants		No	n/a
Restrictive Covenants: Number		0	EA
Equitable Servitudes		No	n/a
Equitable Servitudes: Number		0	EA
Access Control Signs		Yes	n/a
Access Control Signs: Number		2	EA
Access Control Signs: Task Complexity		Low	n/a
Utility Notification Service		Yes	n/a
Access Control Signs: Number		1	EA
Access Control Signs: Task Complexity		Low	n/a
Geographic Information Systems (GIS)/Overlay Maps		No	n/a
Geographic Information Systems (GIS)/Overlay Maps: Number		0	EA
Develop Finding of Suitability to Transfer (FOST)		No	n/a

Comments:

Phase Documentation:

Phase Type: Operations & Maintenance
Phase Name: 30-Year O&M
Description: 30-Year O&M

Start Date: June, 2019
Labor Rate Group: System Labor Rate
Analysis Rate Group: System Analysis Rate

Estimate Documentation Detailed Report - Layout 2

Phase Markup Template: System Defaults

Technology Markups

Markup % Prime % Sub.

ADMINISTRATIVE LAND USE CONTROLS Yes 100 0

Total Marked-up Cost: \$476,331.86

Technologies:

Technology Name: **Administrative Land Use Controls (#2)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
System Definition			
<u>Required Parameters</u>			
Rename Model		ADMINISTRATIVE LAND USE CONTROLS	n/a
Planning Documents		No	n/a
Implementation		No	n/a
Monitoring & Enforcement		Yes	n/a
Monitoring & Enforcement: Start Date		2019	n/a
Modification/Termination		No	n/a
Type of Site		Active Government Installation	n/a
Monitoring & Enforcement			
<u>Required Parameters</u>			
Duration of Monitoring/Enforcement		30	Years
Notice Letters		No	n/a
Notice Letters: Number		0	EA
Guard Service/Security		No	n/a
Guard Service/Security: Number		0	EA
Reports & Certifications		Yes	n/a
Reports & Certifications: Frequency		Biennially	n/a
Site Visits/Inspections		Yes	n/a
Site Visits/Inspections: Number		1	EA
Site Visits/Inspections: Safety Level		D	n/a
Site Visits/Inspections: Duration		2	Days
Site Visits/Inspections: Number of People		1	EA
Site Visits/Inspections: Frequency		Biennially	n/a
Site Visits/Inspections: Airfare		500	\$ Per Ticket

Estimate Documentation Detailed Report - Layout 2

Technology Name: **Administrative Land Use Controls (#2)**

User Name: **ADMINISTRATIVE LAND USE CONTROLS**

Description	Default	User	UOM
<i>Monitoring & Enforcement</i>			
<u>Required Parameters</u>			
Site Visits/Inspections: Mileage		100	MI

Comments:

Estimate Documentation Detailed Report - Layout 2

Technology: ADMINISTRATIVE LAND USE CONTROLS
Element: Planning Docs

Year(s)
2019

Cost per Year
\$38,432.02

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	22.00	HR	0.00	234.00	0.00	0.00	\$5,148.07	No
33220105	Project Engineer	30.00	HR	0.00	198.39	0.00	0.00	\$5,951.62	No
33220106	Staff Engineer	45.00	HR	0.00	204.33	0.00	0.00	\$9,194.80	No
33220110	QA/QC Officer	11.00	HR	0.00	160.15	0.00	0.00	\$1,761.69	No
33220114	Word Processing/Clerical	60.00	HR	0.00	109.73	0.00	0.00	\$6,584.04	No
33220115	Draftsman/CADD	30.00	HR	0.00	127.89	0.00	0.00	\$3,836.83	No
33220503	Attorney, Partner, Real Estate	22.00	HR	0.00	245.19	0.00	0.00	\$5,394.14	No
33240101	Other Direct Costs	1.00	LS	560.83	0.00	0.00	0.00	\$560.83	No

Total First Year Element Cost: \$38,432.02

Element: Planning Meetings

Year(s)
2019

Cost per Year
\$7,786.66

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	1.00	DAY	0.00	0.00	0.00	229.87	\$229.87	No
33220102	Project Manager	20.00	HR	0.00	234.00	0.00	0.00	\$4,680.06	No
33220114	Word Processing/Clerical	16.00	HR	0.00	109.73	0.00	0.00	\$1,755.74	No
33220115	Draftsman/CADD	8.00	HR	0.00	127.89	0.00	0.00	\$1,023.15	No
33240101	Other Direct Costs	1.00	LS	97.83	0.00	0.00	0.00	\$97.83	No

Total First Year Element Cost: \$7,786.66

Element: Implementation

Year(s)
2019

Cost per Year
\$30,043.17

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
18010412	Construction Signs	36.00	SF	44.03	0.00	0.00	0.00	\$1,585.04	No
33220102	Project Manager	15.00	HR	0.00	234.00	0.00	0.00	\$3,510.05	No
33220105	Project Engineer	30.00	HR	0.00	198.39	0.00	0.00	\$5,951.62	No

Estimate Documentation Detailed Report - Layout 2

Technology: ADMINISTRATIVE LAND USE CONTROLS

33220106	Staff Engineer	45.00	HR	0.00	204.33	0.00	0.00	\$9,194.80	No
33220110	QA/QC Officer	8.00	HR	0.00	160.15	0.00	0.00	\$1,281.23	No
33220114	Word Processing/Clerical	30.00	HR	0.00	109.73	0.00	0.00	\$3,292.02	No
33220115	Draftsman/CADD	38.00	HR	0.00	127.89	0.00	0.00	\$4,859.99	No
33240101	Other Direct Costs	1.00	LS	368.43	0.00	0.00	0.00	\$368.43	No

Total First Year Element Cost: \$30,043.17

Total First Year Tech Cost: \$76,261.86

Cost Over Time Summary

Element	Year(s)	Cost per Year	Total Cost
Monitoring & Enforcement	2019	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2021	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2023	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2025	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2027	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2029	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2031	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2033	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2035	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2037	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2039	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2041	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2043	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2045	\$31,755.46	\$31,755.46
Monitoring & Enforcement	2047	\$31,755.46	\$31,755.46

Total Marked Up Tech Cost: \$476,331.90

Technology: ADMINISTRATIVE LAND USE CONTROLS

Element: Monitoring & Enforcement

Year(s)	Cost per Year
2019	\$31,755.46
2020	\$0.00
2021	\$31,755.46
2022	\$0.00
2023	\$31,755.46
2024	\$0.00
2025	\$31,755.46
2026	\$0.00
2027	\$31,755.46
2028	\$0.00

Estimate Documentation Detailed Report - Layout 2

Technology: ADMINISTRATIVE LAND USE CONTROLS

2029	\$31,755.46
2030	\$0.00
2031	\$31,755.46
2032	\$0.00
2033	\$31,755.46
2034	\$0.00
2035	\$31,755.46
2036	\$0.00
2037	\$31,755.46
2038	\$0.00
2039	\$31,755.46
2040	\$0.00
2041	\$31,755.46
2042	\$0.00
2043	\$31,755.46
2044	\$0.00
2045	\$31,755.46
2046	\$0.00
2047	\$31,755.46
2048	\$0.00

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010104	Sample collection, vehicle mileage charge, car or van	100.00	MI	0.00	0.00	0.00	0.32	\$31.86	No
33010108	Sedan, Automobile, Rental	3.00	DAY	0.00	0.00	0.00	75.45	\$226.36	No
33010202	Per Diem (per person)	5.00	DAY	0.00	0.00	0.00	229.87	\$1,149.35	No
33022038	Overnight delivery service, 1 lb package	6.00	LB	0.00	0.00	0.00	72.00	\$432.01	No
33041101	Airfare	1.00	LS	0.00	0.00	0.00	500.00	\$500.00	No
33220102	Project Manager	44.00	HR	0.00	285.37	0.00	0.00	\$12,556.26	No
33220106	Staff Engineer	40.00	HR	0.00	249.18	0.00	0.00	\$9,967.26	No
33220110	QA/QC Officer	4.00	HR	0.00	160.15	0.00	0.00	\$640.61	No
33220112	Field Technician	1.00	HR	0.00	135.87	0.00	0.00	\$135.87	No
33220114	Word Processing/Clerical	26.00	HR	0.00	133.82	0.00	0.00	\$3,479.37	No
33220115	Draftsman/CADD	16.00	HR	0.00	127.89	0.00	0.00	\$2,046.31	No
33220119	Health and Safety Officer	1.00	HR	0.00	209.35	0.00	0.00	\$209.35	No
33240101	Other Direct Costs	1.00	LS	380.83	0.00	0.00	0.00	\$380.83	No

Total First Year Element Cost: \$31,755.46

Estimate Documentation Detailed Report - Layout 2

Total First Year Tech Cost: \$31,755.46

Cost Over Time Summary			
Element	Year(s)	Cost per Year	Total Cost
General	2020	\$154,923,762.55	\$154,923,762.55
Total Marked Up Tech Cost:			\$154,923,762.55

Technology: MEC Removal Action with AGC

Element: Systematic Project Planning

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010108	Sedan, Automobile, Rental	30.00	DAY	0.00	0.00	0.00	75.45	\$2,263.62	No
33010202	Per Diem (per person)	36.00	DAY	0.00	0.00	0.00	229.87	\$8,275.32	No
33040947	MEC: Systematic Project Planning Meeting, includes labor and facility rental expenses, per EA	3.00	EA	0.00	22,652.99	0.00	1,379.22	\$72,096.62	No
33040948	MEC: Systematic Project Planning, Site Visit, includes labor expenses, per EA	1.00	EA	0.00	6,745.48	0.00	0.00	\$6,745.48	No
33040949	MEC: Systematic Project Planning, UFP QAPP, includes labor expenses, per EA	1.00	EA	0.00	73,034.81	0.00	0.00	\$73,034.81	No
33040950	MEC: Systematic Project Planning, Establish and Management of GIS Database, includes labor expenses, per EA	1.00	EA	0.00	23,448.13	0.00	0.00	\$23,448.13	No
33040951	MEC: Systematic Project Planning, Community Relation Plan, includes labor expenses, per EA	1.00	EA	0.00	13,429.74	0.00	0.00	\$13,429.74	No
33040953	MEC: Systematic Project Planning, PMP/Quality Assurance Surveillance Plan, includes labor expenses, per EA	1.00	EA	0.00	10,494.89	0.00	0.00	\$10,494.89	No
33040954	MEC: Systematic Project Planning, Health and Safety Plan, includes labor expenses, per EA	1.00	EA	0.00	16,486.44	0.00	0.00	\$16,486.44	No
33040961	Explosive Safety Submission, includes labor and equipment expenses, per EA	1.00	EA	0.00	30,862.89	0.00	0.00	\$30,862.89	No

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Technology: MEC Removal Action with AGC

33041101	Airfare	6.00	LS	0.00	0.00	0.00	575.00	\$3,450.00	No
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	6,456.17	\$6,456.17	No

Total First Year Element Cost: \$267,044.10

Element: Surface and Sub Removal - Site Prep

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	14.00	DAY	0.00	0.00	0.00	229.87	\$3,218.18	No
33040651	4 X 4 Truck-Rental/Lease	14.00	DAY	0.00	0.00	302.92	0.00	\$4,240.87	No
33040934	UXO Technician II	200.00	HR	0.00	70.41	0.00	0.00	\$14,082.21	No
33040958	MEC: Surface Clearance , includes labor and equipment expenses, per Day	0.00	DAY	0.00	3,648.24	0.00	94.98	\$0.00	No
33041101	Airfare	2.00	LS	0.00	0.00	0.00	575.00	\$1,150.00	No
33220212	Surveying - 2-man Crew	1.00	DAY	0.00	1,304.24	23.67	0.00	\$1,327.91	No
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	11,988.00	\$11,988.00	Yes

Total First Year Element Cost: \$36,007.17

Element: RA Field Activities

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33010202	Per Diem (per person)	6,314.00	DAY	0.00	0.00	0.00	229.87	\$1,451,399.18	No
33040170	MEC: Instrument Verification Strip Installation, per EA	1.00	EA	625.09	5,227.55	14.19	740.76	\$6,607.60	No
33040171	MEC: UXO Seeding, Quality Seeding Installation, per EA	0.00	EA	7.22	60.09	0.00	151.26	\$0.00	No
33040179	Digital Geophysical Mapping with Array Sensor, Survey Grid Team, per HR	22,548.00	HR	0.00	497.42	0.00	664.27	\$26,193,913.62	No
33040270	Geometrics MetalMapper Mobilization Fee	0.00	EA	0.00	0.00	0.00	1,460.13	\$0.00	No
33040651	4 X 4 Truck-Rental/Lease	3,157.00	DAY	0.00	0.00	302.92	0.00	\$956,315.30	No
33040653	All Terrain Vehicle (ATV) - Rental/Lease	0.00	DAY	0.00	0.00	0.00	226.33	\$0.00	No
33041101	Airfare	4.00	LS	0.00	0.00	0.00	575.00	\$2,300.00	No
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	812,762.86	\$812,762.86	No

Total First Year Element Cost: \$29,423,298.55

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Technology: MEC Removal Action with AGC

Element: Investigation

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
12020401	Lightning Protection System	1.00	EA	272.86	482.08	0.00	0.00	\$754.94	No
16029002	Mobilization & Fee	1.00	LS	3,254.62	0.00	0.00	0.00	\$3,254.62	No
17030103	Rough Grading, 14G, 1 Pass	1,111.00	SY	0.00	0.32	0.51	0.00	\$919.62	No
18010102	Gravel, Delivered & Dumped	185.00	CY	51.95	9.11	9.60	0.00	\$13,071.66	No
18040101	Security Fence, 10' Galvanized with 3 Strands Barbed Wire	400.00	LF	59.88	26.47	5.99	0.00	\$36,934.98	No
18040119	Chain link fence gates and posts, auger fence post hole, medium soil, 3' deep, by hand, includes excavation	2.00	EA	0.00	16.94	0.00	0.00	\$33.88	No
18040132	Chain link fences & gates, gate, chain link, galvanized steel, double gate, 3 strand barbed wire, 10' x 10', excludes excavation	1.00	EA	1,708.32	635.25	141.16	0.00	\$2,484.73	No
33010202	Per Diem (per person)	62,772.00	DAY	0.00	0.00	0.00	229.87	\$14,429,399.64	No
33022601	Safety Signs, Barriers, Yellow Nylon Tape Allowance	4.00	EA	38.71	0.00	0.00	0.00	\$154.84	No
33040181	UXO Anomaly Dig Crew, MEC Removal Action, includes Labor and Equipment, per HR	0.00	HR	0.00	306.99	0.00	67.86	\$0.00	No
33040184	Advanced Geophysics Classification Cueing, MEC Investigation, per EA	0.00	EA	0.00	13.24	0.00	5.94	\$0.00	No
33040185	UXO Anomaly Explosive Demolition, MEC Activities, includes Labor, Material and Equipment, per EA	6,278.00	EA	273.28	614.36	0.00	0.00	\$5,572,608.57	No
33040186	Munitions Deemed As Safe (MDAS) Disposal, bulk solid waste, includes materials, documentation, transport and disposal fees, per LB	423,711.00	LB	0.00	0.00	0.00	9.65	\$4,087,735.96	No
33040651	4 X 4 Truck-Rental/Lease	604.00	DAY	0.00	0.00	302.92	0.00	\$182,963.08	No
33040817	Explosives Storage	1.00	EA	60,477.25	0.00	0.00	0.00	\$60,477.25	No

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Technology: MEC Removal Action with AGC
Locker/Shelter, 22' x 7'
x 7'

33040941	Outside Diver	313,860.00	HR	0.00	188.83	0.00	0.00	\$59,266,577.29	No
33040942	Diver Tender	156,930.00	HR	0.00	102.73	0.00	0.00	\$16,121,150.22	No
33040943	Work Boat Operator	156,930.00	HR	0.00	95.68	0.00	0.00	\$15,015,636.75	No
33041101	Airfare	24.00	LS	0.00	0.00	0.00	575.00	\$13,800.00	No
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	310,338.80	\$310,338.80	No

Total First Year Element Cost: \$115,118,296.84

Element: Site Management

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
16019934	Temporary Office 50' X 12'	24.00	MO	860.33	0.00	0.00	0.00	\$20,647.80	No
16019935	Field office expense, office supplies, average, per month	24.00	MO	140.89	0.00	0.00	0.00	\$3,381.42	No
20020310	1/C #2 Aluminum, Bare, Wire	500.00	LF	0.63	1.36	0.12	0.00	\$1,056.69	No
20020403	40' Class 3 Treated Power Pole	5.00	EA	774.91	897.24	129.96	0.00	\$9,010.52	No
20020431	Terminal Structure, 15 KV Pole Top	2.00	EA	2,931.45	2,906.56	371.46	0.00	\$12,418.94	No
33010202	Per Diem (per person)	2,913.00	DAY	0.00	0.00	0.00	229.87	\$669,611.31	No
33010475	Toilet, portable, chemical, rent per month	24.00	MO	174.35	0.00	0.00	0.00	\$4,184.51	No
33040651	4 X 4 Truck-Rental/Lease	2,913.00	DAY	0.00	0.00	302.92	0.00	\$882,403.06	No
33040699	Storage boxes, rent per month, 40' x 8'	24.00	MO	190.20	0.00	0.00	0.00	\$4,564.92	No
33040921	Senior UXO Supervisor (SUXOS)	6,921.00	HR	0.00	111.18	0.00	0.00	\$769,489.53	No
33040923	UXO Project Manager	17,303.00	HR	0.00	162.04	0.00	0.00	\$2,803,848.30	No
33040930	UXO QC Specialist	11,734.00	HR	0.00	98.92	0.00	0.00	\$1,160,776.43	No
33040931	UXO Safety Officer	11,734.00	HR	0.00	99.51	0.00	0.00	\$1,167,596.02	No
33040940	GIS Manager (UXO)	17,303.00	HR	0.00	116.84	0.00	0.00	\$2,021,598.70	No
33041101	Airfare	5.00	LS	0.00	0.00	0.00	575.00	\$2,875.00	No
33220101	Senior Project Manager	1,385.00	HR	0.00	244.21	0.00	0.00	\$338,227.75	No
33220113	Secretarial/Administrative	1,385.00	HR	0.00	120.71	0.00	0.00	\$167,184.46	No

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Technology: MEC Removal Action with AGC

33222006	Electrician	40.00	HR	0.00	114.58	0.00	0.00	\$4,583.23	No
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Total First Year Element Cost: \$10,043,458.59

Element: RA Reporting

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33041324	MEC After Action Report - Site Complexity (Low), per EA	1.00	EA	0.00	16,089.90	0.00	0.00	\$16,089.90	No
33041325	MEC: Independent Blind Seed Tracking, per EA	0.00	EA	0.00	5,498.68	0.00	0.00	\$0.00	No
33041326	MEC: IVS Memo, per EA	1.00	EA	0.00	9,517.86	0.00	0.00	\$9,517.86	No
33041330	MEC: Anomaly Selection Memo, per EA	1.00	EA	0.00	9,517.86	0.00	0.00	\$9,517.86	No
33041331	MEC: TOI Memo, per EA	0.00	EA	0.00	9,517.86	0.00	0.00	\$0.00	No
33240101	Other Direct Costs	1.00	LS	0.00	0.00	0.00	531.69	\$531.69	No

