



US Army Corps
of Engineers ®

Proposed Plan Iona Island Naval Ammunition Depot FUDS



FUDS PROJECT NO. C02NY074403
STONY POINT, ROCKLAND COUNTY, NEW YORK

April 2022

1 Introduction

This **Proposed Plan** identifies the Preferred Remedial Alternative for the Iona Island Naval Ammunition Depot **Formerly Used Defense Site (FUDS)** and provides the rationale for this recommendation. The **U.S. Army Corps of Engineers (USACE)** proposes **No Action** is necessary to protect human health from hazards associated with **munitions and explosives of concern (MEC)** at the Iona Island Naval Ammunition Depot FUDS, located in Rockland County, New York. There are two active FUDS projects at Iona Island: C02NY074402, **Hazardous, Toxic, and Radioactive Waste (HTRW)** and C02NY074403, **Military Munitions Response Program (MMRP)**. This plan provides USACE's rationale for the MMRP Iona Island Naval Ammunition Depot FUDS project, which is based on investigative actions that demonstrate there are no unacceptable risks to human health from MEC that require **remedial action**. Risks to human health and the environment associated with **munitions constituents (MC)** that may be present in environmental media are being addressed under the on-going HTRW project, where sampling for chemicals that may have resulted from previous DoD use, including those associated with **military munitions** (i.e., MC), is being performed.

USACE is issuing this Proposed Plan as part of its public participation responsibilities under the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** and Section 300.430 (f)(3) of the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)** (40 Code of Federal Regulations Part 300). This Proposed Plan summarizes information that can be found in greater detail in the MMRP Final **Remedial Investigation (RI)** Report and other documents contained in the **Administrative Record file** for this Site. This plan summarizes the following:

- Site Background (Section 2)
- Site Characteristics (Section 3)
- Previous Investigations (Section 4)

- Scope and Role of Response (Section 5)
- Summary of Site Risks (Section 6)
- Preferred Alternative (Section 7)
- Community Participation (Section 8).

A glossary defining terms (identified by **bold text**) used in this document, as well as an acronym list and a document reference page, is included at the end of this Proposed Plan.

This document is issued by USACE for the **U.S. Department of Defense (DoD)** with the concurrence of the New York State Department of Environmental Conservation (NYSDEC), the New York State Department of Health (NYSDOH), and the Palisades Interstate Park Commission (PIPC). USACE will make the final decision on the Preferred Alternative for the Iona Island Naval Ammunition Depot FUDS based upon information generated as part of the site investigations and after reviewing and considering all information submitted during the **public comment period**. USACE may modify the Preferred Alternative or select another alternative based on new information or public comments. Therefore, public comment on the Proposed Plan is invited and encouraged. Information on how to participate in this decision-making process is presented below and in Section 7.

The Administrative Record file and other documents that support this Proposed Plan are available for review at the information repository or through the USACE-New England District website for the Iona Island FUDS: <https://www.nae.usace.army.mil/Missions/Projects-Topics/Iona-Island-FUDS/>.

Information Repository:
Bear Mountain State Park Administration Building
3006 Seven Lakes Drive
Tomkins Cove, NY 10986

Public Comments Are Requested

PUBLIC COMMENT PERIOD

April 29th, 2022 through June 1st, 2022 (33 days, not to include start date)

Written comments on this Proposed Plan may be submitted to USACE during the comment period. Comment letters must be postmarked no later than **June 1st, 2022**, and may be sent to Ms. Erin Kirby (USACE–New England District, Project Manager):

Erin Kirby, P.G., LEP
USACE–New England District
696 Virginia Road
Concord, MA 01742
Phone: 978-318-8147
Erin.M.Kirby@usace.army.mil

PUBLIC MEETING

May 4th, 2022

USACE will host a virtual information session at 6 p.m. at <https://usace1.webex.com/join/cenae-pa> to provide information and answer questions in an informal setting. This meeting will include a brief introduction and summary by USACE.

2 Site Background

2.1 Site Location

The Iona Island Naval Ammunition Depot FUDS consists of approximately 124 acres of land and inland water. Iona Island is in Bear Mountain State Park on the east side of U.S. 202/Route 9W, five miles south of Fort Montgomery (**Figure 1**).

2.2 Site History

The U.S. Navy (Navy) used the Site as an Ammunition Depot from 1900 to 1947. Activities included preparing, assembling, maintaining, inspecting, testing, and issuing ammunition; however, there was no manufacturing conducted onsite.

Prior to use by the military, Iona Island was utilized as a resort hotel during the Civil War. There is no documented evidence available of past use of ordnance-related items prior to use by the military. The Navy purchased Iona Island in 1900 for construction of the Iona Island Naval Ammunition Depot (USACE 1998).

