



Record of Decision

UXO 15 Puerto Ferro

Atlantic Fleet Weapons Training Area – Vieques

Former Vieques Naval Training Range

Vieques, Puerto Rico

March 2023

1. Declaration

1.1 Site Name and Location

This Record of Decision (ROD*) documents the selected remedy for UXO 15, located on the former Vieques Naval Training Range (VNTR) in Vieques, Puerto Rico. UXO 15 comprises approximately 536 acres and is located in the southwestern portion of the former Eastern Maneuver Area (EMA), which was established in 1947 to provide areas and ranges for the training of Marine amphibious units and battalion landing teams in exercises that included amphibious landings, small-arms fire, artillery and tank fire, shore fire control, and combat engineering tasks. UXO 15 is the location where ordnance transport and offloading to support training exercises were likely conducted. The former VNTR is part of the Atlantic Fleet Weapons Training Area (AFWTA) – Vieques, which was placed on the National Priorities List (NPL) on February 11, 2005 (Superfund Enterprise Management System [SEMS] identification number: PRN000204694). UXO 15 is also known as Operable Unit (OU) 26 in SEMS. UXO 15 is part of the Vieques National Wildlife Refuge, which is managed by the United States Fish and Wildlife Service (USFWS), a bureau of the Department of the Interior (DOI).

UXO 15 was primarily used for temporary ordnance storage, transport, and loading/offloading in support of military training activities and is not contiguous with any of the other UXO sites within the EMA. Although a relatively low quantity of munitions and explosives of concern (MEC) is anticipated to be present based on the type of historical activities and the number of MEC recovered during past MEC removal activities, it is possible MEC may be present in areas planned for future use. Therefore, because a future land user (e.g., recreational user, maintenance worker, or construction worker) may encounter MEC at UXO 15, a Remedial Investigation (RI)/Feasibility Study (FS) was conducted to assess the nature and extent of MEC and potentially related contamination, and to evaluate remedial alternatives to address potential MEC explosive hazard to potential land users.

1.2 Statement of Basis and Purpose

The remedy described in this ROD was selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The Department of the Navy (Navy), Naval Facilities Engineering Systems Command Atlantic (NAVFAC), United States Environmental Protection Agency (EPA) Region 2, Commonwealth of Puerto Rico, and DOI entered into a Federal Facility Agreement (FFA) in 2007, as a result of the NPL listing and pursuant to CERCLA. The FFA establishes the procedural framework and schedule for implementing CERCLA response actions for Vieques.

* This acronym, and all others used in this document, can be found in alphabetical order in Section 4 of this document.

This decision is undertaken pursuant to the President's authority under CERCLA Section 104, as delegated to EPA and the Navy in accordance with Executive Order 12580, and in compliance with the process set out in CERCLA Section 120. The selection of the remedy is authorized pursuant to CERCLA Section 104, and the selected remedy will be carried out in accordance with CERCLA Section 121. The Navy is the lead response agency for AFWTA-Vieques and is responsible for taking all appropriate CERCLA response actions necessary to protect public health, welfare, and the environment.

This remedy is being jointly selected by the Navy and EPA, with concurrence of DOI and the Puerto Rico Department of Natural and Environmental Resources (PRDNER). This decision is based on information contained in the Administrative Record file for UXO 15. Information not specifically summarized in this ROD or its references, but contained in the Administrative Record, has been considered and is relevant to the remedy selection for UXO 15. Thus, the ROD is based upon and relies on the Administrative Record file for UXO 15 in making this decision. This ROD was prepared in accordance with EPA ROD guidance, specifically *A Guide¹ to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents* (EPA, 1999) and *Toolkit² for Preparing CERCLA Records of Decision* (EPA, 2011), a supplement to the 1999 guidance for producing higher quality and more user-friendly RODs. The result is a ROD format that is conducive for the general public to read and understand the information upon which the decisions for UXO 15 were made, including references to technical resources presented in the Administrative Record for the site.

1.3 Scope and Role of Response Action

Although only two MEC have been identified and removed from UXO 15 and a low quantity of MEC is anticipated to remain within UXO 15, there is potential explosive hazard posed by MEC that may be present in planned land use areas. However, based on the RI findings, no chemical contamination was identified posing unacceptable human health or ecological risks associated with current or planned use. Therefore, the selected remedy will address the potential remaining explosive hazards to ensure UXO 15 can be used as planned. The potential for contaminants attributable to past Navy training activities to leach to groundwater was also evaluated to determine whether groundwater sampling was warranted. This evaluation indicated leaching to groundwater is not a concern at UXO 15 based on multiple lines of evidence, including: (1) the most likely contaminant source areas (debris piles) were removed, (2) the general absence of munitions-related contamination observed throughout the site, and (3) many of the constituents evaluated are naturally occurring and/or not associated with munitions or were located within soil or sediment at isolated areas at concentrations unlikely to cause a concern of leaching to groundwater.

UXO 15 is one of 19 munitions response sites associated with AFWTA-Vieques that have been or currently are being evaluated in accordance with CERCLA under the Navy's Munitions Response Program (MRP). The Site Management Plan for Vieques further details the investigation history and the schedule for CERCLA investigations/response activities at the former AFWTA-Vieques, and it is updated annually. The response action selected in this ROD is intended to be the final remedy for UXO 15 and does not include or affect any other OUs at AFWTA-Vieques under the CERCLA process. The final determinations for the other OUs within AFWTA-Vieques have been documented in past decision documents or will be documented in future decision documents. UXO 15 is the sixth MRP site within AFWTA-Vieques for which a final remedy determination has been made.

1.4 Description of Selected Remedy

The selected remedy for UXO 15 is Surface MEC Removal in Planned Public Use Areas and Land Use Controls (LUCs) to address MEC that potentially remains onsite, as described in Section 2.7. This remedy reduces potential explosive hazards, preserves important ecological habitat, is protective of human health, and supports public access under the USFWS land use plan. If USFWS chooses not to maintain any portions of the public access areas, such that these areas become overgrown and inaccessible to the public, then the Navy will cease to perform LUC and MEC long-term monitoring in these areas. The Navy will not clear vegetation in order to provide access to areas that USFWS chooses not to maintain as accessible to the public. However, should USFWS decide not to maintain an area for public accessibility but at a future date decide to reopen the same area for public access, the Navy will provide on-call MEC support during vegetation clearing performed by USFWS. Further, if during an LUC/MEC monitoring event conducted in response to named hurricanes or other events that may threaten the integrity of LUCs or potential presence of exposed MEC in areas USFWS has been maintaining as publicly accessible that have become inaccessible due to downed vegetation, the Navy will provide on-call MEC support during vegetation/debris clearing performed by USFWS.

The components of the selected remedy are:

- Surface MEC clearance within areas identified by USFWS for land management and recreational activities.
- LUC implementation (e.g., educational kiosks and administrative mechanisms, such as trail markers/monuments) to reduce the potential for people to access areas outside authorized, accessible public-use areas.
- An LUC and MEC long-term monitoring (LTM) program, including periodic site inspections for trespassing, erosion, MEC/munitions debris (MD) occurrence in accessible public-access areas, and the integrity and effectiveness of physical LUCs. Any MEC/MD discovered during the LTM program will be removed.

1.5 Statutory Determination

The selected remedy for UXO 15 meets the statutory requirements of CERCLA Section 121 and is protective of human health and the environment, complies with Federal and Commonwealth regulations that are applicable or relevant and appropriate to the remedial action, and is cost-effective.

Although unlikely, because MEC posing explosive hazards may remain at UXO 15 following implementation of the remedial action, in addition to this remedy the Navy will conduct statutorily required reviews every five years to ensure that the remedy remains protective of human health and the environment.

1.6 Navy Authorizing Signature for the Record of Decision for UXO 15, Atlantic Fleet Weapons Training Area – Vieques



J. R. Cirvello
Environmental Business Line Manager
Naval Facilities Engineering Systems Command Atlantic

28 Mar 2023
Date

1.7 EPA Authorizing Signature for the Record of Decision for UXO 15, Atlantic Fleet Weapons Training Area – Vieques

ERIC WILSON Digitally signed by ERIC WILSON
Date: 2023.04.11 11:46:32 -04'00'

April 11, 2023

Pat Evangelista

Date

Director, Superfund and Emergency Management Division
Environmental Protection Agency Region 2

1.8 DOI Concurrence Signature for the Record of Decision for UXO 15, Atlantic Fleet Weapons Training Area – Vieques

JOAN MOONEY Digitally signed by JOAN MOONEY
Date: 2023.02.09 10:25:05 -05'00'

Joan M. Mooney
Principal Deputy Assistant Secretary
Exercising the Delegated Authority of the Assistant Secretary - Policy,
Management and Budget
Department of the Interior

Date

1.9 PRDNER Concurrence Signature for the Record of Decision for UXO 15, Atlantic Fleet Weapons Training Area – Vieques



JUN - 1 2022

Anais Rodríguez Vega
Acting Secretary
Puerto Rico Department of Natural and Environmental Resources

Date

2. Decision Summary

Vieques is approximately 7 miles southeast of the eastern tip of the main island of Puerto Rico (Figure 1). Aside from mainland Puerto Rico, Vieques is the largest island in the Commonwealth of Puerto Rico, encompassing 33,088 acres (51 square miles).

The Navy purchased large portions of Vieques in the early 1940s to conduct activities related to military training. Operations within the former VNTR included various aspects of naval gunfire training, such as air-to-ground ordnance delivery and amphibious landings, as well as housing the main base of operations for these activities at Camp Garcia. The former VNTR is approximately 14,600 acres and is comprised of former military training areas known as the EMA, Surface Impact Area (SIA), Live Impact Area (LIA), and Eastern Conservation Area (ECA) (Figure 2).

The Navy ceased training exercises at the former VNTR on April 30, 2003, in accordance with the Presidential Directive to the Secretary of Defense dated January 30, 2000, when the land was transferred to the DOI, to be managed by USFWS as a National Wildlife Refuge. On February 11, 2005, AFWTA-Vieques was added to the NPL, which required all subsequent environmental restoration activities for Navy sites on Vieques to be conducted under CERCLA. On September 7, 2007, the Navy, DOI, EPA, and the Commonwealth of Puerto Rico finalized an FFA that established the procedural framework and schedule for implementing the CERCLA activities for Vieques. The Navy retains the primary responsibility under the FFA for conducting the environmental investigations and cleanup of the property, as warranted.

2.1 UXO 15

2.1.1 Site Description and History

UXO 15 comprises the 536-acre Puerto Ferro peninsula located in the southwestern portion of the EMA (Figure 2). The area was primarily used for temporary ordnance storage, transport, and loading/offloading in support of military training activities and is not contiguous with the other UXO sites within the EMA, all of which are being addressed separately from UXO 15. UXO 15 includes two Photo Identified (PI) sites (PI 9 East and West and PI 13) (Figure 3). PI 9 West, located in the northwestern portion of the site, was likely used for temporary ammunition storage; investigation findings suggest it was not used for ammunition disposal (Section 2.1.4). PI 9 East, located in the northeastern corner of UXO 15, was likely used for ordnance transport and loading/offloading activities. PI 13, located in the southeastern portion of UXO 15, was reportedly used as a firing point from which rocket-related ordnance was launched to the LIA/SIA; however, no evidence of this use was found during the RI or previous investigations. A potential ordnance detonation area identified within UXO 15 was investigated during the RI, the findings of which suggest the area was unlikely used for munitions disposal by detonation (see Section 2.1.4).

2.1.2 Site Characteristics

The ground elevation at UXO 15 ranges from about 30 feet above mean sea level (amsl) inland to sea level at the coastline. The topographically higher areas (also referred to as upland areas) generally slope toward the ocean. Steep cliff faces tend to form the eastern and southern portions of UXO 15 while a relatively thin mangrove forest forms the western boundary with Puerto Mosquito.

UXO 15 contains a variety of environmental habitats, including dry scrub forest on hilltops and ridges; a mangrove forest associated with lagoons, salt/sand flats, or tidal mud flats; evergreen scrub habitat; exposed limestone areas; and areas of mixed native, naturalized, and invasive species (Figure 4).

Generalized groundwater flow at UXO 15 is anticipated to be toward Puerto Mosquito to the west, Puerto Ferro to the north and east, and the ocean to the south, and is likely to be tidally influenced, especially near the shorelines. Due to the site's proximity to the ocean and existence primarily in limestone, groundwater at UXO 15 is likely brackish to saline and hard (contains high concentrations of naturally occurring calcium, magnesium, and other minerals).

2.1.3 Summary of Previous Investigations for UXO 15

Several environmental investigations and munitions removal actions have been conducted at or included UXO 15 beginning in 2000. Table 1 summarizes the purpose, scope, and pertinent results of previous investigations and munitions removal activities performed at or relevant to UXO 15.