Total First Year Element Cost: \$35,657.30

Total First Year Tech Cost: \$154,923,762.55

Cost Over Time Summary

Element	Year(s)	Cost per Year	Total Cost
Document Review	2024	\$454.68	\$454.68
Document Review	2029	\$454.68	\$454.68
Document Review	2034	\$454.68	\$454.68
Document Review	2039	\$454.68	\$454.68
Document Review	2044	\$454.68	\$454.68
Document Review	2049	\$454.68	\$454.68
Interviews	2024	\$2,282.96	\$2,282.96
Interviews	2029	\$2,282.96	\$2,282.96
Interviews	2034	\$2,282.96	\$2,282.96
Interviews	2039	\$2,282.96	\$2,282.96
Interviews	2044	\$2,282.96	\$2,282.96
Interviews	2049	\$2,282.96	\$2,282.96
Report	2024	\$5,518.10	\$5,518.10
Report	2029	\$5,518.10	\$5,518.10
Report	2034	\$5,518.10	\$5,518.10
Report	2039	\$5,518.10	\$5,518.10
Report	2044	\$5,518.10	\$5,518.10
Report	2049	\$5,518.10	\$5,518.10

Estimate Documentation Detailed Report - Layout 2

Total Marked Up Tech Cost:

\$49,534.44

Technology: Five-Year Review

Element: Document Review

Year(s)	Cost per Year
2024	\$454.68
2025 - 2028	\$0.00
2029	\$454.68
2030 - 2033	\$0.00
2034	\$454.68
2035 - 2038	\$0.00
2039	\$454.68
2040 - 2043	\$0.00
2044	\$454.68
2045 - 2048	\$0.00
2049	\$454.68

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220105	Project Engineer	1.00	HR	0.00	241.94	0.00	0.00	\$241.94	No
33220109	Staff Scientist	1.00	HR	0.00	212.75	0.00	0.00	\$212.75	No

Total First Year Element Cost:

\$454.68

Element: Interviews

Year(s)	Cost per Year
2024	\$2,282.96
2025 - 2028	\$0.00
2029	\$2,282.96
2030 - 2033	\$0.00
2034	\$2,282.96
2035 - 2038	\$0.00
2039	\$2,282.96
2040 - 2043	\$0.00
2044	\$2,282.96
2045 - 2048	\$0.00
2049	\$2,282.96

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	8.00	HR	0.00	285.37	0.00	0.00	\$2,282.96	No

Total First Year Element Cost:

\$2,282.96

Element: Report

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Technology: Five-Year Review

Year(s)	Cost per Year
2024	\$5,518.10
2025 - 2028	\$0.00
2029	\$5,518.10
2030 - 2033	\$0.00
2034	\$5,518.10
2035 - 2038	\$0.00
2039	\$5,518.10
2040 - 2043	\$0.00
2044	\$5,518.10
2045 - 2048	\$0.00
2049	\$5,518.10

Assembly	Description	QTY	UOM	Mat Cost	Lab Cost	Eqp Cost	Sub Bid Cost	Extended Cost	Cost Override
33220102	Project Manager	3.00	HR	0.00	285.37	0.00	0.00	\$856.11	No
33220105	Project Engineer	7.00	HR	0.00	241.94	0.00	0.00	\$1,693.55	No
33220108	Project Scientist	4.00	HR	0.00	263.43	0.00	0.00	\$1,053.71	No
33220109	Staff Scientist	9.00	HR	0.00	212.75	0.00	0.00	\$1,914.73	No

Total First Year Element Cost: \$5,518.10

Total First Year Tech Cost: \$8,255.74

Cost Over Time Summary

Element	Year(s)	Cost per Year	Total Cost
Document Review	2024	\$454.68	\$454.68
Document Review	2029	\$454.68	\$454.68
Document Review	2034	\$454.68	\$454.68
Document Review	2039	\$454.68	\$454.68
Document Review	2044	\$454.68	\$454.68
Document Review	2049	\$454.68	\$454.68
Interviews	2024	\$2,282.96	\$2,282.96
Interviews	2029	\$2,282.96	\$2,282.96
Interviews	2034	\$2,282.96	\$2,282.96
Interviews	2039	\$2,282.96	\$2,282.96
Interviews	2044	\$2,282.96	\$2,282.96
Interviews	2049	\$2,282.96	\$2,282.96
Report	2024	\$5,518.10	\$5,518.10
Report	2029	\$5,518.10	\$5,518.10
Report	2034	\$5,518.10	\$5,518.10
Report	2039	\$5,518.10	\$5,518.10
Report	2044	\$5,518.10	\$5,518.10
Report	2049	\$5,518.10	\$5,518.10

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Total Marked Up Tech Cost:

\$49,534.44

AOI-06, Alternative 3: Partial MEC Removal with LUCs
Project Assembly Level Data Report

Note:
Costs are direct (no markup)

Phase Name	Tech. Key	Technology Name	Assembly No.	Assembly Description	Qty	UOM	Materials	Labor	Equipment	SubBid	Extended Cost	units	Cost
Partial Removal Action	38	MEC Removal Action with AGC	12020401	Lightning Protection System	1	EA	182.82	323.00	0.00	0.00	505.82		
Partial Removal Action	38	MEC Removal Action with AGC	16019934	Temporary Office 50' X 12'	24	MO	576.43	0.00	0.00	0.00	13,834.32		
Partial Removal Action	38	MEC Removal Action with AGC	16019935	Field office expense, office supplies, average, per month	24	MO	94.40	0.00	0.00	0.00	2,265.60		
Partial Removal Action	38	MEC Removal Action with AGC	16029002	Mobilization & Fee	1	LS	2,180.64	0.00	0.00	0.00	2,180.64		
Partial Removal Action	38	MEC Removal Action with AGC	17030103	Rough Grading, 14G, 1 Pass	1111	SY	0.00	0.21	0.34	0.00	616.16		
Partial Removal Action	38	MEC Removal Action with AGC	18010102	Gravel, Delivered & Dumped	185	CY	34.81	6.10	6.43	0.00	8,758.20		
Partial Removal Action	38	MEC Removal Action with AGC	18040101	Security Fence, 10' Galvanized with 3 Strands Barbed Wire	400	LF	40.12	17.74	4.01	0.00	24,746.96		
Partial Removal Action	38	MEC Removal Action with AGC	18040119	Chain link fence gates and posts, auger fence post hole, medium soil, 3' deep, by hand, includes excavation	2	EA	0.00	11.35	0.00	0.00	22.70		
Partial Removal Action	38	MEC Removal Action with AGC	18040132	Chain link fences & gates, gate, chain link, galvanized steel, double gate, 3 strand barbed wire, 10' x 10', excludes excavation	1	EA	1,144.60	425.63	94.58	0.00	1,664.80		
Partial Removal Action	38	MEC Removal Action with AGC	20020310	1/1" #2 Aluminum, Bare, Wire	500	LF	0.42	0.91	0.08	0.00	708.00		
Partial Removal Action	38	MEC Removal Action with AGC	20020403	40' Class 3 Treated Power Pole	5	EA	519.20	601.16	87.07	0.00	6,037.17		
Partial Removal Action	38	MEC Removal Action with AGC	20020431	Terminal Structure, 15 KV Pole Top	2	EA	1,964.11	1,947.44	248.99	0.00	8,320.88		
Partial Removal Action	38	MEC Removal Action with AGC	33010108	Sedan, Automobile, Rental	30	DAY	0.00	0.00	0.00	0.00	62.94		1,888.24
Partial Removal Action	38	MEC Removal Action with AGC	33010202	Per Diem (per person)	36	DAY	0.00	0.00	0.00	0.00	229.87		8,275.32
Partial Removal Action	38	MEC Removal Action with AGC	33010202	Per Diem (per person)	6314	DAY	0.00	0.00	0.00	0.00	229.87		1,451,399.18
Partial Removal Action	38	MEC Removal Action with AGC	33010202	Per Diem (per person)	2913	DAY	0.00	0.00	0.00	0.00	229.87		669,611.31
Partial Removal Action	38	MEC Removal Action with AGC	33010202	Per Diem (per person)	62772	DAY	0.00	0.00	0.00	0.00	229.87		14,429,399.64
Partial Removal Action	38	MEC Removal Action with AGC	33010202	Per Diem (per person)	14	DAY	0.00	0.00	0.00	0.00	229.87		3,218.18
Partial Removal Action	38	MEC Removal Action with AGC	33010475	Toilet, portable, chemical, rent per month	24	MO	116.82	0.00	0.00	0.00	2,803.68		
Partial Removal Action	38	MEC Removal Action with AGC	33022601	Safety Signs, Barriers, Yellow Nylon Tape Allowance	4	EA	25.94	0.00	0.00	0.00	103.75		
Partial Removal Action	38	MEC Removal Action with AGC	33040170	MEC: Instrument Verification Strip Installation, per EA	1	EA	418.82	3,502.53	9.51	617.92	4,548.78		
Partial Removal Action	38	MEC Removal Action with AGC	33040171	MEC: UXO Seeding, Quality Seeding Installation, per EA	0	EA	4.84	40.26	0.00	0.00	126.18		0.00
Partial Removal Action	38	MEC Removal Action with AGC	33040179	Digital Geophysical Mapping with Array Sensor, Survey Grid Team, per HR	22548	HR	0.00	333.28	0.00	554.12	20,008,990.59		
Partial Removal Action	38	MEC Removal Action with AGC	33040181	UXO Anomaly Dig Crew, MEC Removal Action, includes Labor and Equipment, per HR	0	HR	0.00	205.69	0.00	56.60	0.00		0.00
Partial Removal Action	38	MEC Removal Action with AGC	33040184	Advanced Geophysics Classification Cueing, MEC Investigation, per EA	0	EA	0.00	8.87	0.00	4.96	0.00		0.00
Partial Removal Action	38	MEC Removal Action with AGC	33040185	UXO Anomaly Explosive Demolition, MEC Activities, includes Labor, Material and Equipment, per EA	6278	EA	183.10	411.63	0.00	0.00	3,733,726.07		
Partial Removal Action	38	MEC Removal Action with AGC	33040186	Munitions Deemed As Safe (MDAS) Disposal, bulk solid waste, includes materials, documentation, transport and disposal fees, per LB	423711	LB	0.00	0.00	0.00	8.05	3,409,856.49		
Partial Removal Action	38	MEC Removal Action with AGC	33040270	Geometrics MetalMapper Mobilization Fee	0	EA	0.00	0.00	0.00	0.00	1,218.00		0.00
Partial Removal Action	38	MEC Removal Action with AGC	33040651	4 X 4 Truck- Rental/Lease	604	DAY	0.00	0.00	202.96	0.00	122,587.83		
Partial Removal Action	38	MEC Removal Action with AGC	33040651	4 X 4 Truck- Rental/Lease	3157	DAY	0.00	0.00	202.96	0.00	640,744.69		
Partial Removal Action	38	MEC Removal Action with AGC	33040651	4 X 4 Truck- Rental/Lease	2913	DAY	0.00	0.00	202.96	0.00	591,222.45		
Partial Removal Action	38	MEC Removal Action with AGC	33040651	4 X 4 Truck- Rental/Lease	14	DAY	0.00	0.00	202.96	0.00	2,841.44		
Partial Removal Action	38	MEC Removal Action with AGC	33040653	All Terrain Vehicle (ATV) - Rental/Lease	0	DAY	0.00	0.00	0.00	188.80	0.00		0.00
Partial Removal Action	38	MEC Removal Action with AGC	33040699	Storage boxes, rent per month, 40' x 8'	24	MO	127.44	0.00	0.00	0.00	3,058.56		
Partial Removal Action	38	MEC Removal Action with AGC	33040917	Explosives Storage Locker/Shelter, 22' x 7' x 7'	1	EA	40,520.61	0.00	0.00	0.00	40,520.61		
Partial Removal Action	38	MEC Removal Action with AGC	33040921	Senior UXO Supervisor (SUXOS)	6921	HR	0.00	74.49	0.00	0.00	515,568.80		
Partial Removal Action	38	MEC Removal Action with AGC	33040923	UXO Project Manager	17303	HR	0.00	108.57	0.00	0.00	1,878,617.77		
Partial Removal Action	38	MEC Removal Action with AGC	33040930	UXO QC Specialist	11734	HR	0.00	66.28	0.00	0.00	777,736.53		
Partial Removal Action	38	MEC Removal Action with AGC	33040931	UXO Safety Officer	11734	HR	0.00	66.67	0.00	0.00	782,305.75		
Partial Removal Action	38	MEC Removal Action with AGC	33040934	UXO Technician II	200	HR	0.00	47.18	0.00	0.00	9,435.28		
Partial Removal Action	38	MEC Removal Action with AGC	33040940	GIS Manager (UXO)	17303	HR	0.00	78.28	0.00	0.00	1,354,499.54		
Partial Removal Action	38	MEC Removal Action with AGC	33040941	Outside Diver	313860	HR	0.00	126.52	0.00	0.00	39,709,439.89		
Partial Removal Action	38	MEC Removal Action with AGC	33040942	Diver Tender	156930	HR	0.00	68.83	0.00	0.00	10,801,397.26		
Partial Removal Action	38	MEC Removal Action with AGC	33040943	Work Boat Operator	156930	HR	0.00	64.11	0.00	0.00	10,060,687.69		
Partial Removal Action	38	MEC Removal Action with AGC	33040947	MEC: Systematic Project Planning Meeting, includes labor and facility rental expenses, per EA	3	EA	0.00	15,177.82	0.00	1,150.50	48,984.96		
Partial Removal Action	38	MEC Removal Action with AGC	33040948	MEC: Systematic Project Planning, Site Visit, includes labor expenses, per EA	1	EA	0.00	4,519.56	0.00	0.00	4,519.56		

AOI-06, Alternative 3: Partial MEC Removal with LUCs
Project Assembly Level Data Report

Note:
Costs are direct (no markup)

Phase Name	Tech. Key	Technology Name	Assembly No.	Assembly Description	Qty	UOM	Materials	Labor	Equipment	SubBid	Extended Cost	units	Cost
Partial Removal Action	38	MEC Removal Action with AGC	33040949	MEC: Systematic Project Planning, UFP QAPP, includes labor expenses, per EA	1	EA	0.00	48,934.35	0.00	0.00	48,934.35		
Partial Removal Action	38	MEC Removal Action with AGC	33040950	MEC: Systematic Project Planning, Establish and Management of GIS Database, includes labor expenses, per EA	1	EA	0.00	15,710.58	0.00	0.00	15,710.58		
Partial Removal Action	38	MEC Removal Action with AGC	33040951	MEC: Systematic Project Planning, Community Relation Plan, includes labor expenses, per EA	1	EA	0.00	8,998.11	0.00	0.00	8,998.11		
Partial Removal Action	38	MEC Removal Action with AGC	33040953	MEC: Systematic Project Planning, PMP/Quality Assurance Surveillance Plan, includes labor expenses, per EA	1	EA	0.00	7,031.73	0.00	0.00	7,031.73		
Partial Removal Action	38	MEC Removal Action with AGC	33040954	MEC: Systematic Project Planning, Health and Safety Plan, includes labor expenses, per EA	1	EA	0.00	11,046.14	0.00	0.00	11,046.14		
Partial Removal Action	38	MEC Removal Action with AGC	33040958	MEC: Surface Clearance, includes labor and equipment expenses, per Day	0	DAY	0.00	2,444.37	0.00	79.23	0.00		
Partial Removal Action	38	MEC Removal Action with AGC	33040961	Explosive Safety Submission, includes labor and equipment expenses, per EA	1	EA	0.00	20,678.57	0.00	0.00	20,678.57		
Partial Removal Action	38	MEC Removal Action with AGC	33041101	Airfare	2	LS	0.00	0.00	0.00	575.00	1,150.00		
Partial Removal Action	38	MEC Removal Action with AGC	33041101	Airfare	6	LS	0.00	0.00	0.00	575.00	3,450.00		
Partial Removal Action	38	MEC Removal Action with AGC	33041101	Airfare	5	LS	0.00	0.00	0.00	575.00	2,875.00		
Partial Removal Action	38	MEC Removal Action with AGC	33041101	Airfare	24	LS	0.00	0.00	0.00	575.00	13,800.00		
Partial Removal Action	38	MEC Removal Action with AGC	33041101	Airfare	4	LS	0.00	0.00	0.00	575.00	2,300.00		
Partial Removal Action	38	MEC Removal Action with AGC	33041324	MEC After Action Report - Site Complexity (Low), per EA	1	EA	0.00	10,780.46	0.00	0.00	10,780.46		
Partial Removal Action	38	MEC Removal Action with AGC	33041325	MEC: Independent Blind Seed Tracking, per EA	0	EA	0.00	3,684.20	0.00	0.00	0.00		
Partial Removal Action	38	MEC Removal Action with AGC	33041326	MEC: IVS Memo, per EA	1	EA	0.00	6,377.10	0.00	0.00	6,377.10		
Partial Removal Action	38	MEC Removal Action with AGC	33041330	MEC: Anomaly Selection Memo, per EA	1	EA	0.00	6,377.10	0.00	0.00	6,377.10		
Partial Removal Action	38	MEC Removal Action with AGC	33041331	MEC: TOI Memo, per EA	0	EA	0.00	6,377.10	0.00	0.00	0.00		
Partial Removal Action	38	MEC Removal Action with AGC	33220101	Senior Project Manager	1385	HR	0.00	85.84	0.00	0.00	118,895.32		
Partial Removal Action	38	MEC Removal Action with AGC	33220113	Secretarial/ Administrative	1385	HR	0.00	42.43	0.00	0.00	58,769.43		
Partial Removal Action	38	MEC Removal Action with AGC	33220212	Surveying - 2-man Crew	1	DAY	0.00	873.86	15.86	0.00	889.72		
Partial Removal Action	38	MEC Removal Action with AGC	33220206	Electrician	40	HR	0.00	76.77	0.00	0.00	3,070.83		
Partial Removal Action	38	MEC Removal Action with AGC	33240101	Other Direct Costs	1	LS	0.00	0.00	0.00	443.52	443.52		
Partial Removal Action	38	MEC Removal Action with AGC	33240101	Other Direct Costs	1	LS	0.00	0.00	0.00	10,000.00	10,000.00		
Partial Removal Action	38	MEC Removal Action with AGC	33240101	Other Direct Costs	1	LS	0.00	0.00	0.00	258,874.54	258,874.54		
Partial Removal Action	38	MEC Removal Action with AGC	33240101	Other Direct Costs	1	LS	0.00	0.00	0.00	677,980.36	677,980.36		
Partial Removal Action	38	MEC Removal Action with AGC	33240101	Other Direct Costs	1	LS	0.00	0.00	0.00	5,385.53	5,385.53		
										Total	112,431,469.47	1	\$112,431,469.47
Periodic Review	45	Five-Year Review	33220102	Project Manager	8	HR	0.00	100.31	0.00	0.00	802.52		
Periodic Review	45	Five-Year Review	33220102	Project Manager	3	HR	0.00	100.31	0.00	0.00	300.94		
Periodic Review	45	Five-Year Review	33220105	Project Engineer	1	HR	0.00	85.05	0.00	0.00	85.05		
Periodic Review	45	Five-Year Review	33220105	Project Engineer	7	HR	0.00	85.05	0.00	0.00	595.32		
Periodic Review	45	Five-Year Review	33220108	Project Scientist	4	HR	0.00	92.60	0.00	0.00	370.40		
Periodic Review	45	Five-Year Review	33220109	Staff Scientist	9	HR	0.00	74.79	0.00	0.00	673.07		
Periodic Review	45	Five-Year Review	33220109	Staff Scientist	1	HR	0.00	74.79	0.00	0.00	74.79		
										Total	2,902.09	6	\$17,412.57
LAND USE CONTROLS	49	LAND USE CONTROLS	18010412	Construction Signs	36	SF	29.50	0.00	0.00	0.00	1,062.00		
LAND USE CONTROLS	49	LAND USE CONTROLS	33010202	Per Diem (per person)	1	DAY	0.00	0.00	0.00	229.87	229.87		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220102	Project Manager	15	HR	0.00	82.26	0.00	0.00	1,233.87		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220102	Project Manager	22	HR	0.00	82.26	0.00	0.00	1,809.67		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220102	Project Manager	20	HR	0.00	82.26	0.00	0.00	1,645.16		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220105	Project Engineer	30	HR	0.00	69.74	0.00	0.00	2,092.14		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220105	Project Engineer	30	HR	0.00	69.74	0.00	0.00	2,092.14		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220106	Staff Engineer	45	HR	0.00	71.83	0.00	0.00	3,232.20		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220106	Staff Engineer	45	HR	0.00	71.83	0.00	0.00	3,232.20		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220110	QA/QC Officer	11	HR	0.00	56.30	0.00	0.00	619.28		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220110	QA/QC Officer	8	HR	0.00	56.30	0.00	0.00	450.38		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220114	Word Processing/Clerical	60	HR	0.00	38.57	0.00	0.00	2,314.45		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220114	Word Processing/Clerical	16	HR	0.00	38.57	0.00	0.00	617.19		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220114	Word Processing/Clerical	30	HR	0.00	38.57	0.00	0.00	1,157.23		

