Decision Document
Military Munitions Response Program

Iona Island Naval Ammunition Depot
Formerly Used Defense Site

C02NY074403
Stony Point, Rockland County, New York

Contract No. W912DR-15-D-0014
Delivery Order No. W912DR17F0180

U.S. Army Corps of Engineers

New England District

February 2023
Version: Final

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	Degrees Fahrenheit
AGC	Advanced geophysical classification
Alion	Alion Science and Technology
ASR	Archive Search Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSM	Conceptual Site Model
DD	Decision Document
DERP	Defense Environmental Restoration Program
DGM	Digital Geophysical Mapping
DoD	Department of Defense
EA	EA Engineering, P.C. and its affiliate EA Science and Technology
EOD	Explosive Ordnance Disposal
ft	Foot (feet)
FUDS	Formerly Used Defense Site
GSA	General Services Administration
HTRW	Hazardous, Toxic, and Radioactive Waste
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
NAVD	North American Vertical Datum
NOAA	National Oceanic and Atmospheric Administration
NYSDEC	New York State Department of Environmental Conservation and Health
NYDOH	New York State Department of Health
PIPC	Palisades Interstate Park Commission
QAPP	Quality Assurance Project Plan
RI	Remedial Investigation
RMM	Risk Management Methodology
SARA	Superfund Amendments and Reauthorization Act

SRA	Saturated Response Area
UFP	Uniform Federal Policy
USACE	U.S. Army Corps of Engineers

1. DECLARATION

1.1 SITE NAME AND LOCATION

The U.S. Army Corps of Engineers (USACE) prepared this Decision Document (DD) to address Military Munitions Response Program (MMRP) sites known as (1) 1903 Explosion Area Munitions Response Site (MRS) 01, (2) former loading docks, (3) shoreline downstream from the loading docks, and (4) a former dump site at the Iona Island Naval Ammunition Depot Formerly Used Defense Site (FUDS), Rockland County, New York (FUDS Project Number C02NY074403).

The Iona Island Naval Ammunition Depot FUDS consists of approximately 124 acres of land and inland water on the Hudson River. 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 on-site. Iona Island Naval Ammunition Depot was deactivated in 1947. The former depot was excessed by the Navy in 1957 and transferred to the General Services Administration (GSA). The GSA conveyed the FUDS property to Palisades Interstate Park Commission (PIPC) in 1965. The 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 purposes only. The FUDS is part of the much larger Hudson River National Estuarine Research Reserve, a Significant Coastal Fish and Wildlife Habitat Area, and National Natural Landmark.

1.2 STATEMENT OF BASIS AND PURPOSE

This DD presents the determination by the USACE that no action is required at this site. The No Action decision was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 Code of Federal Regulations (CFR) Part 300. As per 40 CFR 300.800(a) of the NCP, the documentation supporting No Action is contained in the Administrative Record. This No Action DD is also compliant with Defense Environmental Restoration Program (DERP) statute (10 U.S. Code § 2701 et seq.).

The New York State Department of Environmental Conservation and Health (NYSDEC), the New York State Department of Health, and PIPC concur with this decision.

1.3 DESCRIPTION OF THE DECISION MADE

No unacceptable human health risk from munitions and explosives of concern (MEC) was identified for the 1903 Explosion Area MRS 01, the former loading docks, the shoreline downstream from the loading docks, or the Dump Site based on the risk assessment conducted during the Remedial Investigation (RI) (USACE 2021). No response action is necessary to protect public health or welfare from actual or threatened releases of MEC into the environment associated with the Iona Island Naval Ammunition Depot FUDS.

The Risk Management Methodology (RMM) (USACE 2019) is the current evaluation system being used to assess risk from MEC at each MRS/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 live munitions/explosives (accessibility), the severity of an explosive incident should one occur (severity), and the likelihood of a detonation (sensitivity of the items). The methodology utilizes these factors to illustrate site-specific conditions and differentiate acceptable from unacceptable conditions. In accordance with the data quality objectives identified in the Uniform Federal Policy (UFP) Quality Assurance Project Plan (QAPP) prepared for the RI (EA Engineering, P.C. and its affiliate EA Science and Technology [EA] 2019), sufficient area was investigated during the RI to support the conclusions presented in the RMM. No MEC has been found at the Iona Island Naval Ammunition Depot FUDS per the RI (USACE 2021). No MEC and only non-hazardous munitions debris (MD) has been identified during previous investigations or during the RI. Based on the conclusions drawn from the RMM that an interaction with MEC is very unlikely, it is the USACE's conclusion there is no unacceptable risk due to MEC at this site.

This DD addresses only risks to human health related to MEC. A separate RI, Proposed Plan, Feasibility Study (if required), and DD will be prepared under an on-going Hazardous, Toxic, and Radioactive Waste (HTRW) project where sampling for chemicals that may have resulted from previous Department of Defense (DoD) use, including munitions constituents (MC), is being performed to address risks to human health and the environment.

1.4 STATUTORY DETERMINATIONS

USACE, in coordination with NYSDEC, concluded that No Action is necessary to protect public health from MEC resulting from the former use of the Iona Island Naval Ammunition Depot FUDS. Because no remediation will be done at the site for MEC, 5-year reviews are not required. The public participation requirements of Section 117(a) of CERCLA and the NCP at 40 CFR 300.430(f)(3) have been met.

1.5 AUTHORIZING SIGNATURE

This DD presents the final decision of no action for MEC at Iona Island Naval Ammunition Depot FUDS. The USACE is the lead executing agency under the DERP at the Iona Island Naval Ammunition Depot FUDS and has developed this DD consistent with CERCLA, as amended, and the NCP. This DD will be available for public review and will be incorporated into the Administrative Record.

Administrative Record
Bear Mountain State Park Administration Building
3006 Seven Lakes Drive
Tomkins Cove, NY 10986
(845) 382-6704

This DD, and other documents that support it, are also available for review through the USACE–New England District website for the Iona Island FUDS at the following link:
https://www.nae.usace.army.mil/Missions/Projects-Topics/Iona-Island-FUDS/.

The DD, with a present worth cost of $0 is approved by the undersigned, pursuant to the delegated authority in the Assistant Secretary of the Army (ASA) for Installations, Energy and Environment (IE&E) memorandum dated May 25, 2022, subject: Assignment of Mission Execution Functions Associated with Department of Defense Lead Agent Responsibilities for the Formerly Used Defense Sites Program, the USACE Re-delegation dated July 8, 2022 and the February 9, 2017, Memo Interim Guidance Document (IGD) for the Formerly Used Defense Sites (FUDS) Decision Document (DD) Staffing and Approval.

Approved:

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Programs Director
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2. DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND BRIEF DESCRIPTION

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, 5 miles south of Fort Montgomery (Figure 2-1). This DD addresses four general areas at the Iona Island Naval Ammunition Depot FUDS that were identified as requiring investigation for MEC, including: (1) MRS 01 1903 Explosion Area (red circle), (2) former loading docks (orange polygons), (3) shoreline at and in the vicinity of the loading docks (dashed black polygon), and (4) the Dump Site (black polygon) (Figure 2-2).

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 is known as Round Island.

The FUDS is currently under the administration of the PIPC and is 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, a 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 plans for construction or redevelopment at the site for the foreseeable future and no anticipated future use of the Island other than its current use.

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

This section summarizes the history of the Iona Island Naval Ammunition Depot FUDS, previous investigations, and removal actions conducted at Iona Island Naval Ammunition Depot FUDS.

2.2.1 Site History

The 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 on-site. 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).

In 1903, at least one 13-inch diameter shell exploded between Shell Houses 3 and 4 (former Buildings 210 and 209, respectively) on Iona Island. The explosion destroyed Shell Houses 3 and 4, and damaged Shell Houses 1 and 2 (USACE 1998). Other munitions stored in the area during the time of the explosion included 1-pounders, 6-pounders, and 6-inch. diameter ammunition. The potential area of contamination resulting from the 1903 explosion was

determined to be a 1,250-foot (ft) radius area centered on the location of the 1903 explosion (Figure 2-2).

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 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 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 excessed by the Navy in 1957 and transferred to the GSA. The GSA conveyed the FUDS property to 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 primarily to park personnel (research, supervised tours, and study groups).

2.2.2 Previous Investigations and Removal Actions

Archive Search Report (ASR) (USACE 1998, 2004)—Through interviews, archival 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-inch. 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, New Jersey. The EOD unit determined that 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 Camp 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 indicates that ammunition had been identified on the shore and was 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-inch. rocket warhead. Maintenance personnel stated that, during low water conditions, suspected ammunition could be seen in the Hudson River near the "Dump Site." No ordnance was seen in the Hudson River at the time of the site visit; however, the team did locate one empty 20-millimeter 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 on-site.

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

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

During the 2007 Site Inspection field visit and during low tide, a qualitative reconnaissance was completed 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 MD or MEC was observed on the FUDS or near the shoreline during the field visit.

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

2.2.3 2020 Remedial Investigation

In 2020, USACE conducted an RI to characterize the nature and extent of potential MEC at the Iona Island Naval Ammunition Depot FUDS and to assess risk to human health from MEC

(USACE 2021). At MRS 01, 6.8 acres were surveyed over 27 grids using digital geophysical mapping (DGM) (Figure 2-3). A total of 1,049 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. 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 (e.g., mini excavator). Of the 420 anomalies and disposal pit/trench locations investigated, two anomaly locations contained MD. The MD consisted of two pieces of fragmentation from a 6-pound projectile.

The dive team performed investigations along transects and at "spot dives" on top of and adjacent to the three former loading dock footprints (Figure 2-3). 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 were collected on parallel transects along the shoreline, and 44 individual anomalies were identified as potential targets of interest in addition to debris associated with the former loading docks. 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 shoreline, and only non-munitions related debris was identified.

DGM was conducted over 2,360 linear ft of transects spaced 10 ft apart over the Dump Site. Fourteen 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 (e.g., shovel) and mechanical (e.g., 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.

