Draft Final
Site Management Plan
Fiscal Year 2015

Atlantic Fleet Weapons Training Area - Vieques
Vieques, Puerto Rico

Contract Task Orders 019

October 2014

Prepared for

Department of the Navy
Naval Facilities Engineering Command
Atlantic

Under the

NAVFAC CLEAN 8012 Program
Contract N62470-11-D-8012

Prepared by

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Virginia Beach, Virginia

Executive Summary

This Site Management Plan (SMP) provides a summary of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response actions and associated documentation to be undertaken at the Atlantic Fleet Weapons Training Area (AFWTA) - Vieques on Vieques, Puerto Rico. In addition, the SMP provides milestones which reflect the anticipated schedule of completing CERCLA response actions that have been agreed to by the Navy and the regulatory agencies. Milestones are provided for both the Environmental Restoration Program (ERP) and the Munitions Response Program (MRP), both of which are part of the Installation Restoration (IR) Program for the Vieques Facility.

The SMP meets the requirements of the Federal Facilities Agreement (FFA) under CERCLA Section 120 (Docket Number FFA-CERCLA 02-2007-2001) (Navy et al., 2007). Under CERCLA, Vieques is referred to as AFWTA – Vieques, consistent with the designation in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). The Site comprises the former Naval Ammunition Support Detachment (NASD), located on western Vieques, and the former Vieques Naval Training Range (VNTR), located on eastern Vieques. This SMP presents a description of the CERCLA sites and the projected schedules of CERCLA response actions in general accordance with timelines presented in the FFA. The Parties identified in the FFA include the Naval Facilities Engineering Command (NAVFAC) Atlantic Division, United States Environmental Protection Agency (USEPA) Region II, Puerto Rico Environmental Quality Board (PREQB), and the United States Department of Interior (DOI).

In accordance with the FFA, this SMP includes the following:

- A description of any actions necessary to mitigate any immediate threat to human health and the environment.
- A description of all currently identified Site Screening Areas (SSA), Operable Units (OUs), interim remedial actions (IRAs), Supplemental Remedial Actions (RAs), Time-critical Removal Actions (TCRAs) and Non-time-critical Removal Actions (NTCRAs) planned or being performed pursuant to the FFA.
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  - Schedule for initiation of Remedial Designs (RDs), RAs, including IRAs and Supplemental RAs, Emergency actions, TCRAs, and NTCRAs and any initiation of other planned response actions covered by the FFA and Projected End Dates

Facility Description

Vieques Island has a land area of approximately 33,000 acres, and is located in the Caribbean Sea approximately 7 miles southeast of the eastern coast of the main island of Puerto Rico (**Figure ES-1**). The former VNTR is located on the eastern half and the former NASD is located on the western one-third, with the communities of Isabel Segunda and Esperanza located in between. On September 7, 2005, Vieques was placed on the National Priorities List (NPL) by USEPA.

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East Vieques (former VNTR)

The former VNTR, which comprises approximately 14,573 acres, provided ground warfare and amphibious training for Marines, naval gunfire support training, and air to ground training. The former VNTR was divided into four separate operational areas, comprising from west to east: the Eastern Maneuver Area (EMA), the Surface Impact Area (SIA), the Live Impact Area (LIA), and the Eastern Conservation Area (ECA) at the easternmost tip of the island.

On April 30, 2003, the former VNTR was transferred to the DOI to be operated and managed by the United States Fish and Wildlife Service (USFWS) as a National Wildlife Refuge pursuant to Section 1049 of the National Defense Authorization Act for Fiscal Year 2002 (Public Law 107–107).

Approximately 900 acres of the former VNTR, consisting of the LIA, is managed as a wilderness area where public access is prohibited in accordance with Public Law 106–398 and Public Law 107–107.

DOI developed a Comprehensive Conservation Plan (CCP) in 2007 for the Vieques National Wildlife Refuge that outlines its concept for managing the refuge (DOI, 2007). Environmental restoration of the former VNTR is based on potential risks to human health and the environment identified via the CERCLA process, together with applicable or relevant and appropriate requirements (ARARs), with consideration given to the future land use identified in the CCP.

West Vieques (former NASD)

On April 30, 2001, the 8,114-acre former NASD on the west side of Vieques was apportioned and transferred to the DOI, the Municipality of Vieques (MOV), and the Puerto Rico Conservation Trust (PRCT) in accordance with Public Law 106–398. The sites owned by these agencies are listed in the appendices. The property owned by DOI (approximately 3,158 acres) is managed by USFWS as part of the Vieques National Wildlife Refuge. Like the former VNTR, environmental restoration of the former NASD is based on potential risks to human health and the environment identified via the CERCLA process, together with ARARs, with consideration given to the planned future land use.

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FIGURE ES-1
Regional Location Map
Site Management Plan, FY 2015
Vieques, Puerto Rico

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ES050713013101TPA Figure_ES-1 - Regional Location Map-SMP_FY2014.ai

Resumen Ejecutivo

Este Plan de Manejo del Sitio (SMP en inglés) presenta un resumen de las acciones de repuesta y los documentos relacionados bajo la Ley de Repuesta, Compensación, y Responsabilidad Ambiental (CERCLA en inglés) que van a llevarse a cabo en la Antigua Instalación de Adiestramiento con Armas de la Flota del Atlántico (AFWTA, por sus siglas en inglés) de Vieques, Vieques Puerto Rico. Además, el SMP presenta los logros alcanzados que se reflejan en el calendario de actividades que se anticipa para la ejecución de las acciones de repuesta de CERCLA que han sido acordadas por la Marina y las agencias reguladoras. Se presentan los logros alcanzados tanto para el Programa de Restauración Ambiental (ERP, por sus siglas en inglés) como para el Programa de Respuesta a Municiones (MRP, por sus siglas en inglés), los que forman parte del Programa de Restauración de la Instalación (IR por sus siglas en inglés) para la de Instalación de Vieques.

El SMP satisface los requisitos del Acuerdo de Facilidades Federales (FFA, por sus siglas en inglés) bajo la ley CERCLA Sección 120 (Número de Archivo FFA-CERCLA 02-2007-2001) (Navy et al., 2007). Las áreas de limpieza bajo CERCLA se referirán en adelante como AFWTA - Vieques, siguiendo con la designación en el Sistema de Información de Respuesta, Compensación y Responsabilidad Ambiental (CERCLIS, por sus siglas en inglés). El sitio comprende el Destacamento de Apoyo de Municiones Navales (NASD por sus siglas en inglés), que se encuentra en el oeste Vieques, y el Antiguo Campo de Adiestramiento Naval de Vieques (VNTR, por sus siglasen inglés), ubicado en el este de Vieques. Este SMP presenta una descripción de los sitios investigados bajo CERCLA y el calendario de actividades que se proyecta para llevar a cabo acciones de repuesta, de forma general como fue establecido en el FFA. Las agencias que se identifican en el FFA incluyen: el Comando de Ingeniería de Instalaciones Navales del Atlántico (NAVFAC, por sus siglas en inglés), la Agencia de Protección Ambiental de los EEUU (U S EPA por sus siglas en inglés) Región II; la Junta de Calidad Ambiental de Puerto Rico (PREQB, por sus siglas en inglés); y el Departamento del Interior de los EEUU (DOI, por sus siglas en inglés).

De acuerdo con el FFA, este SMP incluye lo siguiente:

- Una descripción de las acciones que se necesitan para mitigar cualquier amenaza inmediata para la salud humana y el ambiente.
- Una descripción de todas las identificadas como Áreas de Evaluación del Sitio (SSA, por sus siglas en inglés) , Unidades Operativas (OUs, por sus siglas en inglés), acciones de remediación provisionales (IRAs, por sus siglas en inglés), Acciones de Remediación Suplementarias (RAs, por sus siglas en inglés), Acciones de Remoción de Tiempo Crítico (TCRAs, por sus siglas en inglés) y las Acciones de Remoción de Tiempo No Crítico (NTCRAs, por sus siglas en inglés) que están planificadas o que se están ejecutando de acuerdo al FFA.
- Las actividades y el calendario de actividades para las acciones de respuesta incluyen como mínimo:
  - Identificación de cualquier Acción Primaria
  - Plazos de cumplimiento
  - Logros a alcanzarse en un tiempo corto
  - Logros a alcanzarse en el año
  - Fechas meta
  - El calendario para iniciar los Diseños para la Remediación (RD, por sus siglas en inglés), RAs, incluyendo IRAs y RAs Suplementarias, Acciones de Emergencia, TCRAs y, NTCRAs, además, cualquier inicio de otras acciones de respuesta planificadas que están cubiertas dentro del FFA y todas las Fechas de Terminación Planificadas.