**AOI-06, Alternative 3: Partial MEC Removal with LUCs
Project Assembly Level Data Report**

Note:
Costs are direct (no markup)

Phase Name	Tech. Key	Technology Name	Assembly No.	Assembly Description	Qty	UOM	Materials	Labor	Equipment	SubBid	Extended Cost	units	Cost
LAND USE CONTROLS	49	LAND USE CONTROLS	33220115	Draftsman/CADD	8	HR	0.00	44.96	0.00	0.00	359.66		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220115	Draftsman/CADD	30	HR	0.00	44.96	0.00	0.00	1,348.74		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220115	Draftsman/CADD	38	HR	0.00	44.96	0.00	0.00	1,708.40		
LAND USE CONTROLS	49	LAND USE CONTROLS	33220503	Attorney, Partner, Real Estate	22	HR	0.00	164.28	0.00	0.00	3,614.15		
LAND USE CONTROLS	49	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	246.86	0.00	0.00	0.00	246.86		
LAND USE CONTROLS	49	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	65.55	0.00	0.00	0.00	65.55		
LAND USE CONTROLS	49	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	375.77	0.00	0.00	0.00	375.77		
										Total	29,506.89	1	\$29,506.89
30-Year O&M	36	LAND USE CONTROLS	33010104	Vehicle mileage charge, car or van	100	Mi	0.00	0.00	0.00	0.32	31.86		
30-Year O&M	36	LAND USE CONTROLS	33010108	Sedan, Automobile, Rental	3	DAY	0.00	0.00	0.00	62.94	188.82		
30-Year O&M	36	LAND USE CONTROLS	33010202	Per Diem (per person)	5	DAY	0.00	0.00	0.00	229.87	1,149.35		
30-Year O&M	36	LAND USE CONTROLS	33022038	Overnight delivery service, 1 lb package	6	LB	0.00	0.00	0.00	60.06	360.37		
30-Year O&M	36	LAND USE CONTROLS	33041101	Airfare	1	LS	0.00	0.00	0.00	500.00	500.00		
30-Year O&M	36	LAND USE CONTROLS	33220102	Project Manager	44	HR	0.00	100.31	0.00	0.00	4,413.83		
30-Year O&M	36	LAND USE CONTROLS	33220106	Staff Engineer	40	HR	0.00	87.59	0.00	0.00	3,503.74		
30-Year O&M	36	LAND USE CONTROLS	33220110	QA/QC Officer	4	HR	0.00	56.30	0.00	0.00	225.19		
30-Year O&M	36	LAND USE CONTROLS	33220112	Field Technician	1	HR	0.00	47.76	0.00	0.00	47.76		
30-Year O&M	36	LAND USE CONTROLS	33220114	Word Processing/Clerical	26	HR	0.00	47.04	0.00	0.00	1,223.08		
30-Year O&M	36	LAND USE CONTROLS	33220115	Draftsman/CADD	16	HR	0.00	44.96	0.00	0.00	719.33		
30-Year O&M	36	LAND USE CONTROLS	33220119	Health and Safety Officer	1	HR	0.00	73.59	0.00	0.00	73.59		
30-Year O&M	36	LAND USE CONTROLS	33240101	Other Direct Costs	1	LS	255.16	0.00	0.00	0.00	255.16		
										Total	12,692.09	15	\$190,381.42
												Total	
												Direct	\$112,668,770.35
												Mark-up	\$ 42,857,120.00
												TOTAL	\$155,525,890

Appendix C: Responsiveness Summary

- C-1: Transcript of Public Meeting (Virtual) for the Camp Wellfleet FUDS Proposed Plan
- C-2: Public Meeting (Virtual) Slides for the Camp Wellfleet FUDS Proposed Plan
- C-3: Ad for Public Meeting in Cape Cod Times
- C-4: USACE response letters to Massachusetts Department of Environmental Protection comments on Feasibility Study
- C-5: National Park Service comments on Proposed Plan
National Park Service concurrence email on Selected Alternatives
- C-6: USACE Responses to Questions Received at the Public Meeting (Virtual) for the Camp Wellfleet FUDS Proposed Plan

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Appendix C-1

Transcript of Public Meeting (Virtual) for the Camp Wellfleet FUDS Proposed Plan

January 12, 2022

APPENDIX C-1

Transcript of Public Meeting (Virtual) for the Camp Wellfleet FUDS Proposed Plan

Beth Gosselin, NAE PAO: Good evening and welcome to this virtual public meeting with the U.S. Army Corps of Engineers. We're also known as USACE or US-A-C-E. My name is Beth Gosselin; I'm the Chief of Public Affairs for USACE of New England. I will be your moderator during the meeting today. Today's meeting will provide information about the proposed plan usage prepared for the former Camp Wellfleet formerly used defense site located in Barnstable County, Wellfleet, Massachusetts.

There will be time to answer questions after the presentation in order to ensure transparency in this process. Information about this formerly used defense site, or FUDS for short, is available on our district website. We will list the website address in the comments section of the virtual meeting platform.

Please note: if you're connected from a computer, to turn off your camera to save bandwidth so that the WebEx platform will work better. Only presenters will be displayed on camera. Tonight's presentation is being recorded.

With me today are two USACE team members involved in this project. Gina Kaso is the New England District Program Manager and Todd Beckwith works at the US Army Corps of Engineers, Baltimore District. Following this introduction, I will turn the screen over to the USACE contractor. Tom Bachovchin will provide details on the proposed plan for this Barnstable County site. Following his presentation, there will a moderated question and answer period to hopefully answer all of your questions. You will also be able to provide comments to the USACE Project Manager, Gina Kaso, by February 6th. And Gina has put her email address in the chat function.

Since this is a virtual meeting, we ask that you post your questions in the chat box and you're able to do so at any time. We'll be able to address the questions after the presentation. You'll also have an opportunity to ask via phone or computer.

I'd now like to introduce Tom Bachovchin, Senior Project Manager at ERT, who will give the presentation.

Thomas Bachovchin, ERT Project Manager: [presentation given—see Appendix C-2 for full presentation]

Beth Gosselin: Thank you so much, Tom. And just a note that we will have Tom's presentation on our website so that you can refer to it later or pass it to a friend or a neighbor who is unable to attend today's meeting. As Tom mentioned, you may submit any questions or comments to Gina Kaso by February 6th. As you noted, Tom, any comments that were typed into today's meeting will be officially considered part of the record.

And with that, I don't see any questions in the chat box at this time, but I will give it a few minutes and then, also, if anybody would like to unmute themselves, you're able to do so and provide a comment or ask a question.

Brian Carlstrom, Cape Code National Seashore: Hi, Tom. Thank you for the presentation. The Seashore's got some concerns around the Marconi parking lot area and beach access point. We're in the midst of doing a comprehensive retreat and rebuild strategy for public access points, and there could be concerns related to that in that specific location, and we'll provide some official comments for the record to that effect.

Thomas Bachovchin: Okay, yes. I appreciate that. That's going to be an issue of schedule. You know, where we are, where you guys are, and how those things could overlap and/or merge. What makes sense there. I mean, obviously, nothing's official yet at his point. We need a finalized Decision Document that says we are doing Alternative 2 land use controls and, in this case, what will be most important to you is what – the term I use is – what 'package' of land use controls that we would provide in the land use control implementation plan. So, it may impact your work or your work may impact implementing the alternative, and I think, again, it's largely an issue of schedule and that's something, certainly, that NPS and USACE can discuss.

Brian Carlstrom: Thank you.

Beth Gosselin: Thank you, Brian. Are there any other questions or comments?

Helen Miranda Wilson: Yes. I serve on the Select Board. I'm speaking, however, only on my sole behalf here. I was a delegate of the Select Board but I'm here because I AM on the Select Board. I have three questions. When the Armed Forces, whatever agency or agencies, decided to lease this property in 1942, if that's what I understood from what you just presented – and thank you, it was a great presentation – who owned all those acres? 1,738 acres. Did I get that right? Who owned all that then and who was the...? Which federal agency or agencies were the lessees and who leased it? Who owned it and who leased it? That's my first question. One of three.

Thomas Bachovchin: You know, I actually don't know that. I wonder if Brian or Todd or Gina... if you guys or anybody who's on tonight has that answer. I just don't know right off. It's certainly seems like something that's easy enough to find out. I just didn't have it in the presentation tonight.

Helen Miranda Wilson: So that was my first question. It would be good to know that. It would be also good to see a copy of that lease because during the time that it was used – and my experience with leases – usually there are conditions and I'm wondering if any of the conditions covered possible effects that had to be mitigated during the time that the property was leased. In other words, we need to look at that lease. And, unfortunately there was a big fire in Town Hall in Wellfleet since then and it may not exist in Wellfleet, but surely it exists in the files, I would hope, of whatever services leased it. And you also didn't say who actually leased it back then. Which federal agency was leasing it? Do you know that?

Thomas Bachovchin: I don't. Again, that's a little bit out of the area of my expertise. I don't figure that's something that is particularly difficult to find out by the right folks, maybe the USACE real estate folks. I will also just throw out that, you know, in 1942, if they were doing this at the height of the war, I mean, maybe the situation was a bit different in terms of what you're trying to get at, in terms of what they did, how they impacted the property, if you will, and how they left it, and so on, but I don't have that answer. If anyone else does, please jump in.

Helen Miranda Wilson: And you understand why I'm asking. Because what's being proposed here is options for dealing with stuff that was, shall we say, subjected... the property was subjected to whatever was going on at the time that it was being leased. The third question is... The stuff that's in the ground has been there for roughly 80 years, starting in 1942, and it's slowly disintegrating. And it is a problem if it blows people up, you know, if they dig down. I am most concerned with the slow leaching of whatever is being taken apart by the earth of all these different materials, a lot of which have gone below the areas you're talking about dealing with and, you probably know that there are these fresh water [?] which are the only source of fresh water and that what is even more critical on this property is it's right at the interface of salt water and fresh water. Now, fresh water... some of it does leach out through the interface into the ocean and there are places where you can actually see that here and there. But, generally, the fresh water moves slowly under the land mass, west and, I guess my punchline here is, why are we talking about partial removal? It should *all* be removed, in my opinion or, that is what I would wish for under the circumstances given how toxic it is. And the phrases "deemed feasible" and "acceptable conditions": these are being determined by the Army Corps of

Engineers, not by the people who actually live here. And I have generally friendly feelings toward the Army Corps because you help us in a lot of ways and I respect that, but this really worries me. Thank you for listening to me and please... I am submitting what I just said as a formal comment, exactly as I said it. However not quickly.

Thomas Bachovchin: Well, thank you for the question and let me jump in with a quick answer and we'll give you a more detailed one per your written submittal but slide 12 is where we tried to convey that we feel we've done a really comprehensive and robust, what we call, MC investigation, which is exactly what you're talking about. Leaching of chemicals out of either the propellants, energetics, or even, literally, the casings of the munitions themselves, heavy metals, into the soil and then potentially into the groundwater. And we biased our sampling areas toward those places where we knew people had previously found munitions, where most of the stuff was happening and, again, this would be part of the RI report – the Remedial Investigation. So again, that's the fattest of all the reports that we've done. You can find that on the website and you can take a deep dive in that report, but we found nothing, in terms of the soil contamination, that exceeded the standards. And I will say that report was reviewed and finalized and approved through MassDEP, so I think we have a pretty good feel for some of your concerns. We don't think we're seeing any soil contamination caused by these munitions. We did a little bit of groundwater sampling... I want to say the supply well on site – a sample was collected and we didn't find anything. And so I think, if you take a look into that RI report, you'll get a sense of our conclusions, again, just very briefly summarized in this presentation, in the proposed plan, but detailed in the Remedial Investigation, so, I think you'll see there that we really take a close look at that.

Helen Miranda Wilson: One more question based on what you just said, if that's all right. How do we see the MC sampling results? We get to see your recommendations, your analysis of that. But how do we actually see them, because I've looked at a good number of sampling results for water and it's interesting... you know, you can have something that's just below an acceptable level and it would be just good for the powers that be, here, whether it's the Park – I don't know if the Park cares about this or not – but, you know, for the people in the town to be able to look at that, particularly the people who live more or less west of this area. So how could we see the actual MC sampling results, not just your analysis? Is that possible?

Thomas Bachovchin: Sure. All of that information is in the Remedial Investigation. So, you can find it in that document. It's well organized....

Helen Miranda Wilson: Thank you.

Thomas Bachovchin: We have done a pretty comprehensive and thorough investigation. It's called the Remedial Investigation, the RI, that I've referenced. You'll find answers to all of your questions, including how that sampling was done and where it was done, what the conclusions are, what the results are, what the comparison standards are, and what the screening levels were. All of that stuff is in there... that's the point of an RI. I mean, the RI report is the nature and extent of contamination, you know, answering 'what's the problem'? And, in the case of soil and groundwater, we didn't find any problems. So, you can certainly find that in the RI.

Beth Gosselin: Thank you. And, Gina, will that be... do you know the web site off hand?

[the slide showing the URL was placed back on screen]

Beth Gosselin: That's perfect. So, all of the relevant documents will be there. Thank you very much for your comments. Tom, thank you for your answers as well. Is there anybody else who'd like to make a comment or have a question?

Gina Kaso, NE District PM: This is Gina, the PM, and I did want to make one comment, and maybe I didn't... I must have misunderstood the question. But as much as the town enjoys working with the Corps, the Corps does enjoy working with and on behalf of all the folks. But I just want to stress one thing: The Army conducts these investigations, but we conduct them in accordance with standards and regulations that are established by the EPA and by the state, so we're not conducting our investigations based on our standards. They're the state's standards and the Federal government's standards – EPA and DEP. So, I just wanted to reinforce that. So, as I said, we are looking out for the public, and the state and EPA make sure we look out for the public.

Beth Gosselin: Great clarification. Thank you. Are there any other questions or comments? If there are folks who are on here and have comments or think of things afterwards, please feel free to email Gina by February 6th and we will also keep this WebEx open for a couple more minutes. And on that, Gina? Tom? Do you have any closing remarks?

Thomas Bachovchin: Nothing here.

Gina Kaso: No, no, thank you.

Beth Gosselin: Okay. Well, I want to extend our appreciate on behalf of USACE to all of those who came to listen tonight and provide comments. This is truly a transparent process. Your voice is integral and we're happy to have you here. Thank you very much, and this concludes tonight's meeting. As I said, we'll keep the WebEx open in case there's anybody else that has additional questions afterwards or comments. Thank you.

The meeting was adjourned.

Appendix C-2

Public Meeting (Virtual) Slides for the Camp Wellfleet FUDS Proposed Plan

January 12, 2022

CAMP WELLFLEET FORMERLY USED DEFENSE SITE MILITARY MUNITIONS RESPONSE PROGRAM WELLFLEET, MASSACHUSETTS

Public Meeting to Present the Proposed Plan

Prepared by
U.S. Army Corps of Engineers (USACE)
New England & Baltimore Districts

12 January 2022

"The views, opinions and findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."



**US Army Corps
of Engineers**®



INTRODUCTION



The U.S. Army Corps of Engineers (USACE) is pleased to present the Proposed Plan for the Camp Wellfleet Formerly Used Defense Site (FUDS), Wellfleet, Massachusetts.

- The primary purpose of this Proposed Plan is to identify preferred remedial alternatives to mitigate unacceptable explosive hazards due to munitions and explosives of concern (MEC) that may remain within the Camp Wellfleet FUDS.
- This Proposed Plan was prepared to satisfy Section 117 (a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The Proposed Plan highlights the key factors that led to identifying USACE's preferred alternative.



PROJECT PERSONNEL



USACE

Gina Kaso Project Manager
 Todd Beckwith..... MM Design Manager
 Sally Rigione..... Community Relations Advisor
 Elizabeth Gosselin..... Chief, Public Affairs

MassDEP

Leonard Pinaud..... Chief, Bureau of Waste Site Cleanup
 Kendall Walker..... Bureau of Waste Site Cleanup

National Park Service

Brian Carlstrom..... Superintendent
 Nicole Brooks Taylor..... Safety & Occupational Health Specialist

Town of Wellfleet

Rebecca Roughley Assistant Town Administrator

ERT (USACE Contractor)

Thomas Bachovchin..... Project Manager



KEY DEFINITIONS



A few key definitions are provided to better understand the presentation of the Proposed Plan

- **Applicable or Relevant and Appropriate Requirements (ARARs)** - cleanup standards and substantive requirements promulgated under Federal or state law that address a hazardous substance, contaminant, remedial action, or location found at a CERCLA site. Relevant and appropriate requirements address situations similar to those encountered at a CERCLA site such that their use is well suited to the site.
- **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.
- **Formerly Used Defense Site (FUDS)** - 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. Projects are categorized by actions such as hazardous, toxic, and radioactive waste, military munitions response program, or building demolition/debris removal.
- **Munitions Constituents (MC)** - Any materials originating from unexploded ordnance, discarded military munitions, or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.
- **Munitions and Explosives of Concern (MEC)** - 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.



KEY DEFINITIONS (CONTINUED)



- **Munitions Response Site (MRS)** - A discrete location within a Munitions Response Area that is known to require a munitions response.
- **Remedial Investigation (RI)** – A study that identifies the nature and extent of contamination at a site and provides information supporting the evaluation for the need for a remedy for a site where hazardous substances may be present.
- **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 Remedial Investigation.
- **Proposed Plan** - Supplements the RI/FS and provides the public with a reasonable opportunity to comment on the preferred alternative for remedial action, or alternative plans under consideration, and to participate in the selection of remedial action at a site.
- **Decision Document (DD)** - The documentation of remedial action decisions at non-National Priority List FUDS Properties. It is a public document that describes the cleanup action/remedy selected, the basis for the choice, and responds to public comments.
- **Land Use Controls (LUCs)** - Physical, legal, or administrative mechanisms that restrict the use of, or limit access to, real property to prevent/reduce risks to human health and the environment.
- **Remedial Action Objective (RAO)** - Objectives established for remedial actions to guide the development of alternatives and focus the comparison of remedial action alternatives. RAOs assist in clarifying the goal of minimizing risk and achieving an acceptable level of protection for human health and the environment.