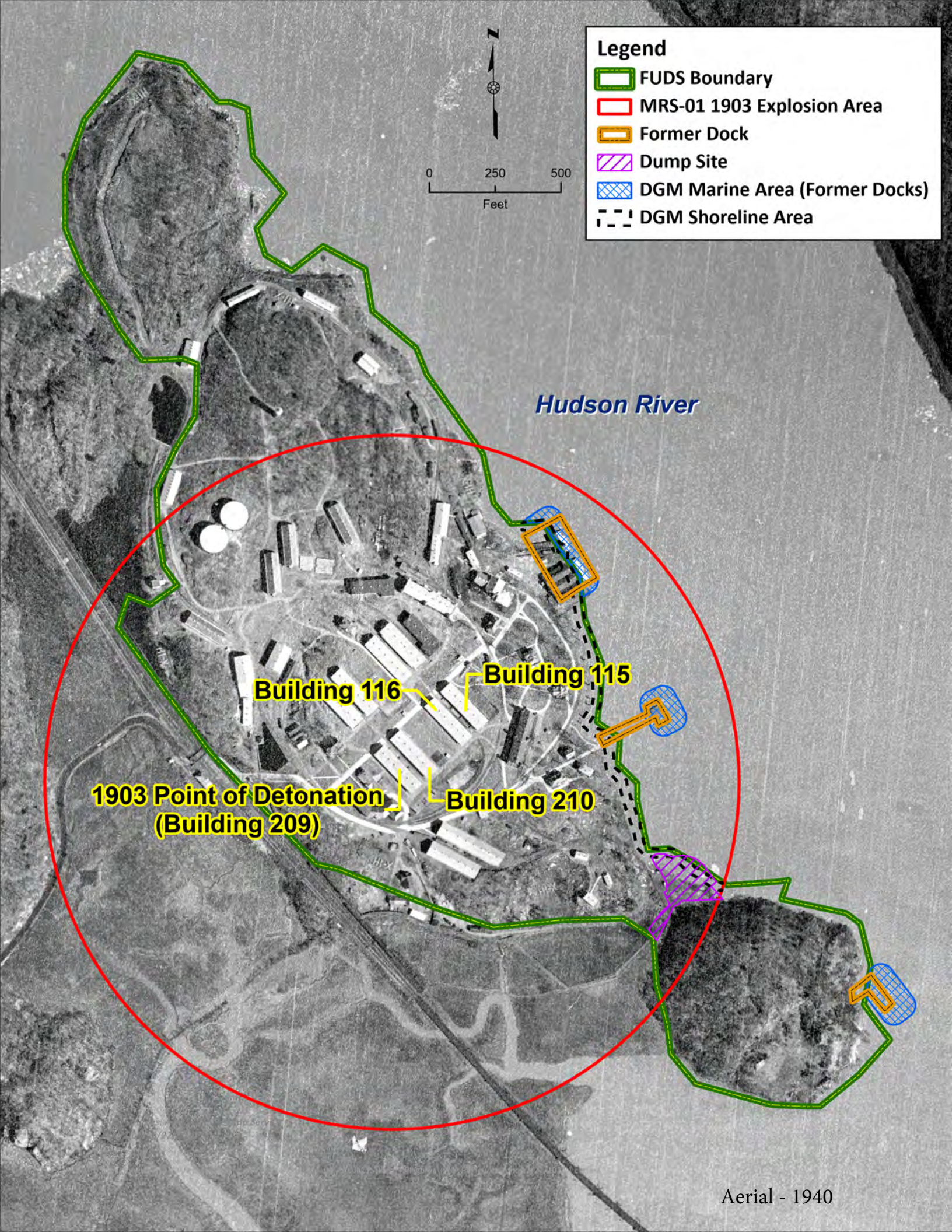


Figure 1: Iona Island Naval Ammunition Depot FUDS.

In 1903, at least one 13-inch (in.) shell exploded between Shell Houses 3 and 4 (former Buildings 210 and 209, respectively) on Iona Island (**Figure 2**). The explosion destroyed Shell Houses 3 and 4, and their contents, and damaged Shell Houses 1 and 2 (former buildings 115 and 116, respectively) (USACE 1998). Other munitions stored in the area during the time of the explosion included 1-pounders, 6-pounders, and 6-in. ammunition. The potential area of contamination resulting from the 1903 explosion was determined to be a 1,250-foot (ft) radius area centered on Shell Houses 3 and 4 (**Figure 2**).