Table 1. Previous Investigations and Munitions Removal Activities

Previous Investigation*	Date	Investigation Activities
Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI)	2000-2004	A Phase I RCRA Facility Investigation ³ (CH2M, 2004) was conducted to determine whether releases of hazardous wastes, solid wastes, or hazardous constituents may have occurred at various sites, including PI 9 and PI 13, which were identified via aerial photograph analysis performed in 2000 to support the RFI. Based on the results of site reconnaissance performed in 2001, the Phase I RFI Report recommended PI 9 for further evaluation for munitions and munitions constituents under the MRP and an inspection for potential MEC at PI 13.
Preliminary Range Assessment (PRA)	2002-2003	A Preliminary Range Assessment ⁴ (NAVFAC, 2003) was conducted in 2002 consisting of personnel interviews, archive records search, and inspections, including a magnetometer survey of approximately 40 percent of PI 9 East to provide information about potential munitions use at the site. No MEC were found at UXO 15 during the PRA.
Environmental Baseline Survey (EBS)	2002-2003	An Environmental Baseline Survey ⁵ (NAVFAC, 2003) was conducted in 2002 to document the environmental conditions at the former VNTR in anticipation of the transfer of jurisdiction to the DOI. The EBS included site inspections, interviews, and additional aerial photograph evaluation for the former VNTR, including UXO 15. Findings indicated PI 9 East was an area likely used for loading and offloading of munitions, PI 9 West was likely used for temporary storage of munitions within earthen-berm areas and possible open burn/open detonation (OB/OD) operations, and PI 13 may have been the firing point from which rocket-related ordnance was launched to the LIA/SIA in the 1950s and 1960s; however, no evidence of OB/OD uses at PI 9 West or firing point uses at PI 13 was observed during subsequent site reconnaissance and investigations.
Expanded Range Assessment/Site Inspection (ERA/SI)	2005-2008	An Expanded Range Assessment/Site Inspection ⁶ (CH2M, 2010) was conducted between 2005 and 2008 within the former VNTR that included surface inspection of UXO 15. Visual and magnetometer-assisted transect surveys were conducted across approximately 6 percent (32 acres) of UXO 15. No MEC were found; a total of 32 MD items were identified, consisting mostly of empty marine artillery casings. Additionally, five small debris piles were

Table 1. Previous Investigations and Munitions Removal Activities

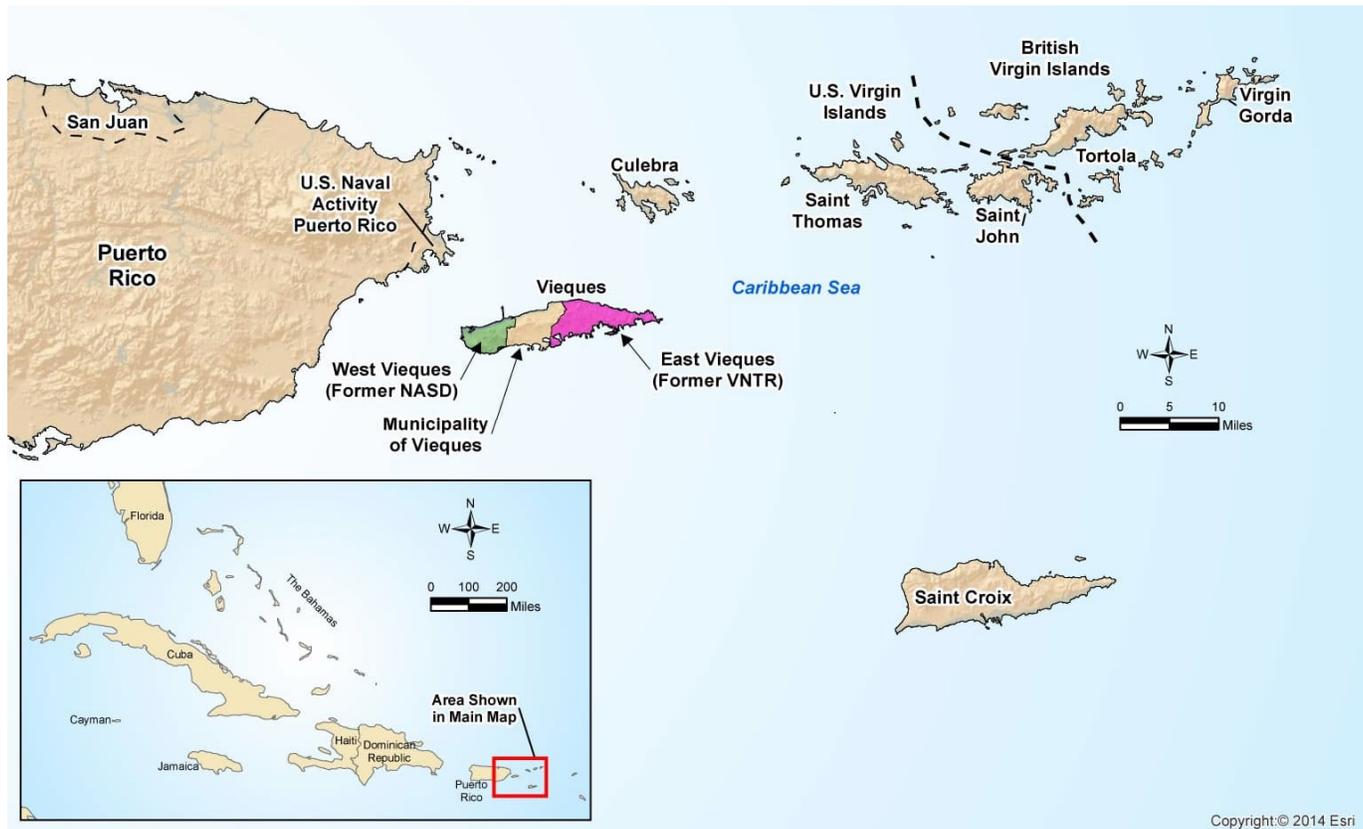
Previous Investigation*	Date	Investigation Activities
		<p>identified in various locations within UXO 15 and encrusted empty munitions casings were identified at PI 9 East and just offshore.</p> <p>The ERA/SI contained a recommendation that further investigation/assessment be conducted of the debris piles, nearshore MD at PI 9 East, and subsurface anomalies to determine if MEC were present and evaluate the need for an RI/FS.</p>
RI/FS	2012-2018	<p>A Remedial Investigation/Feasibility Study⁷ (CH2M, 2020) was conducted at UXO 15 to assess the nature and extent of MEC and environmental media contamination, to assess potential risks to human health and the environment, and to evaluate remedial alternatives for UXO 15. There were no unacceptable risks to human health or the environment⁸ posed by constituent concentrations in site media, so no action is required for environmental media. However, because two MEC (tear gas grenade and 40-millimeter [mm] grenade) were discovered during the RI, there is the potential for MEC to remain at the site. Therefore, an FS was warranted to address these potential explosive hazards. The FS analyzed remedial alternatives to address potential explosive hazards⁹ associated with the potential presence of MEC at UXO 15 in accordance with EPA guidance. A more detailed description of the FS for UXO 15 is presented in Section 2.1.4 of this ROD.</p>
Non-Time-Critical Removal Action (NTCRA) at the Main Access Road, Lighthouse Area, Trails, and Beaches	2014	<p>A Non-Time-Critical Removal Action¹⁰ (CH2M, 2015) was conducted in 2014 to facilitate public access via the main road to areas around the historic Spanish lighthouse (including the adjacent parking area, trail, and Puerto Ferro Lighthouse Beach [Playa Berdiales Faro]), as well as along two planned north-south trails and Pirate's Cove Beach. MEC clearance was not necessary along the main road because in 2007 the road was constructed with geotextile and 6-inch thick, aggregate, along with an embankment for drainage that extended up to 11 feet from the edge of the road. No MEC were identified during road construction.</p> <p>MEC clearance at the lighthouse area, parking area, and trails was performed to an approximate maximum depth of 1 foot below ground surface (bgs) using a metal detector due to the shallow nature of the bedrock. Only non-munitions-related debris was found and removed from around the lighthouse and associated parking area, and no debris was identified along the trails.</p> <p>MEC clearance down to a maximum depth of 4 feet bgs (or to depth of water) was performed at the beaches. No MEC or MD were identified in these areas.</p>
NTCRA at the Southwest Beach	2015	<p>A Non-Time-Critical Removal Action¹¹ (CH2M, 2015) was completed in 2015 for MEC clearance at the Southwest Beach (Playa Novillo) down to a maximum depth of 4-feet bgs to facilitate future public access to the beach. No MEC or MD were identified.</p>
NTCRA at UXO 15 PI 9 East and Adjacent UXO 16 Encrusted Munitions	2017-2019	<p>A Non-Time-Critical Removal Action¹² (USAE, 2019) was completed in 2018 to reduce potential explosive hazards by removing the encrusted munitions-related items identified at PI 9 East in UXO 15 and within UXO 16 (underwater area) immediately adjacent to PI 9 East. A temporary cofferdam was installed to dewater the area and a remote excavator was used to remove the encrusted munitions-related items. Approximately 900 MD items were removed, but no MEC were encountered.</p>

Table 1. Previous Investigations and Munitions Removal Activities

Previous Investigation*	Date	Investigation Activities
		In addition, Hurricane Maria severely impacted Playa Berdiales Faro and the surrounding area in 2017. An MEC inspection using a magnetometer was conducted at the public use areas at UXO 15 following the hurricane and no MEC or MD were identified.

* Documentation associated with the listed activities is available in the Administrative Record and provides detailed information used to support the remedy selection for UXO 15.

Figure 1. Regional Location Map



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Figure 2. Former VNTR Location Map