PROJECT OVERVIEW

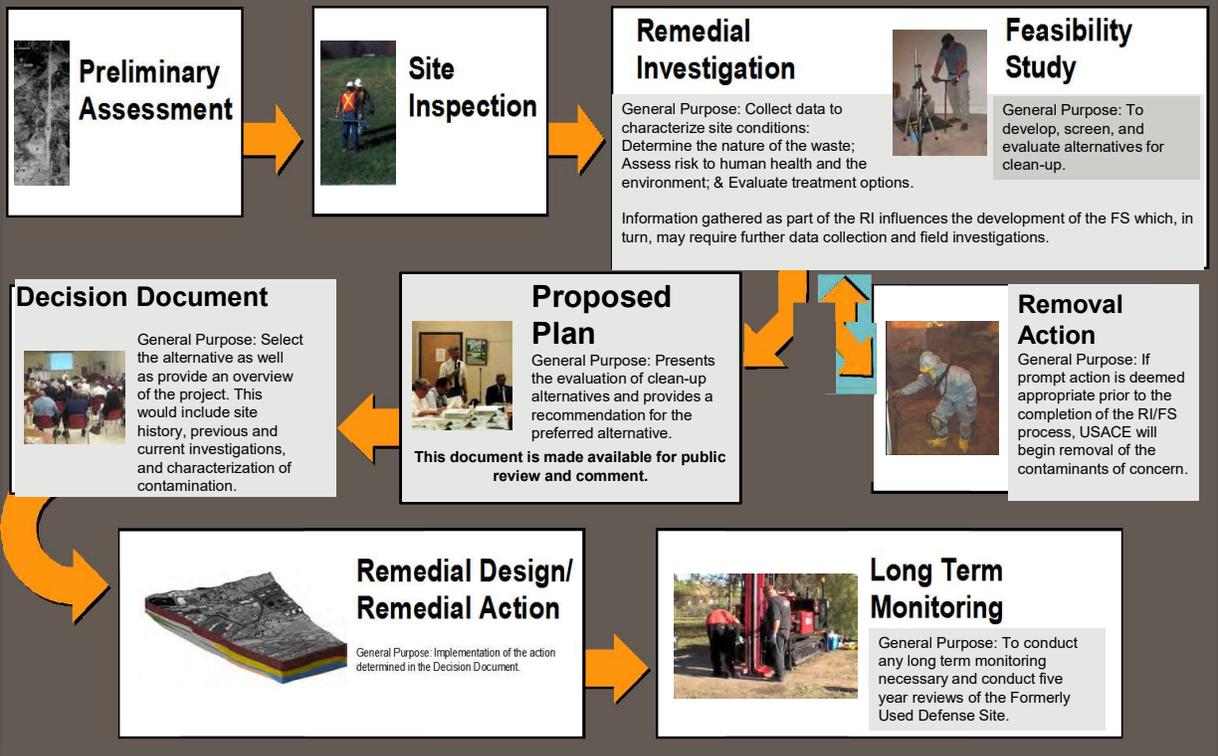


- ❑ This project falls under the Military Munitions Response Program (MMRP) of the Defense Environmental Restoration Program (DERP). The DoD established the MMRP to address MEC and munitions constituents (MC).
- ❑ Under the DERP, the U.S. Army is the DoD's lead Agency for FUDS, and USACE executes FUDS for the Army. USACE performs response activities throughout the Camp Wellfleet FUDS in accordance with CERCLA.
- ❑ USACE will finalize the preferred alternative selection for the Camp Wellfleet FUDS in a Decision Document after evaluating comments received from the public on this Proposed Plan and in coordination with the Massachusetts Department of Environmental Protection (MassDEP).



The CERCLA Process

(The Comprehensive Environmental Response, Compensation, and Liability Act)





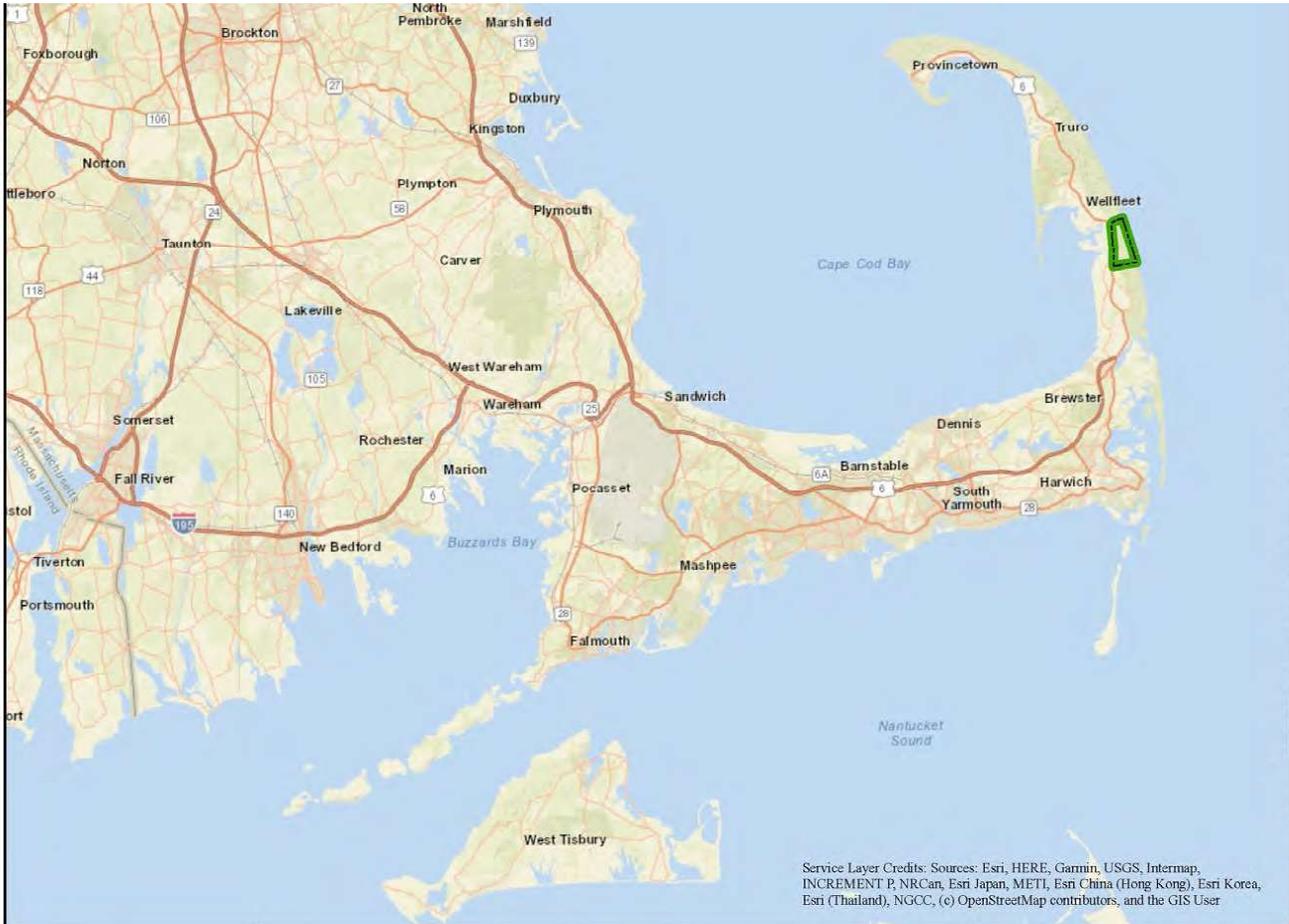
SITE BACKGROUND



- ❑ The Camp Wellfleet FUDS is located in the town of Wellfleet, Barnstable County, Massachusetts, approximately one mile east of South Wellfleet, MA, on the Cape Cod peninsula.

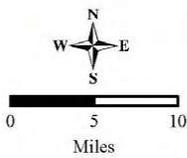
- ❑ The Camp Wellfleet FUDS consists of a total of 1,738 acres - of which approximately 1,688 acres are located in the Cape Cod National Seashore (CCNS) and 49.2 acres in the Town of Wellfleet.

- ❑ Figure 1 provides the site location (figures are located at the end of the presentation).



Legend

-  Former Camp Wellfleet Boundary



0 5 10
Miles

Figure B-1
Site Location

Former Camp Wellfleet
Wellfleet, Barnstable County,
Massachusetts

N:\GIS\Northeast\Massachusetts\CampWellfleet\MXD\RIReport\PreliminaryDraft\SiteLocation.mxd



SITE BACKGROUND



- ❑ The Camp Wellfleet FUDS was previously used by the U.S. Army and U.S. Navy for training purposes, with the property being leased in 1942 for an anti-aircraft artillery training base, with an artillery firing line located along the beach cliff.
- ❑ From 1945 through the end of World War II, the Navy used the base as a radar training school supporting night fighter training, and for Dove missile training. From 1945 to 1961 the Camp also was used for training by National Guard troops and Active Army Reserve anti-aircraft artillery training units.
- ❑ Munitions used at Camp Wellfleet included MK 65 “Dove” practice bombs, 60-millimeter (mm), 90mm, and 105mm projectiles, .30 and .50 caliber ammunition, grenades, and rifle smoke grenades.
- ❑ Camp Wellfleet was officially closed in June 1961. The Department of the Interior acquired the land in August 1961 to establish and develop the CCNS. The majority of the Camp Wellfleet FUDS is currently owned by the National Park Service (NPS).



PREVIOUS INVESTIGATIONS/STUDIES



Many investigations have been performed to characterize the site.

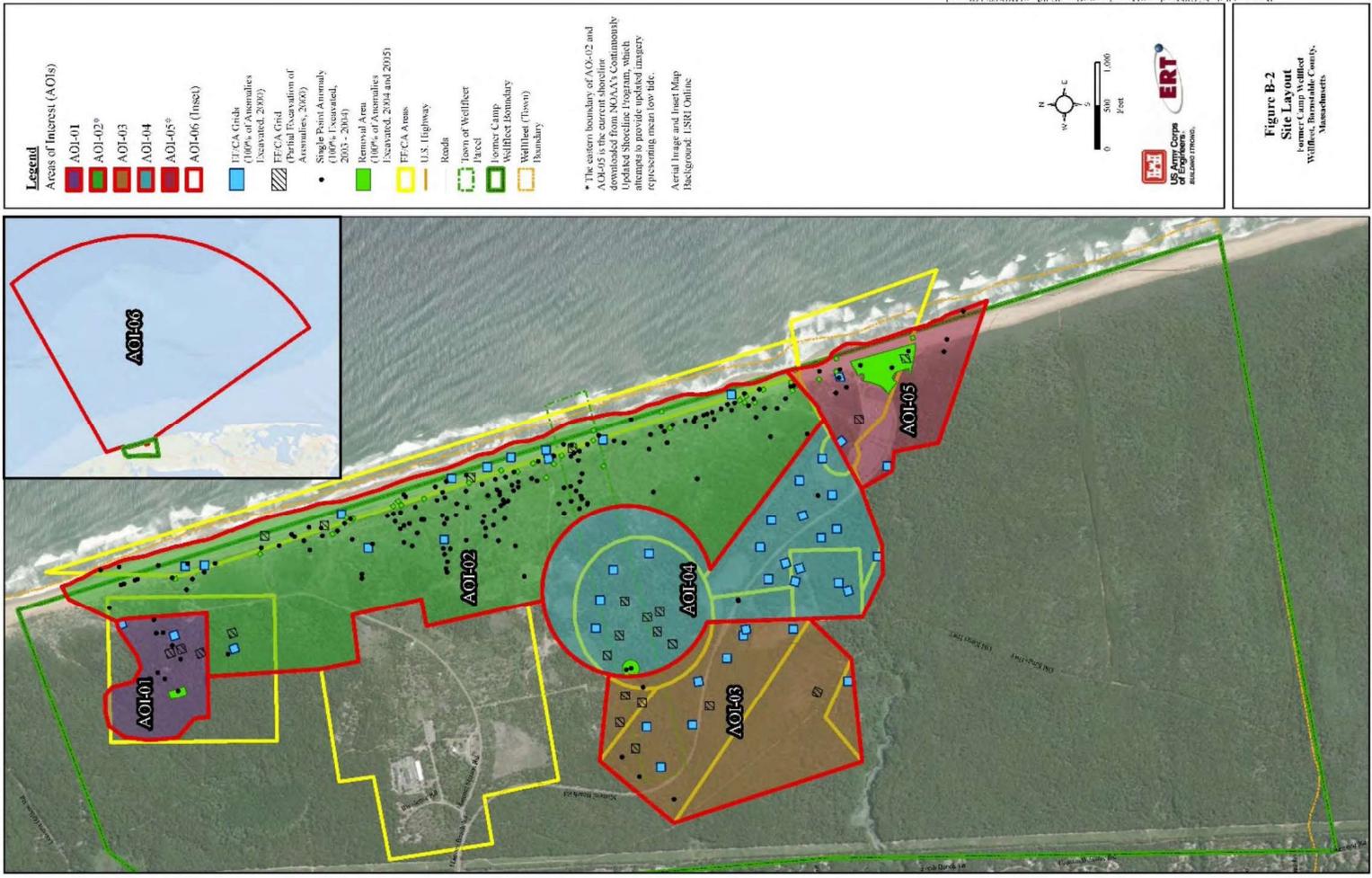
- In 1991, an Inventory Project Report/Preliminary Assessment determined the site was eligible under the FUDS program. A 1994 Archives Search Report categorized areas as containing Munitions and Explosives of Concern (MEC), potentially containing MEC, or not containing MEC. A 1998 Topographic Engineering Center analysis of historical aerial photos included delineation of ground scars, excavations, and features such as bombing targets, gun emplacements, and ammunition supply points.
- Based on the conclusions of the these reports, an Engineering Evaluation and Cost analysis (EE/CA) investigation was completed in May 2000 that identified inert (do not pose an explosive hazard) munitions-related items, including four 1,000-pound MK 65 practice Dove missiles, and one 250-pound practice bomb.
- The Oak Ridge National Laboratory conducted a helicopter geophysical survey in March 2002 to map Unexploded Ordnance (UXO). The survey identified 345 anomalies resulting in removal actions in several focused areas of the Camp Wellfleet FUDS. These items included primarily miscellaneous munition parts.



PREVIOUS INVESTIGATIONS/STUDIES



- ❑ Various additional removal activities were conducted from approximately 2003 through 2005, resulting in the removal of over 3,400 pounds of munitions debris (MD). MD includes remnants of munitions after use. However, only a single MEC item was encountered.
- ❑ Other focused investigations included an Open Burn/Open Detonation area where 1,040 pounds of MD was removed; no MEC was encountered. A removal action was conducted in an area currently part of the large parking lot, where abundant MD was removed.
- ❑ Most recently, a comprehensive RI was completed (USACE, 2019) based on the previously identified areas that were determined to have MEC, have a potential for MEC, or no potential for MEC, with Areas of Interest (AOIs) being developed as the primary basis of investigation.
- ❑ The AOI configurations considered previous investigation and subsequent removal action results, historical aerial analysis, and the combining of areas of common past activities, resulting in six (6) AOIs that formed the basis of the RI. Five of the AOIs are land-based, while one is ocean-based. See Figure 2.



- Legend**
 Areas of Interest (AOIs)
- AOI-01
 - AOI-02*
 - AOI-03
 - AOI-04
 - AOI-05*
 - AOI-06 (Inset)

- ITCA Grids (100% of Anomalies Excavated, 2003)
- FECA Grid (Partial Excavation of Anomalies, 2000)
- Single Point Anomaly (100% Excavated, 2003 - 2004)
- Removal Area (100% of Anomalies Excavated, 2004 and 2005)
- FECA Areas
- U.S. Highway
- Roads
- Town of Wellfleet
- Paved
- Former Camp
- Wellfleet Boundary
- Wellfleet (Town)
- Boundary

* The eastern boundary of AOI-02 and AOI-05 is based on the most recently downloaded from NOAA's Continuously Updated Shoreline Program, which attempts to provide updated imagery representing mean low tide.

Aerial Image and Inset Map Background: USRR Online

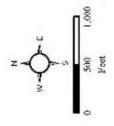


Figure B-2
 Site Layout
 James C. McMillen
 Wellfleet, Barnstable County,
 Massachusetts



SUMMARY OF SITE RISKS AND HAZARDS



The RI integrated the multiple investigation findings and determined the nature and extent of Munitions Constituents (MC) and MEC contamination for each AOI, and recommended whether further actions were warranted.

MC Risks--

- A comprehensive MC soil sampling program was conducted during the RI, with surface and subsurface soil samples collected from areas of the site considered to potentially contain the largest MC contaminant concentrations (areas where previous investigations identified MEC or MD).
- The MC sampling results indicated that project screening levels for soil were not exceeded, and therefore, no quantitative human health risk assessment or screening level ecological risk assessment was required. Accordingly, the RI Report concluded that there is no unacceptable MC risk to either human or ecological receptors at the Camp Wellfleet FUDS.



SUMMARY OF SITE RISKS AND HAZARDS



MEC Explosive Hazards--

❑ With regard to explosive risks that may remain at the Camp Wellfleet FUDS, MEC risk evaluations were determined for all AOIs using the USACE Risk Management Matrix Methodology (RMM), which defines acceptable and unacceptable risk from MEC based on the likelihood of an encounter, the severity of incident, the sensitivity of the munitions, and the likelihood for energy to be imparted on an item.

❑ Based on the RMM, the following AOIs present acceptable site conditions with regard to explosive risks, and therefore require no action:

➤ AOI-01, AOI-03, and AOI-04

❑ Based on the RMM, the following AOIs present unacceptable explosive risks due to MEC potentially remaining, and therefore actions are necessary to protect human health or the environment from the actual or threatened hazards described above:

➤ AOI-02, AOI-05, and AOI-06



FEASIBILITY STUDY



- ❑ A Feasibility Study (USACE 2021) was completed to evaluate remedial action alternatives to address the risks and hazards identified in the RI.
- ❑ Remedial Action Objectives (RAOs) describe what the cleanup is expected to accomplish, specifying the contaminants, media, receptors, exposure pathways, and preliminary remediation goals.
- ❑ For the Camp Wellfleet FUDS, remedial alternatives were developed for unacceptable explosive hazards posed by MEC potentially remaining at the three AOIs. The RAOs are:
 - For land-based AOI-02 and AOI-05: eliminate unacceptable risk due to the presence of MEC to a depth of 3 feet below ground surface (bgs) to address direct contact by park personnel and recreational users, and direct contact of MEC in the subsurface to 6 feet bgs by maintenance workers, such that acceptable conditions are achieved.
 - For ocean-based AOI-06: eliminate unacceptable risk due to the presence of MEC on or beneath the sea floor (approximately 2 ft bgs) to address direct contact by park personnel, visitors (swimmers), and divers, to a water depth of 120 feet, and the potential for interaction resulting from the use of fishing nets to the maximum depth of the AOI, such that an acceptable condition is achieved.



APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)



ARARs are site-specific and involve evaluation of federal and state environmental laws regarding contaminants of concern, site characteristics, and proposed remedial alternatives. In the FS, the ARARs were specifically reviewed relative to each remedial alternative. The following ARARs have been identified for the Camp Wellfleet FUDS:

Federal Statutes/Laws

- Endangered Species Act [16 USC 1538(a)(1)(B) (1991, as amended); 16 USC 1536(a)(2); 50 CFR 402.01(a); 50 CFR 402.14(i)].
- Migratory Bird Treaty Act of 1918 [16 U.S.C. 703(a)].
- Clean Water Act (Sections 404/401). 40 CFR Part 230.10.
- Resource Conservation and Recovery Act (RCRA) [40 CFR 264.601/602/603].



ARARS



❑ State Statutes/Laws

- MassDEP Endangered Species Act, Code of Massachusetts (CMR) regulations 321 CMR 10.04(1).
- Massachusetts Wetlands Protection Act, 310 CMR 10.25(5)-(7), 310 CMR 10.27(3), (6), & (7), 310 CMR 10.28(3) & (6), 310 CMR 10.30 (4) & (6), and 310 CMR 10.34 (4)-(5).
- Massachusetts Waterways Regulation, 310 CMR 9.40(2)(b) (1st sentence), 310 CMR 9.40(3)(b) (1st sentence).
- Massachusetts Contingency Plan (MCP) Upper Concentration Limits. 310 CMR 40.0996.
- Massachusetts Division of Water Pollution Control; 401 Water Quality Certification, 314 CMR 9.06(2)(1st sentence), 314 CMR 9.07(1)(a)(1st sentence).
- Massachusetts Surface Water Quality Standards, substantive portions of 314 CMR 4.04(1), 314 CMR 4.05(4)(a), 4.05(3)(b), & 4.05(5).
- Ocean Sanctuaries Act M.G.L. c. 132A, ss. 15 (3) & (4).