During World War I, almost all the depth charge bombs and ammunition used in the Atlantic area passed through Iona. After World War I, from 1918 to 1940, Iona Island supplied ammunition of all calibers to the fleet for service allowances, target practice, and reserve war requirements. Round Island, the southernmost portion of the depot, was utilized by the Navy for ammunition storage. The Navy filled in the area between Iona Island and Round Island to provide a connection between the two islands. A 0.85-acre Dump Site is first identified between Round Island and Iona Island on a 1930-dated U.S. Navy layout plan (U.S. Army Geospatial Center 2018).

Between 1941 and 1945, the major activity conducted on Iona Island was assembling naval ammunition for World War II. More than 2,300 Navy ships and 2,300 Merchant ships received their ammunition from Iona Island during World War II. In addition, 77 bases, 500 shore stations, and 700 foreign naval ships were serviced



Legend

- FUDS Boundary
- MRS-01 1903 Explosion Area
- Former Dock
- Dump Site
- DGM Marine Area (Former Docks)
- DGM Shoreline Area

Hudson River

Building 116

Building 115

**1903 Point of Detonation
(Building 209)**

Building 210

with ammunition from Iona Island Naval Ammunition Depot.

After World War II, use of the Island as an ammunition depot became obsolete because of lack of expansion room to accommodate new types of ammunition. In 1947, the Navy decided to deactivate the Iona Island Naval Ammunition Depot.

By 1951, there were 146 buildings on the Island. The roads on the Island were in poor condition and most buildings had no natural or artificial lighting, heating, or other utilities; they were large, open warehouses with high ceilings and no partitions or separation of floors. Redevelopment for industrial or warehousing use would have required extensive renovation of buildings, clearance of structures, and construction of roads, parking lots, and new sewer system and utility lines.

The former depot was excecised by the Navy in 1957 and transferred to the General Services Administration. The General Services Administration conveyed the FUDS property to Palisades Interstate Park Commission (PIPC) in 1965. Most buildings and structures were demolished and removed between November 1965 and December 1973. PIPC currently utilizes a portion of Iona Island as a storage facility; however, the property is closed to the public and use is restricted to park personnel only (research, supervised tours, and study groups).

Four general areas at the Iona Island Naval Ammunition Depot FUDS were identified as requiring investigation for **munitions and explosives of concern** (MEC), including: (1) **Munitions Response Site** (MRS) 01 1903 Explosion Area (red circle), (2) former Loading Docks (orange polygons), (3) Shoreline at and in the vicinity of the Loading Docks (black dashed lines), and (4) a previously identified Dump Site (purple polygon) (**Figure 2**).

3 Site Characteristics

Iona Island is a bedrock island of the Hudson River that has rocky terrain, with varying degrees of slopes. Elevations range from about 0 ft along the immediate shoreline to 75 ft. The bedrock of the New England Upland and Hudson Highlands is folded, faulted, and includes metamorphosed sediments (biotite-quartz-plagioclase paragneiss). The rock is resistant to erosion and forms rocky knobs on Iona Island.

Most of the land surface of Iona Island has been filled, built on at one point in time, and/or paved (USACE 1998). Native soil remaining at Iona Island and the

mainland is derived from glacial till and is shallow, acidic, and nutrient poor. Overburden at Iona Island is shallow with bedrock encountered at the ground surface to depths of approximately 25 in. below ground surface. There are no surface water bodies or streams on the upland portion of the Island within the FUDS boundary; however, the shoreline areas of the Island and adjoining marshes are located within and, therefore, impacted by the Hudson River.

Groundwater at and near Iona Island is found in both overburden and underlying bedrock. Shallow groundwater (2 ft bgs) is likely influenced by the Hudson River. Groundwater and surface water at Iona Island are not used for domestic supply. The existing storehouse at Iona Island has a defunct water supply/waterline but does have a working bedrock well owned and used by Bear Mountain State Park that provides non-potable water.

Iona Island is connected to the mainland by a narrow two-lane road off U.S. 202/Route 9W near Doodletown. The Island is accessed by crossing active River Subdivision (CSX Transportation) railroad tracks and entering through an unmanned gate during normal working hours. The southeastern part of the Island, once cut off by marshes, is known as Round Island. In the early 20th century, it was attached to the south end of Iona Island with fill.

The FUDS is currently under the administration of the PIPC and maintained by staff of Bear Mountain State Park. Site access is limited to authorized employees of Bear Mountain State Park who use a few of the remaining buildings for storage, and to researchers who work in the marsh areas. Iona Island is part of the much larger Hudson River National Estuarine Research Reserve and Significant Coastal Fish and Wildlife Habitat Area, managed under New York's Coastal Management Program. In addition, the Iona Island Marsh became a registered National Natural Landmark in 1971. The Island is also considered a bald eagle sanctuary. There are no current plans to develop Iona Island for recreational purposes and no anticipated future use of the Island other than its current use as a conservation area.

