

U.S. Army Corps of Engineers Proposes Remediation and Requests Public Comments

Tisbury Great Pond Munitions Response Area Formerly Used Defense Site (FUDS)

Martha's Vineyard, Massachusetts

June 11, 2015

Text in bold italics indicates that a word/phrase is included in the glossary at the end of this Proposed Plan.

MARK YOUR CALENDAR!

The U.S. Army Corps of Engineers will hold a **public meeting** to present the preferred remedial alternative and proposed plan with an opportunity to ask questions.

Public Meeting

Date: June 23, 2015

Time: 6:30 – 8:00 p.m.

Place: West Tisbury Free Public Library Program Room

We invite questions and comments at the public meeting or in writing during the public comment period.

Public Comment Period

15 June to 17 July 2015

Comments must be postmarked or e-mailed by midnight 17 July 2015. Comment can also be submitted orally at the meeting or in writing by mail or e-mail to:

Amec Foster Wheeler Environment & Infrastructure, Inc.

ATTN: Ms. Donna Sharp
9725 Cogdill Road
Knoxville, Tennessee 37932
donna.sharp@amecfw.com

Questions regarding this project can be directed to the US Army Corps of Engineer's Project Manager, Ms. Carol Ann Charette at 978-318-8605 (Office) or 978-505-2918 (Cell).

Project Information Repository

This Proposed Plan is available in the project **information repository**, at the **West Tisbury Free Public Library (1042A State Rd, West Tisbury, MA 02539)**. This repository also contains technical reports and community outreach material specific to the Tisbury Great Pond Munitions Response Area.

This Proposed Plan is presented by the United States Army Corps of Engineers (USACE) to facilitate public involvement to review and comment in the remedy selection process at the Tisbury Great Pond **Munitions Response Area (MRA)** which covers approximately 1,082 acres. This MRA is a Formerly Used Defense Site (FUDS), Project Number D01MA0453, located on Martha's Vineyard, Massachusetts (see Figure 1). The MRA is further divided into two **Munitions Response Sites (MRS)**:

- Tisbury Great Pond MRS (123 acres); and
- Remaining Land and Water MRS (959 acres).

USACE is proposing "**Subsurface Clearance**" as the Preferred Alternative for the Tisbury Great Pond MRS and No Action is proposed for the Remaining Land and Water MRS (where no risk was identified). The proposed remediation is designed to protect people from coming in contact with **Munitions and Explosives of Concern (MEC)** at both MRSs.

The FUDS program addresses the potential explosives safety, health, and environmental issues resulting from past munitions use at former defense sites under the Department of Defense (DoD) **Military Munitions Response Program**, established by the U.S. Congress under the **Defense Environmental Restoration Program**. The FUDS program only applies to properties that transferred from DoD before October 17, 1986. The Army is the executive agent for the FUDS program, and USACE is the program's lead agency with Massachusetts Department of Environmental Protection (MassDEP) as the regulatory agency. In fulfilling its obligations under FUDS, the first priority of USACE is the protection of human health, safety, and the environment.

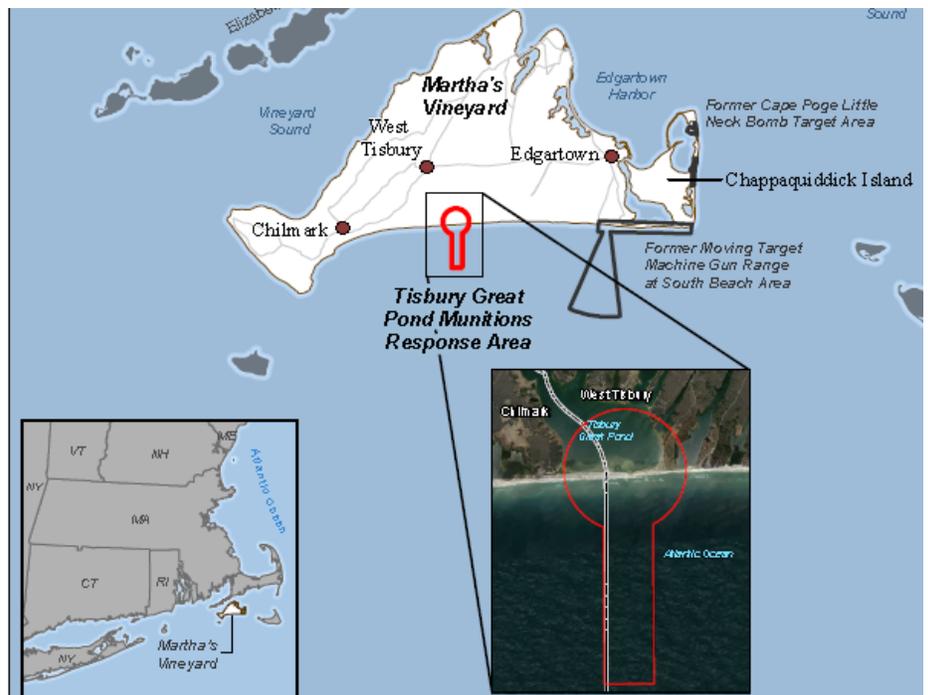


Figure 1 – Site Location

USACE will select a final remedy for the Tisbury Great Pond MRA after considering all state and public comments. The public is encouraged to review supporting technical documents and community outreach material that are available in the project **information repository**, located at the West Tisbury Public Library. This project information repository provides copies of documentation included in the **Administrative Record file** for the MRA. The official Administrative Record file for the Tisbury Great Pond MRA is located at the USACE, New England District 696 Virginia Road, Concord, Massachusetts 01742-2751, and is maintained by USACE. The selected remedy will be announced in a public notice in local newspapers and finalized in the **Decision Document**.

The FUDS program follows the requirements of the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)** and the **Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)** of 1980 and its amendments of 1986. This **Proposed Plan** is prepared to be consistent with the requirements of *Title 40 Code of Federal Regulations (CFR) Section 117(a) of CERCLA, Section 300.430(f) (2) of the NCP, and the U.S. Environmental Protection Agency (EPA) guidance.

The Proposed Plan describes the remedial alternatives considered for the Tisbury Great Pond MRS (Figure 2) and identifies the remedial alternatives. The public has until 17 July 2015, to comment on the Proposed Plan. See the **Mark your Calendar** box on Page 1 to find out how to submit comments.