EVALUATION OF REMEDIAL ALTERNATIVES



□ General categories of technologies for addressing MEC, such as detection, removal, and disposal, were identified and screened in the FS. Four remedial alternatives were identified:

- **Alternative 1: No Action** – would involve leaving the subject areas in their current condition. This alternative does not provide for additional investigation for or removal of MEC items, and does not provide for any active or passive land use controls to reduce the potential for exposure. No Action is evaluated to satisfy the National Contingency Plan requirement to consider this alternative as a baseline against which other alternatives are compared.
- **Alternative 2: Land Use Controls (LUCs)** – for the Camp Wellfleet FUDS, LUCs may include the use of signage installed in appropriate locations to limit access by providing awareness of potential hazards, education (training, pamphlets, flyers) concerning the hazards suspected to be present within the AOI, and periodic visual inspections to evaluate changing site conditions.
- **Alternative 3: Partial MEC Removal with LUCs** - entails conducting a partial MEC removal down to 3 feet bgs and implementing educational and notification LUCs should there be a need to go deeper than that for maintenance or construction activities.



EVALUATION OF REMEDIAL ALTERNATIVES



- **Alternative 3: Partial MEC Removal with LUCs (continued)** - for the water AOI, the partial removal would include items on the sea floor and approximately 2 feet beneath it, and the footprint would extend to the 120 feet recreational diver depth limit, almost 3 miles out from the shoreline.
 - **Alternative 4: MEC Removal to Unlimited Use/Unrestricted Exposure** – DERP requires an action to remediate a site to a condition that allows for UU/UE, so this alternative would include complete removal and subsequent destruction of MEC such that LUCs would not be required.
- These four remedial alternatives were evaluated against three broad criteria: effectiveness, implementability, and cost.
- This broad screen concluded that Alternative 4 was not effective in the short term, was not technically/administratively feasible, and was cost prohibitive. Therefore, Alternative 4 was not retained for the more detailed comparative analysis of alternatives.



EVALUATION OF REMEDIAL ALTERNATIVES



□ USEPA developed nine criteria to address CERCLA requirements for selecting remedial alternatives. These criteria were used to evaluate the alternatives for each of the three AOIs individually, and then against one another, in order to select a preferred alternative. The criteria are:

- Threshold
 - Overall Protectiveness of Human Health and the Environment
 - Compliance with ARARs
- Balancing
 - Long-term Effectiveness and Permanence
 - Reduction in Toxicity, Mobility, or Volume through Treatment
 - Short-Term Effectiveness
 - Implementability
 - Cost
- Modifying
 - State/Support Agency Acceptance
 - Community Acceptance



EVALUATION OF REMEDIAL ALTERNATIVES FOR AOI-02



□ AOI-02 (Figure 3)

AOI	Usage	Munition Findings	Acreage
AOI-02	Artillery Firing Line for anti-aircraft artillery	MEC (76mm anti-aircraft artillery). Miscellaneous MD.	275

□ The table on the next slide presents the detailed analysis of alternatives for AOI-02.



Legend

- 150 ft Partial Removal Limit (associated with Alternative 3)
 - Partial Removal Area (associated with Alternative 3) (39.2 Acres)
 - Historical Firing Line Road
 - Approximate Bluff Location (2015)
 - NHESP Natural Community Sandplain Heathland
 - AOI-02 Boundary
 - Areas Ineligible for Work by Request of the Cape Cod National Seashore National Park Service (CCNS NPS) due to Ongoing Research or Habitat Establishment
 - Camp Wellfleet Boundary
 - Town of Wellfleet Parcel
- NHESP - Natural Heritage & Endangered Species Program
- Aerial: ESRI Online
 Natural Communities: NHESP BioMap2 Core Habitat Priority Natural Communities

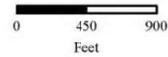
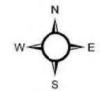


Figure B-3
AOI-02
 Former Camp Wellfleet
 Wellfleet, Barnstable County,
 Massachusetts



DETAILED ANALYSIS OF ALTERNATIVES FOR AOI-02



Table 8.1: Summary of Detailed Analysis of Explosive Risks Remedial Alternatives – AOI-02

	Screening Criterion	Alternative 1: No Action	Alternative 2: Land Use Controls	Alternative 3: Partial MEC Removal with LUCs
Threshold	Overall Protection of Human Health and Environment ¹¹	○	●	●
	Compliance with ARARs	●	●	●
Balancing	Long-Term Effectiveness	○	◐	●
	Reduction of Toxicity, Mobility and Volume Through Treatment ¹²	○	○	●
	Short-Term Effectiveness	○	●	◐
	Implementability	●	●	◐
	Cost ¹³	\$0.00	\$629,800	\$1,949,800
Modifying ¹⁴	State Acceptance	TBD	TBD	TBD
	Community Acceptance	TBD	TBD	TBD

- Favorable ('YES' for threshold criteria)
- ◐ Moderately Favorable
- Not Favorable ('NO' for threshold criteria)

¹¹ – Favorable for this criterion requires achieving 'Acceptable' site conditions using the RMM (see Appendix B of the FS).

¹² – For MEC, this criterion addresses reduction of volume of MEC.

¹³ - Costs were developed using Remedial Action Cost Engineering and Requirements (RACER) software. O&M for a 30-year duration is included, as applicable, for an alternative. Details provided in Appendix C of the FS.

¹⁴ – The Modifying criteria of state and community acceptance are 'To Be Determined (TBD)' following review and input from these parties.



PREFERRED ALTERNATIVE FOR AOI-02



Alternative 2: Land Use Controls, is the recommended preferred remedial alternative to achieve the explosive risks RAOs for AOI-02.

- Alternative 2 is protective of human health and the environment, using LUCs to limit access to the AOI-02 areas.
- It will comply with all ARARs through coordination with NPS, USFWS, MassDEP, and the Town of Wellfleet to minimize any disturbance and not cause a take of any protected species.
- It is moderately favorable for long-term effectiveness by informing the public of the explosive risks, minimizing human exposure, and is favorable in the short-term because the estimated time to meet the RAOs would be short.
- It is favorable in meeting the implementability criterion as it is technically feasible to install signage, produce educational materials, and provide notifications of intrusive work, and the materials to implement this alternative are readily available.
- While Alternative 3 had one more moderately favorable ranking, it was significantly more costly than Alternative 2.



EVALUATION OF REMEDIAL ALTERNATIVES FOR AOI-05



□ AOI-05 (Figure 4)

AOI	Usage	Munition Findings	Acreage
AOI-05	Rocket Range and Small Arms Range	MD indicative of MEC (high explosive frag from 3.5-in rockets and 105mm projectiles). Miscellaneous MD.	56.1

□ The table on the next slide presents the detailed analysis of alternatives for AOI-05.





DETAILED ANALYSIS OF ALTERNATIVES FOR AOI-05



Table 8.2: Summary of Detailed Analysis of Explosive Risks Remedial Alternatives – AOI-05

	Screening Criterion	Alternative 1: No Action	Alternative 2: Land Use Controls	Alternative 3: Partial MEC Removal 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	●	●	◐
	Cost ³	\$0.00	\$622,900	\$1,772,600
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).

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

³ - Costs were developed using RACER software. O&M for a 30-year duration is included, as applicable, for an alternative. Details provided in Appendix C of the FS.

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



PREFERRED ALTERNATIVE FOR AOI-05



Alternative 2: Land Use Controls, is the recommended preferred remedial alternative to achieve the explosive risks RAOs for AOI-05.

- Alternative 2 is protective of human health and the environment, using LUCs to limit access to the AOI-05 areas.
- It will comply with all ARARs through coordination with NPS and USFWS to minimize any disturbance and not cause a take of any protected species.
- It is moderately favorable for long-term effectiveness by informing the public of the explosive risks, and the estimated time to meet the RAOs would be short.
- It is favorable in meeting the implementability criterion as it is technically feasible to install signage, produce educational materials, and provide notifications of intrusive work, and the materials to implement this alternative are readily available.
- While Alternative 3 had one more moderately favorable ranking, it was significantly more costly than Alternative 2.



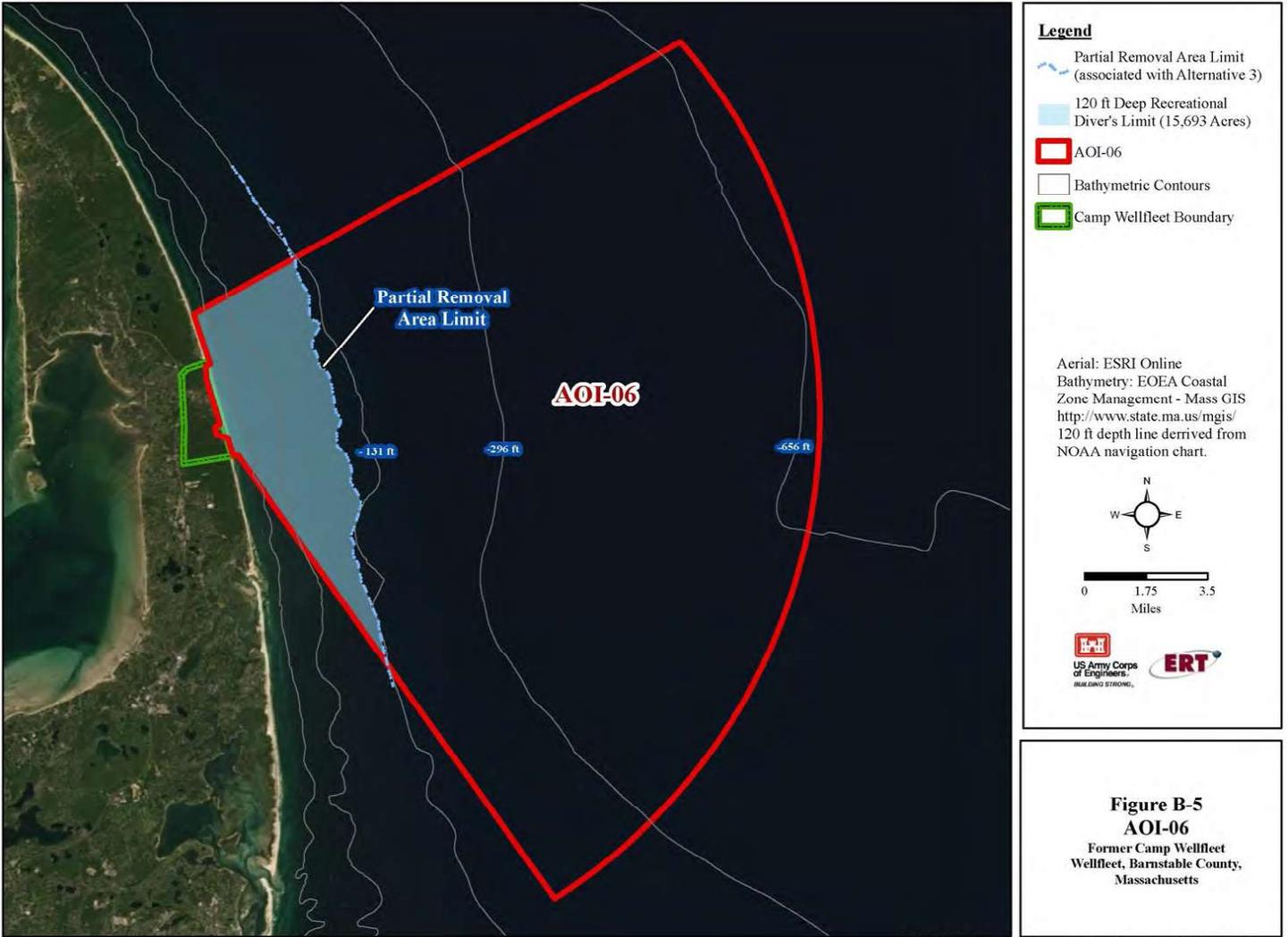
EVALUATION OF REMEDIAL ALTERNATIVES FOR AOI-06



□ **AOI-06** (Figure 5)

AOI	Usage	Munition Findings	Acreage
AOI-06	Range Fan of Artillery Targets in Ocean	MEC presence assumed based on 20 years of firing. Potential types: 76mm anti-aircraft artillery, 90 and 105mm projectiles, 3.5" rockets.	167,856

□ The table on the next slide presents the detailed analysis of alternatives for AOI-06.





DETAILED ANALYSIS OF ALTERNATIVES FOR AOI-06



Table 8.3: Summary of Detailed Analysis of Explosive Risks Remedial Alternatives – AOI-06

	Screening Criterion	Alternative 1: No Action	Alternative 2: Land Use Controls	Alternative 3: Partial MEC Removal 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	●	●	◐
	Cost ³	\$0.00	\$608,000	\$155,525,900
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).

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

³ - Costs were developed using RACER software. O&M for a 30-year duration is included, as applicable, for an alternative. Details provided in Appendix C of the FS.

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



PREFERRED ALTERNATIVE FOR AOI-06



Alternative 2: Land Use Controls, is the recommended preferred remedial alternative to achieve the explosive risks RAOs for AOI-06.

- Alternative 2 was ranked favorable for more criteria than were the other alternatives.
- It is protective of human health and the environment, is compliant with ARARs, is effective in the short term, and is favorable for implementability.
- Alternative 3 was favorable for only two criteria. The Alternative 2 cost is relatively low while the Alternative 3 cost is significant.



SUMMARY OF PREFERRED ALTERNATIVES

- ❑ For AOI-02, AOI-05, and AOI-06, it is the judgment of USACE that the preferred alternatives identified in the Proposed Plan, or one of the other alternatives considered in the detailed analysis (other than No Action), are necessary to protect human health or the environment from the actual or threatened hazards described.
- ❑ Based on information currently available, USACE believes the preferred alternatives meet the threshold criteria and provide the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria.
- ❑ USACE expects the preferred alternative to satisfy the following statutory requirements of CERCLA § 121(b): (1) be protective of human health and the environment; (2) comply with ARARs; (3) be cost-effective; (4) utilize permanent solutions and alternative treatment technologies to the maximum extent practicable; and (5) satisfy the preference for treatment as a principal element.



NEXT STEPS



- Public comments will be taken under consideration and responses will be prepared.
- Prepare a Decision Document that documents the remedial alternatives selected.
 - Public comments received will be summarized and the responses provided in the Responsiveness Summary section of the Decision Document. Note that comments provided during this virtual meeting can be included as a formal comment if requested by the commenter.
- The Final Decision Document will be placed on the New England District website at:
<https://www.nae.usace.army.mil/Missions/Projects-Topics/Camp-Wellfleet-FUDS/>



QUESTIONS OR COMMENTS



USACE invites questions and comments on this Proposed Plan throughout the public comment period (through February 06, 2022).

These can be submitted in writing or via email to:

Gina Kaso
Project Manager
U. S. Army Corps of Engineers, New England District,
ATTN: CENAE-PPE
696 Virginia Road
Concord, MA 01742-2718
(P) 978-318-8180
gina.a.kaso@usace.army.mil

Appendix C-3

Ad for Public Meeting in Cape Cod Times

January 3, 2022

Appendix C-4

USACE response letters to Massachusetts Department of Environmental Protection comments on Feasibility Study

Letter of submittal of Draft Final Proposed Plan to Massachusetts Department of Environmental Protection (August 9, 2021) and inquiry email (September 30, 2021)

Email to Massachusetts Department of Environmental notifying of start of public comment period (December 16, 2021)

Email to Massachusetts Department of Environmental regarding intention to remove AOI-05 from Decision Document (August 15, 2022) with NPS diagram and contractor scoping report



**DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751**

June 10, 2021

Programs and Project
Management Division

Mr. Leonard J. Pinaud
Chief, Federal Site Management Section
Bureau of Waste Site Cleanup
Massachusetts Department of Environmental Protection
20 Riverside Drive
Lakeview Massachusetts 02347

Re: MMRP Remedial Investigation through Decision Document, Former Camp Wellfleet,
Wellfleet Massachusetts (D01MA003300) – Draft Final Feasibility Study (FS) Response to
Comments and Final FS

Dear Mr. Pinaud

The U.S. Army Corps of Engineers (USACE), is pleased to provide the enclosed response to Massachusetts Department of Environmental Protection (MassDEP) comments on the Draft Final FS dated September 15, 2020 and additional MassDEP comments received via email dated April 22, 2021. As discussed during our April 7, 2021 comment resolution meeting, and due to limited technical comments, USACE has decided to proceed to Final FS and requests that further discussion regarding proposed ARARs, if warranted, be conducted during the Proposed Plan phase. As such, also attached is the Final FS dated June 2021. Please do not hesitate to contact the undersigned should you have questions.

Sincerely,

Gina A. Kaso
USACE, Project Manager

Enclosures

Ec: US National Park Service, Cape Cod National Seashore
Town Administrator, Town of Wellfleet



DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

June 10, 2021

Office of Counsel

Kendall Walker
MassDEP, Southeast Regional Office
Bureau of Waste Site Cleanup
20 Riverside Drive
Lakeville, MA 02347

Dear Mr. Walker:

Thank you for your response on the Wellfleet ARARs. We have considered your comments and made some changes to the Feasibility Study (FS). While we cannot accept all of your proposed ARARs, hopefully this letter will help explain USACE position on the subject. Please keep in mind that the FUDS program is subject to many rules and standards from USACE and the Department of Defense. During our last call, you indicated that you disagreed with some of these rules and interpretations of regulation. The New England District does not have the authority to act contrary to these rules or change them. We do not have discretion to negotiate these standards.

You also mentioned in your letter that many of the suggested ARARs have been accepted at other sites by other federal agencies. While we cannot speak to the practices of other agencies, USACE follows CERCLA's ARAR rules strictly. Whether or not another agency has previously accepted a suggested ARAR is not a factor in our determination. Even ARARs previously accepted at other USACE sites are reviewed to ensure applicability.

Per 42 U.S.C § 9621(d)(2)(A)(ii), it is the responsibility of the state to propose any ARARs based in state law. ("...identified to the President by the State in a timely manner...") By definition, a state regulation cannot be an ARAR if the state did not identify it for the federal government. For this reason, apart from providing limited suggestions, USACE will not independently identify state ARARs. USACE may help the state revise a proposed ARAR that does not meet all criteria, but the duty of identifying a qualifying ARAR remains with the state. The state is in the best position to perform this task because of its familiarity with its own laws, as compared to the federal government which performs work in every state.

Category 1:

The focus of Category 1 was the use of TBCs. Though it is not standard practice at USACE, we are willing to include TBCs within the FS. We will put them in a new table

alongside the ARAR table. It would not be appropriate to include them in the ARAR table because they follow different standards.

To qualify as a TBC, a citation cannot be a promulgated regulation. Taking that into account, the following will be included:

- Massachusetts 2015 Ocean Management Plan
- Massachusetts Stormwater Handbook Volumes I and 2 February 2008
- 2020 Standards and Guidelines for Chemicals in Massachusetts Drinking Waters
- Erosion and Sediment Control Guidance May 2003

Category 2:

Category 2 focused on whether proposed ARARs were specific enough to qualify or if they were too broad. In practice, this has significant overlap with Category 3 because proposed ARARs that are overly broad include administrative requirements and other language that does not meet the definition of an ARAR. The added difficulty with overly broad proposed ARARs is that it makes it hard for USACE to assist the state in narrowing the language down.