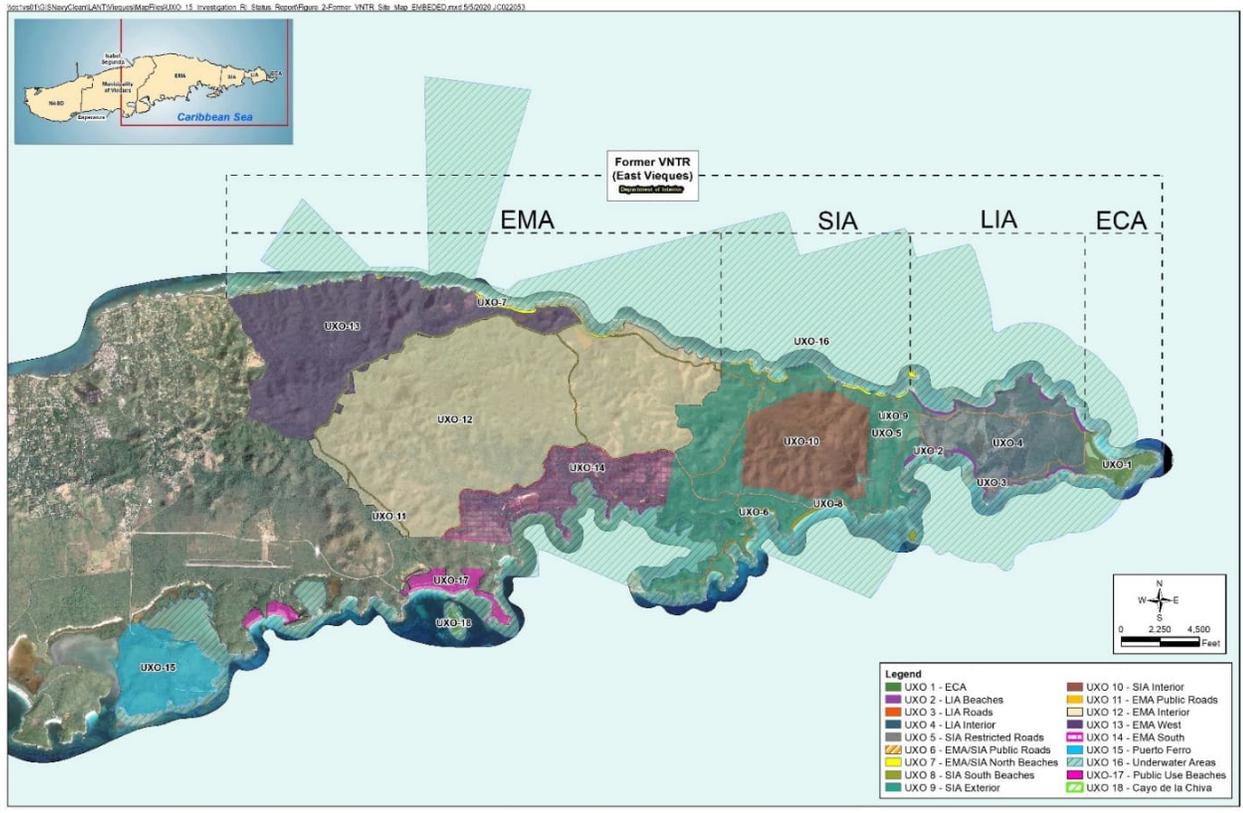


Figure 3. UXO 15 Site Features

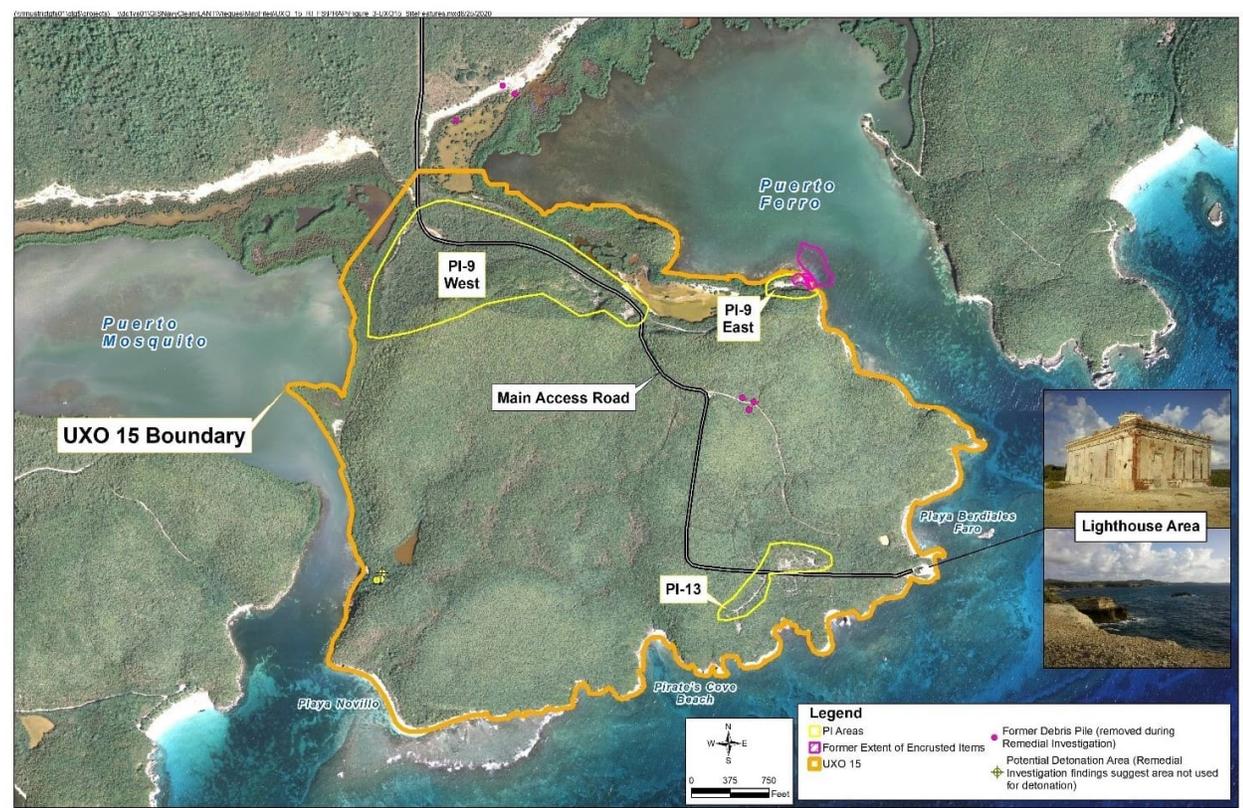
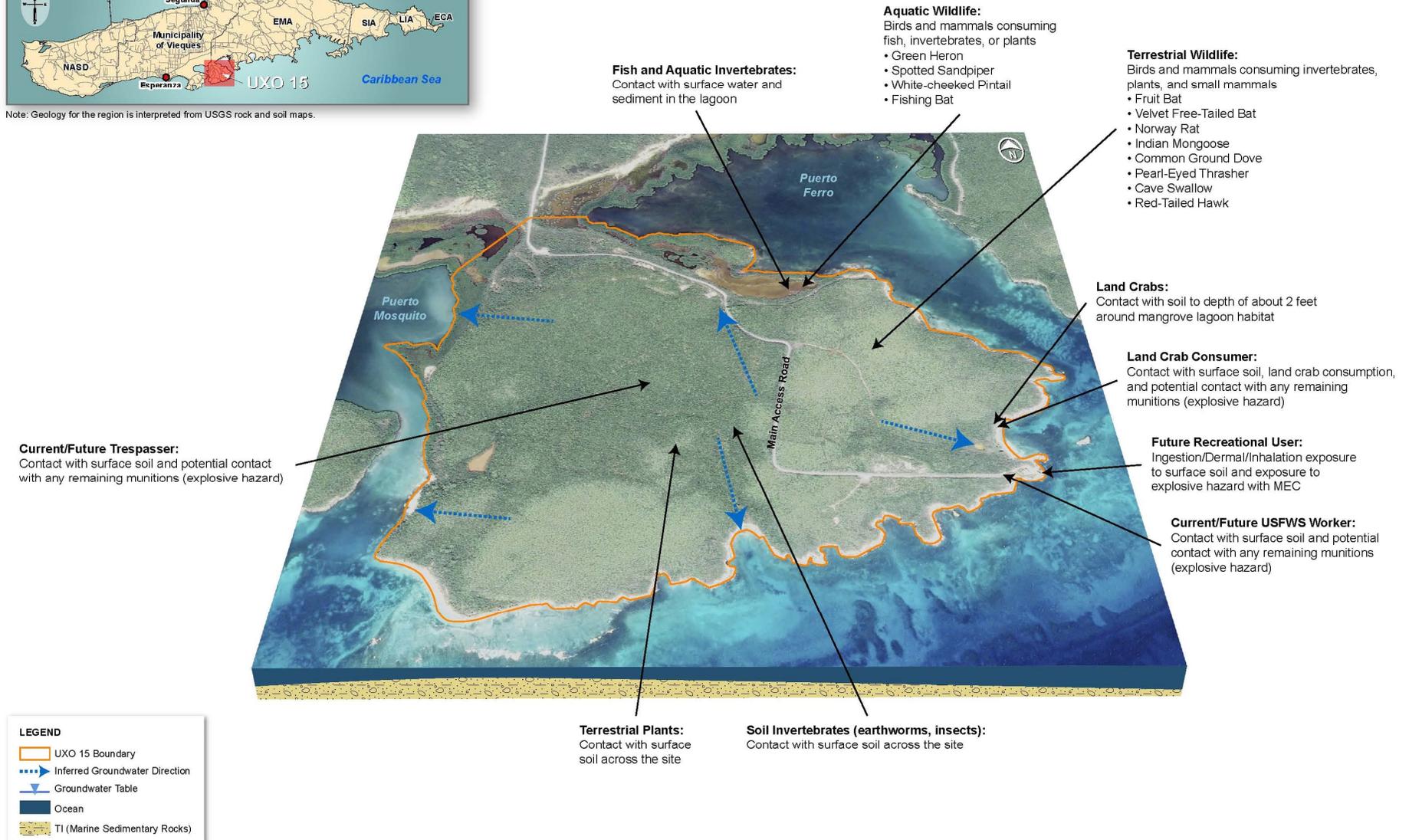


Figure 4. UXO 15 Conceptual Site Model



Note: Geology for the region is interpreted from USGS rock and soil maps.



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2.1.4 Nature and Extent of Contamination

As discussed in Section 2.1.3 and summarized in Table 1, beginning in 2000, a number of investigations and NTCRAs were conducted at UXO 15 that helped determine the nature and extent of MEC and other munitions-related material. Of the 2,240 items recovered during the ERA/SI, NTCRAs, and RI at UXO 15, only two were MEC; both were grenades (one tear gas and one 40-mm) found within PI 9 West during the RI, and both were found on the ground surface and likely were discarded military munitions (DMM). More than half of the items (1,467) were non-munitions-related debris such as pallets, fencing material, general trash/debris, steel matting, and partially buried drums. The remaining 771 items were MD, most of which (653) were munitions casings recovered from PI 9 East where munitions loading/offloading took place. This information supports historical knowledge that UXO 15 was likely used for support activities for training activities that took place elsewhere on the former VNTR. While there is the potential for MEC to remain at UXO 15, information collected during investigations and actions indicates there are likely few if any MEC present at UXO 15 (i.e., less than 0.01 percent of items recovered were MEC).

Environmental media (soil and sediment) samples were collected from areas with the highest potential for contamination, including the locations of soil berms, drums, potential detonation and excavation areas, and debris piles. All samples were analyzed for explosives and metals, and a subset of samples (those collected from soil berms and former drum locations) were also analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, and polychlorinated biphenyls (PCBs). No explosives or PCBs were detected in any samples collected at UXO 15. As shown in Table 2, detections of VOCs, SVOCs, and pesticides were sporadic and isolated and most were below EPA Regional (risk-based) Screening Levels (RSLs) and ecological risk-based levels (i.e., literature-based ecological screening values (ESVs) and toxicity reference values (TRVs) selected based on a hierarchy developed by the Navy and regulatory agencies). The potential for contaminants attributable to past Navy training activities to leach to groundwater was also evaluated to determine whether groundwater sampling was warranted. This evaluation indicated leaching to groundwater is not a concern at UXO 15 based on multiple lines of evidence, including: (1) the most likely contaminant source areas (debris piles) were removed, (2) very little impact from munitions-related contamination was observed during the RI, and (3) many of the constituents evaluated are naturally occurring and/or not associated with munitions. Metals detections were evaluated following a process developed by the stakeholder agencies, which is based on a scientific assessment of the concentration of each metal to determine whether it is associated with a munitions constituent or other potential contaminant source, such as its location relative to other detections, whether it is a natural constituent of the soils, and whether it is present at levels consistent with background concentrations. This determination is supported by lines of evidence that include relatively low magnitude of background exceedances, relatively uniform distribution across the site indicative of natural conditions, relatively minor or lack of contribution in munitions, and/or likely association with lithology present at UXO 15. The metals concentrations detected in soil and sediment at UXO 15 were attributable to background, or if potentially site-related, posed no unacceptable risk and were located in small, isolated areas at concentrations not expected to cause a concern of leaching to groundwater.

Table 2. Soil and Sediment Exceedances for UXO 15

Environmental Media	COPC	Maximum Concentration Detected Above Screening Criteria and Background	Vieques (East) Background UTL Zone TI SS*	Screening Criteria		
				Soil Screening Level (risk-based if no MCL) (May 2019)	Adjusted RSL for Industrial Soil (May 2019)	Vieques Ecological Screening Value
Surface Soil Below Drums	<i>Volatile Organic Compounds (mg/kg)</i>					
	Bromomethane	.0047	--	.0019	3	--
	<i>Pesticide/Polychlorinated Biphenyls (mg/kg)</i>					
	4,4'-DDE	.048	--	.011	9.3	4.1
	<i>Total Inorganics (mg/kg)</i>					
	Antimony	1.2	--	0.27	47	78
	Copper	98.3	94	46	4,700	70
	Iron	55,100	38,100	350	82,000	--
Surface Soil for Debris Piles B, C, and D	<i>Total Inorganics (mg/kg)</i>					
	Aluminum	52,300	35,000	30,000	100,000	--
	Chromium	130	70	100,000	6.3	64
	Lead	66.5	16	14	800	120
	Vanadium	110	56	86	580	130
	Zinc	804	32	370	35,000	120
Environmental Media	COPC	Maximum Concentration Detected Above Screening Criteria and Background	Vieques (East) Background UTL Zone TI SB*	Screening Criteria		
				Soil Screening Level (risk-based if no MCL) (May 2019)	Adjusted RSL for Industrial Soil (May 2019)	
Subsurface Soil Below Drums	<i>Volatile Organic Compounds (mg/kg)</i>					
	Bromomethane	.0034	--	.0019	3	
	<i>Total Inorganics (mg/kg)</i>					
	Antimony	0.59	--	0.27	47	
	Barium	482	212	82	22,000	
	Copper	213	94	46	4,700	
	Vanadium	105	56	86	580	
Subsurface Soil at Potential Detonation Areas 1-3 and Excavation Area	<i>Total Inorganics (mg/kg)</i>					
	Antimony	2.6	--	0.27	47	

Table 2. Soil and Sediment Exceedances for UXO 15

Environmental Media	COPC	Maximum Concentration Detected Above Screening Criteria and Background	Vieques (East) Background UTL Zone TI SB*	Screening Criteria		
				Soil Screening Level (risk-based if no MCL) (May 2019)	Adjusted RSL for Industrial Soil (May 2019)	
Subsurface Soil for PI 9 West, Trench D, and Trench K	<i>Semivolatile Organic Compounds (mg/kg)</i>					
	Benzaldehyde	1.8	--	0.0041	820	
	Benzo(a)anthracene	0.93	--	0.011	21	
	Benzo(a)pyrene	0.5	--	0.24	2.1	
	<i>Total Inorganics (mg/kg)</i>					
	Chromium (hexavalent)	4.9	--	0.00067	6.3	
	<i>Pesticide/Polychlorinated Biphenyls (mg/kg)</i>					
	4,4'-DDE	0.024	--	0.011	9.3	
Environmental Media	COPC	Maximum Concentration Detected Above Screening Criteria and Background	Vieques Marine Sediment ESVs Soil	Vieques (East) Background UTL Zone Oa SS*	Screening Criteria	
					Soil Screening Level (risk-based if no MCL) (May 2019)	Adjusted RSL for Industrial Soil (May 2019)
Sediment Samples for Debris Piles A and F	<i>Total Inorganics (mg/kg)</i>					
	Antimony	4	--	--	--	--
	Arsenic	33.3	8.2	1.6	--	--
	Copper	560	34	53	--	--
	Lead	528	46.7	5.4	--	--
	Zinc	3710	150	32	--	--

Notes:

Adjusted RSL corresponds to a risk of 1×10^{-6} and an adjusted hazard quotient (HQ) of 0.1, as applicable. The adjusted HQ is used for initial screening of data from sites where more than one constituent with the same toxic endpoint (e.g., target organ, reproductivity, etc.) might be present. EPA RSLs are not adjusted for carcinogenic constituents; therefore, adjusted and unadjusted RSLs for carcinogenic constituents are the same. The May 2019 RSLs were available during the Remedial Investigation; although several RSLs (as well as other screening levels) may have been updated since that time, the updated values do not alter the human health or ecological risk assessment conclusions.

*For metals data, an exceedance is not considered if the result is less than background.

COPC = constituent of potential concern

mg/kg = milligrams per kilogram

J = estimated value

UTL = upper tolerance limit

MCL = Maximum Contaminant Level

2.1.5 Current and Potential Future Land and Resource Uses

The former VNTR occupies approximately 14,600 acres, most of which is undeveloped, and is bounded by the Municipality of Vieques to the west, and the Caribbean Sea to the north, south, and east. The land that includes UXO 15 is under the administrative jurisdiction of the DOI, to be managed by USFWS as part of the Vieques National Wildlife

Refuge, as mandated by legislation. Accordingly, USFWS prepared a [Comprehensive Conservation Plan/Environmental Impact Statement](#) ¹³ (CCP/EIS) for the Vieques National Wildlife Refuge that provides long-term guidance for the management and public use of these lands (USFWS, 2007). Based on this plan, USFWS has identified and mapped locations of planned recreational features and public use areas, including areas/trails for hiking and birdwatching, parking, and picnicking. These planned public use areas are shown in Figure 5. There are currently no planned fishing and land crabbing areas. However, USFWS has stated that land crabbing could occur in habitats that are appropriate, such as to the east of Laguna Yanuel. Therefore, the land crab exposure scenarios were included in the risk assessment to account for potential trespasser receptors.

There is currently public access allowed around the historic Spanish lighthouse and adjacent beach, and although groundwater in Vieques is classified as a potable water supply by the Commonwealth of Puerto Rico, there is no current or planned groundwater use within UXO 15 or anywhere on Vieques. Potable water supply on Vieques is derived from the Rio Blanco on the main island of Puerto Rico and supplied to Vieques via pipeline by the Puerto Rico Aqueduct and Sewer Authority (PRASA).