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 2-4. 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 site use is being evaluated as a part of the on-going HTRW investigation.

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 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. There is anecdotal evidence of a single hand grenade and a single unidentified munitions item being found on Iona Island, however, there is no evidence that these items were identified as MEC and there is no historical record of use for these items at

the site and no easily explainable reason for their presence (e.g., no training areas, target ranges, OB/OD operations, or MEC disposal). Based on the completion of the RMM evaluation of risk from MEC to human health, MRS 01 and the 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.

2.3 COMMUNITY PARTICIPATION

The Final RI Report (USACE 2021) and the Proposed Plan (USACE 2022) were made available to the public on 29 April 2022. The notice announcing the availability of these documents was published in the weekly *Cornwall Local/News of the Highlands* newspaper on 29 April 2022 and on 6, 13, 20, and 27 May 2022. A public comment period was provided from April 29 to June 1, 2022. In addition, a public meeting was held 4 May 2022 to present the Proposed Plan. At the meeting, representatives from USACE answered questions and presented information about the Iona Island Naval Ammunition Depot FUDS and the remedial alternatives considered. Select Iona Island Naval Ammunition Depot FUDS documents can be accessed on the USACE New England District website titled "Iona Island." The current web address for the page is 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

All Iona Island Naval Ammunition Depot FUDS documents in the Administrative Record are available to the public at the following location:

Bear Mountain State Park Administration Building, 3006 Seven Lakes Drive, Tomkins Cove, NY 10986 (845-382-6704).

2.4 SCOPE AND ROLE OF THE RESPONSE ACTION

This DD authorizes the No Action decision related to MEC for the Iona Island Naval Ammunition Depot FUDS. USACE has concluded that no CERCLA action is necessary to ensure protection of human health from MEC. Risk to human health or the environment from MC attributed to former DoD site use is being evaluated as a part of the on-going HTRW investigation.

2.5 SITE CHARACTERISTICS

This section provides an overview of the physical characteristics of the Iona Island Naval Ammunition Depot FUDS including topography, geology, and ecology, and describes the nature and extent of contamination.

2.5.1 Physical Characteristics

2.5.1.1 Regional Climate

The climate in Rockland County, New York is classified as humid continental and is subjected to some modification by the Atlantic Ocean. Minimum temperatures average 22.9 degrees Fahrenheit (°F) in the winter and maximum temperatures average 82.3°F in the summer (National Oceanic and Atmospheric Administration [NOAA] 2021). Mean monthly air temperatures below 40°F occur from December through March and freeze dates with temperatures below 28°F generally occur from late October to mid-April (NOAA 2021). Precipitation averages from 35 to 49 in. annually, with over half of the precipitation (26.14 in.) falling between May and October (NOAA 2021).

2.5.1.2 Topography

Iona Island is an approximately 124-acre bedrock island of the Hudson River that has rocky terrain, with varying degrees of slopes. The rock is resistant to erosion and forms rocky knobs on Iona Island. Elevations range from about 1 ft North American Vertical Datum 1988 (NAVD88) along the immediate shoreline to 75 ft NAVD88 at the high end (USACE 1998). The southeastern part of the Island, once cut off by marshes, is known as Round Island. It was attached to the south end of Iona Island with fill in the early 20th century.

2.5.1.3 Geology

Field notes from a 1996 investigation document overburden at Iona Island as fill material overlying fine to coarse sand, with some silt and gravel. Overburden at Iona Island is shallow with bedrock encountered at the ground surface to depths of approximately 25 in. below ground surface, as found during the Greeley-Polhemus Group soil sampling event in October 1996 (USACE 1998).

The bedrock of the New England Upland and Hudson Highlands is folded, faulted, and includes metamorphosed sediments that have been intruded by numerous plutonic masses (USACE 1998). The rock is resistant to erosion and forms rocky knobs on Iona Island that project 100 ft above the Hudson River. Based on the bedrock geology map for the Lower Hudson, bedrock at Iona Island consists primarily of biotite-quartz-plagioclase paragneiss (Fisher et al. 1970).

2.5.1.4 Soil

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 (Yozzo 2005). Overburden at Iona Island is shallow with bedrock encountered at the ground surface to depths of approximately 25 in. below ground surface.

Muddy sediments dominate the Hudson River, and there is a complicated pattern of dynamic and depositional environments between the non-depositional bedrock outcrops, which are found along the river margins. At Iona Island, the eastern shoreline of the Hudson River is high energy

versus the low energy/depositional environment of the western shoreline and tidal marsh area. Sediments in the tidal marshes and shallows west of Iona Island consist of peat and silt and are more than 100 ft deep (NOAA and NYSDEC 1982).

A retaining wall is present along the Hudson River between the northern dock and the Dump Site. The shoreline where the retaining wall is not present is characterized by riprap (at former dock locations), exposed bedrock, gravel/cobble beaches, and boulders in the intertidal zone.

The western and southern portion of the Island is separated from the adjacent marshes by the active River Subdivision (CSX Transportation) railroad tracks. The southern shoreline is separated from Ring Meadow by a fill area emplaced after Navy transfer of the FUDS to PIPC. No culverts are present under the CSX railbed and drainage from Iona Island to the marsh is generally restricted by the CSX railbed.

2.5.1.5 Hydrogeology

Groundwater at and near Iona Island is found in both overburden and underlying bedrock. Groundwater in overburden at Iona Island was encountered at a depth of 2 ft near the Dump Site between Iona Island and Round Island during the October 1996 soil sampling event, likely because bedrock is close to the surface and infiltration, where possible, is very slow (Greeley-Polhemus Group 1997). Shallow groundwater is likely influenced by the Hudson River.

Crystalline bedrock of the Hudson Highlands acts as a relatively poor aquifer. Groundwater in the gneiss and granitic rocks only occurs in fractures and joints (Heisig 2010). Bedrock groundwater at Iona Island is likely encountered at depths greater than 6 ft, based on the rock outcrop soil description reported in the Rockland County Soil Survey (Bonnell 1990). 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 well that provides non-potable water.

2.5.1.6 Surface Water Hydrology

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 are impacted by, the Hudson River.

Iona Island is bordered on the east by the Hudson River; on the northwest by the mouth of Doodletown Bight, an expanse of shallows and mudflats; and on the west and southwest by Iona Island Marsh, a tidal marsh between Iona Island and the mainland. Iona Island is separated from the mainland by Snake Hole Creek on the south and Doodletown Brook on the west and north. The Dump Site (located between Iona Island and Round Island) and adjoining marshes are tidally influenced by the Hudson River. The Dump Site is a wetland area that is inundated during high tide. Drainage from the Dump Site is to the west and to the south to the Iona Island Marsh.

Iona Island is located 41.2 miles upstream from New York Harbor. The Hudson River at Iona Island is an estuary (drowned river valley) affected by semidiurnal tides, with two highs and two lows occurring within a 25-hour period (Yozzo et al. 2005). Tidal influence at Iona Island is

approximately 3.5 ft, and shorelines may not be accessible during high tide conditions (Alion 2008). The section of the Hudson River at Iona Island is very narrow and deep, with strong currents and a rocky bottom substrate. The width of the Hudson River at Iona Island is approximately 0.3 miles and the river in this area has a depth of approximately 165 ft.

2.5.1.7 Ecology

Habitat types surrounding Iona Island include brackish intertidal mudflats, brackish tidal marsh, and freshwater tidal marsh. Terrestrial habitats on the Island consist of deciduous forestland and meadows comprised of both native and invasive herbaceous vegetation and early successional shrubs. Specific habitats are described in more detail in the following paragraphs.

An intertidal marsh (Iona Island Marsh) encompasses approximately 225 acres between Iona Island and the western shore of the Hudson River and is one of the largest, undeveloped tidal wetlands on the Hudson River (Yozzo et al. 2005). The marshes that separate Iona Island and Round Island from the mainland were filled in the early 20th century, with a Navy dumping area located along the Hudson River side of the islands and an area of fill on the western shoreline placed by PIPC following Navy transfer of the FUDS in 1965.

The Hudson River is classified as estuarine and marine deep water (U.S. Fish and Wildlife Service 2018). Migratory birds, including osprey (*Pandion haliaetus*) and bald eagles (*Haliaeetus leucocephalus*), are found along the Hudson River shoreline of Iona Island. They hunt for the more than 200 species of fish that populate the Hudson River, which serves as a nursery ground for important species such as sturgeon, striped bass, and American shad. Rocks, large boulders, and riprap form Iona Island's shoreline with the Hudson River. Among these rocks, benthic macroinvertebrates such as snails and amphipods are common.

The upland terrestrial areas of the Island consist of deciduous, rocky woodland communities including oaks (*Quercus* spp.), ashes (*Fraxinus* spp.), birches (*Betula* spp.), willows (*Salix* spp.), red maple (*Acer rubrum*), and elms (*Ulmus* spp.). The woodlands are maintained for their value as cover, perch sites, and buffer zones.

Resident wildlife species in the general vicinity (not necessarily present on Iona Island) include muskrat (*Ondatra zibethicus*), white-tailed deer (*Odocoileus virginianus*), and red fox (*Vulpes Vulpes*). Herptiles may include box turtle (*Terrapene carolina*), green frog (*Rana clamitans*), rat snake (*Pantherophis* spp.), Northern water snake (*Nerodia sipedon*), and timber rattlesnake (*Crotalus horridus*).

2.5.1.8 Threatened and Endangered Species

Several of the species that occur within Iona Island are state and/or federally listed as threatened or endangered. In addition to state protection, bald eagles are federally protected under the Bald and Golden Eagle Protection Act. Additionally, there are 10 migratory birds of conservation concern known to use the Island as habitat. Atlantic sturgeon (*Acipenser oxyrhynchus*) and shortnose sturgeon (*Acipenser brevirostrum*) live primarily in the ocean but migrate to coastal rivers for spawning. In New York, spawning and nursery grounds for juveniles are located in the Lower Hudson River. Both species are classified as endangered species under the Endangered

Species Act and are protected in the State of New York under the jurisdiction of the National Marine Fisheries Service.