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Descripción de la Instalación

Vieques tiene una superficie de aproximadamente 33,000 acres y está localizada en el mar Caribe aproximadamente 7 millas al sureste de la costa este de la isla principal de Puerto Rico (**Figure E-1**). El antiguo VNTR está localizado en la mitad de la parte este, yel antiguo NASD está localizado en la tercera parte del oeste; las comunidades de Isabel Segunda y Esperanza están en el medio. El 7 de septiembre del 2007, Vieques fue añadida a la Lista de Prioridades Nacionales (NPL, por sus siglas en inglés) de USEPA.

Este Vieques (antiguo VNTR)

El antiguo VNTR se compone de aproximadamente 14,573 acres, y proporcionó adiestramiento de guerra sobre tierra y adiestramiento de técnicas anfibias para los infantes de marina, adiestramiento de apoyo de armas navales, y adiestramiento de combate de aire-tierra. El antiguo VNTR fue divido en cuatro áreas operativas separadas: el Área de Maniobras del Este (EMA, por sus siglas en inglés), el Área de Impacto de Superficie (SIA por sus siglas en inglés), el Área de Impacto con Bala Viva (LIA, pos sus siglas en inglés), y el Área de Conservación del Este (ECA, por sus siglas en inglés) que se encuentra en el punto más al este de la isla.

El 30 de abril del 2003, el antiguo VNTR fue transferidos a DOI para que sea operados y administrados por el Servicio de Pesca y Vida Silvestre (USFWS, por sus siglas en inglés) como un Refugio Nacional de Vida Silvestre siguiendo la Sección 1049 de la Ley de Autorización de Defensa Nacional para Año Fiscal 2002 (Ley Pública 107–107).

Aproximadamente 900 acres del antiguo VNTR, que incluyen el LIA son administrados como un área silvestre sin acceso al público siguiendo la Ley Pública 106–398 y la ley Pública 107–107.

DOI desarrolló un Plan Abarcador de Conservación (CCP, por sus siglas en inglés) en 2007 para el Refugio Nacional de Vida Silvestre de Vieques que delinea las normas para el manejo del refugio. La restauración ambiental del antiguo VNTR se basa en los riesgos potenciales a la salud humana y al ambiente ambiente identificados a través del proceso CERCLA, junto con los requisitos aplicables, relevantes y apropiados (ARARs, por sus siglas en inglés), considerando el uso futuro de los terrenos identificado en el CCP.

Oeste Vieques (antiguo NASD)

El 30 de abril 30 del 2001, 8,114 acres del antiguo NASD ubicado en el lado oeste de Vieques fue repartido y transferido a DOI, al Municipio de Vieques (MOV, por sus siglas en inglés), y al Fideicomiso de Conservación de Puerto Rico (PRCT, por sus siglas en inglés) de acuerdo con la Ley Pública 106–398. Los sitios que son propiedad de estas agencias se describen en los anexos. La propiedad de DOI (aproximadamente 3,158 acres) está administrada por USFWS como parte del Refugio Nacional de Vida Silvestre de Vieques. Igual que en el antiguo VNTR, la restauración del antiguo NASD se basa en los riesgos potenciales a la salud humana y al ambiente ambiente identificados a través del proceso CERCLA, en conjunto con los ARARs, y considerando el uso futuro planificado para los terrenos.

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Acronyms and Abbreviations

AFWTA	Atlantic Fleet Weapons Training Area
AFWTF	Atlantic Fleet Weapons Training Facility
AMS	Aerial Magnetometer Survey
AOC	area of concern
ARF	Administrative Record File
ATG	air-to-ground
ATSDR	Agency for Toxic Substances & Business Registry
CCP	Comprehensive Conservation Plan
CCP/EIS	Comprehensive Conservation Plan/Environmental Impact Statement
CCR	Construction Completion Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHE	Chemical Warfare Evaluation
DoD	Department of Defense
DOI	United States Department of Interior
EBS	Environmental Baseline Survey
ECA	Eastern Conservation Area
EE/CA	Engineering Evaluation/Cost Analysis
EHE	Explosive Hazard Evaluation
EISB	enhanced *in situ* bioremediation
EMA	Eastern Maneuver Area
ERA	Expanded Range Assessment
ERM	Environmental Resource Management
ER,N	Environmental Restoration, Navy
ERP	Environmental Restoration Program
ESI	Expanded Site Investigation
FFA	Federal Facilities Agreement
FFS	Focused Feasibility Study
FS	Feasibility Study
FY	fiscal year
HE	High Explosive
HHE	Health Hazard Evaluation
HHRA	Human Health Risk Assessment
IAS	Initial Assessment Study
IR	Installation Restoration
IRA	Interim Remedial Action
ISCO	in situ chemical oxidation
LIA	Live Impact Area
LUC	land use control
MC	munitions constituents
MCL	maximum contaminant limit
MD	Munitions Debris
MEC	munitions and explosives of concern
mg/kg	milligrams per kilogram
MOV	Municipality of Vieques
MPE	multi-phase vacuum extraction
MPPEH	Munitions potentially presenting an explosive hazard

MRP	Munitions Response Program
MRS	Munitions Response Site
MRSPP	Munitions Response Site Prioritization Protocol
NACIP	Navy Assessment and Control of Installation Pollutants
NASD	Naval Ammunition Support Detachment
NAVFAC	Naval Facilities Engineering Command
NFA	no further action
NGF	Naval gun fire
NOAA	National Oceanic and Atmospheric Administration
NPL	National Priorities List
NSRR	Naval Station Roosevelt Roads
NTCRA	Non-time-critical Removal Action
OB/OD	open burn/open detonation
OE	ordnance and explosives
PA/SI	Preliminary Assessment/Site Inspection
PAH	polycyclic aromatic hydrocarbon
PAOC	potential area of concern
PCB	polychlorinated biphenyl
PHC	Public Health Consultation
PI	photo-identified
PRCT	Puerto Rico Conservation Trust
PREQB	Puerto Rico Environmental Quality Board
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RAD	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFI	RCRA Facility Investigation
RI	Remedial Investigation
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SI	Site Inspection
SIA	Surface Impact Area
SMP	Site Management Plan
SSA	site screening area
SSL	Screening criterion
SSP	Site screening process
SWMU	solid waste management unit
TCE	trichloroethene
TCRA	Time-critical Removal Action
TPH	total petroleum hydrocarbon
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	underground storage tank
UXO	unexploded ordnance
VNTR	Vieques Naval Training Range
VOC	volatile organic compound
VSI	Visual Site Inspection

SECTION 1

Introduction

1.1 Overview of the Site Management Plan

1.1.1 Overview of this Document

This Site Management Plan (SMP) provides a summary of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response actions and associated documentation to be undertaken at the Atlantic Fleet Weapons Training Area (AFWTA) - Vieques on Vieques, Puerto Rico. In addition, the SMP provides milestones which reflect the anticipated schedule of completing CERCLA response actions that have been agreed to by the Navy and the regulatory agencies. Milestones are provided for both the Environmental Restoration Program (ERP) and the Munitions Response Program (MRP), both of which are part of the Installation Restoration (IR) Program for the Vieques Facility.

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An organizational chart identifying the Navy chain of command and authority lines responsible for the overall progress of this NPL site is included in **Figure 1-2**.

1.1.2 Objectives of the Site Management Plan

In accordance with the FFA, this SMP includes the following:

- A description of any actions necessary to mitigate any immediate threat to human health and the environment.
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1.1.3 Site Management Plan Updates

The Navy will prepare a Draft fiscal year amendment of the SMP by June 15 of each year and will include updates of milestones that have been previously agreed to by the Parties and will provide any new milestones that are planned.

Comments on Draft fiscal year amendments will be due to the Navy 30 days after receipt by USEPA, DOI, and PREQB of a Draft fiscal year amendment. A revised Draft fiscal year amendment to the SMP (hereinafter referred to as the "Draft Final fiscal year amendment") will be due from Navy no later than 30 days after the end of the USEPA/DOI/PREQB comment period. The resolution of comments and production of the Draft Final will be conducted within 30 days following the receipt of comments on the Draft. The Draft Final fiscal year amendment SMP shall not become an approved SMP until 21 days after Navy receives official notification of Congress' authorization and appropriation of funds if funding is sufficient to complete the Work to be performed during the year covered by that authorization or appropriation. However, upon approval of the Draft Final or conclusion of the dispute resolution process, the Parties shall implement the SMP while awaiting official notification of Congress' authorization and appropriation.