4 Previous Investigations

Archive Search Report (ASR) (USACE 1998, 2004)—Through interviews, archive research, and a site investigation conducted by USACE, it was determined that ordnance associated with the Iona Ammunition

Depot consisted of small arms; projectiles, projectile fuzes, and propellant; rockets; bombs and bomb fuzes; pyrotechnics; bulk black powder; and high explosives. During the site visit, USACE inspectors observed several ordnance items that had been recovered from Iona Island Naval Depot after the Park Service had taken possession. These items were lying in a pile at the Trail Side Museum at Bear Mountain State Park. These items included unfired projectiles ranging from 8 to 16 in. in diameter along with two 10-in. cannonballs. USACE site inspectors were informed that the two cannonballs had come from one of the buildings once occupied by the Marines and speculation is that the cannonballs may have been display pieces. The origin of the other projectiles is unknown. The team recommended to the Park Ranger that he notify the U.S. Army **Explosive Ordnance Disposal** (EOD) Detachment at Fort Monmouth, NJ. The EOD unit determined all items were empty and free of explosives (i.e., empty or sand filled). The ASR inspection team speculated that these items may have been display pieces.

The Park Police and Park Rangers had no past incidents on record of any MEC being found on the Island. However, in an interview prior to the ASR site inspection, a Bear Mountain State Park Ranger recounted a story of kids finding a grenade near Buildings 311 and 314 and that the demolition team from Fort Smith took care of the grenade. The Park Ranger did not know if the grenade was live or practice. Additionally, the Park Ranger provided anecdotal information (i.e., conversation with his father, who worked at Iona Depot in 1942) that ordnance may have been intentionally dumped or accidentally dropped into the Hudson River. Additional anecdotal/hearsay information through interviews with an employee of the New York State Police indicate ammunition had been identified on the shore and removed by the 142nd Explosive Ordnance Detachment (inactivated) from West Point.

The USACE inspection team also spoke to maintenance personnel from the sign shop located on Iona Island. The USACE inspection team was shown a collection of ordnance debris that had been found in various locations on the Island. All items were expended and had no visible explosive residue and included: small arms cartridge cases, 6-pounder projectile cartridge case, signal flare, and a fragment from a 3.5-in. rocket warhead. Maintenance personnel stated that, during low water conditions, suspected ammunition could be seen in the Hudson River near the old “Dump Site” on Round Island. No ordnance was seen in the Hudson River at the time of the site visit; however, the team did locate one empty 20-millimeter (mm) practice cartridge case along

the Hudson River’s edge. No ordnance or explosive debris was found during the inspection of the Site. The USACE inspection team found no indication that any MEC were buried onsite.

Based on the 1,250-ft kick-out radius of 13-in. shells that were reportedly part of the 1903 explosion, the ASR determined a range footprint of 124.2 acres for MRS 01 (**Figure 2**).

MMRP SI (Alion Science and Technology [Alion] 2008)—With support from EA Engineering, Science, and Technology, Inc., PBC (EA), Alion performed a **Site Inspection** (SI) under contract to the U.S. Army Engineering and Support Center in Huntsville and USACE-Baltimore District. The purpose of this MMRP SI was to evaluate the presence or absence of MEC and MC related to historical use of the Site.

During the 2007 SI field visit, a qualitative reconnaissance was completed during low tide of the eastern boundaries of the MRS along the former Loading Dock areas and at the Dump Site where it was reported that ordnance items were historically observed at low tide. No **munitions debris** (MD) or MEC was observed on the FUDS or near the shoreline during the SI field visit.

The SI recommended that an RI/feasibility study be performed for both MEC and MC, based on historical discoveries of MD, potential for MEC onsite, and potential for risks to human health and the environment in surface soil and sediment (Alion 2008). MC sampling and the exposure risk to human and ecological **receptors** associated with explosives constituents and metals MC attributed to former DoD usage in environmental media are being evaluated as a part of the on-going HTRW investigation.

MMRP RI (EA 2021) —At MRS 01, 6.8 acres were surveyed over 27 grids using **digital geophysical mapping** (DGM). A total of 1049 DGM **anomalies** identified as potential MEC, and 2.7 acres of **saturated response areas** (SRAs) were identified. **Advanced geophysical classification** (AGC) methods were used to further investigate 989 of the DGM anomalies (**Figure 3**). A total of 60 DGM anomalies, 250 AGC anomalies, and 110 potential disposal pit/trench locations were intrusively investigated using hand tools (e.g., shovels) and mechanical equipment (i.e., mini excavator). Of the 420 anomalies and disposal pit/trench locations investigated, two anomaly locations contained MD, specifically, two pieces of fragmentation from a 6-pound projectile.