2.1.6 Summary of Site Risks

The results of the Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA) conducted for UXO 15 during the RI are discussed in the following subsections and summarized in Table 3. The complete HHRA and ERA are provided in the RI/FS Report, which is available in the Administrative Record file.

Table 3. UXO 15 Risk Assessment Results

Receptors	Human Health Risk
Current/Future Trespassers	Adult – Cumulative ELCR ranging from 4×10^{-6} to 4×10^{-7} and HI < 1.0 Youth – Cumulative ELCR ranging from 3×10^{-6} to 3×10^{-7} and HI < 1.0 Acceptable
Future Recreational Users	Adult – Cumulative ELCR ranging from 4×10^{-6} to 1×10^{-7} and HI < 1.0 Child – Cumulative ELCR ranging from 1×10^{-5} to 4×10^{-7} and HI < 1.0 Acceptable
Current/Future USFWS Workers	Cumulative ELCR ranging from 2×10^{-6} to 2×10^{-7} and HI < 1.0 Acceptable
Potential Current/Future Land Crab Consumers	Adult – 2×10^{-5} cumulative ELCR, two target organ specific HI > 1 (cardiovascular [HI = 7] and dermal [HI = 7] due to arsenic); the probability of BLLs exceeding 10 µg/dL is less than 5% Child – 9×10^{-5} cumulative ELCR, three target organ specific HI > 1 (cardiovascular [HI = 116] due to arsenic, dermal [HI = 117] due to arsenic with a smaller contribution from selenium, gastrointestinal [HI = 3] due to copper); the probability of BLLs exceeding 10 µg/dL is less than 5% Although calculations indicate unacceptable non-cancer hazard for adult and child consumers, metals concentrations responsible for calculated values are attributable to natural conditions; therefore, no unacceptable risk or non-cancer hazard associated with past munitions-related activities. Section 2.1.4 describes the process used to determine whether metals concentrations are attributable to natural conditions.

Table 3. UXO 15 Risk Assessment Results

Receptors	Human Health Risk
µg/dL = micrograms per deciliter BLL = blood lead levels ELCR = excess lifetime cancer risk HI = hazard index	Unacceptable ELCR = $>1 \times 10^{-4}$ Unacceptable HI = >1
Receptors	Ecological Risk
Sediment Organisms	HQs ≥ 1 (beryllium, lead, and thallium) Further risk evaluation identified beryllium and thallium concentrations as attributable to background. Lead exceeded the sediment screening value at one of nine locations with an HQ of 3.0; however, the mean HQ was below 1 (0.43). Therefore, lead risk was identified as acceptable.
Aquatic Food Web	HQs < 1 Acceptable
Soil Organisms	HQs ≥ 1 (chromium, iron, and zinc) Further risk evaluation identified chromium and iron concentrations as attributable to background. Although the mean HQ for zinc was 3.97, the associated vegetative community was healthy, diverse, and comparable to the surrounding vegetative community. As a result, zinc risk was identified as acceptable.
Terrestrial Food Web	HQs ≥ 1 (selenium and vanadium) Further risk evaluation identified selenium and vanadium concentrations as attributable to background.
HQ = hazard quotient HQ = ≥ 1 ; identified in the ERA as a contaminant of potential concern warranting further risk evaluation	

Human Health Risk Assessment UXO 15

An HHRA was conducted to evaluate potential human health risks associated with exposure to constituents detected in soil and sediment at UXO 15. Maximum detected concentrations of constituents were compared to EPA RSLs, and constituents of potential concern (COPCs) were identified for direct exposure pathways based on exceedances of these screening levels. COPCs for the indirect exposure to constituents in sediment and soil through consumption of biota (land crabs) were selected using both quantitative (based on screening level comparison) and qualitative (based on constituents’ bioaccumulation potential) approaches. Table 2 in Section 2.1.4 identifies constituents detected above human health adjusted RSLs; these constituents were therefore identified as COPCs for quantitative evaluation.

Human health risks were quantitatively evaluated for current and potential future human receptors exposed to COPCs in site media at UXO 15 under reasonable maximum exposure (RME) scenarios. Exposure scenarios that were evaluated were recreational users, including visitors to the lighthouse as well as people utilizing trails and associated areas around the peninsula for such activities as hiking, horseback riding, bicycling, and land crabbing; USFWS workers; and trespassers in areas not open to the public. The recreational user exposure scenario was used to conservatively represent the trespasser exposure scenario. The potential non-cancer hazards, expressed as the

hazard index (HI), and cancer risk estimates, expressed as the excess lifetime cancer risk (ELCR), were calculated using RME assumptions.

Contaminants of concern (COCs) were not identified for soil and sediment because either risk estimates for site-related chemicals were below threshold values (the upper end of EPA's acceptable ELCR range of 10^{-4} , non-cancer HI of 1, and 5% probability of blood lead levels [BLLs] exceeding 10 micrograms per deciliter [$\mu\text{g}/\text{dL}$]) or constituents detected at levels resulting in potentially unacceptable risks are attributable to natural background levels or are not site-related.

Ecological Risk Assessment UXO 15

The ERA was conducted to evaluate potential ecological (plant and animal) risks associated with exposure to constituents detected in soil and sediment at UXO 15 using literature-based ecological effects values to assess risks from direct exposure by organisms as well as via the food chain. For the initial ERA screening step, maximum soil and sediment concentrations (for directly exposed plants and animals) and maximum exposure doses (for food chain exposed wildlife) were compared with corresponding ESVs or TRVs to derive risk estimates using the hazard quotient (HQ) method. HQs are calculated by dividing the chemical concentration by the corresponding ESV or by dividing the exposure dose by the ingestion-based TRV. HQs equaling or exceeding 1 indicate the potential for unacceptable risk since the chemical concentration or dose equals or exceeds the ESV or TRV; these chemicals were identified as COPCs.

Since the screening step HQs are the result of using intentionally conservative assumptions, HQs greater than or equal to 1 do not necessarily indicate that unacceptable risks are present. Thus, for the screening step COPCs the ERA proceeds to a refined evaluation of exposure estimates using less conservative, but more realistic, assumptions such as using mean exposure concentrations and consideration of background concentrations. This information was considered in a risk evaluation to determine whether unacceptable risks may exist, the results of which are described in Table 3.

Based on the risk evaluation, no unacceptable risks to directly exposed plants and animals and other wildlife potentially feeding on those plants and animals were identified. Thus, no COCs were identified for soil, sediment, or food web exposures at UXO 15.

2.2 Explosive Hazard

Relative to other UXO sites within the former VNTR, the anticipated density of MEC within UXO 15 is very low, based on information gathered during munitions response actions and other munitions removal performed there. However, potential explosive hazard remains at UXO 15, associated with the possible presence of MEC in the subsurface, with surface MEC in areas not previously cleared, and from MEC that may become exposed on the surface as a result of erosion.

2.3 Basis for Response Action

In cooperation with EPA, DOI, and the Commonwealth, and in accordance with applicable guidance, the Navy performed investigations and munitions removal at UXO 15 to evaluate the nature and extent of MEC and potentially associated contamination, to assess the potential risks to human health and the environment from exposure to UXO 15

media, and to evaluate remedial alternatives for their suitability to further reduce possible explosive hazards remaining at the site.

No unacceptable human health or ecological risks from exposure to chemicals in UXO 15 media were identified. However, the Navy evaluated remedial alternatives and ultimately selected a response action to address potential explosive hazards remaining because there is the potential for MEC to be present in authorized, accessible public-use areas, or where it may become exposed in these areas over time from erosion.

2.4 Principal Threat Waste

MEC, specifically DMM or unexploded ordnance (UXO), if any, that remains present at UXO 15 may constitute a principal threat waste (PTW) due to the potential for it to pose an explosive hazard if the material is moved, handled, or disturbed. The selected remedy includes additional MEC clearance, LUCs, and inspections to limit the potential for people to encounter MEC that may remain. During historical investigations and removal actions, a total of two MEC items were found and removed from the 536 acres that comprise UXO 15. If potential MEC is later found at UXO 15, Department of Defense (DoD) explosive ordnance disposal personnel or similarly qualified personnel will evaluate the material to determine if it poses an explosive hazard. Material that is determined to pose an explosive hazard will normally be treated onsite or removed for destruction per applicable DoD explosives safety standards and environmental laws and regulations. In these cases, the Navy, EPA, DOI, and the Commonwealth will consult, in accordance with the terms of the Vieques FFA, to make a determination as to whether the material should, as defined by CERCLA, the NCP, and EPA guidance, be classified as PTW. If the material is deemed to be PTW, the Navy will conduct the actions necessary to ensure protectiveness of human health and the environment to address unacceptable risks posed by the material designated as PTW.

2.5 Remedial Action Objectives

Remedial Action Objectives (RAOs) are cleanup objectives that specify contaminants to be cleaned up, the cleanup standard, the area of cleanup, and the time required to achieve cleanup, for the purpose of protecting human health and the environment. The following RAOs were developed to be protective of current, potential future, and hypothetical receptors, in accordance with the current and anticipated future land use for UXO 15:

- Reduce the risk of exposure to potential munitions-related explosive hazards to be consistent with current and anticipated future land use identified by USFWS in accordance with its CCP and as set forth in Public Law 106-398, as amended by Public Law 107-107, which requires the land containing UXO 15, among other sites, to be managed by USFWS as a National Wildlife Refuge.
- Reduce or prevent the potential for unauthorized access to portions of UXO 15.

An RAO for groundwater is not necessary for UXO 15 because no contaminants representing a leaching concern for groundwater were identified, as detailed in the RI/FS Report (CH2M, 2020).

2.6 Description and Comparative Analysis of Remedial Alternatives

Remedial alternatives were developed based on site-specific considerations related to the potential explosive hazard, site conditions, and planned recreational site use.

2.6.1 Description of Remedial Alternatives

Table 4 summarizes the alternatives included in the evaluation, including a listing and description of the major components and estimated cost of each alternative. The following three remedial alternatives were developed to address potential MEC explosive hazards:

- Alternative 1 – No Action
- Alternative 2 – Surface MEC Removal in Planned Public Use Areas and Land Use Controls
- Alternative 3 – Surface and Subsurface MEC Removal in Planned Public Use Areas and Land Use Controls

These remedial alternatives were developed and evaluated in the RI/FS Report (CH2M, 2020). To support evaluation of the alternatives, USFWS has identified and mapped locations of recreational features and public-use areas planned to be installed/authorized/maintained by USFWS, such as vehicular, biking, horseback riding, and hiking along trails and roads; parking; and land crabbing within certain areas of UXO 15, along with offshore activities such as fishing, kayaking, surfing, snorkeling, and swimming. These proposed public use areas are shown in Figure 5. The Navy is not responsible for maintaining accessibility to authorized public use areas. Rather, it will be USFWS' responsibility to choose whether to maintain the public use areas in an accessible manner (e.g., keep the vegetation cut back at/along the intended public use areas) because this activity is associated with the land use, not the remedial action. In fact, if public use areas are not maintained and become inaccessible, the potential for human exposure in those areas would be reduced or eliminated. Nonetheless, the Navy's responsibility will be to provide inspections of accessible portions of public use areas (as well as where trespassing is evident) and remove any MEC identified. Should USFWS decide not to retain certain areas as public-use areas, LUC/MEC monitoring will be discontinued in these locations, except in areas where continued access is evident (e.g., via trespassing).

Consistent with the NCP, a no action alternative was evaluated as a baseline for the comparative analysis. Two additional alternatives were evaluated for their potential to meet the RAOs.

2.6.2 Comparative Analysis of Remedial Alternatives

Each remedial alternative for UXO 15 was evaluated with respect to the [nine evaluation criteria](#)¹⁴ provided in the NCP. The alternatives were then compared to one another with respect to each NCP criterion. The RI/FS Report (CH2M, 2020) provides details and a comparison of the remedial alternatives considered.

The remedial alternatives summarized in Table 4 and shown in Figures 6 and 7 were selected for detailed evaluation and comparative analysis. The assumptions regarding each alternative are conceptual, but sufficient for cost-estimating and evaluation purposes. The details of the alternative selected by this ROD will be provided in the associated remedial action work plan, including the actual number, types, and locations of signs or other educational/warning mechanisms installed, which will be based on such factors as site conditions, accessibility by vehicles, dense jungle conditions, and actual needs.