ABOUT THE TISBURY GREAT POND MRA

Between 1943 and 1947, the MRA was used as a practice dive bombing and strafing range. Strafing and masthead targets were constructed at the MRA in support of the U.S. Navy's fighter training program. Military practice ordnance potentially used at the MRA included 0.30 and 0.50 caliber ammunition; miniature (3-5 pounds) practice bomb series including AN-Mark (MK)5 Mod1, MK23, and MK43; and large (100-500 pound) practice bomb series including MK5, MK15, and MK21. Additionally, spotting charges (also called signals) were used in the practice bombs to permit pilots to observe bombing accuracy. Since the end of military operations in 1947, numerous reports identifying practice bombs, primarily consisting of pieces of 100

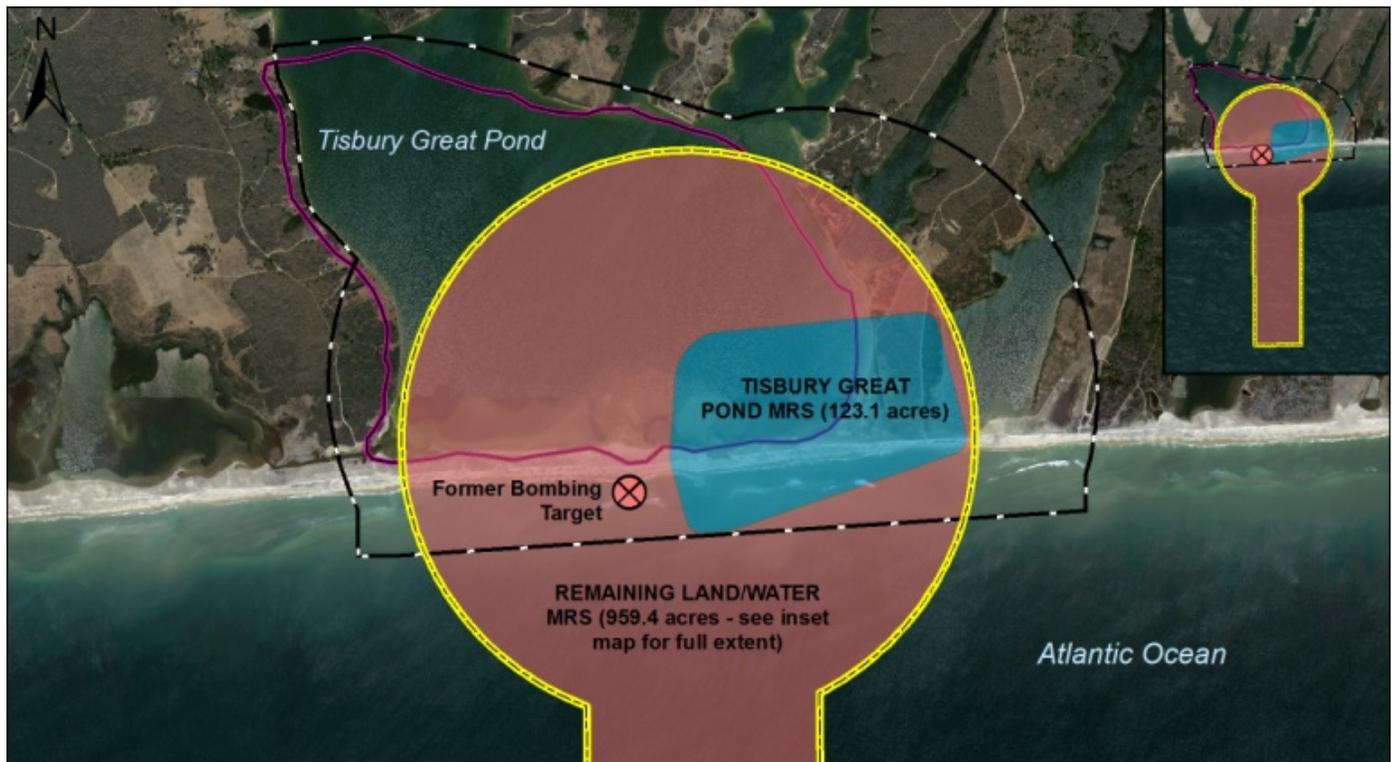


Figure 2 – Tisbury Great Pond and Remaining Land and Water MRSs

*Section 300.430(f)(1)(ii) and 300.430(f)(4)(i) of the NCP requires public participation in the process of approving a proposed decision document. This Proposed Plan summarizes the technical documents available in the project information repository located at the West Tisbury Free Public Library.

pound practice bombs and AN-MK23s containing spotting charges have been identified at the MRA by local residents, wildlife refuge officials, and USACE personnel (Alion, 2008). The practice bombs that remain at the MRA present a potential explosive safety hazard.

The site has been subjected to numerous investigations and actions under CERCLA. In 1996, the USACE conducted an Inventory Project Report and determined the site presented a potential hazard to the public and was an eligible project under the FUDS program. USACE conducted an Archives Search Report in 1999 to gain further information on historical use and potential hazards, and this report was supplemented in 2004 by USACE with additional information.

In September 2008, a Site Inspection (SI) was performed on the site to determine if further responses under CERCLA were warranted. Qualified unexploded ordnance and environmental technicians conducted the field inspection using visual surveys and analog geophysical instruments (metal detectors). Soil sampling was conducted to determine if any chemical hazards from metals and explosives, otherwise known as **Munitions Constituents (MC)**, were present. The Site Inspection found potential hazards and recommended the MRA be moved forward in the CERCLA process and a **Remedial Investigation (RI) conducted**.

Before the RI was conducted, the Navy Explosive Ordnance Detachment (EOD) responded to six emergency calls associated with potential ordnance being found at the MRA. Of the six items discovered (100 pound bombs or pieces of 100 pound bombs), five were determined to be free of explosive hazard and the sixth was destroyed due to a determination that it was a munition potentially containing high explosives.

USACE conducted the RI in 2010-2011 to collect data necessary to determine the nature and extent of potential MEC, **Munitions Debris (MD)**, and MC resulting from historical military activities conducted within the MRA. To achieve the RI goals, various field investigative activities were conducted including: geophysical surveys, intrusive investigations, and environmental sampling and chemical analysis of MCs. These activities were conducted within the RI Investigation Area, which extends beyond the boundary of the Tisbury Great Pond MRA.

During the intrusive investigation, 6 MEC items and 31 MD items were recovered. Recovered items included intact and expended AN-MK23, 3-pound practice bombs with spotting charges. Based upon these results, the Tisbury Great Pond MRA was subdivided into the following two MRSs:

- Tisbury Great Pond MRS (123 acres); and,
- Remaining Land and Water MRS (959 acres).

Currently, the site is owned by The Trustees of Reservations (TTOR), the Commonwealth of Massachusetts (inland and coastal waters), and private landowners. The land is part of the Massachusetts Coastal Zone and Long Point Wildlife Refuge. Currently, the site is a designated shellfish and blue claw crab fisheries area and is actively harvested for oysters, clams, crabs, and fish. The entire barrier beach at the southern end of the pond is privately owned, with many different landowners owning a narrow strip of land extending from the pond to the Atlantic Ocean. The beach is used for recreational purposes. It is anticipated that the future land use will remain the same.