2.5.2 Conceptual Site Model

A conceptual site model (CSM) describes the contaminant sources, release and transport mechanisms, the exposure media, exposure pathways, and potentially exposed human populations for a site. The CSM is broken into three sections (1) Sources—areas where MEC or MC has or may enter the environment, (2) Interactions—the hazard from MEC or MC that may arise as a result of receptors coming in contact with source areas, and (3) Receptors—organisms (human or ecological) that have the potential to come in contact with a chemical or physical agent at the present time or in the reasonably anticipated future. The exposure risk associated from potential MC at the Iona Island Naval Ammunition Depot FUDS is being evaluated as part of the on-going HTRW investigation (EA 2020, 2022). The CSM summarizes potential receptor exposure pathways for MEC that are or may be "complete," "potentially complete," or "incomplete." All elements of the pathway must be present for a pathway to be considered "complete" or "potentially complete," including a source of MEC, a receptor that might be affected by contamination, and a method for which the receptor may be exposed to the contaminant.

Potential Sources—At MRS 01, historically and during the RI, only non-hazardous MD were identified and none of the items found were determined to be MEC. Although there is anecdotal evidence of a single hand grenade and a single unidentified munitions item being found on Iona Island, there is no evidence that these items were identified as MEC and there is no historical record of use for these items at the site and no easily explainable reason for their presence (e.g., no training areas, target ranges, OB/OD operations, or MEC disposal). Potential MEC presence at MRS 01 is based on a one-time event (1903 explosion) rather than continuous use such as a firing range. There are several statements in the memorandum from a US Navy Admiral documenting the 1903 explosion that indicate the potential for MEC from the explosion at Iona Island is low. These statements include "1-pdr, 6-pdr, and 6-inch ammunition for the MASSACHESETTS destroyed", "most of the ammunition stored in the buildings saved", "a number of live shells of all calibers were left, some as they were originally stowed", "a pile of 6" shells in the very middle of the greatest havoc wrought by the explosion remaining undisturbed in their rope slings". Additionally, the depot was used and expanded another 50 years and most, if not all, of any remaining MEC from the explosion would likely have been identified and removed during the shell house and infrastructure repair/cleanup and subsequent significant development of the depot. Based on the results of the RI, it is anticipated that future encounters with MEC would be unlikely.

At the former docks, the entire former dock footprints and the 50-ft buffer areas surrounding the former docks are saturated with former dock debris (concrete rubble, rebar, railroad rails, and pipes), and no MEC or MD was identified. Anecdotal information presented in the ASR implied that munitions may have been dumped or accidentally dropped during the loading of ships; however, no evidence of discarded military munitions was identified during the dive operations, and the area is presumed not to be impacted by MEC.

Similar to the former docks, no MEC or MD was identified along the shoreline downstream from the former docks or adjacent to the former docks. All of the anomalies investigated resulted in debris from the former docks or depot infrastructure (pipes, railroad rails, miscellaneous metal debris), and a MEC source does not appear to be present. The shoreline is presumed not to be impacted by MEC.

At the Dump Site, no MEC or MD was identified, and only concrete slabs, pipes, burned metal debris, and ash were present. Based on the proximity of the Dump Site to the former incinerator, it appears that the material buried in the Dump Site is primarily composed of burned debris from the incinerator. Based on a lack of evidence of MEC or MD, the Dump Site is presumed not to be impacted by MEC.

Interactions—Potential human receptors may be exposed to the explosive hazard associated with the unlikely presence of MEC on the surface and in the subsurface both on the land and aquatic portions of the site as a result of historical operational use and the 1903 explosion. In addition to trespassers, the FUDS is not DoD controlled and is used by different entities including visitors/recreational users and workers of Bear Mountain State Park, who have access to areas where a potential, but unlikely MEC hazard may exist.

Future access restrictions are unlikely because the reasonable future site use is expected to remain the same. Potential MEC may migrate to the surface as a result of natural processes such as frost heave, wind and water erosion, and storm events. Because current and future receptors present at the site will have limited access, and there is a low potential for finding MEC on the land surface, in the subsurface, or in sediments, there is a potentially complete pathway for exposure to the hazard of MEC to human receptors at the FUDS.

Receptors—Potential human receptors may be exposed to explosive hazards from MEC. Based on the identified preliminary CSM, the current and potential human receptors at the site are the following:

- Bear Mountain State Park employees
- Researchers
- Recreational users
- Construction workers
- Trespassers.

The future use of Iona Island is anticipated to remain consistent with current use and the Island will continue to be maintained by park employees and to be an important area for research. Communication with the Director of Development and Special Projects at PIPC indicates that there are no plans for construction or redevelopment at the site for the foreseeable future. Though not currently planned, hypothetical future plans for the Island may include recreational use.

The Island is currently used by a limited number of recreational canoers, who must obtain a permit for access. Current and future recreational users include canoers and potential campers. Potential campers that would have a higher level of direct exposure to on-site soil than other recreational users are considered a separate category of use.

The explosive risk associated with potential MEC to ecological receptors is not evaluated; only the exposure risk from associated MC (i.e., metals and explosives constituents). MC sampling and the exposure risk associated with explosives and metals MC attributed to former DoD site use is being evaluated as a part of the HTRW investigation.

2.6 CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

Iona Island was designated a National Natural Landmark in 1974 by the National Park Service and is currently under the administration of PIPC and is maintained by staff of Bear Mountain State Park. Public use of the Island is limited to educational outings and history tours. Site access is limited to authorized employees of Bear Mountain State Park (who use a few of the remaining buildings for storage), to researchers (who work in the marsh areas as well as on Iona Island), and to guided tour groups that visit the Island six to eight times a year between May and October. The Island is partially fenced, and the main gate is an unmanned vehicular gate that is unlocked during normal working hours (7:00 a.m. to 5:00 p.m., Monday through Friday). This allows for unrestricted access to Iona Island from Bear Mountain State Park. The vehicle gate is locked after normal working hours and on weekends. Boating along the Hudson River is open to the public, and because the shoreline of Iona Island is not fenced, there is potential for recreational users of the Hudson River to access the Island via the shoreline. Although the Island was historically used for camping, camping is no longer conducted because the Island is not regularly patrolled by the Park Service and there are physical hazards (not related to previous military use of the site) present.

In 1965, when GSA conveyed the property to PIPC, it was under a “restrictive clause” (i.e., park purposes only). The majority of Iona Island is currently open space. There is a parking lot and scenic overlook on the west side of the Island and the CSX railroad runs north-south along the west side of the Island. Although PIPC developed plans for construction of a recreational park, these plans were not fully executed, and only water systems were installed. There are no plans for construction or redevelopment at the site for the foreseeable future and no anticipated future use of the site other than its current use as a conservation area.

Land use surrounding Iona Island is recreational and military, with Bear Mountain State Park along the western shore of the Hudson River and Camp Smith along the eastern shore. The site is also surrounded by the Iona Island/Doodletown Bird Conservation Area (NYSDEC 2017). For the portions of the adjacent Bear Mountain State Park that are open to the public, recreational opportunities include hiking, boating, and bird watching. There is no public canoeing or kayaking allowed in the marshes surrounding Iona Island. Access to the marsh is limited to guided canoe and kayak trips.

Iona Island is part of the much larger Hudson River National Estuarine Research Reserve and Significant Coastal Fish and Wildlife Habitat Area, which is managed under New York’s Coastal Management Program (Alion 2008). In addition, the Iona Island Marsh became a registered National Natural Landmark in 1971. The Island is considered a bald eagle sanctuary (Levine 2011).

2.7 SUMMARY OF SITE RISKS

The sampling design developed in the MMRP RI planning documents indicated that additional MC sampling would be conducted only if source areas (i.e., areas with concentrations of MEC) were found during the MMRP RI (USACE 2021). Because no MEC was found, no MC samples were collected as part of the MMRP RI. The potential for risks to human health and the environment associated with MC that may be present in environmental media is being addressed under the on-going HTRW project, where sampling for chemicals that may have resulted from previous DoD site use, including those associated with military munitions (i.e., MC), is being performed.

An analysis of the explosive risk from MEC for the Iona Island Naval Ammunition Depot FUDS is included within the MMRP RI report. A summary of the risk is provided below.

2.7.1 Risk Management Methodology for MEC

The RMM (USACE 2019) is the current evaluation system being used to assess risk from MEC at the Iona Island Naval Ammunition Depot FUDS, and it accounts for a variety of factors related to the potential risks. The methodology contains a series of risk matrices (Matrices 1 through 4) that use site-specific data to relate accessibility, munitions sensitivity, and severity of an explosive event if one were to occur, to determine baseline risks as discussed below.

Matrix 1—the "Likelihood to Encounter" relates the site characterization data for the amount of MEC potentially present to site use, including accessibility, in order to determine the likelihood of encountering MEC at a specific site.

- No MEC has been found historically or during previous investigations and all MD identified to date has been empty and free of explosives. The two MD items found during the RI are evidence of the 1903 explosion. Although there is anecdotal evidence of a single hand grenade and a single unidentified munitions item being found on Iona Island, it was undetermined if these items were ever classified as MEC. There is no historical record of use for these items at the site, including the piece of a 3.5-inch rocket, and no easily explainable reason for their presence (e.g., no training areas, target ranges, OB/OD operations, or MEC disposal). Potential MEC presence at MRS 01 is primarily based on a one-time event (1903 explosion) rather than continuous use such as a firing range, OB/OD operations, MEC disposal, etc.). Based on historical information and site specific characterization data, the amount of MEC suspected to exist at Iona Island is considered low.