Table 4. Remedial Alternatives

Alternative	Components	Details	Cost
<p>1. No Action</p> <p>No action and no restriction on activities.</p>			<p>Capital Cost: \$0</p>
<p>2. Surface MEC Removal in Planned Public Use Areas and Land Use Controls</p> <p>Manages MEC explosive hazards by searching for and, if found, removing additional surface/near-surface MEC to support planned recreational activities, reducing the potential for unauthorized access to portions of the site, and performing periodic inspections to evaluate/maintain LUC integrity and effectiveness and identify and remove any exposed MEC/MD.</p>	<ul style="list-style-type: none"> – Surface/near-surface MEC clearance – LUCs, including physical mechanisms (e.g., educational kiosk/signs/markers) and administrative processes (e.g., use restrictions) – Monitoring, including removal of any MEC identified 	<ul style="list-style-type: none"> – Conducting an instrument-aided (e.g., hand-held magnetometer) visual surface inspection of the trail, multipurpose road/trail, and parking area that were not previously cleared (Figure 6) to identify and remove any MEC and munitions-related debris on or near the ground surface. It is noted that the planned parking area not previously cleared is in an area where bedrock is anticipated to be at or near-surface (within 1-foot bgs), as was the parking area near the lighthouse. – Implementing LUCs (e.g., educational kiosk and/or trail/road markers/monuments and administrative mechanisms) to reduce the potential for human contact with potential MEC by reducing the potential for people to access areas outside authorized, accessible public use areas. LUCs will also include discouraging unauthorized activities, such as restrictions on intrusive activities and groundwater use. The specific LUC requirements, including the associated checklist, will be included in a monitoring plan associated with the remedy that will be submitted for regulatory review. – Establishing an MEC/LUC monitoring program, including periodic inspections for trespassing in restricted areas, MEC/MD recurrence in authorized, accessible public-use areas, and the integrity and effectiveness of physical LUCs. Any MEC/MD discovered during implementation of the monitoring program would be removed. As noted previously, it will be USFWS' responsibility to choose whether to maintain any authorized public-use area as accessible. The Navy will not be responsible for cutting vegetation or otherwise making areas accessible for LUC/MEC monitoring. On-call 	<p>Capital Cost: \$387,000</p> <p>Present Value of Future Annual Monitoring and Maintenance Costs: \$314,000</p> <p>Total Present-Worth Cost: \$701,000</p> <p>Assumed timeframe: 30 years (including monitoring and maintenance)</p>

Table 4. Remedial Alternatives

Alternative	Components	Details	Cost
		construction support, as warranted, would also be conducted in support of USFWS road maintenance activities.	
<p>3. Surface and Subsurface MEC Removal in Planned Public Use Areas and Land Use Controls</p> <p>Manages MEC explosive hazards by searching for and, if found, removing surface (as described in Alternative 2) and additional subsurface MEC to support potential future recreational activities, reducing the potential for unauthorized access to portions of the site, and performing periodic inspections to identify and remove exposed MEC/MD.</p>	<ul style="list-style-type: none"> – Surface and subsurface MEC clearance – LUCs (as described under Alternative 2) – Monitoring (as described under Alternative 2) 	<ul style="list-style-type: none"> – Conducting surface and subsurface MEC clearance utilizing digital geophysical mapping along the trail (to a maximum depth of 1 foot), multipurpose road/trail (to a maximum depth of 2 feet), and parking area (to a maximum depth of 2 feet) that were not previously cleared (Figure 7) to identify and remove any MEC and munitions-related debris on and beneath the ground surface. – Implementing LUCs as described under Alternative 2. – Establishing an MEC/LUC monitoring program as described under Alternative 2. 	<p>Capital Cost: \$547,000</p> <p>Present Value of Future Annual Monitoring and Maintenance Costs: \$314,000</p> <p>Total Present-Worth Cost: \$861,000</p> <p>Assumed timeframe: 30 years (including monitoring and maintenance)</p>

Figure 5. USFWS Planned Land Use at UXO 15

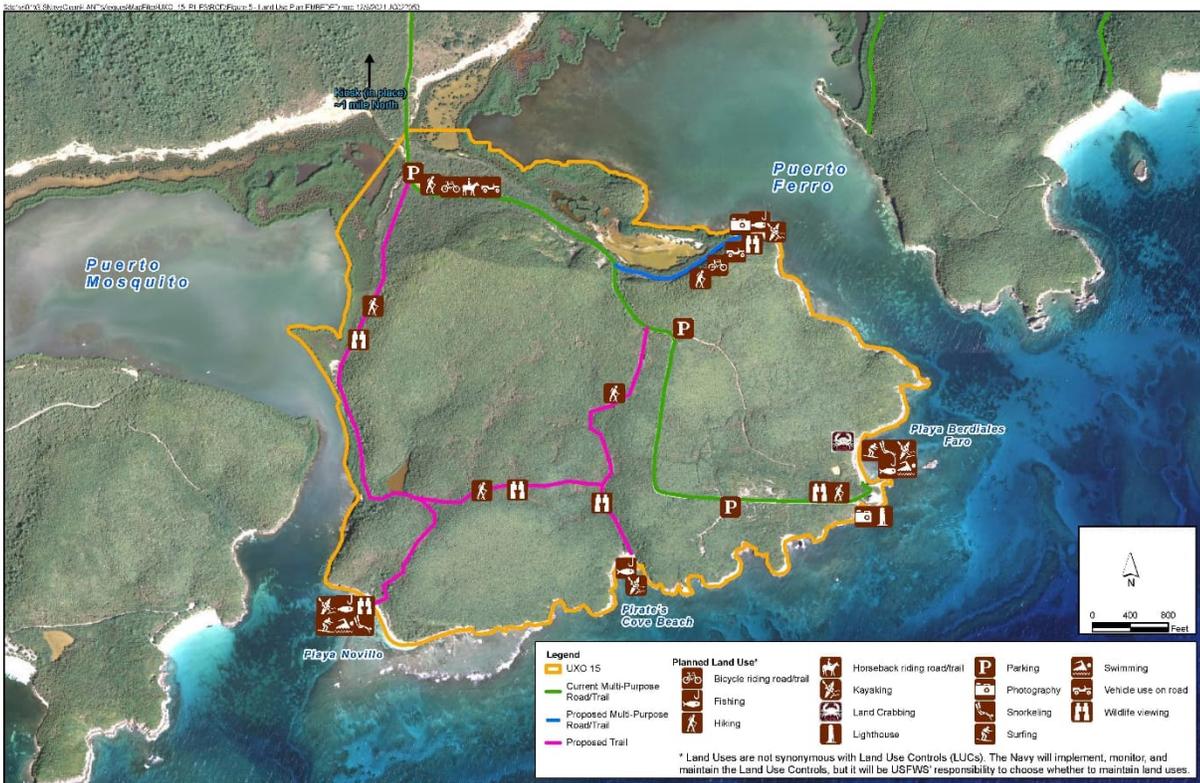


Figure 6. Conceptual Layout of Alternative 2 - Surface MEC Removal in Planned Public Use Areas and Land Use Controls

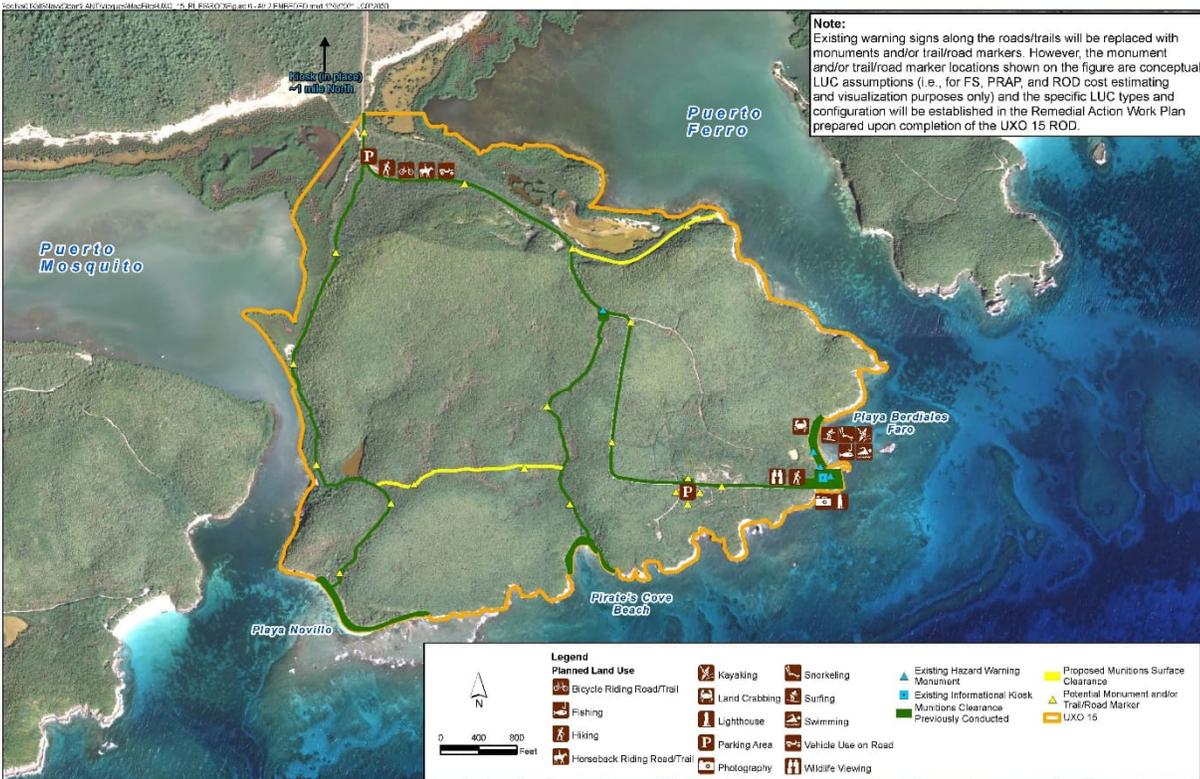
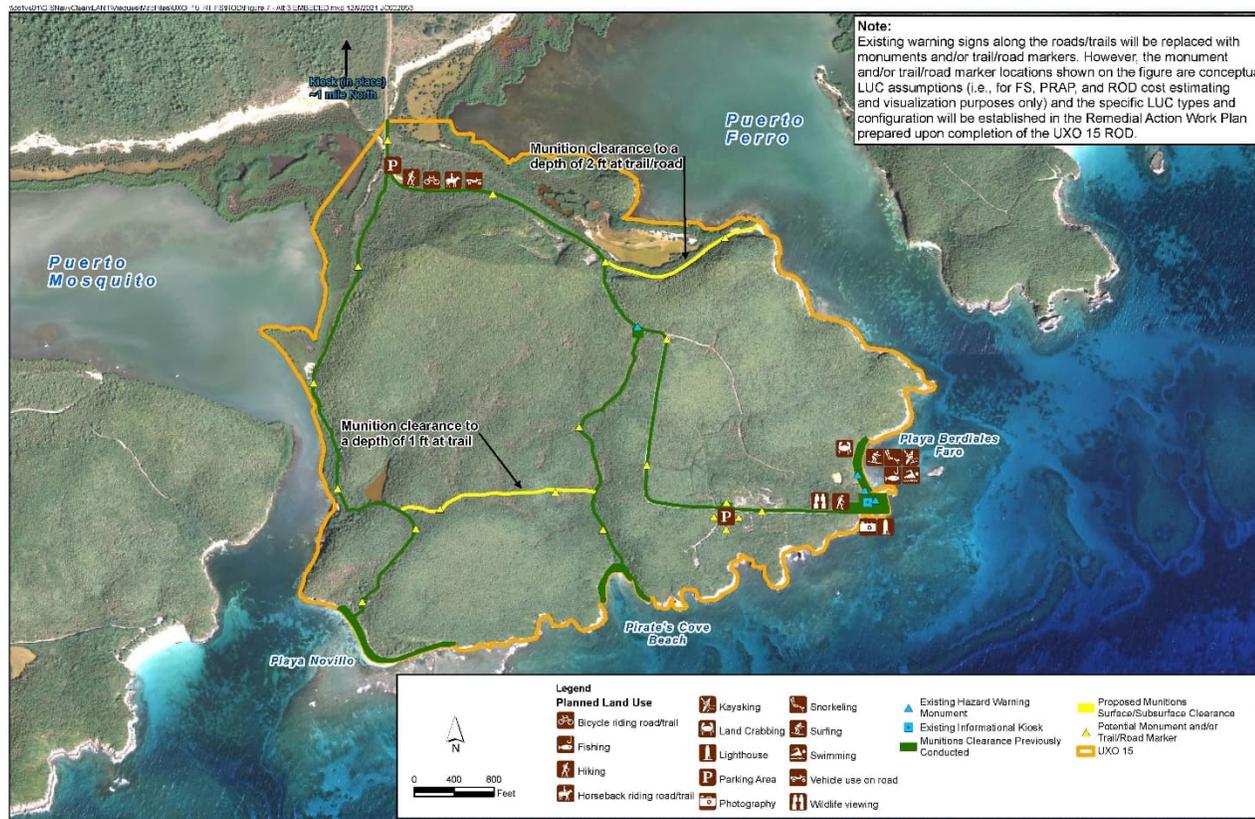


Figure 7. Conceptual Layout of Alternative 3 - Surface and Subsurface MEC Removal in Planned Public Use Areas and Land Use Controls



2.6.3 Threshold Criteria

The two threshold criteria listed in this subsection are statutory requirements that the chosen alternative must satisfy. Alternatives that do not meet the threshold criteria are not eligible for selection as the final remedy.

Overall Protection of Human Health and the Environment

Alternative 1 (no action) is not protective and does not achieve the RAOs. The remaining alternatives are protective of human health and the environment by reducing the exposure to MEC by reducing the potential for people to access areas outside authorized, accessible public use areas, performing periodic MEC inspections, and conducting additional MEC clearance.

Compliance with Applicable or Relevant and Appropriate Requirements

A complete list of the Applicable or Relevant and Appropriate Requirements (ARARs¹⁵), comprising Federal Location-specific ARARs, which address coastal zones and migratory bird areas and endangered species, and Federal and Commonwealth Action-specific ARARs, which address land disturbance and munitions, stormwater, spill, and management of waste, are included in Attachment A. Alternatives 2 and 3 would comply with ARARs.

2.6.4 Primary Balancing Criteria

The five primary balancing criteria listed in this subsection are used to identify major benefit trade-offs among the alternatives. These trade-offs are balanced to help identify the preferred alternative.

Long-term Effectiveness and Permanence

Alternative 1 would provide some long-term effectiveness based on the MEC clearance that has already been performed and the low quantity of MEC found, but it would provide no mechanism to assess conditions or implement LUCs. Alternatives 2 and 3 provide long-term effectiveness and permanence using LUCs combined with additional MEC clearance. Because of the significant munitions clearance activities already conducted at UXO 15, the low number of MEC found (only two MEC have been found), and the absence of MEC within planned public use areas where MEC clearance was previously performed, Alternative 2 has comparable long-term effectiveness and permanence to Alternative 3. While subsurface MEC removal would occur under Alternative 3, it is anticipated to provide only a marginally higher level of long-term effectiveness than Alternative 2 because based on historical clearance activities it is unlikely that subsurface MEC would be discovered. Further, contact with only the ground surface within the areas not previously cleared (trail segments and parking area) is likely based on anticipated future uses.