Figure 3 AGC Survey on upland grid (April 2019)

The dive team performed investigations along transects and at “spot dives” on top of and adjacent to the three former Loading Dock footprints (Figure 4). The steep riverbed slope on the river channel side of the former Loading Docks reduced the diver’s ability to survey along the planned transects. No MEC or MD was located, the divers identified only debris from the former Loading Docks that included rebar, concrete rubble, pipes, railroad rails, and metal debris. Approximately 1.2 miles of DGM data was collected on parallel transects along the Loading Dock Shoreline and 44 individual anomalies were identified as potential targets of interest in addition to debris associated with the former Loading Docks (Figure 5).

All the DGM anomalies outside of the former Loading Dock footprints were intrusively investigated by the dive team. Again, no MEC or MD was located along the Loading Dock Shoreline and only non-munitions related debris (NMRD) was identified.



Figure 4 Iona Island Dive Operations (August 2019)

DGM was conducted over 2,360 linear ft of transects spaced 10 ft apart over the Dump Site and 14 individual anomalies and 3,000 square ft of SRAs were identified. The 14 DGM anomalies and eight locations within the SRAs were intrusively investigated using manual (shovel) and mechanical (mini excavator) methods. The intrusive investigation resulted in only scrap metal, pipes, burn debris/slag, bricks, and concrete slabs, with no MEC or MD identified.



Figure 5 DGM Iona Island Shoreline Survey (April 2019)

Only two pieces of fragmentation were identified at MRS 01 during the MMRP RI, both from 6-pound projectiles located near the 1903 explosion point of origin. No MEC were identified at the Iona Island FUDS during the MMRP RI. Results of the MMRP RI are shown in Figure 6. No sources for MC were identified during the execution of the MMRP RI (e.g., breached munitions item); therefore, MC sampling was not performed during the MMRP RI. MC in environmental media and attributed to former DoD usage is being evaluated as a part of the on-going HTRW investigation.

MMRP RI Conclusions

Historically, Iona Island Naval Ammunition Depot was used for preparing, assembling, maintaining, inspecting, testing, and issuing ammunition. In 1903, an explosion occurred at one of the ammunition storage buildings potentially contaminating the FUDS with MEC. Based on the findings of the MMRP RI and from previous investigations, no MEC have ever been identified at Iona Island Naval Ammunition Depot FUDS. To date, documented MD items found at the Iona Island Naval Ammunition Depot FUDS have been determined to be expended or empty with no explosive hazard associated with them. Based on the completion of the 2017 **Risk Management Methodology** evaluation of risk from explosive hazards to human health, MRS 01 and the



Figure 6 MMRP RI Results (October 2021)

other three investigation areas were identified as having no unacceptable risks. As concluded in the MMRP RI Report, **No Action** for MEC is recommended for Iona Island Naval Ammunition Depot FUDS.

5 Scope and Role of Response

The MMRP RI Report noted that no MEC had been identified at the Iona Island Naval Ammunition Depot FUDS; therefore, the MMRP RI concluded that acceptable conditions for MEC exist (i.e., negligible risk from MEC is posed by the FUDS).

Based on the results of the MMRP RI, no remedial action related to MEC is proposed for the Iona Island Naval Ammunition Depot FUDS. Therefore, no **remedial action objectives** for MEC were developed nor remedial alternatives for MEC considered.

Risk to human health or the environment from MC attributed to former DoD usage in environmental media is being evaluated as a part of the on-going HTRW investigation.

6 Summary of Site Risks

For the munitions-related risks, a detailed discussion of the risk management methodology used to assess the explosive risk posed is presented for the Iona Island Naval Ammunition Depot FUDS within the MMRP RI Report (2021).

Human Health and Ecological Risk Assessment

Risk to human health and the environment from MC attributed to former DoD usage in environmental media is being evaluated as a part of the HTRW investigation.

Risk Management Methodology for Munitions

The Risk Management Methodology (USACE 2017) is the current evaluation system being used to assess risk from MEC at military munitions response FUDS, and it accounts for a variety of factors related to the potential risks at a given MRS. These factors include the likelihood of encountering MEC (accessibility), the severity of an explosive incident should one occur (severity), and the likelihood of a detonation (sensitivity of the items) (Table 1).