1.1.4 Facility Description

Vieques Island has a land area of approximately 33,000 acres, and is located in the Caribbean Sea approximately 7 miles southeast of the eastern coast of the main island of Puerto Rico (**Figure 1-1**). The former Naval facilities are located on the eastern half (i.e., former VNTR) and western one-third (i.e., former NASD) of the island, with the communities of Isabel Segunda and Esperanza located in between.

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1.1.5 National Priorities List Listing

In 2003, the Governor of Puerto Rico requested USEPA to list the VNTR and NASD on the National Priorities List (NPL). On May 26, 2004, the President of PREQB sent a letter to the Regional Administrator of USEPA acknowledging that USEPA, PREQB, and DOI concurred with the designation of the former naval facilities of eastern and western Vieques as an NPL site. In addition, a clarification of the AFWTA was provided and stated that initial areas of Preliminary Assessment/Site Inspection (PA/SI) under CERCLA will focus on "Agreed Areas" in and around Vieques and Culebra where the Navy conducted operations, including "those waters in and around Vieques where contamination has come to be located." On February 7, 2005, Vieques was placed on the NPL. The areas being and to be assessed as part of the NPL are shown on **Figure 1-3**.

As a result of the NPL listing, an FFA was signed by the Navy, USEPA, PREQB and DOI on September 7, 2007. The FFA establishes the procedural framework and schedule for implementing the CERCLA Response Actions on Vieques.

1.2 Information Repositories

The Navy maintains an information repository at the following public website where technical documents and other information related to site investigations can be found: http://www.navfac.navy.mil/vieques. The public website can be accessed from any computer connected to the internet. On Vieques, computers with internet connection are maintained at the public library. As of the issuance date of the FY15 SMP, the library is being remodeled. When the library reopens, the Navy will provide written instructions to be posted at the location and engage staff who can help visitors operate the computer and find documents. The instructions also will be publicized in flyers and newsletters, RAB meetings and other events. The EPA Field Office can also be contacted for information.

The Information Repository contains two types of documents:

- The Administrative Record File (ARF). The ARF is the collection of documents pertinent to selecting response actions at CERCLA sites.
- Documents that the Department of the Navy makes available for public review and comments.

The ARF serves two purposes:

- It contains documents which form the basis for selection of a response action and focuses judicial review of any issue concerning the adequacy of a response action to ARF documents.
- It serves as a vehicle for public participation in the selection of a response action.

FIGURE 1-1
Regional Location Map
Site Management Plan, FY 2015
Vieques, Puerto Rico

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ES050713013101TPA Figure_1-1 - Regional Location Map-SMP_FY2014.ai

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FIGURE 1-2
Navy Vieques Program Organizational Chart
Site Management Plan, FY 2015
Vieques, Puerto Rico

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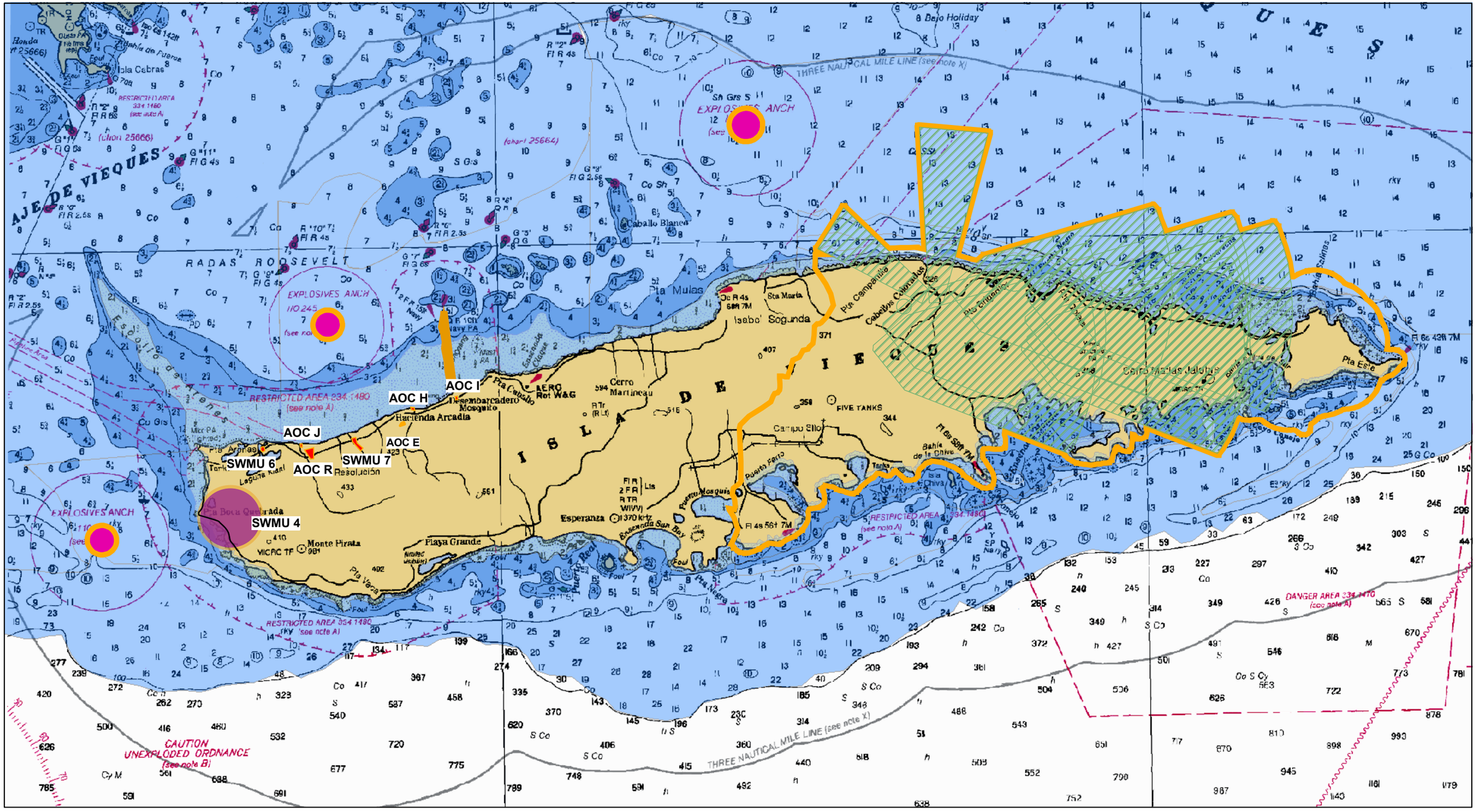

Legend

- Agreed Areas of Proposed NPL Site
- Anchorage Location Boundary
- Western Vieques Environmental Sites
- SWMU 4 (Former OB/OD Site)
- Artillery Safety Fan

Water Depth

- 0-10 Feet
- 10 - 150 Feet
- Greater Than 150 Feet

N

0 1 2 4 Miles

FIGURE 1-3
Vieques Sites to be Assessed Under CERCLA
Site Management Plan, FY 2015
Vieques, Puerto Rico

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SECTION 2

Site Descriptions

This section presents a description of the sites and the current status for the CERCLA response actions that are underway or have been completed at the Vieques Site. The individual sites are categorized in the appendices to this SMP and the FFA as follows:

- **Appendix A**, Remedial Investigation/Feasibility Study (RI/FS) Sites
  - **Appendix A-1**, Environmental Sites
  - **Appendix A-2**, Munitions Response Sites
- **Appendix B**, Site Screening Areas
  - **Appendix B-1**, Environmental Sites
  - **Appendix B-2**, Munitions Response Sites
- **Appendix C**, DoD Site Prioritization Protocol Scoring

Figures showing the locations of the sites on East Vieques and West Vieques are provided as **Figures 2-1, 2-2, and 2-3**.

2.1 Eastern Vieques (Former VNTR) Sites

2.1.1 Consent Order Sites

This subsection summarizes the status of the 12 environmental sites (Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) that were identified in a RCRA Consent Order and have undergone investigations through the CERCLA process. Additional detail for the one site Solid Waste Management Unit 1 (SWMU 1) for which a remedial action is ongoing is provided herein. Site-specific detail for sites closed out of the CERCLA process is provided in **Appendix A-1** and past SMPs. The anticipated schedule for deliverable submittal for the following sites, as applicable, is provided in **Figure 3-1**. A cross reference table, **Table 2-1**, has been included to facilitate comparison of Department of Defense (DoD) “sites” with EPA “Operable Units” or “OUs.”