  Site access is limited to authorized employees of Bear Mountain State Park who use a few of the remaining buildings for storage, to researchers who work in the marsh areas, to guided tour groups six to eight times a year between May and October, and to trespassers. The Island is partially fenced, and the main gate is unmanned during normal working hours, which allows for limited access to Iona Island from Bear Mountain State Park. Boating along the Hudson River is open to the public, and because the shoreline of Iona Island is not fenced, there is a potential for recreational users of the Hudson River/trespassers to access the Island via the shoreline. Based on current and anticipated

future users and access conditions, MRS 01 frequency of use is considered "intermittent" (e.g., some irregular use, or access limited). Based on these factors, the likelihood of encounter with MEC is considered "unlikely" for this matrix. The Matrix 1 output of an "unlikely" encounter of MEC at Iona Island is used as an input for Matrix 2.

Matrix 2—the "Severity of an Incident" relates the "Likelihood of Encounter" from Matrix 1 to the severity of an unintentional detonation.

- No MEC has been documented at MRS 01 in the 117 years since the 1903 explosion, and all MD identified to date has been inert or expended. However, if, based on the "unlikely" occurrence that a munition potentially associated with the 1903 explosion (i.e., 1-pounder, 6-pounder, 6-inch, or 13-inch high explosive projectile) was encountered and it exploded, injury would be considered "critical" resulting in potential death. Based on these factors, the severity of an explosive incident results in a Category "D" for this matrix. The Matrix 2 output of "D" for Severity of Incident is used as an input for Matrix 4.

Matrix 3—the "Likelihood of Detonation" relates the sensitivity of site-specific munitions items to the likelihood for energy to be imparted on an item, such that the interaction results in detonation (an incident).

- No MEC has been documented at MRS 01 and all MD identified to date has been inert or expended. The types of munitions potentially associated with the 1903 explosion (i.e., 1-pounder, 6-pounder, 6-inch. and 13-inch. high explosive projectiles) are not considered sensitive and would therefore be classified as "moderate" sensitivity. Based on the current use of MRS 01, which is a state park not planned for development and where digging is manual or limited, the likelihood to impart energy on an item is considered "modest." Based on these factors, the likelihood of detonation results in a Category "2" (i.e., medium) for this matrix. The Matrix 3 output of "2" for Likelihood of Detonation is used as an input for Matrix 4.

Matrix 4—represents the overall risk for the site and differentiates "acceptable" from "unacceptable" conditions. This is determined based on the likelihood of an encounter (Matrix 1), with consideration given to the severity of the incident (Matrix 2), combined with the likelihood of an interaction that results in detonation (Matrix 3).

- Based on the result from Matrix 2 ("D") and the result from Matrix 3 ("2"), the Matrix 4 output indicates current conditions at MRS 01 are *"***Acceptable" (i.e., no unacceptable risk)**.

The summary of the results from each matrix evaluation is presented in Table 2-1 for the Iona Island Naval Ammunition Depot FUDS.

Table 2-1: Risk Management Methodology Summary Evaluation

Matrix	Evaluation	Risk Output
#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 (D)
#3 Likelihood of Detonation	Modest likelihood of imparting energy on moderately sensitive munition	Medium (2)
#4 Site Conditions	Unlikely encounter; improbable severe incident; medium likelihood of detonation if encountered	ACCEPTABLE SITE CONDITIONS

Sufficient area was investigated during the RI to support the conclusions presented in the RMM. Although practice and inert munitions have been identified at Iona Island Naval Ammunition Depot FUDS, no MEC has been documented at Iona Island Naval Ammunition Depot FUDS historically, during previous investigations, or during the RI. Based on the conclusions drawn from the RMM that an interaction with MEC is very unlikely, it is the USACE's conclusion there is no unacceptable risk due to MEC at this site. If, however, in the future, new information and/or MD is discovered that is significantly different from what is known or discovered to date, PIPC may consult with the USACE to assess options.

2.8 DOCUMENTATION OF SIGNIFICANT CHANGES FROM THE PREFERRED ALTERNATIVE IN THE PROPOSED PLAN

No comments on the Proposed Plan for the Iona Island Naval Ammunition Depot FUDS were received at the public meeting or during the public comment period of 29 April to 1 June 2022. Therefore, there are no changes in this DD to the No Action determination for the Iona Island Naval Ammunition Depot FUDS from what was presented in the Proposed Plan for these sites.

3. RESPONSIVENESS SUMMARY

The public comment period for the Proposed Plan was provided from 29 April through 1 June 2022. In addition, a public meeting was held virtually on 4 May 2022 to present the Proposed Plan. A virtual meeting was held pursuant to DOD and EPA policy due to the worldwide pandemic. No objections to that format from the stakeholders or the public were received. A notice identifying the date and time of the public meeting, the public comment period, and the availability of the Proposed Plan was published in the Cornwall Local/News of the Highlands newspaper on 29 April 2022 and on 6, 13, 20, and 27 May 2022. At the public meeting, representatives from USACE presented information about the Iona Island Naval Ammunition Depot FUDS and the remedial alternatives considered. No questions were submitted during the public meeting and no written comments were received during the public comment period. The meeting transcript has been placed in the Administrative Record at the USACE-New England District office and the Bear Mountain State Park Administration Building and on the USACE–New England District website for the Iona Island FUDS. It can also be found in Appendix A of the DD.

3.1 STAKEHOLDER COMMENTS AND USACE RESPONSES

The public comment period ended on 1 June 2022. No formal comments were received during the public meeting or during the comment period. NYSDEC, NYSDOH, and PIPC reviewed the Proposed Plan and had no comments, attended the public meeting or were provided the public meeting presentation, and concurred with the No Action decision.

3.2 TECHNICAL AND LEGAL ISSUES

No issues were raised during the public meeting or during the public comment period that would impact the technical or legal requirements for the No Action decision.

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FIGURES

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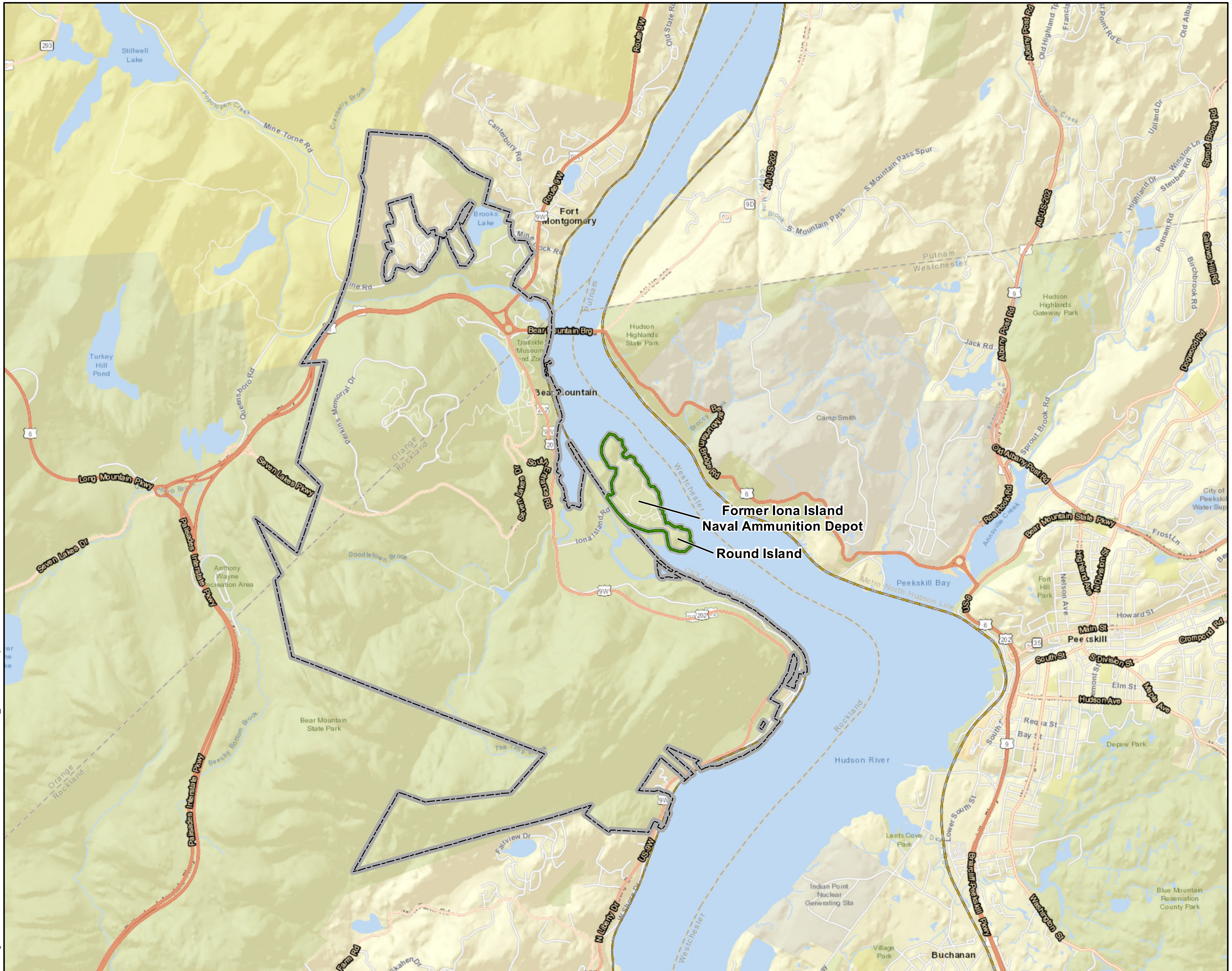