The methodology utilizes these factors to illustrate site-specific conditions and differentiate acceptable from unacceptable conditions.

Table 1: MMRP Risk Evaluation for Iona Island FUDS

Matrix	Evaluation	Risk
#1 Likelihood of Encounter	No evidence of MEC at site with intermittent use	Unlikely
#2 Severity of Incident	Unlikely encounter with high explosives munition	Improbable
#3 Likelihood of Detonation	Modest likelihood of imparting energy on moderately sensitive munition	Medium
#4 Site Conditions	Unlikely encounter; improbable severe incident; medium likelihood of detonation	Acceptable Site Conditions

Although practice and inert munitions, and fragmentation from the 1903 explosion, have been identified at the Iona Island Naval Ammunition Depot FUDS, no MEC (i.e., containing explosives) or MD indicative of MEC have been found. Since no MEC have been identified at the Iona Island Naval Ammunition Depot FUDS during previous investigations or during the MMRP RI, it is unlikely for a future encounter to occur. Therefore, the Risk Management Methodology evaluation for the Iona Island Naval Ammunition Depot FUDS determined acceptable site conditions (i.e., no unacceptable risk from MEC).

7 Preferred Alternative

Based on the results of the MMRP RI for the Iona Island Naval Ammunition Depot FUDS, there is no unacceptable risk related to MEC to human health at the Site. Therefore, the Proposed Plan for the FUDS is **No Action** for MEC, recommended by USACE. The evaluation for risk to human health or the environment from MC, and potential remedial actions for MC, will be addressed under the HTRW project.

8 Community Participation

One of the purposes of this Proposed Plan is to solicit comments from members of the public. USACE encourages the public to gain a more comprehensive understanding of the Site and the activities that have been conducted there. USACE maintains the information repository (current information, technical

reports, etc.) and administrative record file (information directly related to remedial action decisions) for the Iona Island Naval Ammunition Depot FUDS. Detailed information about the previous studies and restoration activities can be found in the reports and documents contained in the information repository located at the address below.

Information Repository

The Information Repository can be found at:
Bear Mountain State Park Administration Building
3006 Seven Lakes Drive
Tomkins Cove, NY 10986

To make an appointment to review the Information Repository, please contact Ed McGowen at the Bear Mountain State Park Office at (845) 382-6704.

Administrative Record

The Administrative Record can be found at:
USACE-New England District Office
696 Virginia Road
Concord, MA 01742

The Administrative Record can also be found through the USACE- New England District website for the Iona Island FUDS:

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

Computers to access the website are located at:
Highland Falls Library
298 Main Street
Highland Falls, New York

This Proposed Plan fulfills the public participation requirements of CERCLA Section 117(a), which specifies that the lead agency (i.e., USACE) must publish a plan outlining any remedial alternatives evaluated for the Site and identifying the proposed decision.

The public comment period for this Proposed Plan is an opportunity to provide input regarding the proposed No Action recommendation for the Iona Island Naval Ammunition Depot FUDS. See below for details on the public comment period, and the public meeting. All interested parties are encouraged to attend the meeting to learn more about the Iona Island Naval Ammunition Depot FUDS from the project team members. The public meeting will also provide an additional opportunity to submit comments to USACE on the Proposed Plan.

The insert page may be used to provide comments to USACE, although the use of this form is not required. On the basis of comments or new information, USACE may modify the proposed selected alternative, if appropriate. USACE will summarize and respond to comments in a responsiveness summary, which will become part of the official **Decision Document (DD)**. After the public comment period, USACE will determine whether the Proposed Plan should be modified on the basis of comments received. If modifications based on comments do not change the current Proposed Plan for No Action, then a DD will be written, signed by USACE, and placed in the Administrative Record to document the decision that no remedial action is necessary.

Mark Your Calendar for the Public Comment Period

Public Comment Period

April 29th, 2022 through June 1st, 2022



Submit Written Comments

USACE will accept written comments on the Proposed Plan during the public comment period. To submit comments or obtain further information, please refer to the insert page.

Attend the Virtual Public Meeting

May 4th, 2022 at 6:00 p.m.

<https://usace1.webex.com/join/cenae-pa>

or join by phone:

1-844-800-2712 US Toll Free

1-669-234-1177 US Toll

Access code: 199 945 8471

USACE will hold a virtual public meeting to explain the Proposed Plan. Written comments will be accepted during the public comment period, including at the meeting.

For further information on this Proposed Plan for Iona Island Naval Ammunition Depot FUDS, please contact:

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Please Print Your Comments Below:

Your input on the Proposed Plan for the Iona Island Naval Ammunition Depot FUDS is important to USACE. Comments provided by the public are valuable in helping USACE select a final remedy for the Site.