Prior to Vieques’ listing on the NPL, environmental investigations on the former VNTR were conducted under RCRA. Therefore, a Phase I RCRA Facility Investigation (RFI) (similar to a PA/SI conducted under CERCLA) was conducted for the 12 Consent Order SWMUs and AOCs and the Draft Phase I RFI Report was prepared (CH2M HILL, 2004a). Because several of the potential inorganic constituents (also referred to as metals) detected in site-specific soil samples are also commonly occurring in nature or otherwise ubiquitous, a background investigation of soil inorganics was conducted and a Final Background Soil Inorganics Report was submitted in October 2007 (CH2M HILL, 2007f). These background soil results are used to assess if the inorganic constituent levels detected in site-specific soils are consistent with background conditions or indicative of releases from historical waste management activities. Once the Background Soil Inorganics Report was finalized, the Draft Phase I RFI Report was revised with this information and re-submitted as the Draft PA/SI Report (to be consistent with the CERCLA terminology since Vieques had by then been listed on the NPL) for regulatory review, and subsequently the Final PA/SI Report (CH2M HILL, 2008d).

Based on the findings of investigations documented in the PA/SI Report, 4 of the 12 Consent Order sites were identified as requiring no action to be protective of unrestricted human use and ecological exposure. These sites were subsequently closed out of the CERCLA process via a No Action Decision Document (CH2M HILL, 2009a). The remaining 8 sites were included in additional investigation, the results of which are presented in the Final Site Inspection/ Expanded Site Inspection (SI/ESI) Report (CH2M HILL, 2010b). Based on the findings presented in the Final SI/ESI Report, 7 of the 8 remaining Consent Order sites were identified as requiring no action or no further action (NFA) to be protective of unrestricted human use and ecological exposure. These sites are included in a Final No Action/NFA Decision Document (CH2M HILL, 2010d). The 1 remaining site (SWMU 1) was recommended for presumptive remedy following preparation of a Streamlined RI/FS Report. Subsequently, a presumptive remedy Record of Decision (ROD) was signed in 2011, the remedial action for which began in 2012, as discussed below.

SWMU 1—Camp Garcia Landfill

According to the Navy Assessment and Control of Installation Pollutants (NACIP) Initial Assessment Study (IAS) Report, this SWMU was in operation from approximately 1954 to 1978 (Greenleaf/Telesca, 1984). While this SWMU was operational, it was an unlined landfill that was used to dispose of paper, corrugated containers, cans and food packaging material, rags, scrap metal, and yard waste. Municipal waste from both Camp Garcia and other areas of the VNTR was handled here. The SWMU 1 area, the Camp Garcia area, and environmental restoration sites in the former VNTR are shown in **Figure 2-1**. Approximately 1,800 to 3,120 tons of wastes were reportedly disposed of in the SWMU 1 landfill, as noted in the IAS (Greenleaf/Telesca, 1984).

During operation of the landfill, the trench method of disposal was employed and land clearing was kept to a minimum to avoid erosion at the site. A bulldozer was used to dig a trench into which materials were disposed. The trench was then covered with about 6 inches of soil to control blowing of litter. The landfill was closed in 1978 and a 2-foot thick soil cover was placed over the landfill.

The landfill managed waste from a maximum of approximately 150 individuals, depending on military exercises. An aerial photograph analysis of the landfill indicated that the fill area extended over an area of approximately 50 acres (Lockheed Martin, 1999). Subsequent geophysical evaluation and test pitting performed during the Phase I RFI and the ESI suggest the areal extent of the landfill is approximately 41 acres. The landfill is currently vegetated with dense grasses and trees. A gravel road was constructed down the center of the landfill in the mid-1980s, but the road has become vegetated. During the Visual Site Inspection (VSI), no signs of erosion or stresses on vegetation were observed (PREQB-Vargas, 1995). No documentation was found regarding releases of hazardous constituents from the landfill. Several areas of debris (fill material) were observed in 2004 during the clearing of transects for the Phase I RFI. Debris observed included galley (kitchen) waste (cans, bottles, forks, and knives), metal pipes, and a small metal tank. Observations made while test pitting during the ESI suggest some munitions debris (MD) was also disposed of in the landfill.

Evaluation of historical data collected at SWMU 1 is presented in the Final PA/SI Report (CH2M HILL, 2008d) and the Final SI/ESI Report (CH2M HILL, 2010b). Although the data collected during the Phase I RFI suggest there had not been a release from the landfill that posed a potentially unacceptable risk, only surface soil and groundwater data were collected at that time (i.e., no soil samples within and beneath debris nor ephemeral stream samples were collected). Based on this information, SWMU 1 was part of an ESI for which the field work, described in a SAP (CH2M HILL, 2009b) was completed in May 2009. During the ESI, geophysical surveying, test pitting, waste characterization, soil sampling, ephemeral stream sampling, monitoring well installation, and groundwater sampling were performed. The Final SI/ESI Report, which included SWMU 1, was submitted in August 2010 (CH2M HILL, 2010b). Based on the findings documented in the Final SI/ESI Report and consistent with USEPA guidance, a Streamlined RI/FS for presumptive remedy was produced for SWMU 1. The Final Streamlined RI/FS was completed in April 2011 (CH2M HILL 2011d). Based on the remedial alternatives evaluation in the RI/FS, a Proposed Plan was issued for public comment in July 2011 (CH2M HILL, 2011i) and the associated ROD was issued in September 2011 (CH2MHILL, 2011l). The work plan to guide implementation of the remedial action, operation and maintenance, land use controls, and long-term monitoring was submitted in July 2012 (CH2M HILL, 2012d). During implementation of the remedy in September 2012, more surface debris was encountered than had been previously assumed present on the landfill surface (i.e., 0.5 acre). Based on this finding, the Navy recommended removing the vegetation across the landfill in order to ensure all debris at the landfill surface could be removed, noting this would also facilitate a site-wide geophysical surveying to refine the boundary of the landfill and increase the level of confidence that all areas within the landfill boundary will be appropriately addressed by the remedial action. To accomplish this, a technical memorandum work plan for these pre-design activities was submitted in September 2013 (CH2M HILL, 2013h), with fieldwork commencing thereafter. During the surface clearance approximately 11,631 pounds of debris were removed from the landfill surface. A geophysical investigation was completed in April 2014 which identified the boundaries of buried debris contained within the landfill. The information gathered from the surface debris clearance and geophysical survey will be used to refine the remedial action for the site.

2.1.2 Photo-identified (PI) and Potential Area of Concern (PAOC) Sites

During the development of the Description of Current Conditions Report (CH2M HILL, 2001b) and the Environmental Baseline Survey (EBS) (NAVFAC, 2003a), several additional potential environmental sites were identified based on the review of historical aerial photographs and facility records. This subsection summarizes the status of the 23 Photo-identified (PI) and 24 Potential Area of Concern (PAOC) sites that were identified, and in most cases, investigated and closed out of the CERCLA process. Additional detail for the two sites (SWMU 20 [formerly PI 4] and PI 21) that are currently under investigation is provided herein. Site-specific detail for sites closed out of the CERCLA process is provided in **Appendix B-1** and past SMPs. The anticipated schedule for deliverable submittal for the following sites, as applicable, is provided in **Figure 3-1**. The locations of the PI sites and PAOCs are shown on **Figure 2-1**.