VICINITY MAP

Legend

- FUDS Boundary
- Bear Mountain State Park Boundary

0 0.5 1
Miles
1 in = 1 miles

N

FIGURE 2-1
IONA ISLAND SITE LOCATION MAP

IONA ISLAND NAVAL AMMUNITION DEPOT
FORMERLY USED DEFENSE SITE
ROCKLAND COUNTY, NY

Aerial: ESRI ArcGIS Online Map Service

Map Date: 11/19/2020

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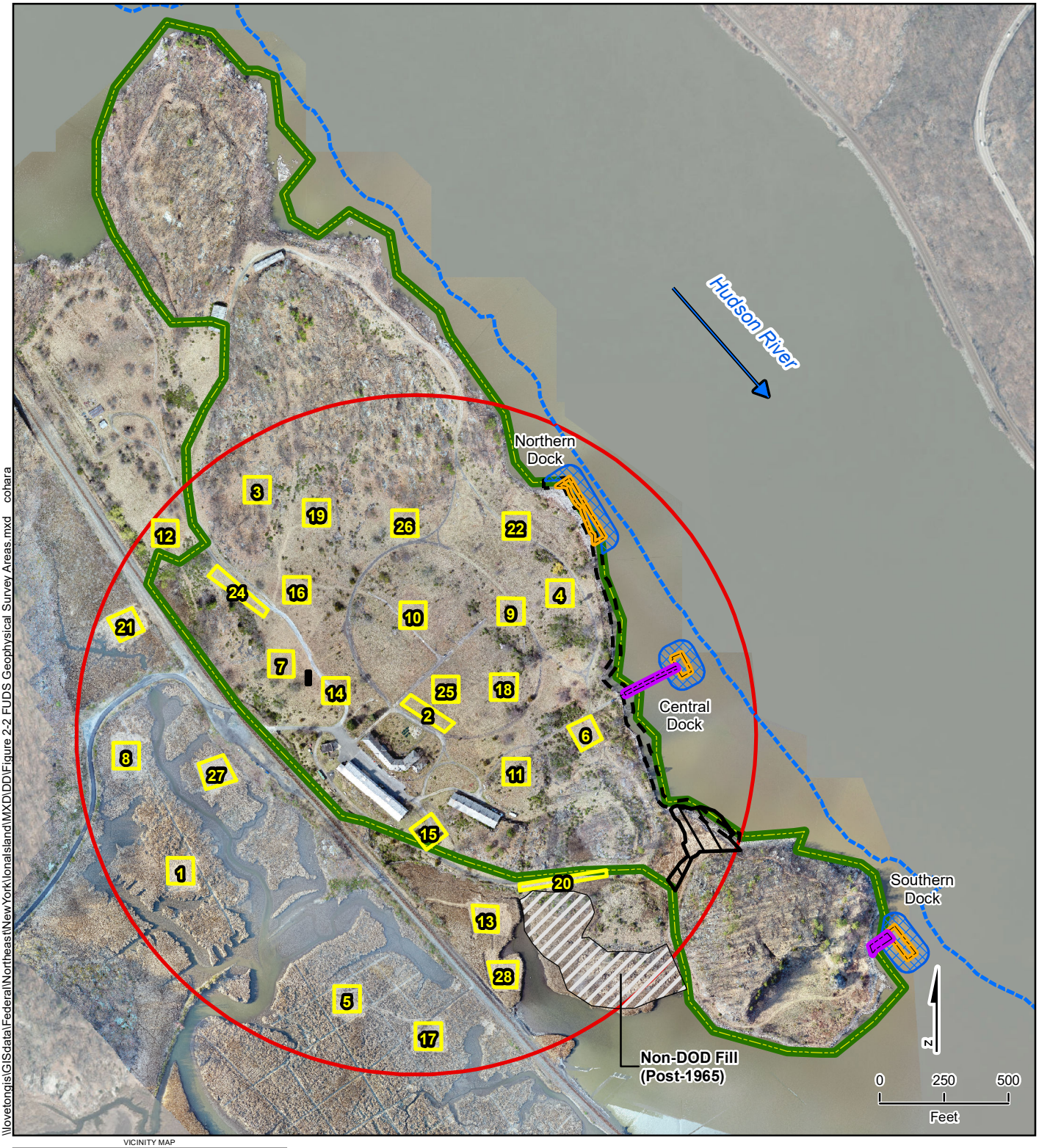
VICINITY MAP

Legend

- Dump Site
- Former Dock
- Fill Area
- Shoreline Area
- FUDS Boundary
- MRS-01 1903 Explosion Area (1,250 ft radius)

FIGURE 2-2
IONA ISLAND SITE MAP
IONA ISLAND NAVAL AMMUNITION DEPOT
FORMERLY USED DEFENSE SITE
ROCKLAND COUNTY, NY

Map Date: 7/1/2022
Source: Aerial - EA, April 2020



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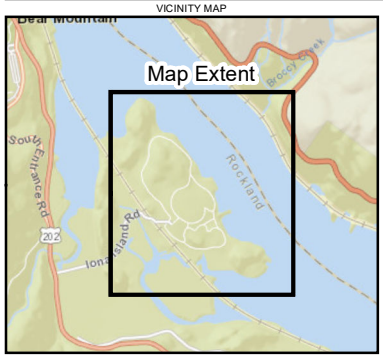
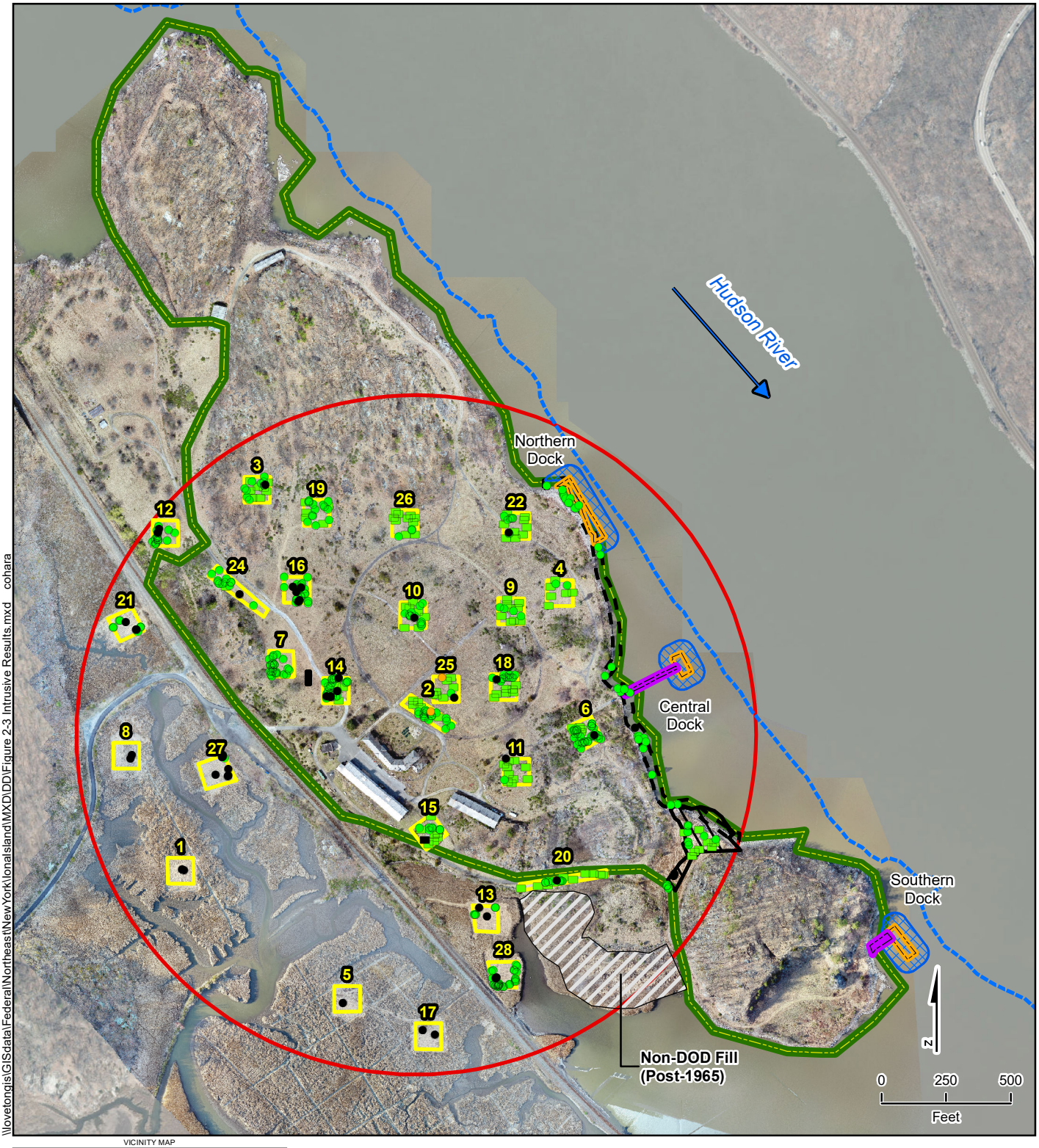
VICINITY MAP



Legend

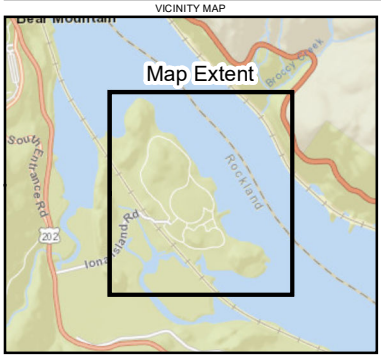
- Approximate 60 Foot Depth Line
- IVS Location
- DGM Grid (100ft x 100ft)
- DGM Marine Area (Former Docks)
- DGM Shoreline Area
- Dump Site
- Fill Area
- Former Dock
- Former Causeway
- FUDS Boundary
- MRS-01 1903 Explosion Area

FIGURE 2-3
RI GEOPHYSICAL SURVEY AREAS
IONA ISLAND NAVAL AMMUNITION DEPOT
FORMERLY USED DEFENSE SITE
ROCKLAND COUNTY, NY
Map Date: 7/1/2022
Source: Aerial - EA, April 2020



\\lovetongis\GISdata\Federal\Northeast\NewYork\IonaIsland\MXD\DD\Figure 2-3 Intrusive Results.mxd cohara

VICINITY MAP



Legend

Anomaly Type

- MD
- NMRD
- OTHER
- Test Pit
- Approximate 60 Foot Depth Line
- IVS Location
- DGM Grid (100ft x 100ft)
- DGM Marine Area (Former Docks)
- DGM Shoreline Area
- Dump Site
- Fill Area
- Former Dock
- Former Causeway
- FUDS Boundary
- MRS-01 1903 Explosion Area