You may use the space below to write your comments, then fold and mail to the U.S. Army Corps of Engineers–New England District 696 Virginia Road, Concord, MA 01742 to the attention of Ms. Erin Kirby. Comments must be postmarked by **June 1st, 2022**. Comments may also be emailed to Ms. Erin Kirby at Erin.Kirby@usace.army.mil. If you have questions regarding the comment period, please contact Ms. Erin Kirby at 978-318-8147.

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Glossary

Administrative Record file: The body of documents that “forms the basis” for the selection of a particular response at a site. Documents that are included are relevant documents that were relied upon in selecting the response action as well as relevant documents that were considered but were ultimately rejected. Until the Administrative Record is certified, it will be referred to as the “Administrative Record file.”

Advanced Geophysical Classification: Advanced classification is a process used to make a decision about the likely origin of a geophysical anomaly. In the case of munitions response, high-quality geophysical data can be interpreted with physics-based models to estimate parameters that may be useful for classification. The values of these parameters may then be used to estimate the likelihood that the signal arose from an item of interest – that is, a munition.

Anomaly: Any item that is seen as a subsurface irregularity after geophysical investigation. This irregularity will deviate from the expected subsurface ferrous and non-ferrous material at a site (e.g., pipes, power lines). As it relates to this document, an anomaly is a suspected metallic object that is identified using digital and analog metal detectors.

Archive Search Report (ASR): A detailed investigation to report on past MEC activities conducted on an installation. The principal purpose of the Archives Search is to assemble historical records and available field data, assess potential ordnance presence, and recommend follow-up actions at a FUDS. There are four general steps in an Archives Search: records search phase, site safety and health plan, site survey; archives search report including risk assessment.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A Federal law enacted in 1980 and amended in 1986 by the Superfund Amendments and Reauthorization Act, which concerns investigation and response actions regarding hazardous substances, pollutants, and contaminants.

Decision Document (DD): The Department of Defense has adopted the term Decision Document for the documentation of remedial action decisions at non-National Priorities List FUDS Properties. The decision document shall address the following: Purpose, Site Risk, Remedial Alternatives, Public/Community Involvement, Declaration, and Approval and Signature. A Decision Document for sites not covered by an interagency agreement or Federal facility agreement is still required to follow a CERCLA response. All

Decision Documents will be maintained in the Formerly Used Defense Sites Property/Project Administrative Record file.

Digital Geophysical Mapping: The use of specialized digital instruments on the ground surface to detect metallic items such as munitions or munitions debris below the ground. The instruments used are known as sensors.

Ecological Risk Assessment: An evaluation of the risk posed to the environment should remedial activities not be implemented.

Explosive Ordnance Disposal (EOD): The detection, identification, on-site evaluation, rendering safe, recovery, and final disposal of unexploded ordnance and of other munitions that have become an imposing danger, for example, by damage or deterioration.

Formerly Used Defense Site (FUDS): A FUDS is defined as a facility or site (property) that was under the jurisdiction of the Secretary of Defense and owned by, leased to, or otherwise possessed by the United States at the time of actions leading to contamination by hazardous substances. By the Defense Environmental Restoration Program policy, the FUDS program is limited to those real properties that were transferred from Department of Defense control prior to 17 October 1986. FUDS properties can be located within the 50 States, District of Columbia, Territories, Commonwealths, and possessions of the United States.

Groundwater: Subsurface water that occurs in soils and geologic formations that are fully saturated.

Hazardous Substance:

- any substance designated pursuant to section 311(b)(2)(A) of the Federal Water Pollution Control Act [33 U.S.C. 1321 (b)(2)(A)],
- any element, compound, mixture, solution, or substance designated pursuant to section 9602 of CERCLA,
- any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Solid Waste Disposal Act [42 U.S.C. 6921] (but not including any waste the regulation of which under the Solid Waste Disposal Act [42 U.S.C. 6901 et seq.] has been suspended by Act of Congress),
- any toxic pollutant listed under section 307(a) of the Federal Water Pollution Control Act [33 U.S.C. 1317 (a)],
- any hazardous air pollutant listed under section 112 of the Clean Air Act [42 U.S.C. 7412], and

- any imminently hazardous chemical substance or mixture with respect to which the Administrator has taken action pursuant to section 7 of the Toxic Substances Control Act [15 U.S.C. 2606].
- The term does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance under subparagraphs (A) through (F) of this paragraph, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).

Human Health Risk Assessment: An evaluation of the risk posed to human health should remedial activities not be implemented.