The topography of the MRA is relatively flat with sand dunes, which range in height from approximately 5 to 12 ft. Elevations range from sea level to approximately 3 ft above mean sea level (msl) near the southern coastline to approximately 15 ft above msl in the northern portion of the site. There is a barrier beach that separates Tisbury Great Pond, a brackish pond, from the Atlantic Ocean. On occasion, the barrier beach is breached by storm events. In addition, the Town Sewers breach the beach several times a year to lower the elevation of the pond and to hydraulically connect the pond to the ocean to allow the pond to discharge freshwater to the Atlantic Ocean and allow saltwater to enter the pond. The breach closes naturally after each of these events. Eelgrass is sparse in Tisbury Great Pond but it supports a productive fin fish community. Opening the pond allows alewives, an anadromous species, to enter and spawn in the upper estuary. Striped bass, bluefish, white perch, and American eel are also present in the pond. Recreational fishing is popular along the beach and at the cut channel when it is opened.

The MRA is mapped as "Core Habitat" and "Critical Natural Landscape" by the Massachusetts Natural Heritage Endangered Species Program (MA NHESP) BioMap2 town report for Edgartown (MA NHESP, 2012). Core habitat identifies areas that are critical to long-term persistence of rare species in Massachusetts. Critical Natural Landscape encompasses habitat used by wide ranging species (e.g. tern), large areas of contiguous habitat, and buffer habitat. The MRA is within Core Habitat area 102 and Critical Natural Landscape area 45.

The MRA provides habitat for a variety of plants and animals. Federally-listed threatened and endangered species, state-listed endangered species, state-listed threatened species, and state-listed special species of concern may be present within the Tisbury Great Pond MRS. Specific species of concern observed within the MRS are Piping Plover, Roseate Tern, and the Northeastern Tiger Beetle.

NATURE AND EXTENT OF MEC, MD, AND MC CONTAMINATION

Munitions and Explosives of Concern (MEC and MD)

Within the Tisbury Great Pond MRS, MEC was found between 6 inches and 2 feet below ground surface (bgs). In the dunes, MEC was found at a depth of 2 feet bgs below the base of the dune. All of the total quantity of MEC and MD recovered was discovered within the subsurface. No MEC items were identified during intrusive investigations performed in the Remaining Land and Water MRS

Munitions Constituents

Between October and November 2011, environmental sampling for MCs was conducted at the MRA and included the collection of discrete, surface and subsurface soil samples, sediment samples, and groundwater samples. Samples were analyzed for MCs, including antimony, copper, lead, nickel, and zinc, and explosive compounds previously identified as components of munitions identified within the Investigation Area. Analytical results indicated that lead is present at concentrations exceeding ecological screening criterion at three surface and subsurface soil sample locations, but below the human health screening criterion. All other detections of metals in soil and groundwater were below human health and ecological screening criterion. No explosives were detected in soil samples collected. In groundwater, no explosives were detected. In sediment, lead and nickel were detected at concentrations exceeding ecological screening criteria at four locations, but below human health screening criterion.

Because some of the lead values exceeded the ecological screening criterion, background sediment and surface water samples were collected from the northern fingers of Tisbury Great Pond in August, 2013. The background samples were analyzed for lead and nickel. The discrete sediment samples showed lead and nickel at concentrations of 34 mg/kg and 21 mg/kg, respectively. The background sediment concentrations (lead and nickel at 32 mg/kg and 16 mg/kg, respectively) are similar to the discrete sediment samples collected from Tisbury Great Pond. Although the concentrations of lead and nickel in surface sediment from Tisbury Great Pond exceeded the USEPA Region 3 ecological screening levels, their potential for risk was found to be insignificant based on the 95% upper confidence level concentrations. Background sediment concentrations also exceeded the USEPA Region 3 ecological screening levels for lead and nickel.

Human Health and Ecological Risk Evaluations for MC

A Human Health Risk Assessment (HHRA) was conducted during the RI to provide a comprehensive assessment of potential risks to individuals that may be exposed to hazardous MC at the Investigation Area. The HHRA concluded that there is no unacceptable risk to human health from MC at the Investigation Area.

A Screening-Level Ecological Risk Assessment (SLERA) was performed to evaluate risks posed to ecological receptors (plants, invertebrates, herbivores, predators, and marine receptors) due to exposures to residual MCs. Based on the low concentrations of MCs within soil, sediment and groundwater samples, and the results of this assessment, it was concluded that none of the MCs evaluated pose a potential risk to ecological receptors.

SCOPE OF THE PROPOSED PLAN

This Proposed Plan addresses only the remedial alternative selected by USACE to manage the risks that have been identified specifically at the Tisbury Great Pond MRA. Based on the information and data collected for the MRA, USACE anticipates that the proposed remediation will be the final action needed at Tisbury Great Pond MRS and No Action is needed at the Remaining Land and Water MRS.

SUMMARY OF RISKS

Based on the results of previous actions and the RI, a significant amount of MEC and MD (which indicated the potential for MEC to exist) was found during characterization of the Tisbury Great Pond MRS. The RI concluded that an *explosive safety hazard* exists at the Tisbury Great Pond MRS. An explosive safety hazard is the possibility that a MEC item will explode or burn and potentially cause harm if handled or disturbed. Based on the presence of MEC identified during the RI, a *MEC Hazard Assessment (HA)* was performed. Under current conditions, the Tisbury Great Pond MRS received a hazard level category of 1, indicating the highest level of potential explosive hazard conditions is present. The HHRA did not identify any risk to human receptors from MC, and the SLERA did not identify a significant risk to ecological receptors. Therefore, no action for MCs is required at the Tisbury Great Pond MRS, however, a MEC hazard exists requiring further action.

Because no MC risk or MEC hazard was identified in the Remaining Land and Water MRS, the Preferred Alternative is No Action for that MRS.

REMEDIAL ACTION OBJECTIVE

A *Feasibility Study (FS)* was performed for the Tisbury Great Pond MRS after the RI Report was completed in June 2014. An FS is a detailed analysis that develops viable remediation alternatives and examines the pros and cons of applying the alternatives to a specific MRS to achieve a desired **Remedial Action Objective (RAO)**. The RAO for Tisbury Great Pond is to protect recreational users, landowners, visitors, and workers conducting activities such as boating, fishing, and swimming at the MRS from explosive hazards associated with MEC exposure in and below the dunes and in the top three feet of subsurface soil or sediment during intrusive activities and from exposure of munitions due to dune erosion. The FS was finalized in June 2015.