Reduction in Toxicity, Mobility, and Volume through Treatment

While removing MEC may not technically be considered as treatment, for MEC that must be detonated for disposal, it is substantively similar to treatment, especially with respect to consideration of this evaluation criterion. Alternative 1 does not result in any additional reduction in toxicity, mobility, and volume (TMV). Alternative 3 has marginally higher theoretical degree of reduction in TMV than Alternative 2 because it includes the screening for and, if present, removal and detonation, if necessary, of subsurface MEC (i.e., clearance) within planned public use areas versus only surface/near-surface MEC clearance of Alternative 2. However, as noted previously, implementing Alternative 3 would likely produce very little or no increase in discovered MEC.

Short-term Effectiveness

Alternative 1 would not pose short-term difficulties because no action would occur, but it would not achieve short-term effectiveness and, therefore, it would not achieve the RAO. Implementing Alternatives 2 and 3 could begin almost immediately after a ROD and associated remedial action work plan are finalized; however, Alternative 3 would take longer to implement and pose greater potential environmental impacts due to the subsurface MEC clearance activities. Therefore, Alternative 2 would have a marginally higher degree of short-term effectiveness because, relative to Alternative 3, it would present somewhat lower risks to the community and/or workers during the remedial action, lower potential environmental impacts, and shorter time until the RAO is achieved because it would not involve heavy machinery and associated excavations that are part of Alternative 3.

Implementability

Alternative 1 requires no action or implementation but does not meet the RAO. Alternative 2 is technically feasible and could facilitate public access in the areas intended for public use by USFWS. The implementability of Alternative 3 would be similar to Alternative 2, but it would be marginally more logistically challenging because of the subsurface MEC clearance and the associated excavations. While both Alternatives 2 and 3 are technically feasible and fully

implementable, Alternative 3 may require replacement and/or restoration of habitat that is damaged/destroyed during subsurface MEC clearance activities.

Cost

Alternative 1 is the most cost effective but does not meet the RAOs. Alternatives 2 and 3 meet the RAOs and have present-worth costs of \$701,000 and \$861,000, respectively.

2.6.5 Modifying Criteria

The modifying criteria represent the level of Commonwealth and community acceptance of the proposed remedial alternative.

Commonwealth Acceptance. Commonwealth involvement has been continual throughout the CERCLA process for UXO 15 and PRDNER supports and concurs with the preferred alternative.

Community Acceptance. The Proposed Plan was issued for public review from July 26 to September 23, 2021 and was discussed at a Virtual Public Meeting held on MS Teams (with phone dial-in) on August 4, 2021. Several clarifying questions were asked and addressed at the meeting. Substantive public comments were documented and addressed in the Responsiveness Summary (Attachment B). Based on evaluation of public comments, it appears the Vieques community as a whole supports the preferred alternative.

2.7 Selected Remedy

The selected remedy for UXO 15 is Alternative 2 – Surface MEC Removal in Planned Public Use Areas and Land Use Controls. This selected remedy is the preferred alternative that was presented in the Proposed Plan.

2.7.1 Rationale for Selected Remedy

Based on the evaluation of the data, information currently available, including the anticipated land use provided by USFWS, and the comparative analysis, the preferred alternative meets the statutory requirements of CERCLA for protection of human health and the environment under current and projected future land use as a wildlife refuge with focused areas of recreational use.

2.7.2 Description of Selected Remedy

Alternative 2 – Surface MEC Removal in Planned Public Use Areas and Land Use Controls involves surface MEC removal from areas that have been identified for recreational use. Because MEC may still be present at the site following the MEC removal, LUCs and LTM will be employed and maintained to ensure the remedy remains effective in the long-term. The details of Alternative 2 are provided in Table 4. The statutorily-required five-year reviews will also be performed every five years to assure that human health and the environment are being protected.

Key elements that make Alternative 2 the preferred alternative are:

- Meets the RAOs and is compatible with the planned land use, based on the USFWS CCP. Should USFWS not maintain accessibility to authorized public-use areas or not retain certain areas as public-use areas, the Navy will not be responsible for maintaining accessibility, but will be responsible for continuing to perform LUC/MEC monitoring in current/former public-use areas where access is observed to still be occurring.

- Reflects significant MEC clearance that has already been conducted as part of historical munitions removal activities from the areas identified by USFWS for future recreational use, such as the main access road to the lighthouse area, several trails, and beaches around the peninsula.
- Performs additional surface/near-surface MEC clearance in areas planned for recreational use that were not previously cleared, implements LUCs to reduce the potential for people to access areas outside authorized, accessible public use areas, and it includes MEC/LUC monitoring to ensure the integrity and effectiveness of the LUCs and monitors for and removal of MEC identified in the future.
- Avoids the potential for deleterious effects such as erosion that may be caused by Alternative 3 subsurface MEC clearance, which would not likely substantively reduce explosive hazard.

2.7.3 Expected Outcomes of the Selected Remedy

The expected outcome of the selected remedy is that the RAOs for UXO 15 will be met and that potential explosive hazards will be reduced to levels appropriately supportive of the planned land use.

Within 90 days following selection of the remedy, the Navy will prepare, in accordance with EPA guidance, and submit to EPA, DOI, and PRDNER for review and concurrence, the UXO 15 Remedial Action Work Plan that includes an LUC Plan, LTM Plan, and a plan for surface MEC removal from proposed public use areas or areas where MEC may be discovered due to natural or other occurrences, such as soil erosion. Details of the surface MEC removal and LUCs, including performance metrics, will be included in the LUC Plan. While the potential for explosive hazards remains, the Navy will be responsible for implementing, maintaining, inspecting, and reporting on the accessible LUCs in accordance with the ROD and associated MEC removal, LUC, and LTM plans. As noted previously, it will be USFWS' responsibility to choose whether to maintain the public use areas in an accessible manner (e.g., keep the vegetation cut back at/along the intended public use areas) because this activity is associated with the land use, not the remedial action.

2.7.4 Statutory Determinations

In accordance with the NCP, the selected remedy meets the following statutory determinations.

- Protection of Human Health and the Environment - The selected remedy is protective of human health and the environment by controlling land use and access, limiting negative impacts to the environment and site workers (associated with vegetation clearance and land disturbance), reducing the potential for people to access areas outside authorized, accessible public use areas, and by performing surface MEC removal in planned public use areas not previously cleared and removing any MEC identified during LTM or public use in the future.
- Compliance with ARARs - The selected remedy will comply with Federal and Commonwealth ARARs presented herein (Attachment A, Tables A-1 through A-6).
- Cost-Effectiveness - The selected remedy provides the best value relative to the planned land use.
- Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable - The selected remedy represents the maximum extent to which permanent solutions and alternative treatment technologies can be used in a practicable manner at UXO 15

because any MEC found during remedy implementation and associated LTM will be removed and treated (detonated).

- Preference for Treatment as a Principal Element - The selected remedy results in additional reduction in TMV through surface MEC removal (if found) and treatment (detonation).

2.8 Community Participation

The Navy, in consultation with the EPA, Commonwealth, and USFWS, established a community relations program for the Vieques Environmental Restoration Program in 2001. The program promotes communication regarding various OU investigations and response activities between the stakeholder agencies (Navy, EPA, Commonwealth, and USFWS) and the public. The community relations program formed a Restoration Advisory Board (RAB) in 2004 to further encourage community involvement. RAB meetings are held approximately every three months and are open to the public for participation. A summary of the community participation activities associated with this action are discussed in the next section.

3. Responsiveness Summary

The Responsiveness Summary is a concise summary of substantive comments received from the public during the public comment period and the associated responses. The Responsiveness Summary was prepared in accordance with guidance in *Community Relations in Superfund: A Handbook*¹⁶ (EPA, 1992) after the public comment period ended on September 23, 2021.

3.1 Overview

The Proposed Plan that was presented to the public identified that *Alternative 2 – Surface MEC Removal in Planned Public Use Areas and Land Use Controls* is warranted at UXO 15 to protect human health and the environment.

3.2 Community Involvement Process

In accordance with CERCLA Section 117(a), the Navy issued the Proposed Plan for public comment starting July 26, 2021 and ending September 23, 2021. The Navy and EPA held a virtual [public meeting](#)¹⁷ on MS Teams (with phone dial-in) to discuss the Proposed Plan on August 4, 2021.

The Proposed Plan and previous investigation reports for UXO 15 were available during the public comment period and are currently available in the Administrative Record for this remedial decision. The Administrative Record is accessible to the public via: <https://go.usa.gov/xSfZq>

3.3 Summary of the Public Comment Period

During the UXO 15 Proposed Plan public comment period, no written comments were received; however, comments were made during the public meeting. The responses to public comments by the Navy and EPA, in consultation with DOI and PRDNER, are presented in the Responsiveness Summary, which is included as Attachment B of this ROD. No public comments were received during the public comment period that warranted changes to the selected remedy.



4. Acronyms

µg/dL	micrograms per deciliter
AFWTA	Atlantic Fleet Weapons Training Area
amsl	above mean sea level
ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
BLL	blood lead level
CCP/EIS	Comprehensive Conservation Plan/Environmental Impact Statement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
COPC	constituent of potential concern
DMM	discarded military munitions
DoD	Department of Defense
DOI	Department of the Interior
EBS	Environmental Baseline Survey
ECA	Eastern Conservation Area
ELCR	excess lifetime cancer risk
EMA	Eastern Maneuver Area
EPA	Environmental Protection Agency
ERA	Ecological Risk Assessment
ERA/SI	Expanded Range Assessment/Site Inspection
ESV	ecological screening value
FFA	Federal Facility Agreement
FS	Feasibility Study
HHRA	Human Health Risk Assessment
HI	hazard index
HQ	hazard quotient

LIA	Live Impact Area
LTM	long-term monitoring
LUC	land use control
MCL	Maximum Contaminant Level
MD	munitions debris
MEC	munitions and explosives of concern
mg/kg	milligrams per kilogram
mm	millimeter(s)
MRP	Munitions Response Program
NAVFAC	Naval Facilities Engineering Systems Command Atlantic
Navy	Department of the Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NTCRA	Non-Time-Critical Removal Action
OB/OD	open burn/open detonation
OU	Operable Unit
PCB	polychlorinated biphenyl
PI	Photo Identified (site)
PRA	Preliminary Range Assessment
PRASA	Puerto Rico Aqueduct and Sewer Authority
PRDNER	Puerto Rico Department of Natural and Environmental Resources
PTW	principal threat waste
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RME	reasonable maximum exposure
ROD	Record of Decision
RSL	Regional Screening Level
SEMS	Superfund Enterprise Management System
SIA	Surface Impact Area
SVOC	semivolatile organic compound
TMV	toxicity, mobility, and volume
TRV	toxicity reference value

USFWS	United States Fish and Wildlife Service
UTL	upper tolerance limit
UXO	unexploded ordnance
VNTR	Vieques Naval Training Range
VOC	volatile organic compound



References

5. References

Item	Reference Phrase in ROD	Location in ROD	Identification of Referenced Document Available in the Administrative Record
Ref. 1	Guide	Section 1.2	EPA. 1999. <i>A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents</i> . July.
Ref. 2	Toolkit	Section 1.2	EPA. 2011. <i>Toolkit for Preparing CERCLA Records of Decision</i> . September.
Ref. 3	Phase I RCRA Facility Investigation	Section 2.1.3	CH2M HILL. 2004. <i>Phase I RCRA Facility Investigation Report, Former Atlantic Fleet Weapons Training Facility, Vieques Island, Puerto Rico</i> . Draft. June.
Ref. 4	Preliminary Range Assessment	Section 2.1.3	NAVFAC. 2003. <i>Preliminary Range Assessment Report, Vieques Naval Training Range, Vieques Island Puerto Rico</i> . Final Draft. April.
Ref. 5	Environmental Baseline Survey	Section 2.1.3	NAVFAC. 2003. <i>Environmental Baseline Survey, Vieques Naval Training Range, Vieques Island, Puerto Rico</i> . Draft Final. April.
Ref. 6	Expanded Range Assessment/Site Inspection	Section 2.1.3	CH2M. 2010. <i>Expanded Range Assessment/Site Inspection Report, Former Vieques Naval Training Range, Vieques, Puerto Rico</i> . September.
Ref. 7	Remedial Investigation/ Feasibility Study	Section 2.1.3	CH2M. 2020. <i>UXO 15 Remedial Investigation/Feasibility Study Report, Atlantic Fleet Weapons Training Area – Vieques, Former Vieques Naval Training Range, Vieques, Puerto Rico</i> . July.
Ref. 8	no unacceptable risks to human health or the environment	Section 2.1.3	CH2M. 2020. <i>UXO 15 Remedial Investigation/Feasibility Study Report, Atlantic Fleet Weapons Training Area – Vieques, Former Vieques Naval Training Range, Vieques, Puerto Rico</i> . July.
Ref.9	remedial alternatives to address potential explosive hazards	Section 2.1.3	CH2M. 2020. <i>UXO 15 Remedial Investigation/Feasibility Study Report, Atlantic Fleet Weapons Training Area – Vieques, Former Vieques Naval Training Range, Vieques, Puerto Rico</i> . July.
Ref. 10	Non-Time-Critical Removal Action	Section 2.1.3	CH2M. 2015. <i>After Action Report, Non-Time Critical Interim Removal Action, Main Access Road, Lighthouse Area, Trails, and Beaches, UXO 15, Atlantic Fleet Weapons Training Area—Vieques, Former Vieques Naval Training Range, Vieques, Puerto Rico</i> . February.
Ref. 11	Non-Time-Critical Removal Action	Section 2.1.3	CH2M. 2015. <i>After Action Report, Non-Time-Critical Interim Removal Action, Southwestern Beach, UXO 15, Atlantic Fleet Weapons Training Area—Vieques, Former Vieques Naval Training Range, Vieques, Puerto Rico</i> . November.