We reviewed the updated citations you provided:

- Row 1, Solid Waste Management regulations:
 - 310 CMR 19.014: Contains administrative requirements and requirements not relevant to the alternatives (e.g. landfill operation, dumping grounds, etc.).
 - 19.015: Administrative rather than substantive.
 - 19.016: Administrative rather than substantive.
 - 19.017: Contains administrative requirements and not relevant to the alternatives (e.g. restricted materials not applicable to the site).
- Row 15, Surface Water Quality Standards:
 - 314 CMR 4.04: Contains administrative requirements. However, 314 CMR 4.04(1) may qualify as an ARAR and shall be added to the FS.
 - 4.05: USACE will include 4.05(4)(a), 4.05(3)(b), and the parts of 4.05(5) that do not include administrative, permit, or notification requirement.
 - 4.06: Contains administrative requirements and does not provide a cleanup standard, standard of control, or other substantive requirements.
- Row 16, Wetlands Protection Act regulations:
 - 310 CMR 10.02: Contains administrative requirements.
 - 10.03: Too broad and contains administrative requirements.
 - 10.07: Administrative rather than substantive.
 - 10.12: Administrative rather than substantive.
 - 10.14: Administrative rather than substantive.
 - 10.22: Administrative rather than substantive.
 - 10.24: Administrative rather than substantive.
 - 10.25: USACE has already included (5)-(7) but the rest are administrative or not relevant (e.g. maintenance dredging, improvement dredging, etc.).

- 10.27: USACE has already included (3), (6), and (7) but the rest are administrative or not relevant (beach renourishment, human-made structures, etc.).
- 10.28: USACE has already included (3) and (6) but the rest are administrative or not relevant (buildings, dune development, etc.).
- 10.30: USACE will include (4) and (6) but the rest are administrative or not relevant (coastal engineering structures, etc.).
- 10.34: USACE has already included (4) and (5) but the rest are administrative or not relevant (movement of shellfish, projects to increase productivity, etc.).
- Row 21, Water Quality Certification:
 - 314 CMR 9.04: Administrative rather than substantive.
 - 9.06: Too broad and contains administrative requirements. However, USACE will include 314 CMR 9.06(2)(1st sentence). Though this project does not constitute dredging and, therefore, this requirement is not applicable, this provision was deemed relevant and appropriate.
 - 9.07: Too broad and contains administrative requirements. However, USACE will include 314 CMR 9.07(1)(a)(1st sentence). Though this project does not constitute dredging and, therefore, this requirement is not applicable, this provision was deemed relevant and appropriate.
- Row 22, Chapter 91:
 - 310 CMR 9.33: Administrative rather than substantive.
 - 9.35: Too broad and contains administrative requirements.
 - 9.40: USACE previously included 310 CMR 9.40(2)(b) (1st sentence) and 310 CMR 9.40(3)(b) (1st sentence). Though this project does not constitute dredging and, therefore, these requirements are not applicable, these provisions were deemed relevant and appropriate. The rest of 9.40 is administrative or not relevant (e.g. requirements related to the deepening of channels, beach renourishment, dredged material disposal, etc.).

Regarding Row 13, USACE will replace “relevant and appropriate” with “applicable.”

Category 3:

Category 3 focused on proposed ARARs that contain a mix of substantive and procedural requirements. The definition of an ARAR does not allow us to include administrative requirements. As previously mentioned, it is the responsibility of the state to propose any ARARs based in state law. ARARs are required to be site specific. Whether a specific regulation has been identified as a potential ARAR by a different agency for a different activity at a different site may not be relevant to whether the regulation is a potential ARAR for the specific activity at this site. We have reviewed your comments for Rows 5, 6, 14, and 17 but do not see any additional information that would warrant a change in the USACE response.

Category 4:

Your heading for Category 4 stated, "USACE states that the citations will either not be triggered, or else that USACE will comply with the regulation and that therefore the regulation can be excluded from the ARAR table." This is not accurate. Many of your suggested ARARs were conditional and based on the possibility of an event or activity happening in the future. Our response explained that when it is unlikely an event or activity will occur, then the standard is not an ARAR. Additionally, most of the suggestions in this category are also too broad and contain administrative requirements. In addition to our previous responses, additional comments are below:

- Row 2, 310 CMR 22.05-22.09, Drinking Water Regulations: These sections are too broad, contain administrative requirements, and contain standards that are not relevant to the site (non-applicable contaminants, water system management, etc.).
- Row 3, 310 CMR 40.0996, MCP Upper Concentration Limits: This section is too broad and contains standards that are not relevant to the site (non-applicable contaminants, etc.). However, the limits for the following from Table 6 shall be included: Antimony, lead, nickel, zinc, cyclotrimethylenetrinitramine [RDX], and 2,4-dinitrotoluene.
- Row 7, 310 CMR 30.606, Hazardous Waste Management Rules - Standards for Treatment, Storage and Disposal Facilities, and Miscellaneous Units: USACE will include the parts of 310 CMR 30.606(2) that do not include administrative, license, or notification requirement. The rest of 310 CMR 30.606 is predominantly administrative.
- Row 10, 310 CMR 7.00, Air Quality Standards:
 - 7.01, 7.06, 7.09-7.11: Because the proposed alternatives are unlikely to cause pollution, these sections are not relevant.
- Row 18, Ocean Sanctuaries Act, M.G.L. c. 132A, ss. 13-15:
 - 13: This section is administrative.
 - 14: This section is administrative.
 - 15: (3) and (4) will be included, but the rest is not relevant to this project (e.g. structures, electric generating stations, advertising, etc.).

Miscellaneous:

We reviewed your correction for Row 21 and our comments for your suggested citations are in Category 2. However, as explained above, we cannot search the regulation for additional substantive sections. It is the state's responsibility to identify any ARARs based in state law.

In response to your comments, USACE also made edits to the ARAR table so that the relationships between the ARARs and alternatives are more obvious.

Sincerely,

Jenna N. Gustafson
Assistant District Counsel
New England District
U.S. Army Corps of Engineers



DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

August 9, 2021

Programs and Project
Management Division

Mr. Leonard J. Pinaud
Chief, Federal Site Management Section
Bureau of Waste Site Cleanup
Massachusetts Department of Environmental Protection
20 Riverside Drive
Lakeview Massachusetts 02347

Re: MMRP Remedial Investigation through Decision Document, Former Camp Wellfleet,
Wellfleet Massachusetts (D01MA003300) – Draft Final Proposed Plan

Dear Mr. Pinaud

The U.S. Army Corps of Engineers (USACE) is pleased to submit the Draft Final Proposed Plan dated August 2021 for your review. We would appreciate receipt of comments or concurrence by 8 September 2021. Please do not hesitate to contact the undersigned should you have questions.

Sincerely,

Gina A. Kaso
USACE, Project Manager

Enclosures

Ec: US National Park Service, Cape Cod National Seashore
Town Administrator, Town of Wellfleet

From: Kaso, Gina A CIV USARMY CENAE (USA) <Gina.A.Kaso@usace.army.mil>
Sent: Thursday, September 30, 2021 9:26 AM
To: Len Pinaud (leonard.pinaud@state.ma.us); Walker, Kendall (DEP)
Cc: Beckwith, Todd T CIV USARMY CENAB (USA); Thomas Bachovchin; Sullivan, Heather L CIV USARMY CENAE (USA)
Subject: FW: Former Camp Wellfleet (D01MA003300) Draft Final Proposed Plan
Attachments: Camp Wellfleet DF PP Submit to DEP _ 9Aug 2021.pdf; Draft Final_Proposed Plan_Camp Wellfleet_9 Aug 2021.pdf

Good Morning Len and Kendall!

Happy end of FY21!

I am touching base with you to inquire about the status of the subject review. Hoping we can be your first concurrence of FY22!

Thanks,

Gina A. Kaso
JBCC Program Manager and COR
MMRP Project Manager
USACE, New England District

Gina.A.Kaso@usace.army.mil

978.318.8180 (Office)
508.713.3718 (Cell)

From: Kaso, Gina A CIV USARMY CENAE (USA)
Sent: Monday, August 9, 2021 1:18 PM
To: Len Pinaud (leonard.pinaud@state.ma.us) <leonard.pinaud@state.ma.us>; Walker, Kendall (DEP) <kendall.walker@state.ma.us>
Cc: Thomas Bachovchin <Thomas.Bachovchin@ertcorp.com>; Beckwith, Todd T CIV USARMY CENAB (USA) <Todd.T.Beckwith@usace.army.mil>; Sullivan, Heather L CIV USARMY CENAE (USA) <Heather.L.Sullivan@usace.army.mil>; Taylor, Nicole <Nicole_Taylor@nps.gov>; brian.carlson@wellfleet-ma.gov
Subject: Former Camp Wellfleet (D01MA003300) Draft Final Proposed Plan

Good afternoon Kendall and Len,

Hope all is well. Attached for your review, and hopefully concurrence, is the draft Final PP. We look forward to hearing from you.

Thank you,

Gina A. Kaso
JBCC Program Manager and COR

MMRP Project Manager
USACE, New England District

Gina.A.Kaso@usace.army.mil

978.318.8180 (Office)
508.713.3718 (Cell)

From: Kaso, Gina A CIV USARMY CENAE (USA) <Gina.A.Kaso@usace.army.mil>
Sent: Thursday, December 16, 2021 10:48 AM
To: Len Pinaud (leonard.pinaud@state.ma.us); Walker, Kendall (DEP); Sullivan, Heather L CIV USARMY CENAE (USA); Morin, Gary P CIV USARMY CENAE (USA)
Cc: Beckwith, Todd T CIV USARMY CENAB (USA); Thomas Bachovchin
Subject: Camp Wellfleet Proposed Plan Public Meeting
Attachments: Former Camp Wellfleet (D01MA003300) Draft Final Proposed Plan (8.85 MB); FW: Former Camp Wellfleet (D01MA003300) Draft Final Proposed Plan (8.86 MB)

Good Morning Len and Kendall

Please refer to the attached emails and the information below. Hope this holiday season finds you well. We are proceeding with the public comment period. Should you have comments in response to the attached we can address during this time. Below provides public comment schedule and link to project information/website. Look forward to you joining us on Jan 12th.

- Publish notice Jan 3, 2022
- Start public comment period Jan 3 (first Monday in Jan) and go 35 days through Feb 6.
- Schedule virtual meeting for Wednesday, Jan 12.

<https://www.nae.usace.army.mil/Missions/Projects-Topics/Camp-Wellfleet-FUDS/>

Thank you.....Merry Christmas,

Gina A. Kaso
JBCC Program Manager and COR
MMRP Project Manager
USACE, New England District

Gina.A.Kaso@usace.army.mil

978.318.8180 (Office)
508.713.3718 (Cell)

From: Kaso, Gina A CIV USARMY CENAE (USA) <Gina.A.Kaso@usace.army.mil>
Sent: Monday, August 15, 2022 11:14 AM
To: Len Pinaud (leonard.pinaud@state.ma.us); Walker, Kendall (DEP)
Cc: Sullivan, Heather L CIV USARMY CENAE (USA); Morin, Gary P CIV USARMY CENAE (USA); Beckwith, Todd T CIV USARMY CENAB (USA)
Subject: Cape Cod National Seashore's Comments on the Proposed Plan for the Camp Wellfleet Formerly Used Defense Site
Attachments: Project Scoping Tool Assessment Information.pdf; Camp Wellfleet Letter.pdf; 211221_Marconi Beach-Diagram-r.pdf

Good Morning Len and Kendall,

Please refer to the emails below and the attached documents.

NPS recently advised they plan to demolish the existing bathroom/Lifeguard breakroom facility within AOI-05 and reconstruct within AOI-05 as shown in the attached documents. Per the email below, and after consultation with our office of counsel, USACE has determined the best path forward is to remove AOI-05 from the project. USACE will re-evaluate AOI -05 considering the "NEW" reasonably anticipated future use described in the attached documents and recommend a remedy that insures the site is safe to accept future construction. The DD is currently under development/revision and will reflect the removal of AOI-05. A separate FS, PP and DD will be prepared for AOI-05. Will keep you apprised of all actions going forward. I am available to discuss at your convenience.

Thank you,

Gina A. Kaso
JBCC Program Manager and COR
MMRP Project Manager
USACE, New England District

Gina.A.Kaso@usace.army.mil

978.318-8180 Office
508.713.3718 Cell

From: Kaso, Gina A CIV USARMY CENAE (USA)
Sent: Thursday, July 28, 2022 10:28 AM
To: Taylor, Nicole <Nicole_Taylor@nps.gov>
Cc: Carlstrom, Brian <Brian_Carlstrom@nps.gov>; James Stuby <Jim.Stuby@ertcorp.com>; Beckwith, Todd T CIV USARMY CENAB (USA) <Todd.T.Beckwith@usace.army.mil>; Sullivan, Heather L CIV USARMY CENAE (USA) <Heather.L.Sullivan@usace.army.mil>; Morin, Gary P CIV USARMY CENAE (USA) <Gary.P.Morin@usace.army.mil>; McInerny, Joseph P CIV USARMY CENAE (USA) <Joseph.P.McInerny@usace.army.mil>; Gustafson, Jenna N CIV USARMY CENAE (USA) <Jenna.N.Gustafson@usace.army.mil>

Subject: RE: Cape Cod National Seashore's Comments on the Proposed Plan for the Camp Wellfleet Formerly Used Defense Site

Good Morning Nicole,

Upon review of NPS plans for future construction in AOI-05, USACE has determined the best path forward is to remove AOI-05 in its entirety from the current project, revise the decision document to reflect the change and prepare a separate FS, proposed plan and decision document for AOI-05. USACE will re-evaluate AOI -05 considering the "NEW" reasonably anticipated future use described in the attached documents and recommend a remedy that insures the site is safe to accept future construction. A remedy can only be implemented once. Therefore USACE will coordinate with NPS to identify a construction footprint that adequately supports future requirements and also allows for contingency to accommodate final design. The next step is to coordinate with the technical team and contractor to identify tasks and develop a schedule. I will provide details as they become available. As we are quickly approaching the end of the FY, I expect that this will not take shape until early FY23. Until then, please don't hesitate to reach out should you have questions and I'll do my best to address.

Thank you,

Gina A. Kaso
JBCC Program Manager and COR
MMRP Project Manager
USACE, New England District

Gina.A.Kaso@usace.army.mil

978.318-8180 Office
508.713.3718 Cell

From: Taylor, Nicole <Nicole_Taylor@nps.gov>

Sent: Tuesday, July 5, 2022 10:05 AM

To: Kaso, Gina A CIV USARMY CENAE (USA) <Gina.A.Kaso@usace.army.mil>

Cc: Sullivan, Heather L CIV USARMY CENAE (USA) <Heather.L.Sullivan@usace.army.mil>; Beckwith, Todd T CIV USARMY CENAB (USA) <Todd.T.Beckwith@usace.army.mil>; James Stuby <Jim.Stuby@ertcorp.com>; Carlstrom, Brian <Brian_Carlstrom@nps.gov>

Subject: [Non-DoD Source] Re: [EXTERNAL] RE: Cape Cod National Seashore's Comments on the Proposed Plan for the Camp Wellfleet Formerly Used Defense Site

Hi everyone,

I apologize. One of the documents sent was a copy of the cover letter. Attached are the appropriate documents. A hard copy will follow.

Thank you,
Nicole

Nicole Brooks Taylor

Safety & Occupational Health Specialist
NPS Interior Region 1/Cape Cod National Seashore
99 Marconi Site Road
Wellfleet, MA 02667
Ph: (508) 957-0741
Fax: (508) 349-9052

From: Taylor, Nicole <Nicole_Taylor@nps.gov>

Sent: Friday, July 1, 2022 2:28 PM

To: Kaso, Gina A CIV USARMY CENAE (USA) <Gina.A.Kaso@usace.army.mil>

Cc: Sullivan, Heather L CIV USARMY CENAE (USA) <Heather.L.Sullivan@usace.army.mil>; Beckwith, Todd T CIV USARMY CENAB (USA) <Todd.T.Beckwith@usace.army.mil>; James Stuby <Jim.Stuby@ertcorp.com>; Carlstrom, Brian <Brian_Carlstrom@nps.gov>

Subject: Re: [EXTERNAL] RE: Cape Cod National Seashore's Comments on the Proposed Plan for the Camp Wellfleet Formerly Used Defense Site

Hi Gina,

I apologize for the delay. We were waiting on a report from region. Please see attached and let us know if you need anything else from us.

Thank you,
Nicole

Nicole Brooks Taylor
Safety & Occupational Health Specialist
NPS Interior Region 1/Cape Cod National Seashore
99 Marconi Site Road
Wellfleet, MA 02667
Ph: (508) 957-0741
Fax: (508) 349-9052

FACILITY ENGINEERING ASSOCIATES, P.C.

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April 29, 2022

National Park Service
Interior Region 1, NER
1234 Market Street
Philadelphia, PA 19106

**SUBJECT: Final Report for Project Scoping Assessment
Rehabilitate Marconi Maintenance Facility and other Facilities within Marconi Beach
Site
Cape Cod National Seashore (CACO)
NPS Order No. 140P2020F0329
FEA Project No. R05.2020.001260**

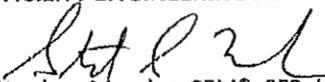
Facility Engineering Associates, P.C. (FEA) has completed the project scoping assessment (PSA) for Cape Cod National Seashore (CACO). This assessment was completed as part of the National Park Service (NPS) Order No. 140P2020F0329. A draft report dated February 25, 2022, was previously issued for review. This final report has been revised based on comments from the Park and Region.

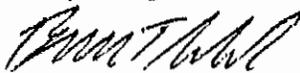
The scope of this PSA was to rehabilitate the Marconi maintenance facility and other facilities within the Marconi Beach site. This report provides narratives to facilitate development of required inputs in the Project Management Information System (PMIS), as well as supplemental information about the identified project.

We appreciate the opportunity to assist NPS in its efforts to address deferred maintenance at this park. If you have any questions, need additional information, or require clarification on any matter, please contact us.

Respectfully,

FACILITY ENGINEERING ASSOCIATES, P.C.


Stephen Meador, CEM®, SFP, LEED AP O+M
Facility Management Consultant


Brian T. Isleib
Senior Project Manager


John Edwards, P.E., CFM, FMP
Vice President/Associate



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Attachments:

- Appendix A – Project Cost Estimate
- Appendix B – Maps / Site Location
- Appendix C – Illustrated Scope of Work
- Appendix D – Photographs
- Appendix E – Glossary of Acronyms
- Appendix F – Project Information Form (PIF)



1.0 EXECUTIVE SUMMARY

FEA completed this PSA to provide the NPS with necessary information to input the identified project into PMIS. Note that the intent of this report is to provide NPS with narratives to assist with developing the following sections in PMIS: (2.0) Project Description; (3.0) Justification; (5.0) Measurable Results; (6.0) Scope of Benefits; (7.0) Investment Strategy; and (8.0) Consequences of Failure to Act. The additional sections in this report provide supplemental and supporting information.

The project scope of work and PMIS narratives presented in this report were developed through close coordination with NPS staff during the PSA planning meetings, site visit assessments, and a closeout presentation given by FEA to NPS staff following the site visit. Conceptual plans may be presented to clarify the PSA's understanding of the scope of work. However, the scope of work, cost estimate, and any conceptual plans presented in this PSA report are not intended to dictate or constrain future design iterations and the final project outcome. Additional planning, compliance, value engineering, and design efforts will be completed by others in the future to further develop and modify the scope of work as the project progresses towards final construction.

This assessment was completed with coordination between Cape Cod National Seashore (CACO) Staff, NPS Northeast Region Staff and FEA. Representatives from each of these groups met at the site to perform the assessment November 15-19, 2021. FEA's team of staff and subconsultants included Steve Meador (FEA), Doug Yon (FEA), Natalie Lord (Form+Works Design Group, LLC), and Ed White with McDonough Bolyard Peck (MBP), Bill Gregg and Abigail Griffith from Studio CPG provided remote support, as did Jeff Harsha (FEA).