SUMMARY OF REMEDIATION ALTERNATIVES

USACE conducted a detailed analysis of four alternatives for the Tisbury Great Pond MRS. The alternatives were evaluated against seven of the nine criteria required by CERCLA and the NCP (*see criteria explanation on page 8*). Since criteria 8 and 9 are dependent on state and community acceptance, they are considered after the public comment period closes. The alternatives for each MRS are summarized below. Additional details are available in the technical documents provided for public information in the project information repository located at the West Tisbury Free Public Library.

Tisbury Great Pond MRS Alternative 1 - No Action

CERCLA requires that a “no action” alternative be evaluated for the purpose of comparison to the other proposed alternatives. This alternative means no action would be taken to locate, remove, and dispose of MEC. In addition, no public awareness or education training would be initiated with regard to the risk of MEC. For the No Action alternative, it is assumed that no change to the current land use of the Tisbury Great Pond MRS would occur. There would be no **Applicable or Relevant and Appropriate Requirements (ARARs)** associated with this alternative. **Cost - \$0**

Tisbury Great Pond MRS Alternative 2 – Land Use Controls

Alternative 2 would consist of various **Land Use Control (LUC)** components to prevent humans from encountering MEC remaining at this MRS. LUCs for this MRS would consist of posting signs at public access locations, distributing brochures and fact sheets notifying the public of explosive safety hazards associated with MEC and to follow the Army’s 3Rs policy (i.e., Recognize, Retreat, Report – when

encountering MEC (*see last page of this Proposed Plan for more information on the 3Rs*), as well as an educational component to provide site-specific awareness training for the local community. Although legal mechanisms of control cannot be imposed by the federal government, the implementation of a LUC alternative based on public awareness and education components would provide a means for USACE to coordinate an effort to reduce munitions handling by unqualified/untrained personnel (i.e., private residents, TTOR personnel, contractor/maintenance personnel, and recreational users/visitors) through behavior modification. Alternative 2 will achieve the RAO through exposure controls as long as the LUCs remain in place. The LUC components can be readily implemented as there are no associated technical difficulties, and the materials and services needed to implement this alternative are available. There are no ARARs associated with Alternative 2 and since this alternative reduces the exposure to MEC rather than the amount of MEC, it is contingent upon the cooperation and active participation of the local government, with the existing property owners, local responders, and the general public who use the MRS. Approximately 6 months would be required to establish LUCs associated with Alternative 2. Since this remedial alternative will not allow for unlimited use and unrestricted exposure, Five Year Reviews are required by the NCP (40 CFR 300.430(f)(4)(ii)). Five Year Reviews will continue until any munitions remaining on-site are at levels at or below those allowing for unlimited use and unrestricted exposure. **Alternative 2 Costs = \$369,000 (Alternative) + \$42,000 x 6 (Five Year Reviews) = \$622,000**

Tisbury Great Pond MRS Alternative 3 – Partial Subsurface Clearance with LUCs

Alternative 3 includes removal of subsurface MEC to approximately 3 feet below ground surface in the open areas (33.5) and 3 feet to possibly 6 feet in/under the dunes (5 acres), Figure 3. LUCs would be implemented on the remaining inland water and ocean areas, as described in Alternative 2. The RAO (to protect recreational users, visitors, and workers at the MRS from explosive hazards associated with MEC exposure in the top three feet of subsurface soil during intrusive activities and by MEC exposed due to dune erosion) would be achieved to a high degree of certainty and would allow recreational activities that could involve intrusive activities. The RAO will also be achieved through exposure control utilizing LUCs. This alternative includes the excavation and sifting of the dunes, which comprises approximately 5 acres of the MRS. It is estimated that the dunes are 12 feet high. The dunes would be excavated in lifts and the sand would be sifted to remove MEC. Approximately 3 to

possibly 6 feet below the dunes would also be excavated and sifted. DGM would be conducted at the base of the

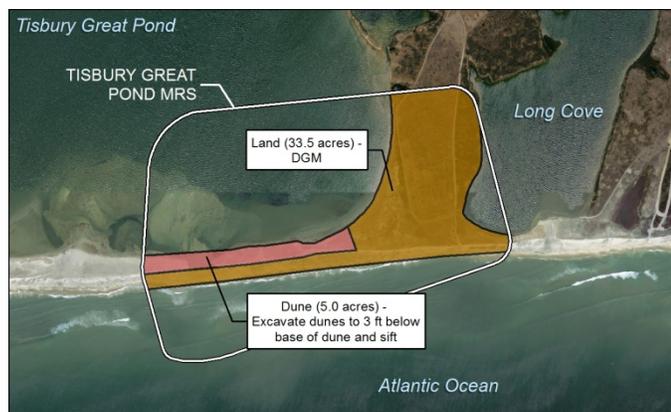


Figure 3 – Tisbury Great Pond MRS Alternative 3: Subsurface Clearance

excavation and individual anomalies excavated as needed to a total depth of 3 to 6 feet below the base of the dune. However, if anomalies are detected below a dug anomaly, they will be investigated, removed, and properly disposed of. The dunes would be restored upon completion of sifting operations.

Detection of MEC would be performed using digital detection instrumentation proven to work effectively at the site during the RI. Once identified, munitions would be dug using hand-tools. All munitions would require inspection prior to removal to determine if they contain an explosive hazard or if they are safe to move. If potentially explosive, the munitions would be detonated in place using standard operating procedures to minimize risks to workers. Items identified as safe would be removed and taken off-site for recycling. After completion of the subsurface clearance, the site would be re-vegetated with native grasses and post-construction monitoring of re-vegetated areas would occur for three years or until vegetation has been successfully restored.

Since sensitive species are known to exist within the MRS, this alternative would require coordination with MA NHESP and TTOR and a rare plant and wildlife habitat evaluation would be conducted during development of the work plan in accordance with MA NHESP guidelines. The field work would be scheduled to avoid sensitive species as much as possible. Work would also be coordinated with the Massachusetts Historical Commission and the Wampanoag Tribal Historic Preservation Office.

Thirty-one ARARs were identified for the Tisbury Great Pond MRS Alternative 3 (See Table 1 for a list of ARARs). Alternative 3 would comply with all ARARs. Procedures for ensuring compliance would be developed in the Remedial Action Work Plan.

This alternative would also include LUC components and would require Five Year Reviews. It is estimated that partial clearance under Alternative 3 would require approximately 6 months including establishing LUCs.