Military Munitions: All ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the DoD, U.S. Coast Guard, U.S. Department of Energy, and National Guard. The term includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives, and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof.

The term does not include wholly inert items, improvised explosive devices, and nuclear weapons, devices, and nuclear components, other than nonnuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) have been completed.

Military Munitions Response Program (MMRP): The DoD developed the Military Munitions Response Program (MMRP) in 2001 to address munitions-related concerns, including explosive safety, environmental, and health hazards from releases of unexploded ordnance (UXO), discarded military munitions (DDM), and munitions constituents found at locations other than operational ranges on active and Base Realignment and Closure installations and Formerly Used Defense Sites (FUDS) properties. The

MMRP addresses non-operational range lands with suspected or known hazards from munitions and explosives of concern (MEC) which occurred prior to September 2002 but are not already included with an Installation Response Program site cleanup activity.

Munitions and Explosives of Concern (MEC): This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks means:

- (A) Unexploded Ordnance (UXO), as defined in 10 U.S.C. 101(e)(5);
- (B) Discarded military munitions (DDM), as defined in 10 U.S.C. 2710(e)(2); or
- (C) Munitions constituents (e.g., TNT, RDX), as defined in 10 U.S. Code 2710(e)(3), present in high enough concentrations to pose an explosive hazard.

Munitions Constituents (MC): Any materials originating from UXO, DDM, 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 Site (MRS): A specific area on a defense site that is known or suspected to contain unexploded ordnance, discarded military munitions, or munitions constituents and is known to require a munitions response. Examples include former ranges and munitions burial areas.

No Action: The lead agency has determined that no action is necessary to protect public health or welfare or the environment because the site poses no unacceptable risks to human health or the environment.

Proposed Plan: In the first step in the remedy selection process, the lead agency identifies the alternative that best meets the requirements in CERCLA 300.430(f)(1) and presents that alternative to the public in a proposed plan. The purpose of the Proposed Plan is to supplement the RI and provide the public with a reasonable opportunity to comment on the proposed remedial action, and to participate in the selection of remedial action at a site.

Public Comment Period: The time allowed for the members of an affected community to express views and concerns regarding an action proposed to be taken by USACE.

Receptors: Humans, animals, or plants that may be exposed to risks from contaminants related to a site.

Remedial Action: Action of the lead remedial agent that addresses a contaminant, hazard, receptor, or the connection between the receptor and the hazard, which is taken to produce site conditions that present no significant risk to human health and the environment.

Remedial Action Objective: Objectives of remedial actions that are developed based on contaminated media, contaminants of concern, potential receptors and exposure scenarios, human health and ecological risk assessment, and attainment of regulatory cleanup levels, if any exist.

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, as necessary, and includes the gathering of sufficient information to determine the necessity for remedial action and to support the evaluation of remedial alternatives.

Risk Management Methodology: A risk evaluation method for munitions and explosives of concern used to provide information to support risk management decisions upon completion of site characterization;

develop remedial action objectives; and provide a basis for assessing achievement of remedial action objectives relative to acceptable end states.

Saturated Response Area: An area where the density of geophysical anomalies is too high to identify individual anomalies.

Site Inspection (SI): An on-site investigation to determine whether there is a release or potential release and the nature of the associated threats. The purpose is to augment the data collected in the preliminary assessment and to generate, if necessary, sampling and other field data to determine if further action or investigation is appropriate.

U.S. Army Corps of Engineers (USACE): A branch of the DoD with special expertise in carrying out CERCLA/NCP investigations and response actions at former DoD sites.

U.S. Department of Defense (DoD): an executive branch department of the federal government of the United States charged with coordinating and supervising all agencies and functions of the government concerned directly with national security and the United States Armed Forces.

Acronyms

AGC	Advanced geophysical classification
Alion	Alion Science and Technology
ASR	Archive Search Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DD	Decision Document
DGM	Digital geophysical mapping
DoD	U.S. Department of Defense
DMM	Discarded military munitions
EA	EA Engineering, P.C. and Its Affiliate EA Science and Technology
EOD	Explosive Ordnance Disposal
ft	feet
FUDS	Formerly Used Defense Site
HTRW	Hazardous, toxic, and radioactive waste
in.	inch(es)
MC	Munitions constituents
MD	Munitions debris
MEC	Munitions and explosives of concern
MMRP	Military Munitions Response Program
MRS	Munitions Response Site
Navy	U.S. Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NJ	New Jersey
NMRD	Non munitions related debris
NY	New York
PIPC	Palisades Interstate Park Commission
RI	Remedial Investigation
SI	Site Inspection
SRA	Saturated response area
USACE	U.S. Army Corps of Engineers

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