Designated a National Park at John F. Kennedy in 1961, Cape Cod National Seashore encompasses 43,607 acres of dunes and woodlands along Cape Cod, Massachusetts. The outer shoreline facing the Atlantic includes an area at South Wellfleet known as Marconi Beach, named after Italian inventor Guglielmo Marconi. Marconi built a wireless radio station here on a high coastal bluff from which he transmitted the station's first transatlantic messages in 1903. The site is best known for enabling ship to shore communications with historic vessels such as RMS Titanic and RMS Lusitania. The Marconi Wireless Station Site is listed on the National Register of Historic Places.

The Marconi Beach facilities under consideration include two public-facing facilities, as well as four maintenance support facilities and a maintenance yard.



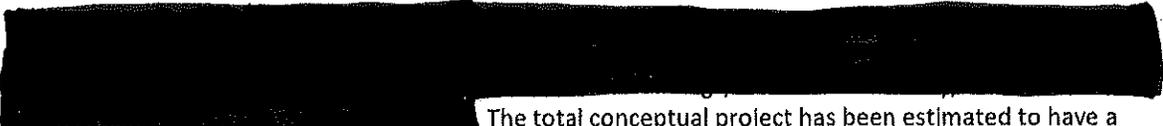
The assets assessed for this project are listed by location numbers and include:

Site

- 38464 Marconi Maintenance Area Grounds

Buildings

- 38460 Marconi Maintenance Building
- 38462 Marconi Garage-Maintenance Offices
- 38461 Marconi Storage Building
- 38474 Marconi Site Comfort Station
- 38481 Marconi Beach Bathhouse
- 38491 Marconi Pump House B



The total conceptual project has been estimated to have a NET Cost of Construction of [REDACTED]. This project may be separated, if necessary, into components for phasing in construction procurement with partial funding. The component estimates are sub-totaled and address individual components. The core component project is considered essential to the program and function and should be constructed first. The additional component projects may be phased as subsequent projects as recommended by the assessment team.

Core component project: Marconi Beach Bathhouse. [REDACTED]

Subsequent component projects (recommended order to be identified by NPS):

- | | | |
|----|-------------------------------|--------------------|
| a. | Maintenance Area Grounds. | Amount: [REDACTED] |
| b. | Maintenance Building. | Amount: [REDACTED] |
| c. | Garage-Maintenance Office. | Amount: [REDACTED] |
| d. | Storage Building. | Amount: [REDACTED] |
| e. | Marconi Site Comfort Station. | Amount: [REDACTED] |
| f. | Pump House. | Amount: [REDACTED] |

2.0 PROJECT DESCRIPTION

This project will rehabilitate and reconfigure assets within the Marconi Beach area, including public facilities [REDACTED]. The Bathhouse will be demolished, and a new facility configured for improved functionality will be constructed at a safe distance from the zone of coastal erosion. [REDACTED]

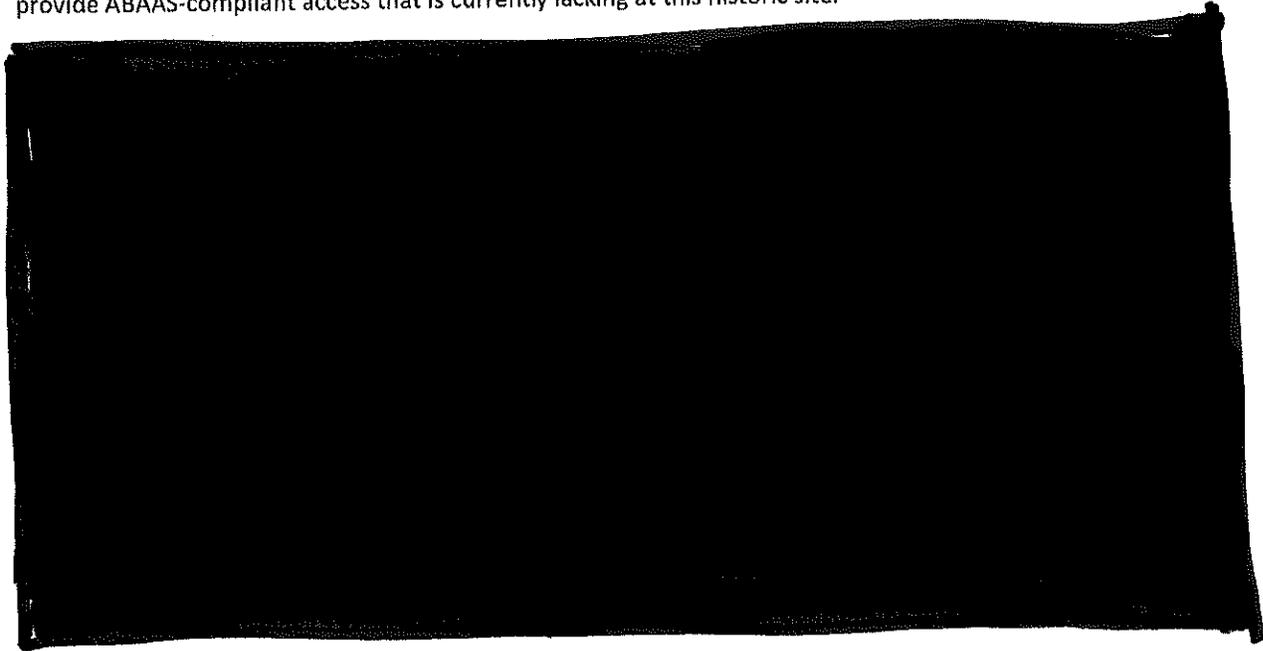


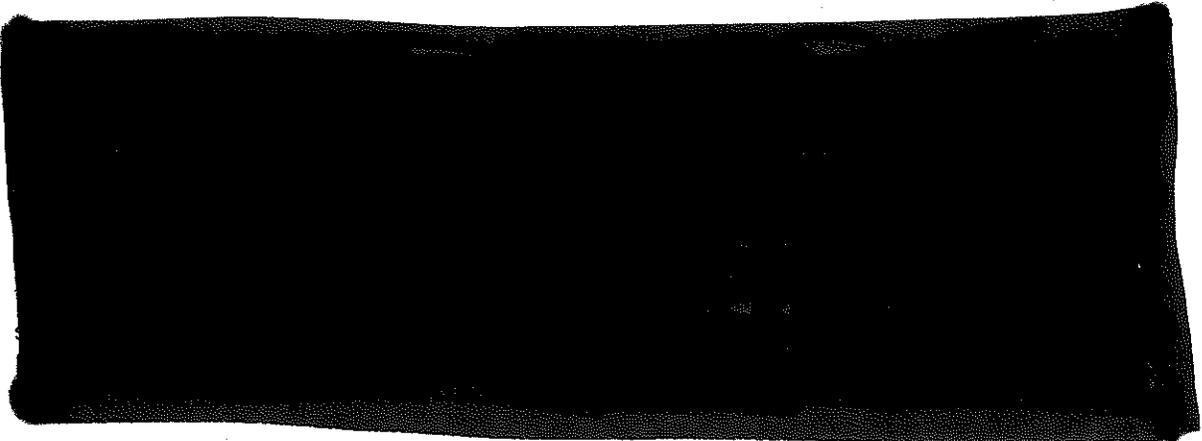
The Pump House will have an exterior rehabilitation while the Comfort Station will have both interior and exterior rehabilitation, including accessibility improvements.

3.0 JUSTIFICATION



Two public-facing facilities are within the scope of this project: a Bathhouse and a Comfort Station. The Marconi Beach Bathhouse is located roughly 100 feet from the edge of a 50-foot-tall coastal bluff. This area is eroding at a rate of three to six feet annually, and the U.S. Geological Survey has noted its vulnerability to sea-level rise. Unlike other public beach furnishings, such as boardwalks and stairways, the Bathhouse has equipment and utilities that cannot be exposed to dynamic environmental forces. With time, the risk to this facility will rapidly increase. The Bathhouse requires demolition and reconstruction approximately 300 feet west, in a more stable environment. This relocation provides an opportunity for reconfiguration to better serve the public and NPS staff. Current requirements include a larger, integrated storage space, single-occupant (gender-neutral) restrooms and changing rooms, improved accessibility, and a more functional lifeguard office. This relocation and reconfiguration will ensure this key asset can continue to fully serve the public and NPS staff for the foreseeable future, but it should be carefully designed to minimize new impervious areas and to properly manage stormwater runoff. The Comfort Station requires minor rehabilitation, but its primary need is reconfiguration to provide ABAAS-compliant access that is currently lacking at this historic site.





4.0 SCOPE OF WORK

The project scope of work and PMIS narratives presented in this section were developed through close coordination with NPS staff during the PSA planning meetings, site visit assessments, and a closeout presentation given by FEA to NPS staff following the site visit. NPS staff in charge of managing this PSA have previously agreed to the general direction and limits of this PSA project. The project scope of work and cost estimate include details to ensure the team has captured various aspects of the project that may drive costs during design and construction. Conceptual plans may be presented to clarify the understanding of the stated scope of work. However, the scope of work, cost estimate, and any conceptual plans presented in this PSA report are not intended to dictate or constrain future designs and the final project outcome. The PSA is primarily a planning exercise to establish the initial project funding request in PMIS. Where multiple possible options were discussed for any particular scope item, FEA typically included the higher-cost option into the project scope of work in order to ensure adequate budget is available to cover any of the various options. Additional planning, compliance, value engineering, and design efforts will be completed by others in the future to further develop and modify the scope of work as the project progresses towards final construction.

The anticipated scope of work for this project is broken down by building and site within the park as follows:

Marconi Beach Bathhouse (FMSS 38481)

The ongoing erosion at Marconi Beach is threatening the existing bathhouse facility and access to the beach. A 2003 U.S. Geological Survey assessment indicated that the Marconi Beach area has a "Moderate" Coastal Vulnerability Index (CVI) when considering relative vulnerability of the coast to future sea-level rise within CACO, with expected impacts that include shoreline erosion and threats to cultural and historic resources as well as infrastructure. Shoreline erosion at this location has been estimated at three to six feet annually. The goal of this scope is to relocate the existing bathhouse complex to a more stable location and facilitate a controlled retreat from the beach area while keeping successful site elements in place, including the existing parking lot, sidewalks, beach access trails, and stairs. Optional improvements that are not included in this scope or cost estimate are rebuilding existing beach access trails and stairs.



Site

- Install temporary fence to establish site perimeter, approximately 460 LF of 6-foot-high chain link fence.
- Install approximately 460 LF of silt fence for erosion control:
 - Existing bathhouse complex: 170 LF
 - New bathhouse area: 290 LF
- Demolish composite boardwalk and concrete paving at the existing complex, approximately 4,000 SF.
- Construct a new beach outlook structure at the existing complex. Construction and materials would include:
 - Composite decking, 2,500 SF
 - Cedar split rail fencing, 170 LF, including cedar posts on 5-foot centers with footings
 - Two benches
 - New concrete pads for two benches and one trash receptacle (receptacle provided by the park)
- Repair existing beach access trails:
 - Cedar slats, 210 LF
 - Cedar split rail fence, 420 LF, including cedar posts on 5-foot centers with footings
- Clear and grub existing landscape for new bathhouse complex construction, approximately 9,800 SF.
- Clear and grub existing landscape for new septic system, approximately 300 SF.
- Install new cedar split rail wood fence, approximately 300 LF.
- Restore all disturbed areas with American Beach Grass plugs spaced at 12 inches on center, approximately 7,000 SF.

Structures

- Demolish existing structures, including restrooms, changing rooms, lifeguard office, outdoor showers, and storage building, approximately 6,750 SF total. Haul away all building materials, concrete foundations, footers, etc. and dispose of at approved location. Cap all existing services and cap connection to existing septic field.
- Construct two new buildings on concrete piers at the new bathhouse complex site approximately 300 LF west of existing complex:
 - Building 1: Men's, women's, and family restrooms, lifeguard office, storage rooms, approximately 2,250 SF.
 - Building 2: Men's, women's, and family changing rooms, approximately 2,000 SF.
- Install the following walkways within the new complex:
 - New cedar boardwalk decking at the entry corridor, breakoff space, and lifeguard outdoor break area, approximately 4,250 SF.
 - Six-inch-thick concrete at building entry ways, showers, storage entry, and staging area, approximately 960 SF. Concrete to be installed on 6-inch aggregate base course on compacted sub-grade.

Furnishings

- Install the following furnishings within the new bathhouse complex:
 - Install new open air shower facility, including center wall with shower fixtures on two sides. Provide 2-inch by 4-inch wood framed walls with 1-inch marine-grade plywood sheathing up to eight feet high. Install wood shingle siding and painted wood trim exterior to match existing construction. Install six shower fixtures.
 - Install approximately 35 LF of 5-foot-high privacy screening, wood framed with plywood sheathing approximately one foot from grade level, near the showers.
 - Install new exterior stainless steel drinking fountain and bottle filling station.
 - Install eight benches.
 - Install three picnic tables.
 - Install six bike racks (single).
 - Provide allowance to install concrete footers below deck as needed to support furnishings, including benches, trash receptacles, picnic tables, and bike racks.
 - Install cedar split rail fencing, approximately 200 LF.

Exteriors and Interiors

- For Building 2, men's, women's, and family dressing rooms: provide 2-inch by 4-inch wood framed walls with 1-inch marine-grade plywood sheathing up to eight feet high. Install wood shingle siding and painted wood trim exterior to match existing construction. Install shower enclosure with plumbing and fixture within each room. Surround with resilient paneling.
- For men's dressing room: install 84 LF of built-in benches with composite deck material.
- For women's dressing room: install 84 LF of built-in benches with composite deck material. Create fourteen dressing stalls with 2-inch by 4-inch wood framed partitions with 1-inch marine-grade plywood to match existing.
- For family dressing room: install four LF of built-in bench with composite decking material. Install fiberglass door with stainless steel hinges and hardware.
- For the Restroom, Lifeguard, and Storage building (Building 1):
 - Assume 2-inch by 6-inch wood framed construction with 1-inch marine grade exterior plywood. Install building wrap and wood shingle siding. Install painted wood trim to match existing construction.
 - Install five single and six double metal exterior doors with stainless steel hardware.
 - Install seven insulated glass metal windows and provide obscured glass at two windows.
 - Install women's restroom with six toilets, three sinks, stainless steel partitions and doors, ceramic tile floors and full height wainscot, and painted gypsum board ceilings. Provide toilet accessories including mirrors, toilet tissue dispensers, hand dryers, soap dispensers, etc. One toilet area shall be fully ABAAS-compliant while all fixtures and accessories shall be labeled ABAAS-compliant.
 - Install men's restroom with four toilets, two urinals, three sinks, stainless steel partitions and doors, ceramic tile floors and full height wainscot, painted gypsum board ceilings. Provide toilet accessories including mirrors, toilet tissue dispensers, hand



dryers, soap dispensers, etc. One toilet area shall be fully ABAAS-compliant while all fixtures and accessories shall be labeled ABAAS-compliant.

- Install terrazzo mop sink and fixtures and four LF of built-in storage shelves in Janitor's closet.
- Install two single occupant restrooms each with a toilet, sink, ceramic tile floor and full height wainscot, and painted gypsum board ceiling. Provide toilet accessories including mirror, toilet tissue dispenser, hand dryer, soap dispenser, etc. One restroom (public) shall be fully ABAAS-compliant while all fixtures and accessories shall be labeled ABAAS-compliant.
- In lifeguard office, install gypsum wall board at all interior walls and ceilings. Provide wood door and window trim. Install sealer on concrete floor. Install 10 LF kitchenette casework with sink and faucet. Install 35 LF of built-in work countertop.
- In storage rooms, install 55 LF of built-in storage shelving.
- Install wood framed roof with plywood sheathing, building wrap, sheet metal gutters, downspouts and flashings, and cedar shingles.

Mechanical

- For the lifeguard office, install ductless, through-wall unitary heat pump. Include wall structure to support the HP unit and a wall-bolted exterior security cage allowing for unit service access. For estimating purposes, assume a 500 SF space requiring 1.25 tons of cooling. Include electrical fully wired service (minimum 20-amp disconnect at the panel) and unit condensation piping to waste.
- For Building 1, provide for separate ducted natural ventilation systems for each enclosed space, including the men's restroom, women's restroom, single occupant restroom, lifeguard office, and storage area.

Plumbing

- Install 50 LF of new 2-inch buried water service piping (C900 PVC or HDPE) to tie the new complex into the site water main.
- Install 75 LF of new ¾-inch buried water distribution piping (HDPE).
- Provide for domestic water service, plumbing facilities, and associated piping per the exteriors and interiors requirements above for Buildings 1 and 2, along with site furnishings.
- Install a small electric domestic water heater (approximately 6-gallon capacity) and associated electrical distribution in the lifeguard office to support the kitchenette.
- Construct and connect new septic system directly adjacent (west) of new bathhouse complex.

Electrical

- Install new medium voltage underground duct bank with one 4-in conduit, assume 100 LF.
- Install one 50 kVA, 120/240 volt, one-phase secondary pad mounted utility transformer.
- Install one new cold sequence disconnect switch and in-line utility meter.
- Install 100-amp, 120/240 V one-phase, 30-pole, 14kAIC panelboard in a wall-mounted NEMA Type 3R enclosure in Building 1.
- Provide for new electrical service, distribution, interior lighting, and devices per the exteriors and interiors requirements above for Building 1.

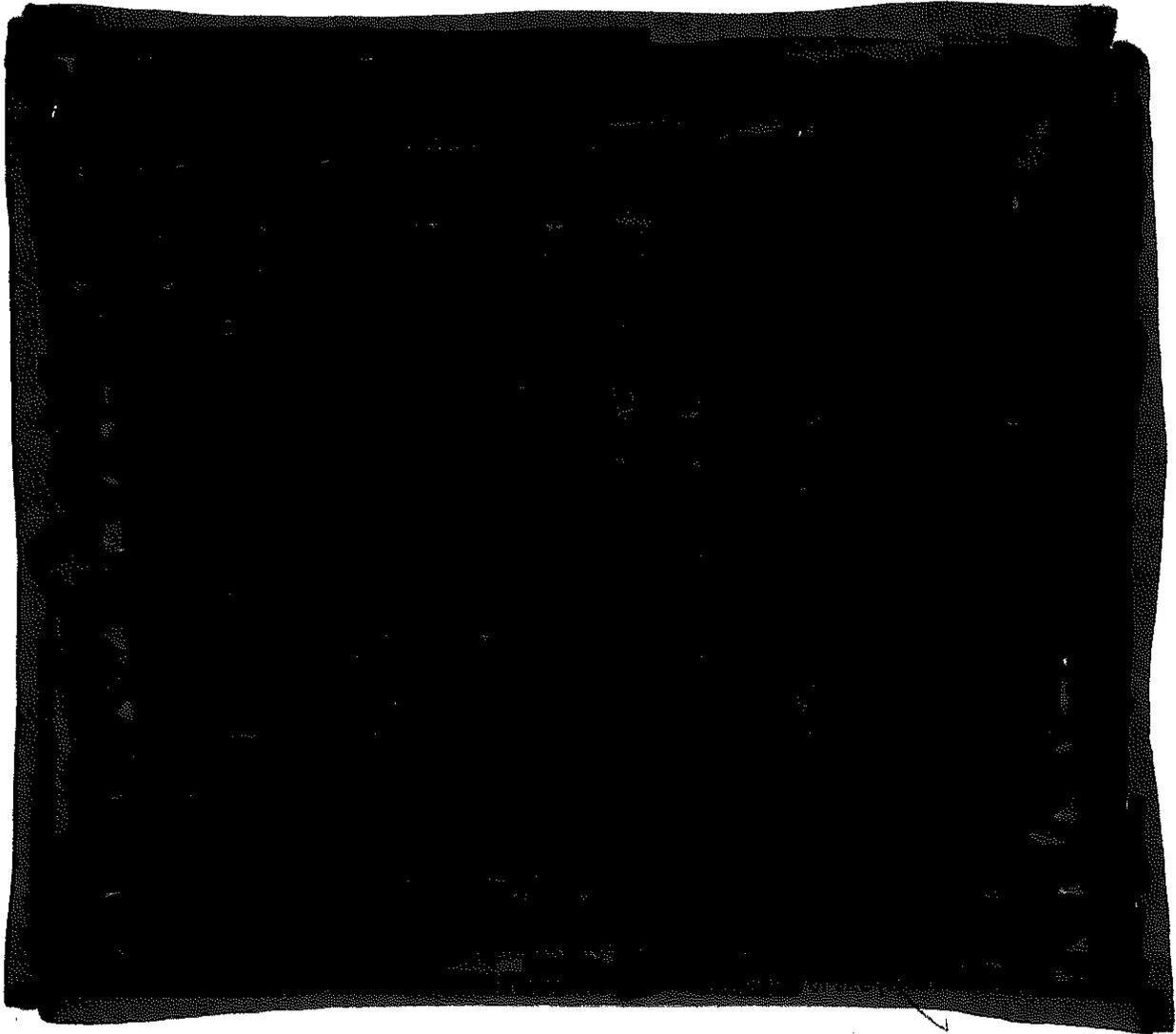
- Provide lighting for Building 2.
- For the kitchenette in Building 1, provide separate convenience outlets suitable for refrigerator, microwave oven, and other small appliances. Install GFI outlets near wet facilities (i.e., sink).
- Install exterior lighting at the bathhouse complex that uses UL/FM compliant LED fixtures, follows IESNA minimum lighting level standards, and is consistent with the NPS Night Sky program.