Alternative 3 Costs - \$7,829,000 (Alternative) + \$42,000 x 6 (Five Year Reviews) = \$8,079,000

Tisbury Great Pond MRS Alternative 4 –Subsurface Clearance

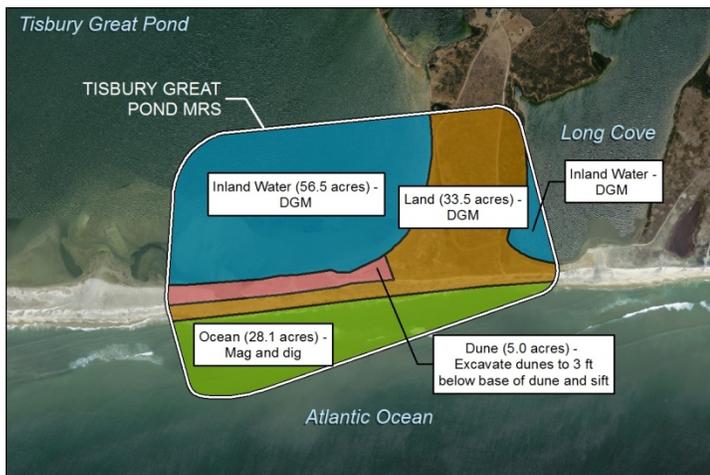
Alternative 4 includes all the activities in Alternative 3 (subsurface remediation of MEC on the beach and dunes) and adds MEC detection and removal in the inland waters and ocean area of the MRS, Figure 4.

As with Alternative 3 for the Tisbury Great Pond MRS, detection of MEC would be performed using digital detection instrumentation and munitions would be dug using hand-tools. Intrusive activities are anticipated to occur within the top three feet of soil. However, if anomalies are detected below three feet, they will be removed. All munitions would require inspection prior to removal to determine if they contain an explosive hazard or if they are safe to move. If potentially explosive, the munitions would be detonated in place using standard operating procedures to minimize risks to workers. Items identified as safe would be removed and taken off-site for recycling. After completion of the subsurface clearance, the site would be re-vegetated with native grasses and post-construction monitoring of re-vegetated areas would occur for a minimum of three years or until vegetation has been successfully restored.

Inland Water activities would include mapping of the water areas using a boat towed geophysical mapping instrument with GPS positioning. Anomalies identified during DGM activities would be reacquired using a robotic total station and the anomaly resolved (e.g. dug up, identified and removed). This would be done using a combination of hand-tools, as successfully accomplished during the RI, and mechanical methods. Mechanical methods including a marsh buggy or similar excavator with floatation tracks may be used for deeper anomalies underwater, which could require excessive time to dig by hand.

Ocean surf zone activities include a “Mag and Dig” technique for ocean clearance activities due to the dynamic nature of the ocean surf zone. Divers will identify anomalies on transects using a waterproof underwater hand-held analog instrument, and subsequently excavate each anomaly as it is located.

The RAO (to protect recreational users, visitors, and workers at the MRS from explosive hazards associated with MEC exposure in and below the dunes and in the top 3 feet of subsurface soil during intrusive activities



**Figure 4 – Tisbury Great Pond MRS
Alternative 4: Subsurface Clearance**

and by MEC exposure due to dune erosion) would be achieved to a high degree of certainty.

Prior to taking any other actions under this alternative, interim awareness components would consist of posting signs at public access locations, distributing brochures and fact sheets notifying the public of explosive safety hazards associated with MEC and following the Army's 3Rs policy (i.e., Recognize, Retreat, Report – when encountering MEC (*see last page of this Proposed Plan for more information on the 3Rs*), as well as an educational component to provide site-specific awareness training for the local community.

Coordination with MA NHESP and TTOR would be required due to the sensitive species known to exist within the MRS, and a rare plant and wildlife habitat evaluation would be conducted during development of the work plan in accordance with MA NHESP guidelines. Work would also be coordinated with the MA Division of Marine Fisheries, NOAA, Town Shellfish Advisory Committees, MA Historical Commission and the Wampanoag Tribal Historic Preservation.

Thirty-four ARARs were identified for the Tisbury Great Pond MRS Alternative 4 (See Table 1 for a list of ARARs). Alternative 4 would comply with all ARARs. Procedures for ensuring compliance would be developed in the Remedial Action Work Plan.

It is estimated that Alternative 4 would require approximately 12 months of field work to implement (though overall it may take longer due to scheduling limitations). A final review (similar in nature to a CERCLA five year review) would be conducted when all other work is complete to ensure the effectiveness of all elements of the remedial action. The expectation is that after the remedy is fully complete, the site will be

safe for unlimited use and unrestricted exposure.
Alternative 4 Costs - \$9,826,000 (Alternative) + \$42,000 (Review) = \$9,868,000

EVALUATION OF ALTERNATIVES

USACE evaluated the various remediation alternatives individually for each MRS in a detailed analysis against seven of the nine CERCLA/NCP evaluation criteria (*see Explanation of the Nine Evaluation Criteria*).

Remedial alternatives were developed during the FS in accordance with the NCP, 40 CFR 300.430(e). The NCP nine criteria were used to evaluate the different remedial alternatives individually and against each other in order to select a Preferred Alternative for each MRS. The nine criteria fall into three groups: threshold criteria, primary balancing criteria, and modifying criteria. The detailed screening of alternatives can be found in the FS Report. A description and purpose of the three groups follow:

- *Threshold criteria* are requirements that must be met in order for an alternative to be eligible for selection.
- *Primary balancing criteria* are used to weigh major trade-offs among alternatives.
- *Modifying criteria* are considered to the extent that information is available, but cannot be fully evaluated until after public comment is received on the Proposed Plan.

In the final balancing of tradeoffs among proposed alternatives, modifying criteria are of equal importance as the balancing criteria. More detailed information about the evaluation can be found in the *Feasibility Study Report for the Tisbury Great Pond Munitions Response Area, Formerly Used Defense Site (FUDS) Project Number D01MA0453, Martha's Vineyard, Massachusetts*.

The degree to which the considered alternatives meet the evaluation criteria is shown in Table 2 and is summarized below. The x indicates the ARAR is not met, the √ indicates the ARAR is met.