Item	Reference Phrase in ROD	Location in ROD	Identification of Referenced Document Available in the Administrative Record
Ref. 12	Non-Time-Critical Removal Action	Section 2.1.3	USAE. 2019. <i>After Action Report, Interim Non-Time-Critical Removal Action, UXO 15 PI-9 East, Adjacent UXO 16 Encrusted Munitions, Atlantic Fleet Weapons Training Area – Vieques, Former Vieques Naval Training Range, Vieques Island, Puerto Rico.</i> June.
Ref. 13	Comprehensive Conservation Plan/Environmental Impact Statement	Section 2.1.5	USFWS. 2007. <i>Vieques National Wildlife Refuge Final Comprehensive Conservation Plan and Environmental Impact Statement, Vieques, Puerto Rico.</i> August
Ref. 14	nine evaluation criteria	Section 2.6.2	CH2M. 2020. <i>UXO 15 Remedial Investigation/Feasibility Study Report, Atlantic Fleet Weapons Training Area – Vieques, Former Vieques Naval Training Range, Vieques, Puerto Rico.</i> July.
Ref. 15	ARARs	Section 2.6.3	CH2M. 2020. <i>UXO 15 Remedial Investigation/Feasibility Study Report, Atlantic Fleet Weapons Training Area – Vieques, Former Vieques Naval Training Range, Vieques, Puerto Rico.</i> July.
Ref. 16	Community Relations in Superfund: A Handbook	Section 3	EPA. 1992. <i>Community Relations in Superfund: A Handbook.</i> January.
Ref. 17	public meeting	Section 3.2	Proposed Remedial Action Plan for UXO 15 Puerto Ferro, Former Vieques Naval Training Range, Vieques, Puerto Rico, Public Meeting Transcript. August 4, 2021.

Attachment A
Applicable Relevant and Appropriate Requirements

Table A-1

Federal Chemical-Specific ARARs

UXO 15 Record of Decision

Former Vieques Naval Training Range, Vieques, Puerto Rico

Media	Requirement	Prerequisite	Citation	Alternative	ARAR Determination	Comment
No federal chemical-specific ARARs apply.						

Source: UXO 15 Remedial Investigation/Feasibility Study Report (CH2M, 2020)

Table A-2

Puerto Rico Chemical-Specific ARARs

UXO 15 Record of Decision

Former Vieques Naval Training Range, Vieques, Puerto Rico

Media	Requirement	Prerequisite	Citation	Alternative	ARAR Determination	Comment
No Puerto Rico chemical-specific ARARs apply.						

Source: UXO 15 Remedial Investigation/Feasibility Study Report (CH2M, 2020)

Table A-3

Federal Location-Specific ARARs

UXO 15 Record of Decision

Former Vieques Naval Training Range, Vieques, Puerto Rico

Location	Requirement	Prerequisite	Citation	Alternative	ARAR Determination	Comment
Coastal Zone Management Act						
Coastal zone or area that will affect the coastal zone	Federal activities must be consistent with, to the maximum extent practicable, State coastal zone management programs. Federal agencies must supply the State with a consistency determination.	Activity taking place in a wetland, flood plain, estuary, beach, dune, barrier island, coral reef, and fish and wildlife and their habitat, within the coastal zone.	15 CFR 930.33(a)(1), (c); .36(a); 39(b), (c)	2 and 3	Applicable	Activities at UXO 15 that will affect Puerto Rico's coastal zone will be consistent to the maximum extent practicable with Puerto Rico's enforceable policies. Activities performed onsite and in compliance with CERCLA are not subject to administrative review; however, the enforceable policies included in the Commonwealth's Coastal Zone Management Plan will be considered in developing and implementing the remedy.
Migratory Bird Treaty Act						
Migratory bird habitat	Protects almost all species of native birds in the United States from unregulated taking.	Presence of migratory birds.	16 USC 703	2 and 3	Applicable	The site is located in the Atlantic Americas Migratory Flyway. If migratory birds, or their nests or eggs, are identified at the site, operations will not destroy the birds, nests, or eggs.
Endangered Species Act 1978						
Endangered species habitat	Actions to protect endangered or threatened species and prevent adversely impacting critical habitat.	Presence of protected species or their critical habitat.	16 USC 1538(a)(1)(B)	2 and 3	Applicable	Several endangered species and critical habitat have been identified within UXO 15. If protected species are present at the site during the response action, steps will be taken to prevent adverse impacts. Activities will avoid identified critical habitat areas or, if they cannot be avoided, actions resulting in permanent impact will be avoided or involve mitigation measures.

Source: UXO 15 Remedial Investigation/Feasibility Study Report (CH2M, 2020)

Table A-4

Puerto Rico Location-Specific ARARs

UXO 15 Record of Decision

Former Vieques Naval Training Range, Vieques, Puerto Rico

Location	Requirement	Prerequisite	Citation	Alternative	ARAR Determination	Comment
No Puerto Rico Location-Specific ARARs apply.						

Source: UXO 15 Remedial Investigation/Feasibility Study Report (CH2M, 2020)

Table A-5

Federal Action-Specific ARARs

UXO 15 Record of Decision

Former Vieques Naval Training Range, Vieques, Puerto Rico

Action	Requirement	Prerequisite	Citation	Alternative	ARAR Determination	Comment
Stormwater Pollution Prevention						
Performing activities that will disturb greater than one acre of land	Requires the development and implementation of best management practices and erosion and sedimentation control measures during construction activity.	Implementation of construction activities that will disturb more than one acre of land.	one to five acres: 40 CFR 122.26(a)(1)(ii), (a)(9)(i)(B), (b)(15); 122.44(k)(2) and (s)(1) five acres or more: 40 CFR 122.26(a)(1)(ii), (b)(14)(x); 122.44(k)(2) and (s)(2)	3	Applicable	If the selected remedy disturbs greater than, or equal to, one acre of land, the following are required: - Implement appropriate erosion and sediment control best management practices - control waste at the construction site - prepare and implement a Storm Water Pollution Prevention Plan Since activities are taking place onsite and in compliance with CERCLA, the substantive requirements will be met, but a permit will not be required.
Military Munitions Management						
Management of military munitions	Specifies management requirements for those military munitions that are no longer exempt from the definition of solid waste.	Management of unused military munitions that have been disposed of or fired/ used military munitions that have been removed from the range.	40 CFR 266.202(b) and (c); 205 (a) and (b)	2 and 3	Applicable	Munitions items discovered that are no longer exempt from the definition of solid waste will be managed in accordance with these regulations.
Spill Pollution, Control, and Countermeasures						
Storage of fuels and oils (petroleum and non-petroleum) onsite	If storage capacity limits are exceeded, a Spill, Prevention, Control, and Countermeasures (SPCC) Plan must be prepared and implemented with procedures, methods, equipment, and other requirements to prevent the discharge of, into, or upon the navigable waters of the United States.	Total onsite storage capacity exceeding 1,320 gallons in containers that are 55 gallons or larger in size. Empty or partially filled containers must still have their entire volume included in the summation.	40 CFR 112.1(b) through (d), 112.3 [excluding paragraph f], 112.5 through 8, and 12	3	Applicable	It is anticipated that fuels or other oils will be stored onsite. If the storage capacity in containers that are 55 gallons or greater is equal to or exceeds 1,320 gallons an SPCC Plan must be prepared and implemented. Containers include oil (including those oils used for enhanced biodegradation) and fuel reservoirs in equipment.

Source: UXO 15 Remedial Investigation/Feasibility Study Report (CH2M, 2020)

Table A-6

Puerto Rico Action-Specific ARARs

UXO 15 Record of Decision

Former Vieques Naval Training Range, Vieques, Puerto Rico

Action	Requirement	Prerequisite	Citation	Alternative	ARAR Determination	Comment
Erosion and Sediment Control						
Land disturbance	A Control of Erosion and Sediment (CES) Plan and a Work Plan must be prepared for any activities that involve the alteration of ground or soil conditions that have not been specifically excluded.	Disturbance of more than 40 cubic meters of soil during construction activity.	Puerto Rico Regulation 5754.1230(B), (C)	3	Applicable	Remedial alternatives involve the disturbance of more than 40 cubic meters of soil. A CES and Work Plan will be prepared for this activity if disturbance threshold is exceeded. However, because activities are taking place onsite and in compliance with CERCLA, a permit will not be required and the CES Plan and Work Plan will not be subject to administrative review or approval by the Oficina de Gerencia de Permisos (OGPe).
Fugitive Dust						
Production of fugitive dust	Take reasonable precautions to prevent particulate matter from becoming airborne during activities such as land clearing, soil or material hauling. Immediately clean up any soil spilled during transport. Do not cause or permit the discharge of visible emissions of fugitive dust beyond the boundary line of the property on which the emissions originate.	Construction and material hauling activities causing particulate matter to become airborne.	Puerto Rico Regulation 5300.404(A)(1), (4), (7); (B)	2 and 3	Applicable	Applicable to activities that produce fugitive dust. If necessary, dust control measures will be implemented.
Noise						
Performing construction activities that generate noise	No construction activity may be performed at night or in such a way that vibrations are produced that can be felt beyond the property boundary. If equipment used in construction is not manufactured in accordance with EPA standards for newly manufactured equipment then it may not produce noise that exceeds 70 dBA.	Construction activity including earthwork.	Puerto Rico Regulation 3418.3.1.5(A),(C); 3.1.10; 3.1.13; and 4.1	2 and 3	Applicable	Noise pollution during munitions and explosives of concern (MEC) clearance and demolition activities will be prevented if necessary.
Waste Management						
Management of non-hazardous solid waste onsite in containers and piles	Non-hazardous solid waste staged onsite must not create a hazard or public nuisance.	Generation of non-hazardous solid waste that is managed onsite in containers or in piles.	Puerto Rico Non-Hazardous Solid Waste Regulation 531.H	2 and 3	Applicable	It is possible non-hazardous solid wastes will be generated during the implementation of these alternatives. If necessary, investigation-derived waste (IDW) will be sampled to confirm characterization prior to disposal. It will be assumed that material documented as safe (MDAS) is regulated as scrap metal.

Source: UXO 15 Remedial Investigation/Feasibility Study Report (CH2M, 2020)

Attachment B
Responsiveness Summary for UXO 15

Responsiveness Summary

Proposed Plan UXO 15 Puerto Ferro

Atlantic Fleet Weapons Training Area – Vieques
Former Vieques Naval Training Range
Vieques, Puerto Rico

1. Introduction

This responsiveness summary provides a summary of the substantive comments submitted by the public on the UXO 15 Proposed Plan issued by the Department of the Navy, Naval Facilities Engineering Systems Command Atlantic (NAVFAC), the United States Environmental Protection Agency (EPA), and the United States Department of the Interior (DOI), in consultation with the Puerto Rico Department of Natural and Environmental Resources (PRDNER). The responsiveness summary was prepared in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and 40 CFR 300.430(f)(3)(F), Section 117(b) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and EPA Office of Solid Waste and Emergency Response (OSWER) Directive 9230.0-06 (Superfund Responsiveness Summaries).

The UXO 15 Proposed Plan was issued for public comment from July 26 to September 23, 2021, which included a 30-day review extension. The Navy, EPA, and the United States Fish and Wildlife Service (USFWS), a bureau of DOI) Vieques National Wildlife Refuge administrator, held a virtual public meeting via the ZOOM platform to discuss the Proposed Plan on Wednesday August 4, 2021, during which questions and comments regarding the proposed remedial alternative, as well as other alternatives, were made, for which the Navy and other stakeholder agencies provided feedback. No comments/questions were submitted to NAVFAC, EPA, USFWS, DOI, or PRDNER other than during the public meeting. A summary of the public meeting comments/questions and the associated responses are provided in Section 4 of this Responsiveness Summary.

UXO 15 comprises the 536-acre Puerto Ferro peninsula in the southwestern portion of the Eastern Maneuver Area (EMA), located within the western portion of the former Vieques Naval Training Range (VNTR). As detailed in the Proposed Plan, the Navy and EPA, with concurrence of DOI and PRDNER, identified Alternative 2 – Surface Munitions and Explosives of Concern (MEC) Removal in Planned Public Use Areas and Land Use Controls (LUCs) as the preferred alternative for UXO 15. The alternative was determined to be appropriate because it is protective of human health and the environment based on current and planned land use as part of the Vieques National Wildlife Refuge (VNWR) with areas of recreational use.

Key elements of Alternative 2 are:

- Surface and near-surface MEC clearance within areas identified by USFWS for land management and recreational use (e.g., hiking/biking trails, observation tower, parking and picnicking areas, land crabbing area, etc.) not previously cleared
- LUC implementation (e.g., educational kiosks and administrative mechanisms, such as hazard warning monuments, groundwater use restrictions) to guide access to approved areas and control unauthorized access or use
- LUC and MEC long-term monitoring, including periodic site inspections for trespassing, erosion, MEC occurrence in public-access areas, and the integrity and effectiveness of physical LUCs, as well as removal of any MEC found or reported

2. Community Involvement Activities Associated with UXO 15

This section summarizes the community involvement activities associated with the investigation and munitions cleanup at UXO 15. The community involvement activities discussed below were designed to ensure the community was informed and had the opportunity to provide feedback and input throughout the investigation and cleanup process.

Community Involvement Plan: The Navy, EPA, PRDNER, and DOI/USFWS, collectively referred to as the stakeholder agencies, worked jointly to update the Community Involvement Plan (CIP) in 2020 with input from community members and stakeholders via interviews, surveys, and agency-community meetings. The CIP defines the mechanisms used to facilitate communication between the community and the agencies involved in the cleanup of former Navy lands in Vieques. As such, the CIP is designed to foster two-way communication whereby the community can provide input into the site characterization and cleanup activities and the stakeholder agencies can keep the community informed about the cleanup progress. In recognition of the large number of Spanish-speaking residents, the Navy translated the CIP into Spanish.