Fire & Life Safety

- None

Communications/Security

- None





APPENDIX C – ILLUSTRATED SCOPE OF WORK

MARCONI BEACH BATHHOUSE

DRAFT

Cape Cod National Seashore
Marconi Beach

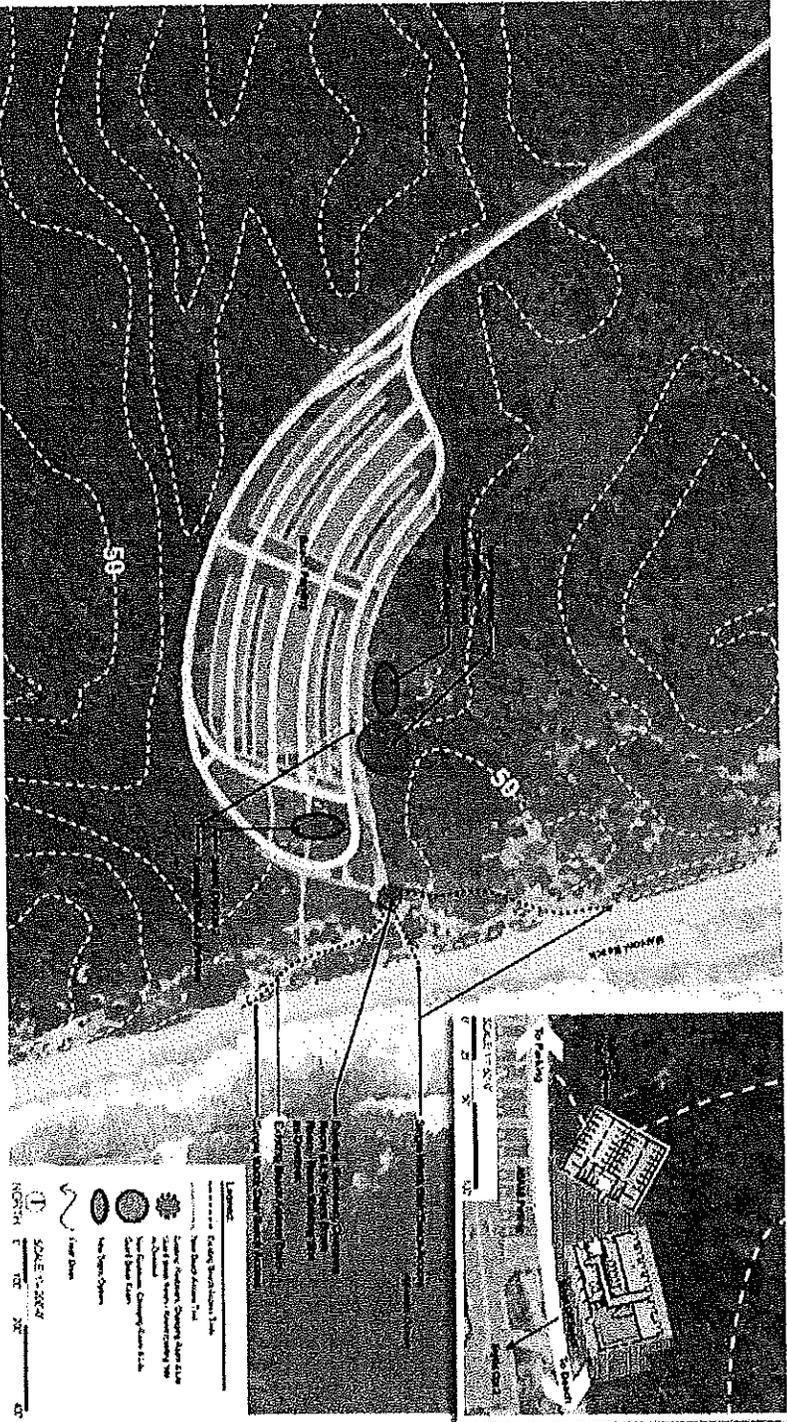
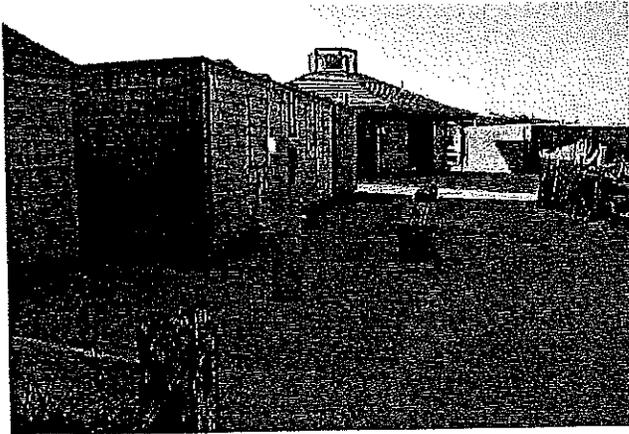


Image Source: Studio CPG

Note: This plan is presented as a concept for PSA project scope development. It is not intended to dictate or constrain future design iterations and the final project outcome. Additional planning, compliance, value engineering, and design efforts will be completed by others in the future.



Photograph 1

The Marconi Bathhouse is situated roughly 100 feet from the edge of a 50-foot-tall coastal bluff that is rapidly eroding. The facility consists of multiple structures including restrooms, changing rooms, a lifeguard office, and a storage building. The facility requires a more stable location.

Appendix C-5

National Park Service comments on Proposed Plan (February 4, 2022)

National Park Service comments on Proposed Plan (July 1, 2022)

National Park Service concurrence email on Selected Alternative for AOI-02 and AOI-06 (August 9, 2022)



IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE
Cape Cod National Seashore
99 Marconi Site Road
Wellfleet, MA 02667

A38

Date: February 4, 2022

Gina Kaso
U.S. Army Corps of Engineers
USACE New England District CENAE-PPE
696 Virginia Road
Concord, MA 01742-2718

Re: Cape Cod National Seashore's Comments on the Proposed Plan for the Camp Wellfleet Formerly Used Defense Site

Dear Ms. Kaso,

Thank you for the opportunity to comment on the U.S. Army Corps of Engineer's Proposed Plan for the Camp Wellfleet Formerly Used Defense Site (FUDS) located in Wellfleet, MA. As you know, I am the Superintendent of Cape Cod National Seashore and current landowner of this site.

I would like to raise concerns over the U.S. Army Corps of Engineer's current preferred Remedial Alternative 2 to mitigate unacceptable explosive risks due to munitions and explosives of concern (MEC) that may remain within the Camp Wellfleet FUDS in the Area of Interest, AOI-05.

The current preferred Remedial Alternative 2 suggests only Land Use Controls be used in the vicinity of Marconi Beach and its associated facilities. Currently, the Park is in the planning stages to relocate the Marconi Beach facilities and parking lot to adapt to coastal erosion beginning in 2026. This project and potential future projects will disturb much of this area and will include demolishing buildings, removing the existing septic system, new excavations for utility lines and septic system, and new facilities being built. Because of this, the park respectfully requests that Alternative 3, which includes both Land Use Controls and Partial MEC removal be selected for this area.

Sincerely,

Brian Carlstrom
Superintendent, Cape Cod National Seashore



IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE
Cape Cod National Seashore
99 Marconi Site Road
Wellfleet, MA 02667

A38

Date: July 1, 2022

Gina Kaso
U.S. Army Corps of Engineers
USACE New England District CENAE-PPE
696 Virginia Road
Concord, MA 01742-2718

Re: Cape Cod National Seashore's Comments on the Proposed Plan for the Camp Wellfleet Formerly Used Defense Site

Dear Ms. Kaso,

As you are aware, the National Park Service (NPS), through the Cape Cod National Seashore, is the federal agency with land management jurisdiction over the Camp Wellfleet Formerly Used Defense Site (FUDS) located in Wellfleet, MA.

Recently, the U.S. Army Corps of Engineers (USACE) completed its Draft Decision Document outlining the preferred remedial alternatives to protect public health, welfare and the environment from unacceptable explosive risks associated with munitions and explosives of concern (MEC) that may remain within the Camp Wellfleet FUD Site. Most of the preferred remedial alternatives suggest Land Use Controls be used in the remaining Areas of Interest (AOI). Land Use Controls include education, signage, and fencing.

Although most of these AOIs are in heavily wooded areas where the proposed Land Use Controls would be acceptable under present anticipated use, the Seashore does have plans to demolish and relocate the Marconi Beach facilities to adapt to coastal erosion. This project will heavily disturb land in the current AOI-05. Disturbance will include demolishing existing buildings, removing the existing septic system, new excavations for utility lines and septic system to a depth of 15 feet, and new facilities being constructed. The Seashore's developed beach access areas are managed through a retreat and rebuild strategy to sustain visitor use. The Marconi Beach access is the fourth location planned to follow this strategy consistent with the Seashore's General Management Plan, and Foundation Document. The Seashore has identified the potential future location of these facilities and associated infrastructure within AOI-05 (see attached pertinent Project Scoping Tool Assessment and proposed concept map). The proposed concept map is not intended to dictate or constrain future iterations and may not depict the final project outcome.

As you know, remediation of FUD sites is subject to the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Response actions selected under CERCLA must protect public health and welfare and the environment from threats posed by hazardous substances and must comply with applicable or relevant and appropriate requirements (ARARs), including location-specific ARARs that arise based on the location of the contamination. The assessment of whether a remedial alternative will be protective is based, in part, on the reasonably foreseeable future uses of the site, which help identify potential human receptors that may be exposed to contamination left at the site. In addition, at units within the National Park System including Cape Cod National Seashore, the NPS Organic Act's non-impairment requirement is a location-specific ARAR that requires that remediation eliminate impairment of park resources and allow for the intended uses of those resources.

Because of anticipated land disturbance during demolition and construction, the Seashore respectfully requests that the current and future Marconi Beach facility areas be removed from the existing AOI-05, that these areas be established in a separate AOI, and that new remedial alternatives be evaluated for this new AOI that will be appropriately protective of public health in light of the intended future use of this location. The Seashore is also requesting future USACE demolition and construction support for this project. This proposal would allow the USACE to finalize the Proposed Plan/Decision Document with the revised AOI-05 and ensure future FUD site demolition and construction are completed safely with appropriate expert oversight.

We look forward to continuing this discussion with you on this matter.

Sincerely,



Brian Carlstrom
Superintendent, Cape Cod National Seashore

From: Taylor, Nicole <Nicole_Taylor@nps.gov>
Sent: Tuesday, August 9, 2022 12:08 PM
To: Kaso, Gina A CIV USARMY CENAE (USA)
Cc: Sullivan, Heather L CIV USARMY CENAE (USA); Beckwith, Todd T CIV USARMY CENAB (USA); James Stuby; Carlstrom, Brian
Subject: [Non-DoD Source] Re: [EXTERNAL] Cape Cod National Seashore's Comments on the Proposed Plan for the Camp Wellfleet Formerly Used Defense Site

Hi Gina,

Yes, the NPS concurs with the selection of Alt 2 and recommended LUCs for AOI 02 and 06. We would like to review and comment on the LUC Implementation Plan (LUCIP) prior to implementation.

Thank you,
Nicole

Nicole Brooks Taylor
Safety & Occupational Health Specialist
NPS Interior Region 1/Cape Cod National Seashore
99 Marconi Site Road
Wellfleet, MA 02667
Ph: (508) 957-0741
Fax: (508) 349-9052

From: Kaso, Gina A CIV USARMY CENAE (USA) <Gina.A.Kaso@usace.army.mil>
Sent: Tuesday, August 9, 2022 11:32 AM
To: Taylor, Nicole <Nicole_Taylor@nps.gov>
Cc: Sullivan, Heather L CIV USARMY CENAE (USA) <Heather.L.Sullivan@usace.army.mil>; Beckwith, Todd T CIV USARMY CENAB (USA) <Todd.T.Beckwith@usace.army.mil>; James Stuby <Jim.Stuby@ertcorp.com>; Carlstrom, Brian <Brian_Carlstrom@nps.gov>
Subject: [EXTERNAL] Cape Cod National Seashore's Comments on the Proposed Plan for the Camp Wellfleet Formerly Used Defense Site

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Good morning Nicole,

USACE is moving forward with the final DD. The DD will reflect the preferred alternative for AOI 02 and 06 is alternative 2, Land Use Controls, LUCs. As developed for the Camp Wellfleet FUDS, Alternative 2 may include the use of signage installed in appropriate locations to limit access by providing awareness of potential

hazards, education (training, pamphlets, flyers) concerning the hazards suspected to be present within the AOI, and periodic visual inspections to evaluate changing site conditions. These LUCs are designed for both the and ocean AOI to limit land or resource use by providing information that helps modify or guide human behavior at the site. Specific details of the LUCs, including type, frequency, duration, etc., will be provided in a LUC Implementation Plan (LUCIP).

NPS provided no comments on the Final FS. Therefore our understanding is NPS concurs with the selection of Alt 2 and recommended LUCs. We will be required to implement alternative/LUCs included in DD. Failure to do so would be considered non-compliance with DD. Purpose of this email is to request NPS acknowledge selected remedy and provide concurrence.

Thank you,

Gina A. Kaso
JBCC Program Manager and COR
MMRP Project Manager
USACE, New England District

Gina.A.Kaso@usace.army.mil

978.318-8180 Office
508.713.3718 Cell

Appendix C-6

USACE Responses to Questions Received at the Public Meeting (Virtual) for the Camp Wellfleet FUDS
Proposed Plan

APPENDIX C-6

USACE Responses to Questions Received at the Public Meeting (Virtual) for the Camp Wellfleet FUDS Proposed Plan

Helen Miranda Wilson: I serve on the Select Board. I'm speaking, however, only on my sole behalf here. I was a delegate of the Select Board but I'm here because I am on the Select Board. When the Armed Forces, whatever agency or agencies, decided to lease this property in 1942, if that's what I understood from what you just presented – and thank you, it was a great presentation – who owned all those acres? 1,738 acres. Did I get that right? Who owned all that then and who was the...? Which federal agency or agencies were the lessees and who leased it? Who owned it and who leased it?

USACE: Available information regarding this question is summarized in the RI report, but the primary source of information is the Final Archives Search Report (ASR) dated 08 February 2007, by the Rock Island District of the USACE. The property was acquired (by condemnation) by the War Department in 1943 and leased until 1961. A parcel map dated October 1943 in Appendix L of the ASR lists the names of landowners affected by the acquisition. In 1961 the Department of the Interior took possession of the property by a Declaration of Taking (included in Appendix G of the ASR) for use as part of the Cape Cod National Seashore, as it remains today. The ASR is available at the Wellfleet Public Library.

Wellfleet Public Library
55 West Main St.
Wellfleet, MA 02667
(508) 349-0310
wellfleetlibrary.org

In addition, historical aerial photographs (available from United States Geological Survey via <https://earthexplorer.usgs.gov/>) dated 21 November 1938 show that the property was not developed apart from a few gravel roads.

Helen Miranda Wilson: It would be also good to see a copy of that lease because during the time that it was used – and my experience with leases – usually there are conditions and I'm wondering if any of the conditions

covered possible effects that had to be mitigated during the time that the property was leased. Who actually leased it back then? Which federal agency was leasing it?

USACE: No original lease information has been found. However, the ASR includes a Declaration of Taking (Appendix G-1 of the ASR) and a map of the 1945 parcels that comprise Camp Wellfleet (Appendix L-1 of the ASR). All available information on the lease is in the ASR described in the response above.

Helen Miranda Wilson: The stuff that's in the ground has been there for roughly 80 years, starting in 1942, and it's slowly disintegrating. And it is a problem if it blows people up, you know, if they dig down. I am most concerned with the slow leaching of whatever is being taken apart by the earth of all these different materials, a lot of which have gone below the areas you're talking about dealing with and, you probably know that there are these fresh water aquifers which are the only source of fresh water and that what is even more critical on this property is it's right at the interface of salt water and fresh water. Now, fresh water... some of it does leach out through the interface into the ocean and there are places where you can actually see that here and there. But, generally, the fresh water moves slowly under the land mass, west and, I guess my punchline here is, why are we talking about partial removal? It should *all* be removed, in my opinion or, that is what I would wish for under the circumstances given how toxic it is. And the phrases "deemed feasible" and "acceptable conditions": these are being determined by the Army Corps of Engineers, not by the people who actually live here. And I have generally friendly feelings toward the Army Corps because you help us in a lot of ways and I respect that, but this really worries me.

USACE: The Remedial Investigation (RI) report (available at the Wellfleet Public Library) includes a comprehensive and robust munitions constituents (MC) investigation. This investigation focused on the potential leaching of chemicals out of either the propellants, energetics, or even the casings of the munitions themselves, wherein heavy metals might leach into the soil and then potentially into the groundwater. To investigate this, we did a stepped out investigation, biasing our soil sampling areas toward those places where munitions had previously been found. Additionally, at the request of NPS we sampled their supply well (drinking water supply).

As described in the RI report, no site soil sampling results were greater than their project screening levels (PSLs) or USEPA Ecological Soil Screening Level (Eco-SSLs). Further, all site soil sampling results were less than the impact to groundwater screening levels, and the groundwater sampling

results were less than their PSLs. Based on these results, no release of MC metals or explosives that would present a risk to human health or the environment has occurred. Finally, we note that the RI report was reviewed and finalized/approved through MassDEP.

The RI report and other documents for Camp Wellfleet are available at the Wellfleet Public Library:

Wellfleet Public Library
55 West Main St.
Wellfleet, MA 02667
(508) 349-0310
wellfleetlibrary.org

Helen Miranda Wilson: How do we see the MC sampling results? We get to see your recommendations, your analysis of that. But how do we actually see them, because I've looked at a good number of sampling results for water and it's interesting... you know, you can have something that's just below an acceptable level and it would be just good for the powers that be, here, whether it's the Park – I don't know if the Park cares about this or not – but, you know, for the people in the town to be able to look at that, particularly the people who live more or less west of this area. So how could we see the actual MC sampling results, not just your analysis? Is that possible?

USACE: Yes. All of that information is in the RI report, including the raw analytical data. It's a very well organized report. You'll find answers to all of your basic questions, including how that sampling was done and where it was done, what the conclusions are, what the results are, what the comparison standards are, and what the screening levels were.

USACE wishes to stress that the Army conducts these investigations in accordance with standards and regulations that are established by the EPA and by the state, so we're not conducting our investigations based on our standards. They're the state's standards and the Federal government's standards – EPA and MassDEP.