A Draft Phase I RFI Report (CH2M HILL, 2004a) was developed that described 47 PI/PAOC sites; however, none of the sites was investigated during the Phase I RFI. The Draft Phase I RFI Report proposed eight of the PI/PAOC sites (PIs 4 and 7, and PAOCs J, K, L, N, S, and U) for a Phase I RFI, which was implemented as a PA/SI under CERCLA due to the subsequent listing of Vieques on the NPL. The PA/SI field work for the eight PI/PAOC sites was completed in April 2006 in accordance with the PA/SI Work Plan (CH2M HILL, 2006a). The Final PA/SI Report discusses the findings and recommendations for each of the eight PI/PAOC sites (CH2M HILL, 2008d). One site (PAOC U) was recommended for NFA, which was documented in a No Action Decision Document (CH2M HILL, 2009a). Five of the remaining seven PI/PAOC sites were recommended for further investigation as part of an ESI (PIs 4 and 7, and PAOCs L, N, and S). Determinations for the two remaining sites (PAOC J and K) were postponed pending completion of a regional groundwater evaluation for the Camp Garcia area. The five aforementioned sites and regional groundwater were included in an ESI, for which the field work, described in a SAP (CH2M HILL, 2009b), was completed in May 2009. The Final SI/ESI Report, which includes these five sites, was submittal in August 2010 (CH2M HILL, 2010b). Based on the findings presented in the Final SI/ESI Report, five of the seven aforementioned PI/PAOC sites (PAOCs J, K, L, N and S) were identified as requiring no action or NFA to be protective of unrestricted human use and ecological exposure. These sites are included in a Final No Action/NFA Decision Document (CH2M HILL, 2010d). The remaining two sites (PI 4 and PI 7) were recommended for additional sampling in accordance with the existing SAP (CH2M HILL, 2009b). The recommendation at the PI 7 site was to collect a co-located surface and subsurface soil sample from the same location sampled 7 years prior to determine current concentrations of polycyclic aromatic hydrocarbons (PAH). The additional samples were collected and the associated data, together with the data from other historical samples collected at the site, were used to determine existing conditions do not pose an unacceptable risk to human health or ecological receptors or leaching concern for groundwater. This was documented in the Final Site Inspection/Expanded Site Inspection Report Addendum (CH2M HILL, 2011g). Based on this, a Final No Action/No Further Action Decision Document that included PI 7 was issued in September 2011 (CH2M HILL, 2011j). PI 4 (subsequently renamed SWMU 20) is still under investigation; therefore, more detail regarding this site is provided below.

The path forward for the remaining 39 PI/PAOC sites was discussed by the Environmental Technical Subcommittee, which comprises representatives from the Navy, USEPA, PREQB, and USFWS, and their contractors. Any of the PI/PAOC sites located in munitions sites are being or will be investigated as part of the broader munitions sites (see Section 2.1.3). Based on this protocol, there are 22 PI/PAOC sites located in munitions sites. The remaining 17 PI/PAOC sites (in addition to the 8 discussed in the preceding paragraph) are in the ERP (PIs 5, 6, 8, 10, 11, 20, and 21, PAOCs I, M, O, P, Q, R, T, V, W, and X). A site visit by the Environmental Technical Subcommittee to 16 of the sites (all except PI 21) on October 17, 2007, determined that 5 of the 16 sites required no action to be protective of unrestricted human use and ecological exposure (PI 11 and 20, and PAOCs T, V, and W). A Final No Action Decision Document (CH2M HILL, 2009a) was issued in January 2009 to document the no action determination for a number of sites, including these five sites. The remaining 11 PI/PAOC sites (not including PI 21) were included in the SI/ESI, for which the field work, as described in the SAP (CH2M HILL, 2009b), was completed in May 2009. The Final SI/ESI Report, which includes these 11 sites, was submitted in August 2010 (CH2M HILL, 2010b). Based on the findings presented in the Final SI/ESI Report, 9 of the 11 aforementioned PI/PAOC sites (PIs 5, 6, 8, and 10, and PAOCs I, M, O, P, X) were identified as requiring no action or NFA to be protective of unrestricted human use and ecological exposure. These sites are included in a Final No Action/NFA Decision Document (CH2M HILL, 2010d). The remaining two sites

(PAOCs Q and R) were recommended for additional sampling in accordance with the aforementioned SAP (CH2M HILL, 2009b). That sampling occurred in August 2010 and documented in a Final SI/ESI Addendum Report (CH2M HILL, 2011g); the sites were subsequently included in a Final No Action/No Further Action Decision Document (CH2M HILL, 2011j). The decision document for PI 21 was issued in 2014; therefore, more detail regarding this site is provided below. Additionally, a new SSA (referred to as Laguna La Chiva) was added based on the results of sediment samples collected there by the National Oceanic and Atmospheric Administration (NOAA). This site is further discussed below.

SWMU 20, formerly known as PI 4 (Former Helicopter Maintenance Area, Trenched Area, Disturbed Area, and Bermed Areas used for Fuel Bladder Storage)

Historical information suggests the site comprised a former helicopter maintenance area, trenched area, disturbed areas, and bermed area for storage of fuel bladders. There are no structures remaining at the site other than concrete pads (potential relics of building foundations) and concrete vaults believed to have been associated with a sanitary septic system for barracks and mess potentially located at the site (CH2M HILL, 2008d).

During the 2001 SI of PI sites and the 2002 EBS SI, no physical evidence of a release was noted. However, as a conservative measure, five potential sources of a release were identified for PA/SI sampling:

- Former trenches
- Area of disturbed ground south of the helicopter maintenance area
- Bermed fuel bladder storage area
- Former helicopter maintenance area
- Disturbed area in the southeast part of the trenched area

Evaluation of historical data collected at SWMU 20 (designated PI 4 during past investigations) is presented in the Final PA/SI Report (CH2M HILL, 2008d) and Final SI/ESI Report (CH2M HILL, 2010b). Although the data collected during the PA/SI suggested there had been a release of volatile organic compounds (VOCs) to groundwater, the spatial coverage of monitoring wells was not adequate to sufficiently characterize the potential source area. Therefore, PI 4 was part of an ESI, for which the field work, as described in the SAP (CH2M HILL, 2009b), was completed in May 2009. During the ESI, additional monitoring well installation and groundwater sampling were performed. The Final SI/ESI Report, which includes PI 4, was submitted in August 2010 (CH2M HILL, 2010b). The SI/ESI Report identified low levels of VOCs in groundwater at PI 4; specifically, low-level exceedances of the trichloroethene (TCE) maximum contaminant limit (MCL) were observed in one well over two rounds of sampling. Collection of another round of groundwater samples from all site wells for volatile organic compound (VOC) analysis was recommended in the Final SI/ESI Report to confirm low levels or evaluate presence of any trends.

A Final Supplemental ESI and Pilot Study SAP was submitted in September 2011 which described additional soil and groundwater sampling and a potential pilot study (CH2M HILL, 2011k). During the Supplemental ESI, five new wells were installed around the well that had the low level TCE concentrations in an attempt to confirm the localized presence of TCE. However, the area of TCE contamination was determined to be larger than previously thought, so two additional wells were installed in the downgradient direction. These two wells also contained relatively low levels of TCE, but demonstrated the area of contamination had not yet been delineated. Therefore, the Supplemental ESI was halted and an RI SAP was developed for the site to determine the extent of the TCE-related contamination in groundwater. Because the site is the subject of an RI, its designation was changed from PI 4 to SWMU 20. A Final Remedial Investigation SAP was submitted on April 26, 2013 (CH2M HILL, 2013f). Field work was conducted from May through October 2013, during which 16 shallow monitoring wells (MW 15 through MW 30) and 2 deep bedrock wells (MW 13D and MW 17D) were installed. Groundwater samples were collected from 14 existing and the 18 new monitoring wells to help delineate the nature and extent of groundwater contamination. Four soil samples were collected from borings for monitoring wells MW 13D and MW 17D to supplement the 35 previously collected soil samples on site. The results of this field effort identified no soil contamination, but did identify TCE-related contamination extending approximately 650 feet in a south-southeastern direction from the assumed source location. Additional monitoring wells are planned in 2014 to complete the nature and extent delineation in both the shallow and deep bedrock groundwater. Following

completion of the groundwater delineation, soil samples will be collected in the anticipated source area to determine if soil contamination at that location is still present.

PI 21 (Quarry, Potential Firing Point)

During the EBS in December 2002, three surface soil samples were collected from a small area of discolored soil near the remains of a small sheet metal structure, with pipes protruding from the embankment. The samples were analyzed for VOCs, SVOCS, metals, herbicides, pesticides, polychlorinated biphenyl (PCBs), perchlorate, TPH-DRO, and TPH-GRO. Evaluation of the data suggest there was not a site-related release of contamination at this area.

A Preliminary Range Assessment (PRA) (NAVFAC, 2003b) was completed in 2003 to identify past range operations and/or management practices that may have had the potential to result in adverse environmental impacts. A field reconnaissance, archive records search, and aerial photographic analysis were conducted as part of the PRA at PI 21. The PRA did not identify the presence of a likely firing point or munitions and explosives of concern (MEC) at PI 21.

Although there are no records of past releases at PI 21, review of historical photographs indicates the site was likely used only for quarrying operations and noted the presence of a vertical storage tank between 1959 and mid 1970. Review of historical records did not indicate what material may have been stored in the tank, which may have been used for water storage. Representative of the Environmental Technical Subcommittee conducted a site visit in March 2012 to evaluate the site conditions, specifically within the areas of interest identified in historical aerial photographs. The Subcommittee determined that soil sampling at the location of the former vertical tank was warranted to determine if a CERCLA-related release(s) occurred. At that time, it was concurred upon that the only sampling warranted was at the location of the former tank.