Information Repositories: The Navy maintains an information repository where the public can review documents associated with UXO 15. The repository is located at: <https://go.usa.gov/xSfZq>. In addition, the Navy submitted the following key documents to the Vieques Restoration Advisory Board (RAB) (and for certain documents the public as a whole) to solicit community comment and input prior to issuing the final versions of the documents and placing them in the Administrative Record:

- Expanded Site Inspection Sampling and Analysis Plan UXO 15 (May 2011). Documents activities to support the Expanded Site Inspection (ESI) at Photo Identified (PI) Sites PI 9 and PI 13, located within UXO 15.
- Biological Assessment for PI 9, PI 13, and Debris Piles within UXO 15 (March 2012). Documents and maps the extent of Federal- and State-listed species within PI 9 and PI 13, as well as the habitat types and biological resources considered important for the VNWR.
- Expanded Site Inspection Sampling and Analysis Plan Addendum for the Remedial Investigation at UXO 15, Former Vieques Naval Training Range Vieques, Puerto Rico (July 2012). Includes modifications to the original approach to include digital geophysical mapping (DGM) at PI 9 and PI 13, a visual survey of potential use areas identified by community members, and delineation of areas where munitions-related objects were encrusted in soils on the far eastern portion of PI 9.
- Engineering Evaluation/Cost Analysis for a Non-Time Critical Interim Removal Action at the Main Access Road and Lighthouse Area UXO 15 (March 2014). Presents the evaluation of removal action alternatives and identification of the preferred alternative for a non-time-critical removal action (NTCRA) to reduce the explosive hazard associated with potential MEC along the main road and around the historic Spanish lighthouse at UXO 15.
- Non-Time-Critical Interim Removal Action Work Plan for the Main Access Road and Lighthouse Area UXO 15 (June 2014). Presents the technical approach for an NTCRA to reduce the explosive hazard associated with potential MEC along the main road and around the historic Spanish lighthouse at UXO 15.
- After Action Report, Non-Time-Critical Interim Removal Action, Main Access Road, Lighthouse Area, Trails, and Beaches at UXO 15 (February 2015). Documents the completion of a NTCRA to facilitate near-term public access via the main road to accessible areas around the historic Spanish lighthouse, including the adjacent parking area, trail, and beach. In addition, the NTCRA addressed two former trails and the southwestern beach.
- Sampling and Analysis Plan Addendum 2 for the Remedial Investigation at UXO 15 (July 2015). Documents additional characterization activities for soil berms, drums, potential detonation areas, and former debris piles identified during initial RI.

- Engineering Evaluation/Cost Analysis for a Non-Time-Critical Interim Removal Action at UXO 15 PI 9 East and Adjacent UXO 16 Encrusted Munitions (July 2015). Presents the evaluation of removal action alternatives and identification of the preferred alternative for an NTCRA to reduce the explosive hazard associated with encrusted munitions-related items identified at PI 9 East in UXO 15 and within UXO 16 immediately adjacent to PI 9 East.
- After Action Report, UXO 15 Southwestern Beach Non-Time-Critical Interim Removal (November 2015). Documents the completion of the NTCRA at the southwest beach of UXO 15.
- UXO 15 PI 9 East/Adjacent UXO 16 Non-Time-Critical Removal Action Work Plan (November 2016). Describes the NTCRA activities to reduce explosive hazard associated with encrusted munitions-related items at PI 9 East and within the offshore area (UXO 16) immediately adjacent to PI 9 East.
- After Action Report, Interim Non-Time-Critical Removal Action UXO 15 PI 9 East, Adjacent UXO 16 Encrusted Munitions (June 2019). Documents the completion of the NTCRA to reduce the explosive hazard associated with munitions-related items within PI 9 East in UXO 15 and within UXO 16 immediately adjacent to PI 9 East.
- UXO 15 Remedial Investigation/Feasibility Study Report, Atlantic Fleet Weapons Training Area—Vieques, Former Vieques Naval Training Range Vieques, Puerto Rico (July 2020). Presents the investigation findings, conclusions, and remedial alternatives evaluation for UXO 15 Puerto Ferro.
- Proposed Remedial Action Plan (PRAP) UXO 15 Puerto Ferro (July 2021). Identifies the preferred remedial alternative and associated rationale for UXO 15.

Informational flyers and newsletters are regularly distributed to keep the Vieques community informed about Vieques cleanup activities. Information specific to UXO 15 was included in the following flyers/newsletters:

- April 2003 Newsletter – Provided general information of the dangers of MEC on Eastern Vieques Island, Puerto Rico
- October 2008 Flyer – Described the aerial magnetometer survey being conducted as part of the Expanded Range Assessment to help identify where munitions may be located on the ground
- November/December 2008 Flyer – Educational flyer describing why certain areas within the former VNTR are restricted from public access, including the EMA
- January 2009 Flyer – Described the planned Site Inspection intended to further evaluate the presence of munitions
- January 2013 Newsletter – Distributed throughout Vieques to provide information on the fieldwork underway for the UXO 15 Remedial Investigation
- March 2014 Flyer- Invited comment on planned removal actions to accelerate public access to two scenic areas of Vieques: Solid Waste Management Unit 4 (SWMU 4) at the west end of Vieques near Punta Arenas and Site UXO 15, which is located on Peninsula Puerto Ferro
- March 2014 Public Notice - Invited public comments on the Engineering Evaluation and Cost Analysis (EE/CA) for an NTCRA at Munitions Response Site UXO 15
- February 2014 Newsletter – Highlighted UXO 15 as a priority site given the cultural significance of the Spanish Lighthouse and importance to accelerate the removal action to open the adjacent beach to the public
- August 2015 Public Notice – Published in Primera Hora / El Vocero inviting public comments on the EE/CA for an NTCRA at UXO 15 PI 9 East to adjacent to UXO 16
- November 2016 Newsletter – Featured as a Technology Highlight the cofferdam used to help munitions removal from PI 9 East located within UXO 15, as well as immediately offshore in Puerto Ferro

- September 2018 Newsletter – Discussed the process for removal of encrusted munitions debris at the Puerto Ferro Peninsula using a temporary cofferdam so the workers could see and safely remove the encrusted material

Additionally, social media was used to support information sharing with the public. The following are announcements posted on the Vieques Environmental Restoration Facebook page, <https://www.facebook.com/ViequesRestoration>

- March 2015 – Described the work planned for the encrusted munitions-related items NTCRA for UXO 15 PI 9 East adjacent to UXO 16 and how a cofferdam would be used so that workers could see and safely remove the encrusted material
- July 2015 – Provided information regarding the findings included in the NTCRA After Action Report for the Main Access Road, Lighthouse Area, Trails, and Beaches UXO 15
- August 2015 – Announced the public comment period for the PI 9 East adjacent to UXO 16 EE/CA
- June 2019 – Announced the agenda for the Vieques Restoration Advisory Board Meeting #60 on Wednesday, August 7, 2019, which included overall updates on environmental and munitions sites
- October 2019 – Presented the agenda for the Vieques Restoration Advisory Board Meeting #61 on Tuesday, November 5, 2019, which included overall updates on environmental and munitions sites
- September 2019 – Shared a flyer describing the cofferdam used to help munitions removal from PI 9 East located within UXO 15, as well as immediately offshore in Puerto Ferro
- November 2019 – Presented a flyer with information on underwater munitions removal near the offshore areas
- February 2020 - Announced the RAB meeting to be held on February 17, 2020
- July 2021 – Announced that the Proposed Plan for UXO 15 will be available for public comment from July 26 through August 24, 2021
- July 2021 - Invited the public to attend and provide comments on the Proposed Plan for implementing the remedial action at UXO 15 Puerto Ferro
- August 2021 - Announced the extension of the public comment period for the Proposed Plan for UXO 15 Puerto Ferro. The public comment period, which began on July 26, 2021, has been extended 30 days and will be available for public comment through September 23, 2021.

Restoration Advisory Board: The Vieques RAB comprises community members and representatives from stakeholder government agencies. The objective of the RAB is to foster communication among the community, regulators, and other stakeholders associated with or interested in the Vieques cleanup. RAB meetings serve as a forum to share information on the environmental restoration process. The community was updated and input was solicited regarding the investigation and cleanup progress associated with UXO 15 during the following RAB meetings:

- April 2011 – Discussed the Expanded Site Inspection (ESI) in UXO 15
- August 2012 – Provided information on the fieldwork planned for UXO 15
- November 2012 – Provided an update on ESI progress at UXO 15
- November 2013 – Discussed Puerto Ferro UXO 15 and priority action to facilitate public access and to encourage recreational and commercial activities at Puerto Ferro and the beach areas
- April 2014 – Provided information regarding the planned main access road and lighthouse area NTCRA
- August 2014 – Provided an update on the UXO 15 main access road and lighthouse area NTCRA that will provide for public access to areas around the historic Spanish lighthouse

- February 2015 – Provided information on the work planned for 2015 following the completion of the NTCRA
- May 2015 – EPA gave a summary of the current activities and the agency's review of technical documents including the RI for UXO 15 Puerto Ferro and for the Time-Critical Removal Action (TCRA) for Potential Area of Concern EE (PAOC EE) (Punta Conejo).
- November 2015 – Indicated that the lighthouse had opened to the public and summarized planned activities for the PI 9 East Adjacent to UXO 16 encrusted munitions NTCRA
- February 2016 – Provided updates on key areas where accelerated cleanup is taking place to foster public access, including the historic Spanish lighthouse at UXO 15
- May 2016 – Provided an update on the UXO 15 Remedial Investigation progress and findings
- August 2016 - Presented a CERCLA timeline with projected status for UXO 15
- February 2017 – Responded to public questions by stating that the road to the historic lighthouse and most of the beaches are open to the public at UXO 15, adding that the majority of the UXO 15 area is still under investigation and a removal action at PI 9 East is under development
- August 2017 – Provided an update of sites with beach dynamics investigation reports including Puerto Ferro
- August 2018 – Presented a graphic update on the Remedial Investigation at UXO 15
- February 2020 – Provided a graphic update on the status and plan of the munitions response site including UXO 15
- August 2021 – Public meeting to present the UXO 15 PRAP and address comments/questions

Presentations made and minutes from the RAB meetings listed above, including any comments/questions posed and the associated responses, can be found on the Vieques Public Website at the following link:

<https://go.usa.gov/xSfWS>

In addition to RAB and public meetings, on August 15, 2011, a site visit to UXO 15 was held with RAB members, the Navy, and regulatory agency representatives to observe site conditions, discuss planned activities, and ask questions.

3. Summary of Commenters' Major Points Regarding the UXO 15 Proposed Remedial Action

No public comments or questions were received outside of those received during the PRAP public meeting, and none represented a major point or theme regarding the proposed final action for UXO 15. Therefore, Section 4 provides all substantive questions/comments received during the public meeting and their associated responses.

4. Summary of Specific Questions Regarding the UXO 15 Proposed Remedial Action

This section provides specific questions regarding the UXO 15 Proposed Plan that were asked at the public meeting (questions and responses are edited for clarity, and as necessary, to account for translation from Spanish to English).

4.1 Question: What do you mean by non-munition piles? Do they not pose an explosive risk?

Response: This question refers to the small non-munition debris piles referred to during the summary of the investigations and related activities at UXO 15. "Non-munitions" means the items found in the piles were not munitions related. They consisted of various types of metal, like metal banding from crates, or other debris, like spark plugs and wrenches.

- 4.2 Question: Regarding the Human Health Risk Assessment, was the cancer risk factor for carcinogens 1×10^{-6} or other? And for toxic contaminants, was the Hazard Quotient Index 1 or what was it?

Response: The Human Health Risk Assessment was done based on the potential receptors, which are the human receptors that could be at the site, including recreational users, Fish and Wildlife workers, and others who may be there. For these potential receptors the risk estimates were 1×10^{-6} to 10^{-7} and all hazard indexes (HIs) were less than 1. For land crab consumers the risk estimates were 1×10^{-5} and HIs were higher than 1. However, those risk estimates and HIs were based on two metals (arsenic and copper) whose concentrations were determined to be attributable to background concentrations. Therefore, there were no unacceptable human health risks associated with potential contaminants at the site.

- 4.3 Question: The public would like to request a 30-day extension period to obtain technical advice/guidance on the UXO 15 Proposed Plan.

Response: Yes, the Navy will provide an additional 30-day time extension for review.

- 4.4 Question: Has there been any clean-up of the submarine area?

Response: The munitions debris located near the water's edge immediately adjacent to UXO 15 PI 9 East were removed when the PI 9 East work was conducted because of the close proximity and common origin of that debris. The remainder of underwater areas around the former military training areas at Vieques (UXO 16) are not associated with UXO 15 and will be evaluated and addressed separately.

- 4.5 Question: Is the biological assessment available? Does it actually include any consideration of the area adjacent to UXO 15's coast that is a bioluminescent bay or is it something that was included as a general observation?

Response: The biological assessment referred to in the presentation was specifically for the land portion of UXO 15 to ensure sensitive vegetation and habitat were identified and considered during all aspects of the UXO 15 investigations and removal actions. Information related to that assessment is included in the Remedial Investigation/Feasibility Study Report. Further, based on findings in the Remedial Investigation Report, there is no ecological risk associated with UXO 15.

- 4.6 Question: Would the remedial action place any restrictions on commercial operations within the bioluminescent bay during implementation?

Response: It is unlikely any restrictions on any commercial operations associated with the bioluminescent bay will occur during remedial action work.

- 4.7 Question: When was the coast adjacent to bioluminescent bay evaluated and is that assessment available?

Response: All the information is in the Remedial Investigation/Feasibility Study Report.