Table 1: Summary of ARARs

ARAR	Alternative 1 – No Action	Alternative 2 – LUCs	Alternative 3 – Partial Subsurface Clearance with LUCs	Alternative 4 – Subsurface Clearance
16 U.S.C. §1538(a)(1)	x	x	✓	✓
40 CFR 264.601	x	x	✓	✓
321 CMR 10.04(1)	x	x	✓	✓
321 CMR 10.23(1)	x	x	✓	✓
321 CMR 10.23(2)	x	x	✓	✓
321 CMR 10.23(3)	x	x	✓	✓
321 CMR 10.23 (6) (b) (1)	x	x	✓	✓
321 CMR 10.23(6) (b) (2)	x	x	✓	✓
321 CMR 10.23(7) (a)	x	x	✓	✓
321 CMR 10.23(7) (b)	x	x	✓	✓
310 CMR 9.40 (2)(b) (1st sentence)	x	x	✓	✓
310 CMR 9.40 (3)(b) (1st sentence)	x	x	✓	✓
310 CMR 10.25 (5) Land under the Ocean	x	x	x	✓
310 CMR 10.25 (6) Land under the Ocean	x	x	x	✓
310 CMR 10.25 (7) Land under the Ocean	x	x	x	✓
310 CMR 10.27 (3) Coastal Beaches	x	x	✓	✓
310 CMR 10.27 (6) Coastal Beaches	x	x	✓	✓
310 CMR 10.27 (7) Coastal Beaches	x	x	✓	✓
310 CMR 10.28 (3) Coastal Dunes	x	x	✓	✓
310 CMR 10.28 (6) Coastal Dunes	x	x	✓	✓
310 CMR 10.33 (3) Land under Salt Ponds	x	x	✓	✓
310 CMR 10.33 (5) Land under Salt Ponds	x	x	✓	✓
310 CMR 10.34 (4) Land Containing Shellfish	x	x	✓	✓
310 CMR 10.34(5) Land Containing Shellfish	x	x	✓	✓
310 CMR 10.34 (8) Land Containing Shellfish	x	x	✓	✓
310 CMR 10.35(3) Banks of or Land under the Ocean, Ponds, Streams, Rivers, Lakes or Creeks that Underlie an Anadromous/Catadromous Fish Run	x	x	✓	✓
310 CMR 10.35(4) Banks of or Land under the Ocean, Ponds, Streams, Rivers, Lakes or Creeks that Underlie an Anadromous/Catadromous Fish Run	x	x	✓	✓
310 CMR 10.35(5) Banks of or Land under the Ocean, Ponds, Streams, Rivers, Lakes or Creeks that Underlie an Anadromous/Catadromous Fish Run	x	x	✓	✓
310 CMR 10.37 5th paragraph, 1st sentence, Estimated Habitats of Rare Wildlife (for Coastal Wetlands)	x	x	✓	✓
310 CMR 10.55 (4)(a) Bordering Vegetated Wetlands (Wet Meadows, Marshes, Swamps and Bogs)	x	x	✓	✓
310 CMR 10.55 (4)(b) Bordering Vegetated Wetlands (Wet Meadows, Marshes, Swamps and Bogs)	x	x	✓	✓
310 CMR 10.55 (4)(d) Bordering Vegetated Wetlands (Wet Meadows, Marshes, Swamps and Bogs)	x	x	✓	✓
314 CMR 9.06 (2)(1st sentence)	x	x	✓	✓
314 CMR 9.07 (1)(a)(1st sentence)	x	x	✓	✓

EXPLANATION OF THE NINE EVALUATION CRITERIA	
CERCLA and NCP [40 CFR 300.430(e)(9)(iii)(A)-(I)] require the evaluation of each alternative to address the following nine criteria :	
Criteria	Threshold
	1. Overall Protection of Human Health and the Environment – Evaluates whether a cleanup alternative provides protection and evaluates how risks are eliminated, reduced, or controlled through treatment, engineering controls, or local government controls.
	2. Compliance with Applicable or Relevant and Appropriate Requirements – Evaluates whether a remedial alternative meets cleanup standards, standards of control, or other requirements related to the contaminant found in other federal and state environmental laws or regulations, or justifies any waivers.
	Primary Balancing
	3. Long-Term Effectiveness and Permanence – Considers any remaining risks after cleanup is complete and the ability of a cleanup option to maintain reliable protection of human health and the environment over time once cleanup goals are met.
	4. Reduction of Toxicity, Mobility, or Volume through Treatment – Evaluates a cleanup option’s use of treatment to reduce the harmful effects of the contaminants, their ability to move in the environment, and the amount of contamination present.
	5. Short-Term Effectiveness – Considers the time needed to clean up a site and the risks and adverse effects a cleanup option may pose to workers, the community, and the environment until the cleanup goals are met.
	6. Implementability – The technical and administrative feasibility of implementing a cleanup option, including factors such as the relative availability of goods and resources.
	7. Cost – Includes estimated capital and annual operations and maintenance costs.
Modifying	
8. State Acceptance – Considers whether the state (Massachusetts) agrees with USACE’s analyses and recommendations as described in the proposed plan.	
9. Community Acceptance – Considers whether the local community agrees with USACE’s analyses and proposed cleanup plan. The comments USACE receives on its Preferred Alternative are important indicators of community acceptance.	

Threshold Criteria

For the Tisbury Great Pond MRS, Alternative 1 does not meet the threshold criterion of overall protectiveness. Alternative 2 includes managing risk through establishing LUCs and would achieve protectiveness for the public who use the MRSs. Tisbury Great Pond MRS Alternative 3 would achieve similar protectiveness over the long term compared to Alternative 2 considering that some level of LUCs and LTM would still be conducted following a partial clearance, and during implementation, measures to protect and restore environmental resources would be required to minimize the adverse affects of remedy implementation. The Tisbury Great Pond MRS Alternative 4 would be the most protective of human health because the most MEC would be removed, but would require measures to protect and restore environmental resources to minimize the adverse affects of remedy implementation. Measures could include seasonal work restrictions, monitoring, and habitat restoration.

Thirty-one ARARs were identified for the Tisbury Great Pond MRS Alternative 3. Thirty-four ARARs were identified for Tisbury Great Pond MRS Alternative 4. Alternatives 3 and 4, if implemented, would comply with the identified ARARs.

Primary Balancing Criteria

The long-term effectiveness and permanence along with the short-term effectiveness were evaluated for each Alternative. For the Tisbury Great Pond MRS, Alternative 1 is not effective or permanent in the long-term. Alternative 2 is effective and permanent assuming the cooperation and active participation of the TTOR and other land owners. Alternatives 3 and 4 would increase risk to the public and workers during the short-term due to clearance of MEC and could cause some damage to the environment because of the vegetation clearance required to conduct subsurface activities. Impacts to human health would be mitigated by preparing and following an explosives safety plan. Impacts to the environment would be minimized through coordination with MA NHESP and scheduling field work to avoid sensitive species and habitats. Impacts to human health would also be mitigated by following an explosives safety plan. Impacts to the environment would be minimized through coordination with MASS DEP and scheduling field work to avoid sensitive habitats. Tisbury Great Pond MRS Alternative 4 would be the more effective and permanent alternative because the depth of clearance and total volume of MEC removed would be greater. MEC would be removed permanently from within the MRS to the greatest extent possible making it the most effective and permanent alternative considered.

Alternative 1 is ranked low relative to the reduction of toxicity, mobility or volume (TMV) criterion as no actions would be taken. Alternative 2 LUC components may reduce the probability of human interaction through education to modify behavior, but would not reduce MEC TMV. Tisbury Great Pond MRS Alternative 3 also partially meets the TMV criterion relative to the amount of clearance performed, while Tisbury Great Pond MRS Alternative 4 would fully meet this criterion.