FIGURE 2-4
RI INTRUSIVE RESULTS

IONA ISLAND NAVAL AMMUNITION DEPOT
FORMERLY USED DEFENSE SITE
ROCKLAND COUNTY, NY

Map Date: 7/1/2022
Source: Aerial - EA, April 2020

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Appendix A: Public Meeting Minutes

FORMER IONA ISLAND NAVAL AMMUNITION DEPOT

Military Munitions Response Program

Public Meeting for the Proposed Plan

Erin Kirby
Project Manager
U.S. Army Corps of Engineers
New England District
Date: 04 May 2022

U.S.ARMY

US Army Corps of Engineers®

AGENDA

- Introduction
- CERCLA Process
- Iona Island Site (Background, History, Use)
- Previous Investigations
- Remedial Investigation Results
- Risk Management Methodology
- Next Steps
- Ways to Comment
- Questions

INTRODUCTION

Project Team:

- United States Army Corps of Engineers (USACE) Baltimore District
- United States Army Corps of Engineers (USACE) New England District
- USACE Contractor: EA Engineering, Science, and Technology, Inc., PBC (EA)
- Palisades Interstate Park Commission (PIPC)
- New York State Department of Environmental Conservation (NYSDEC)
- New York State Department of Health (NYSDOH)

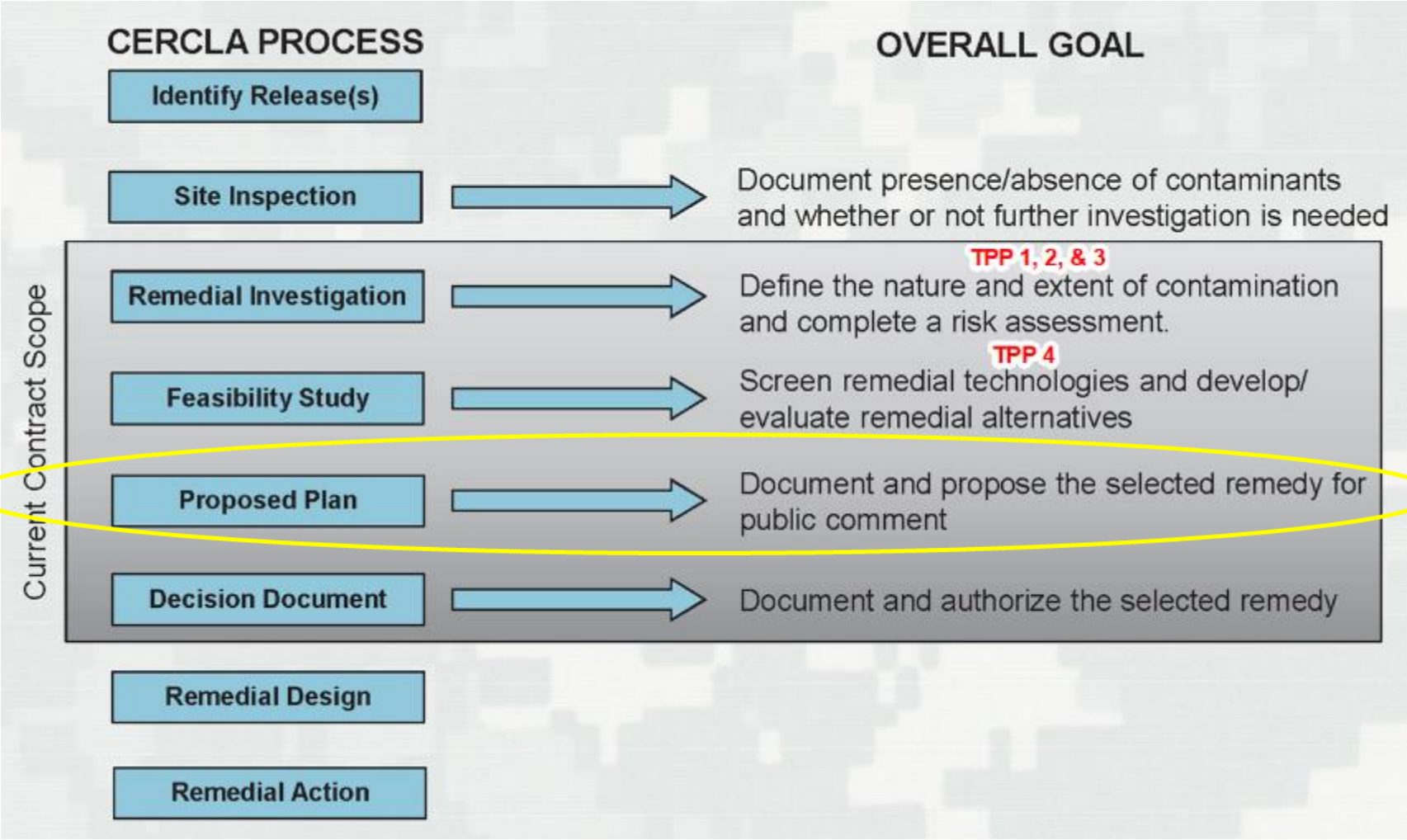
INTRODUCTION

Why are we here?

- Present the Former Iona Island Naval Ammunition Depot background
- Present the results of the military munitions investigation at Iona Island
- Present the Proposed Plan for Iona Island
- Receive public input on the Preferred Approach

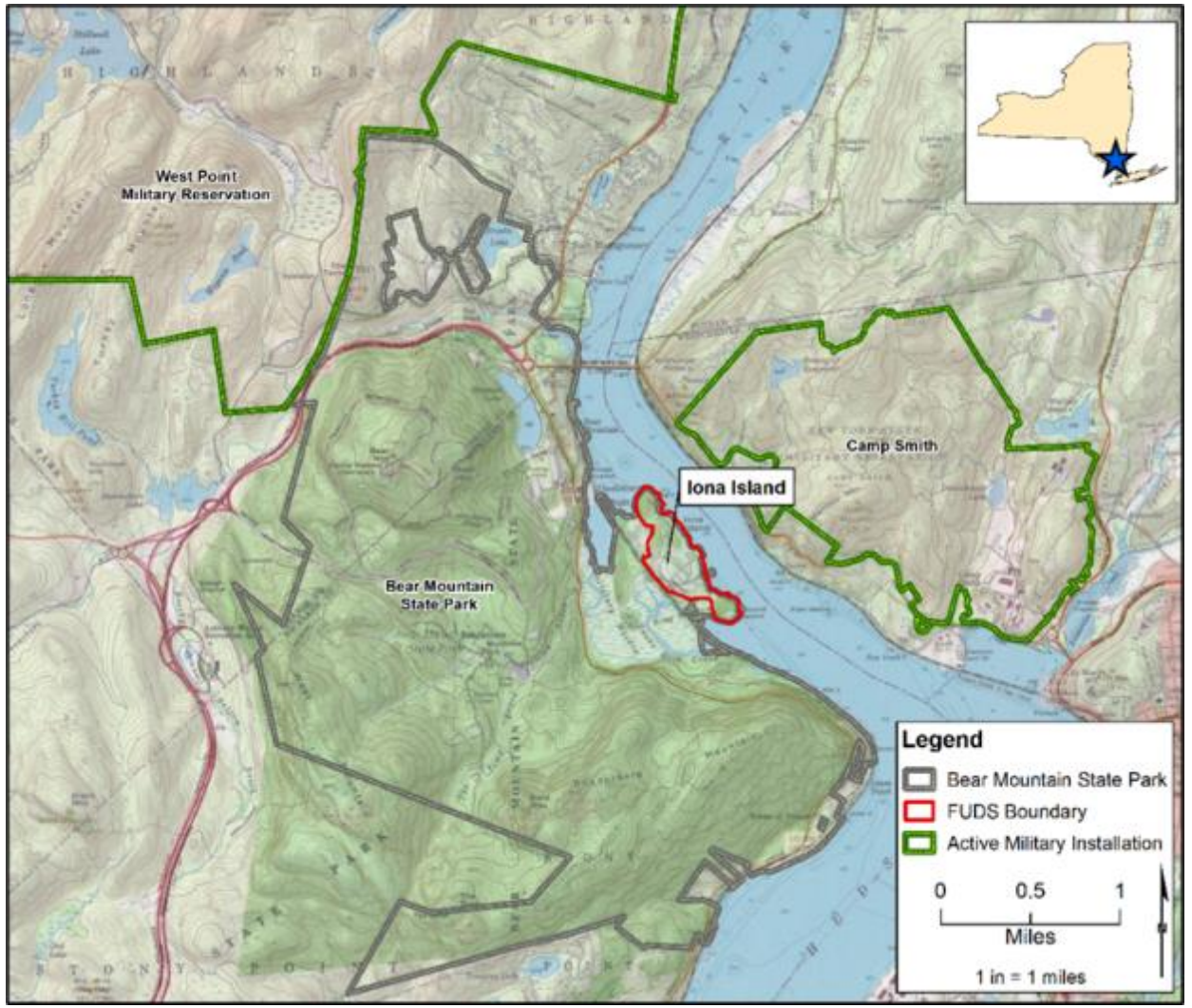
Hazardous, Toxic, and Radioactive Waste (HTRW) and munitions constituents (MC) are being addressed under a separate program, which is still on-going

CERCLA PROCESS



SITE LOCATION AND BACKGROUND

- Iona Island along the Hudson River in the town of Stony Point, Rockland County, NY
- 124.2 acres of land and inland water
- Majority of native soil has been disturbed
- Currently owned by the Palisades Interstate Park Commission (PIPC); maintained by Bear Mountain State Park