Based on the above information, a Final SI SAP was submitted in February 2013 (CH2M HILL, 2013d). Sampling was accomplished in April 2013 and a No Action Decision Document was issued in June 2014 (CH2M HILL, 2014d).

Laguna La Chiva

In 2005, NOAA collected fiddler crab and land crab tissue samples from around Laguna La Chiva. While pesticides were detected in crab tissue, the Public Health Consultation (PHC) prepared by the Agency for Toxic Substances and Disease Registry (ATSDR), in part using the NOAA data, stated that the level of pesticides found in the land crab samples were much lower than levels reported to cause harmful health effects (ATSDR, 2006). In addition, NOAA evaluated the data and concluded that the pesticide concentrations in crabs did not exceed ecological screening values intended for the protection of crustaceans.

In October 2007, NOAA collected three sediment samples from Laguna La Chiva as part of an island-wide sediment evaluation (NOAA, 2010). Pesticide concentrations (primarily DDT, DDE, and DDD) were detected at concentrations higher than at other lagoons on Vieques sampled by NOAA and the Navy and above various ecological screening levels commonly used on Vieques. None exceeded United States Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs) for residential soil, but fish and crab concentrations were not modeled from the sediment concentrations to determine if they may pose an unacceptable risk based on human consumption.

Based on the NOAA information, it was speculated that the pesticide concentrations detected in lagoon sediment were the result of normal pesticide use associated with historic military training at and adjacent to Blue Beach. Blue Beach was one of the two most frequently used beaches for amphibious landing training (Tippets, 1979). Though there are no records available, it is likely that pesticides were used to control insects during training events, especially in and around the lagoon, which would likely have been (and still is) prime mosquito habitat. While the pesticide concentrations detected in NOAA's samples may be associated with normal pesticide use, rusted pieces of several drums were observed around the lagoon, with the majority being observed on the northeast and west banks of the northwestern branch of the lagoon. Since pesticides would likely have been stored and transported in drums, the drum remnants offer another potential explanation for the source of pesticides in the lagoon (i.e., discarding of drums containing pesticide residues). There was also a question of whether the drums may have been a source of contaminants not previously analyzed for in Laguna La Chiva

sediment samples (i.e., volatile organic compounds (VOCs) and semi-volatile organic compounds [SVOCs]). However, historical aerial photography does not show the area to have been used for disposal.

Based on the above information, a Final Site Inspection/Remedial Investigation SAP was submitted on April 29, 2013 (CH2M HILL, 2013g). Sampling took place in May 2013, during which 16 sediment samples from 12 locations across Laguna La Chiva and 7 soil samples within the surrounding terrestrial area were collected. The results of this sampling indicated a past CERCLA-related release was not likely and showed that the sediment and soil constituent concentrations do not pose a potentially unacceptable risk to human or ecological receptors. Based on this information, a No Action Decision Document is anticipated.

2.1.3 Munitions Response Sites

UXO 1—Eastern Conservation Area (ECA)

The ECA, designated as Munitions Response Site (MRS) UXO 1 in the Expanded Range Assessment (ERA/SI) Report, was not an operational area for munitions use. However, its close proximity to the LIA, where extensive naval gunfire and air-to-ground (ATG) bombing took place, resulted in the ECA being a potential area for MEC. In addition, the open burn/open detonation (OB/OD) area within the LIA generated an explosive safety arc that extended into the ECA. The ECA was part of the Time-critical Removal Action (TCRA) to remove munitions from the surface. MEC was removed from the surface within 125 acres of UXO 1 including the lagoon, leaving only several acres (approximately 6% of the site), of steep slopes and cliff edges not cleared, primarily because of inaccessibility and instability. Surface removal activities were completed in February 2009.

In February 2008 an Engineering Evaluation/Cost Analysis (EE/CA) for the Subsurface Removal of MEC from the Roads and Beaches was finalized. A Final NTCRA Work Plan for actions identified in the EE/CA was submitted to the regulatory agencies in October 2008 (CH2M HILL, 2008m). The NTCRA was completed and removed subsurface munitions from the main road and Playa Blanco Beach of the ECA.

During the TCRA and NTCRA, approximately 1,400 MEC items were demolished and removed from UXO 1. Based on the results of the TCRA and NTCRA, an RI was conducted at the ECA to assess the nature and extent of contamination and potential environmental and human health risks associated with exposure to any contamination identified. The RI field investigation was completed in February 2011 and the Final RI report was submitted in July 2012 (CH2M HILL, 2012e). A Final Feasibility Study, which evaluated remedial alternatives for the site, was submitted in October 2012 (CH2M HILL, 2012g). Following USFWS' issuance of the ECA restoration plan in March 2014, the PRAP was finalized in June 2014 (CH2M HILL, 2014g); the preferred alternative in the PRAP is Focused Additional MEC Removal and Land Use Controls (LUCs). Following the public comment period on the PRAP, a ROD for UXO 1 is anticipated in 2015.

UXO 2—LIA Beaches

UXO 2 encompasses approximately 71 acres of beaches along the perimeter of the LIA (**Figure 2-2**). UXO 2 is further defined as the sandy beach areas extending from the waterline to the inland extent of turtle nesting habitats, as described in the *Final Biological Assessment for the Former Live Impact Area* (GMI, 2006). The TCRA (interim action) at UXO 2 for the surface removal of munitions was initiated in 2005. In June 2009, the field activities for a NTCRA (interim action) for subsurface removal of munitions were initiated for UXO 2 (CH2M HILL, 2009c). As of May 2014, over 1,300 surface and subsurface munitions items have been demolished and removed from three of the beaches at UXO 2. The NTCRA to remove subsurface MEC is ongoing. An RI will be conducted to characterize the nature and extent of environmental contamination and MEC and assess the potential risks, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b).

UXO 3—LIA Roads

UXO 3 encompasses approximately 39 acres throughout the LIA and consists of selected roadways and 25 foot buffers on each side of the selected roads (**Figure 2-2**). UXO 3 runs through UXO 4 and adjacent to portions of UXO 2.

As part of the NTCRA for the Roads and Beaches, a DGM survey was conducted for 13 acres of the roadways and buffer area that make up UXO 3. Over 11,300 subsurface anomalies were detected during the DGM survey.

Through May 2014, over 1,900 MEC items have been removed from the surface and subsurface. The NTCRA subsurface clearance of MEC is ongoing. Based on findings from the NTCRA and geophysical surveys, an RI will be conducted to characterize the nature and extent of environmental contamination and MEC and assess the potential risks, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b).

UXO 4—LIA Interior

UXO 4 encompasses approximately 855 acres consisting of a majority of the former LIA, excluding the roads and beaches (**Figure 2-2**).

In 1965, training activity began in the LIA where several mock-ups, such as old tanks and vehicles, were used as targets for aerial bombing. From the mid-1970s, naval gun fire (NGF) was practiced, where several point and area targets for ships were constructed (Tippets et al., 1979). Marine artillery fired from the west likely impacted this area also.

The TCRA (interim action) at UXO 4 was initiated in 2005. The MEC removed from the ground surface consisted of multiple types of munitions items (e.g., bombs, projectiles, rockets, flares, sub munitions).

Over 27,700 MEC items have been demolished and demilitarized during the TCRA. The sub munitions area of the site remains to be surface cleared. Based on the results of the ERA/SI and TCRA, an RI is being conducted to characterize the nature and extent of environmental contamination and MEC and assess the potential risks, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b). The RI field work described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b) started in January 2013 with the collection of soil, surface water, and sediment samples, and is ongoing. The RI field work has not been performed within the submunitions area since, as noted previously, the area has not been surface cleared.

UXO 5—SIA Restricted Roads

UXO 5 encompasses approximately 38 acres throughout the SIA and is composed of selected roadways and 25 foot buffers on each side of the selected roads (**Figure 2-2**).

In June 2009 the field activities for a NTCRA (interim action) were initiated (CH2M HILL, 2009c). Through May 2014, approximately 280 munitions items have been demolished and removed at UXO 5 during the NTCRAs. Based on findings from the NTCRA, an RI will be conducted to characterize the nature and extent of environmental contamination and MEC and assess the potential risks, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b).

UXO 6—EMA/SIA Public Roads

UXO 6 encompasses approximately 62 acres of roads including the road surface and 25 foot buffers on each side of the roads (**Figure 2-2**). The western portion of UXO 6 lies in the former EMA and the eastern portion lies in the former SIA.