Alternative 1 would be easily implemented if approved by all stakeholders because it requires no actions be taken. The LUCs recommended as Alternative 2 could also be readily implemented because these activities pose no technical difficulties and the materials and services needed are readily available. However, implementation relies outside the federal government since the property is owned by other entities. Approximately 6 months would be needed to establish LUCs and achieve the RAO under Alternative 2. The time needed to implement Alternative 3 would be slightly longer, requiring 6 months to perform clearance activities and establish LUCs. Alternative 4 would take 12 months to implement. During this time, short-term impacts to workers on-site would be increased in addition to the potential for impacts to the MRS users. Similarly, Alternative 4 would be the most technically difficult to implement with added administrative logistics based on approvals needed to manage environmental impacts during implementation. Specific activities, including awareness training for workers and use of protection procedures/mitigation techniques would be required to preserve and restore natural resources.

The total value of each alternative plus review costs are as follows (rounded to the nearest thousand dollars):

<u>Tisbury Great Pond MRS</u>	
Alternative 1:	\$0
Alternative 2:	\$622,000
Alternative 3:	\$8,079,000
Alternative 4:	\$9,868,000

Thus, the Tisbury Great Pond MRS Alternative 4 meets the threshold and most favorably meets the primary balancing criteria as compared to the other alternatives. Tisbury Great Pond MRS Alternative 4 can be readily implemented and would provide protectiveness over the long-term compared to its cost.

Table 2 presents a summary of the alternative evaluation versus the CERCLA nine evaluation criteria.

PREFERRED ALTERNATIVE

Alternative 4 – Subsurface Clearance is the Preferred Alternative for the Tisbury Great Pond MRS. Based on information currently available, the lead agency believes

the Preferred Alternative for the MRS meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The USACE expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA Subsection 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 or resource recovery technologies to the maximum extent practicable; and 5) satisfy the preference for treatment as a principal element. Alternative 4 is effective for the long-term and provides permanence, can be readily implemented to achieve the RAOs and provides the highest level of overall effectiveness relative to safe current and future use of the MRSs. The short term effectiveness is moderately favorable. USACE expects the Preferred Alternatives to meet regulatory requirements and to satisfy the statutory requirements under CERCLA §121(b).

The Preferred Alternative for the Remaining Land and Water MRS is No Action.

NEXT STEPS

USACE will evaluate the public’s opinion regarding the preferred remedial alternative during the public meeting and public comment period before deciding on the final remedy for each MRS. Based on new information or public comments that are received, USACE may modify its proposed remediation or select another alternative outlined in this Proposed Plan. USACE encourages the public to review and comment on the alternatives evaluated. More technical details on the proposed remediation are available in the documents provided for the public in the project information repository located at the West Tisbury Free Public Library. USACE will respond in writing to comments in a Responsiveness Summary that will be part of the Final Decision Document for the Tisbury Great Pond MRS, and Remaining Land and Water MRS. Once finalized, USACE will announce the selected remedy in a public notice in the local newspaper and will place a copy of the Final Decision Document in the project information repository.

Table 2: Comparative Summary of the Detailed Analysis of Remedial Alternatives

					Preferred
Criteria		Alternative 1: No Action	Alternative 2: LUCs	Alternative 3: Partial Subsurface Clearance with LUCs	Alternative 4: Subsurface Clearance
Threshold	1. Overall Protection of Human Health and Environment	■	●	●	●
	2. Compliance with ARARs	●	●	●	●
Balancing	3. Long-Term Effectiveness	■	□	□	●
	4. Reduction of TMV through Treatment	■	■	□	●
	5. Short-Term Effectiveness	■	●	□	□
	6. Implementability	●	●	●	●
	7. Cost ¹	\$0	\$622,000	\$8,079,000	\$9,868,000
Modifying ²	8. State Acceptance	TBD	TBD	TBD	TBD
	9. Community Acceptance	TBD	TBD	TBD	TBD

Notes: ¹ Costs provided here include Remedial Alternative Costs plus review costs (\$42,000 per review) to provide a meaningful comparison.

² The modifying criteria will be evaluated after the Proposed Plan following review and input from these parties.

- Favorable (Pass for threshold criteria)
- Moderately Favorable
- Not Favorable (Fail for threshold criteria)

The U.S. Army proposes Tisbury Great Pond MRS (Alternative 4) – Subsurface Clearance, for

Tisbury Great Pond MRS

Important public meeting scheduled for

June 23, 2015

REFERENCES

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- U.S. Army. 2009. *Final Munitions Response Remedial Investigation/Feasibility Study Guidance*. Military Munitions Response Program. November 2009.
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- UXB, 2014a. *Feasibility Study, Tisbury Great Pond Munitions Response Area*, Final, March 2015

PROPOSED PLAN
FORMER Tisbury Great Pond MRA
MARTHA'S VINEYARD, MASSACHUSETTS
GLOSSARY FOR SPECIALIZED TERMS

Administrative Record file	A collection of documents that form the basis for the selection of a response action compiled and maintained by the lead agency. This file is to be available for public review and a copy maintained near the site (i.e., information repository). The official Administrative Record file for the Tisbury Great Pond MRA is located at USACE, New England District, and is maintained by USACE. The point of contact for the file is the USACE New England District PM, Ms. Carol Ann Charette (696 Virginia Road, Concord, Massachusetts, 01742).
Applicable or Relevant and Appropriate Requirements (ARARs)	<p><i>Applicable requirements</i> means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable.</p> <p><i>Relevant and appropriate requirements</i> means those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not “applicable” to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate.</p>
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)	The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, commonly known as Superfund, and modified in 1986 by the <i>Superfund Amendments and Reauthorization Act</i> (SARA), to investigate and clean up hazardous substances.
Decision Document (DD)	The Department of Defense has adopted the term Decision Document (DD) to refer to a legal public document, similar to a Record of Decision completed for National Priorities List sites, that: certifies that the cleanup plan selection process was carried out in accordance with CERCLA, and to the extent practical, the NCP; provides a substantive summary of the technical rationale and background information in the Administrative Record file; provides information necessary in determining the conceptual engineering components to achieve the Remedial Action Objective (RAO) established for a site; and serves as a key communication tool for the public that explains the identified hazards that the selected cleanup will address and the rationale for cleanup plan selection. The DD will be maintained in the Administrative Record file.
Discarded Military Munitions (DMM)	Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include unexploded ordnance (UXO) , military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of, consistent with applicable environmental laws and regulations [10 USC 2710(e)(2)].