SITE LOCATION AND BACKGROUND

– Terrestrial, tidal wetlands, and riverine habitats present

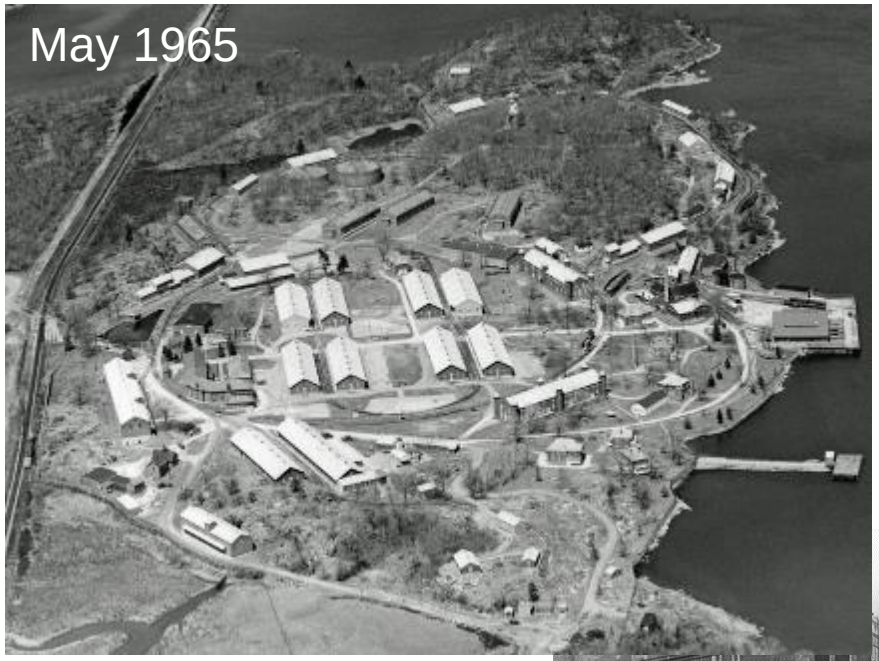
Iona Island Uplands

Iona Island Marsh

Hudson River Shoreline

SITE HISTORY

- Used by Navy between 1900 and 1947: Naval Ammunition Depot
- Preparing, assembling, maintaining, inspecting and storing WWI and WWII ammunition
- 1903 Explosion destroyed two shell houses and damaged two others
- 146 buildings on the island in 1951 when the installation was deactivated
- Majority of buildings and structures have been demolished



SITE USE

- Status of areas/land use is limited to Park offices/storage, conservation, research and recreation
- Access to the island is restricted/limited; future use is not anticipated to deviate from current use
- Human receptors: recreational users, trespassers, construction workers, Bear Mountain State Park employees and researchers
- Ecological receptors: sensitive environments (tidal wetlands), and protected, threatened, and endangered species (bald eagle, bog turtle, northern long-eared bat, Indiana bat, shortnose sturgeon, Atlantic sturgeon)

PREVIOUS INVESTIGATIONS

– 1995 Inventory Project Report
  - Based on previous use as Naval Ammunition Depot, report concluded Iona Island was eligible under the DERP-FUDS program. No Munitions and Explosives of Concern (MEC) were identified during a site visit

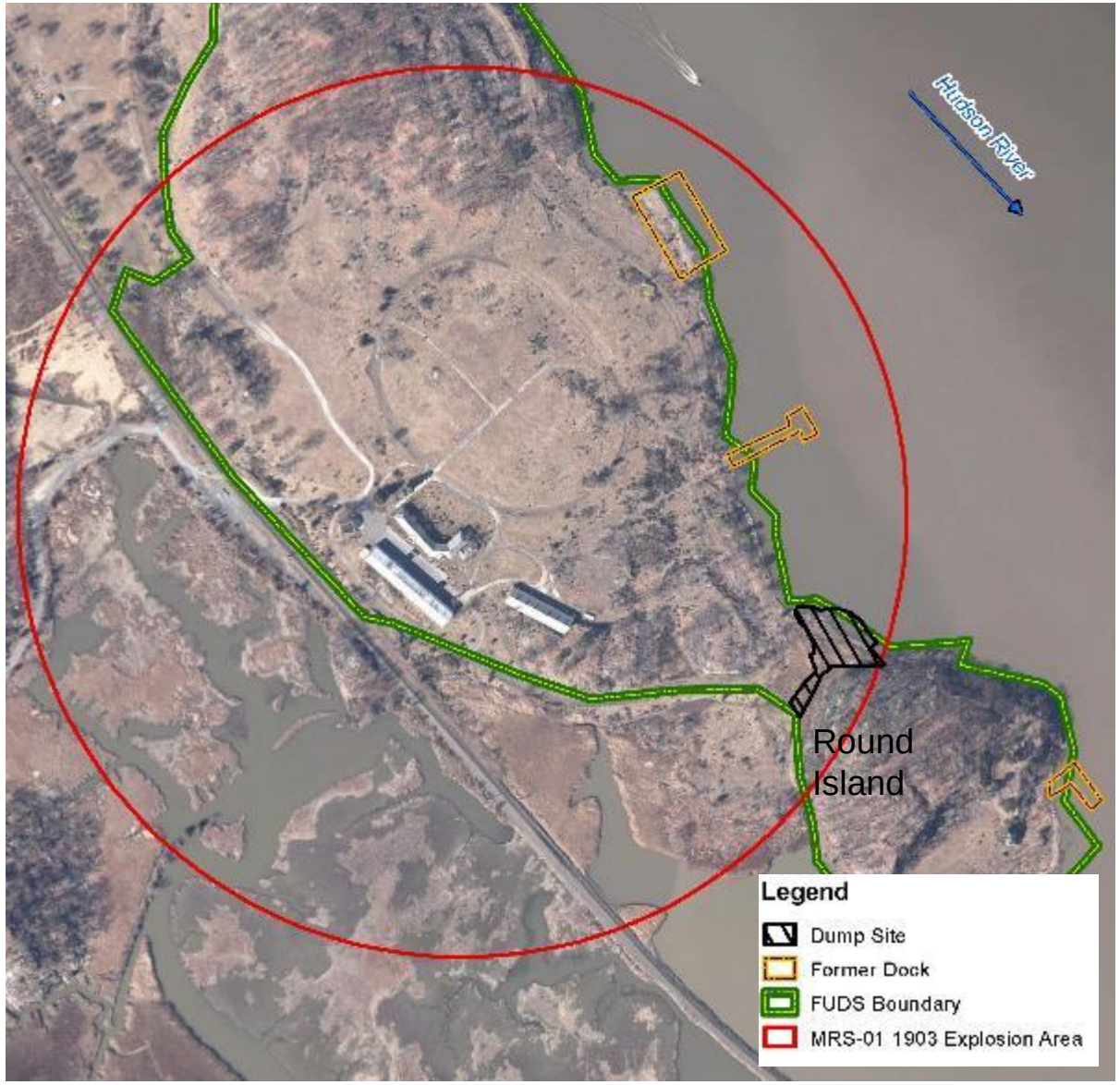
– 1998 Archives Search Report
  - During low water, ordnance items have been reported along the eastern shoreline near “dump area”
  - Grenade reportedly found near former shell houses (no documentation)
  - 6-pound projectile cartridge case
  - Signal flare
  - Portion of a 3.75-inch rocket warhead
  - Anecdotal information that munitions accidently dropped into Hudson River at loading docks
  - Visits by Explosives Ordnance Disposal (EOD) detachment determined items to be inert/free of explosives (e.g., display items, practice items)

– 2007 Site Inspection
  - No MEC or munitions debris (MD) identified during the site inspection

2020 REMEDIAL INVESTIGATION

3 Areas of Concern identified for MEC investigation:

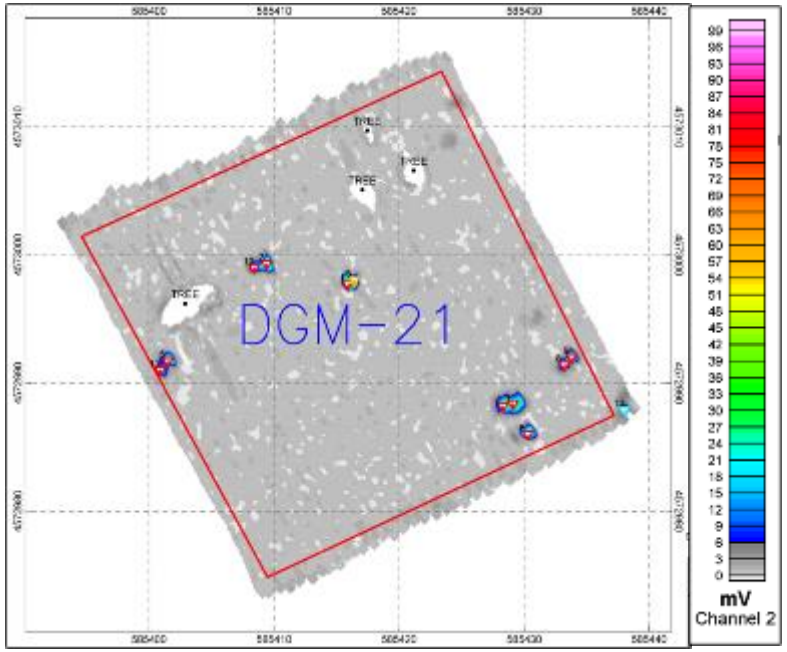
1. MRS-01 1903 Explosion Area (approximately 124.2 acres centered on point of explosion)
2. Former loading docks and downstream shoreline (munitions reportedly dropped during loading of ships)
3. Dump area between Iona Island and Round Island (potential MEC items reportedly sighted during low tide)