Through May 2014 approximately 240 munitions items were demolished and removed at UXO 6 during the current NTCRA for surface and subsurface clearance. The surface and subsurface removal of MEC from this site is currently being conducted as part of the NTCRA (interim action). Based on findings from the NTCRA, an RI will be conducted to characterize the nature and extent of environmental contamination and MEC and assess the potential risks, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b).

UXO 7—EMA/SIA North Beaches

UXO 7 encompasses approximately 54 acres and comprises the sandy beach areas located along the north shore of the former VNTR. Beaches located in UXO 7 include Puerto Diablo, Puerto Negro, and Playa Capana. There are 10 additional beaches that have no known historical names included in UXO 7.

The removal of surface and subsurface MEC at the beaches is currently being completed under the NTCRA and through May 2014 approximately 620 munitions items have been demolished and removed. Based on the results

of this NTCRA, an RI will be conducted to characterize the nature and extent of environmental contamination and MEC and assess the potential risks, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b).

UXO 8—SIA South Beaches

UXO 8 encompasses approximately 45 acres and comprises the sandy beaches located along the southern shore of the area formerly referred to as the SIA (**Figure 2-2**). Beaches located in UXO 8 include Playa Matias, Playa Jalova, Playa Jalovita, Paya Yoye, Cayo Conejo and Playa Fanduca. There are additional beaches that have no known historical names included in UXO 8.

Approximately 240 munitions items were demolished and removed at UXO 8 under the NTCRA. The removal of subsurface MEC at the beaches is currently being completed under the NTCRA. Based on the results of this investigation and the NTCRA, an RI will be conducted to characterize the nature and extent of environmental contamination and MEC and assess the potential risks, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b).

UXO 9—SIA Exterior

UXO 9 encompasses approximately 943 acres and comprises gentle slope areas adjacent to the roads of the former SIA (**Figure 2-2**). In February 2009 the field activities for a NTRCA were initiated to remove surface munitions from the site.

The NTCRA and transects conducted in UXO 9 confirmed that the SIA was used as target areas for marine artillery and air-ground bombing of practice munitions. Through May 2014, over 3,800 munitions items have been demolished and removed from the site as part of the ongoing NTCRA (interim action). Based on findings from the ERA/SI and the NTCRA, an RI is being conducted to characterize the nature and extent of environmental contamination and MEC and assess the potential risks, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b). The RI field work described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b) started in January 2013 and finished in March 2014. These data are being evaluated to determine the appropriate path forward for the site (whether additional RI sampling is needed or an Feasibility Study of potential remedial alternatives should be prepared).

UXO 10—SIA Interior

UXO 10 encompasses approximately 900 acres and comprises the interior section of the area formerly known as the SIA (**Figure 2-2**). In February 2009 the field activities for a NTCRA were initiated at the SIA (CH2M HILL, 2009c) to remove surface munitions from the site.

Through May 2014, approximately 1,280 surface munitions have been demolished and removed from this site as part of the NTCRA (interim action). Based on findings from the ERA/SI and the NTCRA, an RI is being conducted to characterize the nature and extent of environmental contamination and MEC and assess the potential risks, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b). RI field work described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013c) started in January 2013 and finished in March 2014. These data are being evaluated to determine the appropriate path forward for the site (whether additional RI sampling is needed or an Feasibility Study of potential remedial alternatives can be prepared).

UXO 11—EMA Public Roads

UXO 11 encompasses approximately 86 acres and comprises roadways anticipated to be used by the public within the former EMA, the total footprint of this site includes the road surface and 25 foot buffers on each side of the roads (**Figure 2-2**).

In June 2009 the field activities for a NTCRA (interim action) were initiated (CH2M HILL, 2009c) to remove subsurface munitions from several UXO Sites including UXO 11.

The NTCRA is ongoing and through May 2014, the NTCRA demolished and removed approximately 130 munitions items from the site and the DGM identified approximately 1,500 subsurface anomalies. Based on the results of the ERA/SI and the NTCRA, an RI will be conducted to characterize the nature and extent of environmental contamination and MEC and assess the potential risks, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b).

UXO 12—EMA Interior

UXO 12 encompasses approximately 4,465 acres and comprises interior portions of the former EMA (**Figure 2-2**). The former EMA is approximately 10,900 acres, and 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.

In February 2009, the field activities for a non-Time Critical Removal Action (NTCRA) were initiated to remove surface munitions from the eastern portion of UXO 12.

During February, 2011 a brush fire occurred across 215 acres of UXO 12, which allowed easy access to inspect and surface clear any munitions within the area. The inspection identified 17 MEC items, including naval gunfire projectiles, five-inch rockets and a 500 pound bomb. This information indicates that the site may have been used as a target area for naval gunfire and air-to-ground bombing, in addition to the previously documented marine artillery exercises. During March 2013 another brush fire occurred across approximately 300 acres of UXO 12. An emergency action was initiated to surface clear the munitions that were identified at the surface. Over 100 munitions items, the majority of which were projectiles/mortars, were demolished and removed during this surface clearance.

Through May 2014, approximately 3,450 munitions items (approximately half of which were smoke bombs, with the majority of the remaining items being projectiles/mortars and munitions components) were demolished and removed from the site. An RI is being conducted to characterize the nature and extent of environmental contamination and MEC and assess the potential risks, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013c). RI field work described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b) started in January 2013 and finished in March 2014. These data are being evaluated to determine the appropriate path forward for the site (whether additional RI sampling is needed or an Feasibility Study of potential remedial alternatives can be prepared).

UXO 13—EMA West

UXO 13 encompasses approximately 2,434 acres and is located in the northwest of the former EMA (**Figure 2-2**). During 1966, six ranges were established in the area along the north coast in the area identified as UXO 13. These ranges remained operational through February 1999 when they were deactivated.

Over 80 MEC items were identified in the ERA/SI. Based on the high explosive safety hazards of the MEC used at the site, as well as the high frequency of trespassing that occurs at UXO 13, a NTCRA is being conducted at the easternmost 620 acres of UXO 13 where MEC have been identified. Through May 2014 approximately 210 munitions items were demolished and removed. Based on this information, an RI will be conducted to characterize the nature and extent of environmental contamination and MEC and assess the potential risks, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b).

UXO 14—EMA South

UXO 14 encompasses 1,050 acres and is located in the southern portion of the former EMA; the site is south of UXO 11 and adjacent to Ensenada Honda (**Figure 2-2**). Over the years a Range 10 was established as a range with all firing from a single point. This range was located adjacent to Ensenada Honda adjacent to a mangrove area. A total of 61 MEC items were identified at the site. Based on this information, an RI is being conducted to characterize the nature and extent of environmental contamination and MEC and assess the potential risks, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b). RI field work as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial

UXO Sites (CH2M HILL, 2013b) started in January 2013 and finished in March 2014. These data are being evaluated to determine the appropriate path forward for the site (whether additional RI sampling is needed or an Feasibility Study of potential remedial alternatives can be prepared).

UXO 15—Puerto Ferro

UXO 15 encompasses approximately 535 acres and is located to the southeast of the area formerly referred to as the EMA. UXO 15 comprises PI 9 and PI 13 as areas warranting investigation. PI 9 was used for ammunition storage and PI 13 may have been the firing point from which rocket-related ordnance was launched to the LIA/SIA (NAVFAC, 2003a). Interviews conducted during the EBS (NAVFAC, 2003a) also suggests that PI 9 was used for ammunition disposal and small open burn/open detonation (OB/OD); however, the information on the OB/OD was likely interpreted incorrectly from Spanish translation; OB/OD operations did not likely take place at the site.

The ERA/SI (CH2M HILL, 2010c) identified isolated occurrences of munitions debris (MD) and munitions potentially presenting an explosive hazard (MPPEH) within the UXO 15 site. Additionally, two elevated anomaly density areas (EADAs) were identified. Small caliber casings and surface debris were located during the visual evaluation of the debris piles. The ERA/SI recommended further investigation of the debris piles and near shore MD and evaluation of the potential ecological and human health risks. The ESI SAP was finalized in May 2011 (CH2M HILL, 2011e). However, based on additional information gathered since that time, modifications to the original approach were developed and documented in the Final ESI SAP Addendum (CH2M HILL, 2012f). Fieldwork was completed in May 2013, and an initial RI findings technical memorandum was finalized in May 2014 (CH2M HILL, 2014c). In addition, an EE/CA and Work Plan for an NTCRA to guide access along the road leading to the historic lighthouse were finalized in March and June 2014, respectively. In addition, a munitions clearance NTCRA for the beach adjacent to the lighthouse and the trail between the two in accordance with the existing east Vieques roads and beaches NTCRA will be performed. Both NTCRAs are anticipated to occur in the summer of 2014 to expedite public access to the area around the historic lighthouse.