Explosive Safety Hazard	The probability for a MEC item to detonate (explode) and potentially cause harm to people, property, or the environment as a result of human activities. An explosive safety hazard exists if a person can come into contact with a MEC item and act upon it to cause it to detonate or explode. The potential for an explosive safety hazard depends on the presence of three critical elements: a source (presence of MEC), a receptor or person, and an interaction between the source and the receptor (such as picking up the item or disturbing the item by plowing, kicking, picking up, etc.). There is no explosive safety hazard if any one element is missing.
Feasibility Study (FS)	A study undertaken by the lead agency to develop and evaluate options for remedial action. The RI data are used to define the objectives of the response action, to develop remedial action alternatives in the FS, and to undertake an initial screening and detailed analysis of the alternatives. The term also refers to a report that describes the results of the evaluation of the remedial alternatives considered for the site.
Information Repository (IR)	A file containing current information, technical reports, and reference documents duplicated from the Administrative Record file maintained for a site. The information repository is usually located in a public building that is convenient for local residents, such as a public library. The project information repository is located at the West Tisbury Free Public Library [1042A State Rd, West Tisbury, Massachusetts 02539].
Land Use Controls (LUC)	Physical, legal, or administrative mechanisms that restrict the use of, or limit access to, real property, to prevent or reduce risks to human health and the environment. Physical Mechanisms encompass a variety of engineered remedies to contain or reduce contamination and physical barriers to limit access to real property, such as fences or signs. The legal mechanisms used for LUCs are generally the same as those used for institutional controls as discussed in the NCP.
Munitions and Explosives of Concern (MEC)	Specific categories of military munitions that may pose unique explosives safety risks, specifically composed of (a) unexploded ordnance, (b) discarded military munitions, or (c) munitions constituents present in high enough concentrations to pose an explosive hazard.
Munitions and Explosives of Concern (MEC) Hazard Assessment	A tool developed to qualitatively assess the potential explosive hazards to human receptors associated with complete MEC exposure pathways.
Munitions Constituents (MC)	Any materials originating from UXO, Discarded Military Munitions (DMM) , or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.
Munitions Debris (MD)	Remnants of munitions (e.g., fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal.
Munitions Response Area (MRA)	Any area on a defense site that is known or suspected to contain UXO, DMM, or MC. Examples include former ranges and munitions burial areas. A munitions response area is comprised of one or more munitions response sites.
Munitions Response Site (MRS)	A discrete location within a MRA that is known to require a munitions response.
National Oil and Hazardous Substances Pollution Contingency Plan (NCP)	The plan revised pursuant to 42 USC 9605 and found at 40 CFR 300 that sets out the plan for hazardous substance remediation under CERCLA.
Proposed Plan (PP)	A document that presents a proposed cleanup alternative, including rationale for selection, and requests public comments regarding the proposed alternative.
Receptor	Receptors include both humans and biota (plants or animals) that may come into contact with a hazardous substance, including munitions and munitions constituents, either directly (e.g., picking an item up) or indirectly (e.g., through ingestion).

Remedial Action	Those actions consistent with permanent remedy taken instead of or in addition to removal actions in the event of a release or threatened release of a hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare or the environment. The term includes, but is not limited to, such actions at the location of the release as storage, confinement, perimeter protection using dikes, trenches, or ditches, clay cover, neutralization, cleanup of released hazardous substances and associated contaminated materials, recycling or reuse, diversion, destruction, segregation of reactive wastes, dredging or excavations, repair or replacement of leaking containers, collection of leachate and runoff, onsite treatment or incineration, provision of alternative water supplies, and any monitoring reasonably required to assure that such actions protect the public health and welfare and the environment.
Remedial Action Objective (RAO)	Objectives established for remedial actions to guide the development of cleanup alternatives and focus the comparison of acceptable alternatives, if warranted. RAOs also assist in clarifying the goal of minimizing risk and achieving an acceptable level of protection for human health and the environment.
Remedial Investigation (RI)	A process undertaken by the lead agency to determine the nature and extent of the problem presented by the release. The RI emphasizes data collection and site characterization, and is generally performed concurrently and in an interactive fashion with the feasibility study. The RI includes sampling and monitoring, to define nature and extent of contamination, as necessary, and includes the gathering of sufficient information to determine the necessity for remedial action and to support the evaluation of remedial alternatives.
Superfund Amendments and Reauthorization Act (SARA)	In addition to certain free-standing provisions of law, it includes amendments to CERCLA, the Solid Waste Disposal Act, and the Internal Revenue Code. Among the free-standing provisions of law is Title III of SARA, also known as the “Emergency Planning and Community Right-to-Know Act of 1986” and Title IV of SARA, also known as the “Radon Gas and Indoor Air Quality Research Act of 1986.” Title V of SARA amending the Internal Revenue Code is also known as the “Superfund Revenue Act of 1986.”
Unexploded Ordnance	<p>Military munitions that:</p> <ul style="list-style-type: none"> (a) Have been primed, fuzed, armed, or otherwise prepared for actions; (b) Have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and (c) Remain unexploded whether by malfunction, design, or any other cause.. <p>(10 USC 101(e)(5)).</p>

Follow the 3Rs

Recognize

Recognize when you may have encountered a munition.

Recognizing when you may have encountered a munition is the most important step in reducing the risk of injury or death. Munitions may be encountered on land or in the water. They may be easy or hard to identify.

To avoid risk of injury or death:

- Never move, touch, or disturb a munition or suspect munition.
- Be aware that munitions do not become safer with age, in fact, they may become more dangerous.
- Don't be tempted to take or keep a munition as a souvenir.

Munitions come in many sizes, shapes, and colors. Some may look like bullets or bombs while others look like pipes, small cans or even a car muffler. Whether whole or in parts, new or old, shiny or rusty, munitions can still explode.

AN-MK 23 Practice Bomb



Retreat

Do not touch, move, or disturb it; but carefully leave the area. Avoid death or injury by recognizing that you may have encountered a munition and promptly retreating from the area.

If you encounter what you believe is a munition, do not touch, move, or disturb it. Instead, immediately and carefully leave the area by retracing your steps, leaving the same way you entered. Once safely away from the munition, mark the path (e.g., with a piece of clothing or global positioning system (GPS) coordinates) so response personnel can find the munition.



Call 911!

Report

Immediately notify the police.

Protect yourself, your family, your friends, and your community by immediately reporting munitions or suspected munitions to the police.

Help the police by providing as much information as possible about what you saw and where you saw it. This information will help the police and the military or civilian explosives ordnance disposal personnel find, evaluate, and address the situation.

If you believe you may have encountered a munition, call and report the following:

- The area where you encountered it.
- Its general description. Remember: do not approach, touch, move, or disturb it.
- When possible, provide:
 - Its estimated size
 - Its shape
 - Any visible markings, including coloring