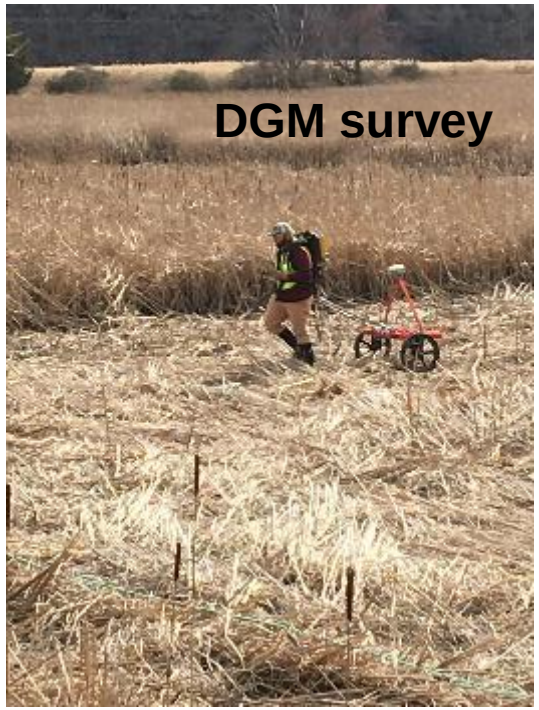


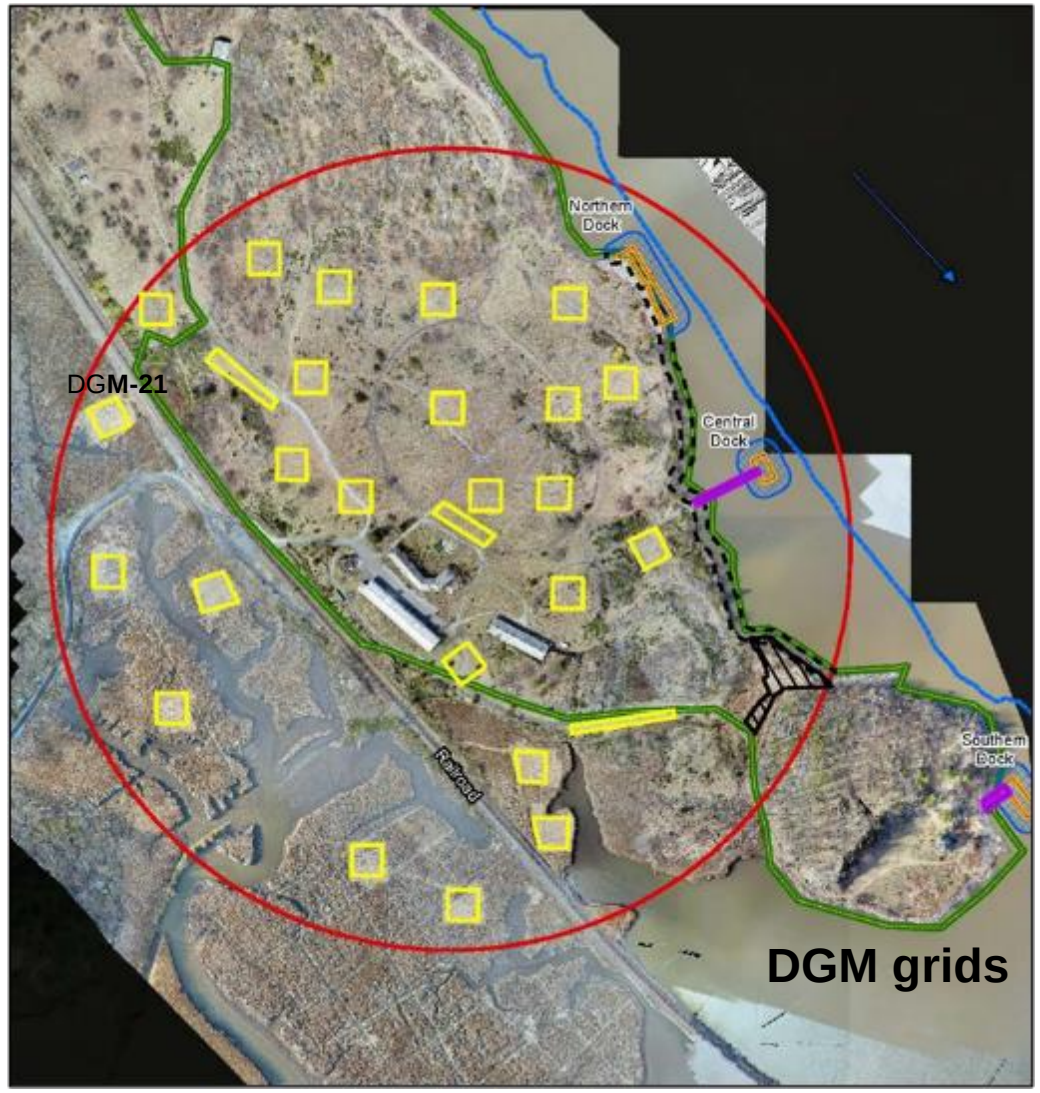
2020 REMEDIAL INVESTIGATION

MRS-01 1903 Explosion

– Twenty-seven Digital Geophysical Mapping (DGM) grids throughout MRS to identify potential munitions and explosives of concern (MEC) and munitions debris (MD)







2020 REMEDIAL INVESTIGATION

MRS-01 1903 Explosion

- Cued Advanced Geophysical Classification (AGC) on 989 targets in 22 grids
- Intrusive investigation of 313 targets
- Trenched 110 potential disposal features
- No MEC identified, two pieces of MD (fragmentation from 6-lb projectile) found near 1903 explosion point of origin


Cued AGC


Intrusive Investigation


Trenching in MRS-01

2020 REMEDIAL INVESTIGATION

Former Loading Docks and Shoreline

- 1/2-mile DGM transects along the Hudson River shoreline (water-based)
- Dive investigation of 3 former docks (transects and spot dives)
- Dive investigation of 44 shoreline targets
- No MEC or MD identified (former loading dock debris only-rebar and concrete)


Shoreline DGM survey


Diving - former dock area


Dive preparation

2020 REMEDIAL INVESTIGATION

Dump Area

- 1/2-mile DGM transects in the former dump area (land-based)
- Intrusive investigation of 14 targets
- Trenched 8 potential disposal features
- No MEC or MD identified (miscellaneous scrap metal, burn debris/slag, bricks, concrete slabs only)


DGM survey in dump area


Trenching in dump area


Trenching in dump area

MMRP RISK MANAGEMENT METHODOLOGY

The methodology contains a series of risk matrices that use site-specific data to relate accessibility, munitions sensitivity, and severity of an explosive event if it were to occur, to determine baseline risks.

Likelihood of Encounter, Matrix 1: **Amount of MEC vs. Access Conditions**		**Access Conditions (Frequency of Use)**			
		Regular (e.g., daily use, open access)	**Often** (e.g., less regular or periodic use, some access)	**Intermittent** (e.g., some irregular use, or access limited)	**Rare** (e.g., very limited use, access prevented)
Amount of MEC	• MEC presence is based on isolated historical discoveries (e.g., EOD report) prior to investigation, or • The MEC concentration is below a project-specific threshold to support this selection (e.g., less than 0.5/acre at 95 percent confidence).	Occasional	Seldom	**Unlikely**	Unlikely

Severity of Explosive Incident, Matrix 2: **Severity vs. Likelihood of Encounter**		**Likelihood of Encounter**				
		Frequent: Regular, or inevitable occurrences	**Likely:** Several or numerous occurrences	**Occasional:** Sporadic or intermittent occurrences	**Seldom:** Infrequent; rare occurrences	**Unlikely:** Not probable
Severity Associated with Specific Munitions Items	**Catastrophic/Critical:** May result in 1 or more deaths, permanent total or partial disability, or hospitalization	A	A	B	B	**D**

MMRP RISK MANAGEMENT METHODOLOGY

Likelihood of Detonation, Matrix 3: Munitions Sensitivity vs. Likelihood of Energy to be Imparted		Likelihood to Impart Energy on an Item [(b)]		
		High: (e.g., areas planned for development, or seasonally tilled)	**Modest:** (e.g., undeveloped, wildlife refuge, parks)	**Inconsequential:** (e.g., not anticipated, prevented, mitigated)
(e.g., high explosive or pyrotechnics)	**Moderate: (e.g., high explosive or pyrotechnics)**	1	**2**	3

Matrix 4: Acceptable and Unacceptable Site Conditions		Result from Matrix 2			
		A	**B**	**C**	**D**
Result from Matrix 3	**1**	Unacceptable	Unacceptable	Unacceptable	Acceptable
	2	Unacceptable	Unacceptable	Acceptable	**Acceptable**
	3	Unacceptable	Acceptable	Acceptable	Acceptable

MMRP INVESTIGATION CONCLUSIONS

- Munitions historically found (~1990s) determined to be inert munitions by EOD (i.e., no explosive filler-practice or display pieces)
- Only two pieces of MD from 6-pound projectile found in MRS-01 during the RI, likely the result of the 1903 explosion
- No evidence of munitions at former docks or shoreline during RI
- No evidence of munitions within the dump area during RI
- No live munitions identified anywhere on Iona Island
- MMRP Risk Assessment resulted in “no unacceptable risk” to human health (Matrix 4)
- Risk to human health and the environment from HTRW and MC is being addressed under a separate program and results will be shared similarly

PROPOSED PLAN
for Former Iona Island Naval Ammunition Depot

- USACE proposes that **No Action** is required for the Military Munition Response Program at the Former Iona Island Naval Ammunition Depot
- No MEC was historically found at the site
- No MEC was found during USACE investigations
- MMRP Risk Assessment determined there is no unacceptable risk to human health from MEC

NEXT STEPS

- Take public comments under consideration and prepare responses to comments
  - Public comment Period: April 29 – June 1, 2022
- Prepare a Decision Document, with responsiveness summary, proposed plan will consider all applicable comments
- Final Decision Document placed in the Bear Mountain State Park repository and online

WAYS TO COMMENT – COMMENT PERIOD APRIL 29 – JUNE 1 , 2022

- Orally at tonight's meeting
- Fill out a form and email or mail it by June 1, 2022
- Documents available at:

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

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Follow the 3Rs

Recognize — when you may have encountered a munition and that munitions are dangerous.

Retreat — do not approach, touch, move or disturb it, but carefully leave the area.

Report — call 911 and advise the police of what you saw and where.

Visit the 3Rs Explosives Safety Education website: www.denix.osd.mil/uxo

QUESTIONS?