UXO 16—Underwater Areas

The underwater areas adjacent to the range and operational areas on East and West Vieques have portions that are known or suspected to have been impacted by MEC. UXO 16 includes former ship anchoring points where munitions may have been loaded, offloaded or transferred (including three anchorage areas and Mosquito Pier), areas where munitions may have been inadvertently fired into the water from Naval gunfire training or air-to-ground bombing (former VNTR), and areas where the explosive safety arc from artillery ranges and adjacent onshore open burning/open detonation activities may have extended into the water (former NASD and VNTR). The underwater areas to be addressed include all of those underwater areas identified within the NPL boundary (**Figures 2-2 and 2-3**).

In 2013, available bathymetry data within UXO 16 were compiled in order to develop a plan for conducting a side-scan sonar survey. The side-scan sonar survey is intended to help plan the wide area assessment of underwater munitions, including avoiding underwater obstacles during the assessment. The side-scan sonar survey began in November 2013 and was completed in January 2014. A wide area assessment to provide a preliminary evaluation of the nature and extent of the underwater MEC is anticipated in 2014.

In addition, an EE/CA for an NTCRA of underwater munitions adjacent to Cayo La Chiva (UXO 18) was submitted for regulatory review in March (CH2M HILL, 2014n). Further, a revised Quality Assurance Project Plan (QAPP) for an Expanded Site Inspection (ESI) of the underwater area adjacent to SWMU 4 was finalized in April 2014 (CH2M HILL, 2014a). ESI field activities are anticipated to occur in late 2014.

UXO 17—Other Sites

UXO 17 is located to the south of the area formerly referred to as the EMA (**Figure 2-2**). Two sites within UXO 17 (PI 14 and PAOC FF) were investigated during the EBS and the ERA/SI. These sites were determined to require no further action and included in a No Further Action Report (CH2M HILL, 2010e). There is one PAOC site (PAOC EE) within UXO 17 that is still under investigation, as described below.

PAOC EE

PAOC EE includes earthen berms that may have been used for storage of munitions (CH2M HILL, 2004a). A DGM survey of the interior portion of the Punta Conejo during 2011 (CH2MHILL, 2012j) and subsequent data analysis identified approximately 2,190 discrete anomalies and 352 polygons (areas of concentrated anomalies) in the subsurface at PAOC EE. A total of 458 anomalies were excavated. During the excavations, two discarded military munitions (DMM) were recovered: a 40mm flare and a canister containing propellant. Based on these findings, an RI will be conducted at the site, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b).

In June 2013, a follow-up munitions investigation of the Blue Beach area identified 864 subsurface anomalies. Excavation of these anomalies produced one DMM (MEC component [rocket fuze]) at the far eastern end of Blue Beach, adjacent to Punta Conejo, resulting in the closure of that stretch of the beach. In addition, seven MPPEH and two DMM were found in the area immediately to the north of Blue Beach. The investigations at and around Blue Beach indicate there may be explosive hazards present in areas adjacent to Blue Beach that are potentially accessible to USFWS and the public. As a result, a TCRA was initiated in May 2014 within the vegetated area north of Blue Beach, extending to and including Punta Conejo. Once the TCRA is completed, the boundary of PAOC EE will be adjusted to include the area where surface/subsurface munitions and other debris are identified.

UXO 18—Cayo La Chiva

A site inspection of the island Cayo La Chiva adjacent to Blue Beach, a public beach, identified five 5-inch rockets. Based on this information, an RI is being conducted to characterize the nature and extent of environmental and MEC and assess the potential risks, as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites (CH2M HILL, 2013b). RI field work started in June 2013 and was completed in November 2013. A Final RI/FS Report is anticipated in 2014.

2.2 Western Vieques Sites (Former NASD)

2.2.1 Environmental Sites

This subsection summarizes the status of the 16 environmental sites (SWMUs and AOCs) on western Vieques. Additional detail for the three sites (SWMU 6, AOC E, and AOC I) for which a decision document has not yet been finalized is provided herein. Site-specific detail for sites closed out of the CERCLA process is provided in **Appendix A-1** and past SMPs. The locations of the western Vieques sites are shown in **Figure 2-3.** The anticipated schedule for deliverable submittal for the following sites, as applicable, is provided in **Figure 3-1**.

SWMU 6—Former Mangrove Disposal Site

The Mangrove Disposal Site is located in the ocean-side mangrove swamp in Laguna Arenas along Highway 200 on the former NASD. There is no known history of permits pertaining to this site. The disposal site was in use during the 1960s and 1970s as a disposal area for general facility wastes. Waste discarded at the site comprised broken glass, rubble, and empty containers of lubricants, oil, solvents, and paints. A CH2M HILL inspection team in conjunction with an MEC avoidance team also identified ordnance items and solid waste from the base galley, such as pieces of broken glass and china. The site is adjacent to an access road for public beaches farther west in this part of the island. However, a fence separating the site from Highway 200 is present, thereby limiting access.

Although the data included in the RI suggested the waste did not pose an unacceptable risk to human health or ecological receptors (CH2M HILL, 2007b), the Navy and regulatory agencies concurred that there was uncertainty associated with this conclusion because soil samples were collected adjacent to the waste rather than directly through the waste due to safety concerns. The agencies also concurred that the waste at SWMU 6 posed an unacceptable uncertainty regarding a potential future source of contamination. An EE/CA was prepared for public comment (CH2M HILL, 2005h). No public comments were submitted. A Final Removal Action Work Plan was submitted in February 2008 (Field Support Services, Inc., 2008). Human health and ecological risk assessments conducted during pre-removal soil profiling suggested some areas of soil may have posed potentially unacceptable risks for unrestricted use (CH2M HILL 2008j, 2008k). The extent of debris removal was based on visual observation; the extent of soil removal was defined by the pre-removal waste characterization human health and ecological risk

assessments, which were summarized in the technical memorandum entitled *Determination of the Disposition of Excavated Soils at SWMU 6* (CH2M HILL, 2008n).

The removal action to remove the waste and areas of soil with contaminant concentrations unsuitable for unrestricted use began in February 2009 and was completed in June 2009. The details of the removal action and site restoration activities (i.e., mangrove planting) are described in the Final Construction Completion Report (CCR) (Field Support Services, Inc., 2010). Due to the removal action, the environmental setting was altered from a predominantly terrestrial habitat to a shallow, marine habitat that is hydraulically (at least partially) connected to and tidally influenced with the adjacent Laguna Kiani complex. The site now supports a relatively diverse community of marine fish and invertebrates, along with foraging wildlife such as wading birds. Because the site conditions changed as a result of the removal action, it was determined that the newly formed sediment and surface water area were not properly characterized by the post-removal confirmatory sampling conducted immediately following the removal action. Therefore, a SAP was developed to appropriately characterize the post-removal conditions. The Final SAP was submitted in December 2010 (CH2M HILL, 2010f). Field work was completed in February 2011 which included further surface water, sediment and surface soil sampling. Additionally, background surface water and sediment samples were collected from adjacent lagoons. The sediment data indicated there may be unacceptable risk associated with human consumption of fish and crab exposed to sediment contaminants. Because these estimates were based on modeling contaminant uptake, a SAP was developed to collect and analyze fish and crab from the lagoon to get more accurate estimates of contaminant levels in the lagoon biota (CH2M HILL January 2012a). The fish and crab samples were collected in January 2012. The 2011 surface water and sediment data, as well as the subsequent fish and crab data, were used to prepare human health and ecological risk assessments that were included in the Final Feasibility Study (CH2M HILL, January 2013a). A SAP to further delineate the extent of sediment containing contaminants of concern (COCs) above likely remediation goals (in order to refine the alternatives included in the Feasibility Study) will be implemented in mid-2014.

AOC E—Former UST Site 2016

AOC E is located within the public works area of the former NASD at the former location of a underground storage tank (UST) near the northwest corner of Building 2016. The former UST was a 550-gallon, single-wall, steel waste oil tank. The piping system associated with the UST consisted of single-wall steel pipes. The UST was installed in 1970 to store waste oil generated from vehicle maintenance activities that take place in Building 2016. As part of UST removal activities, the former UST and associated piping were removed in November 1996. In addition, soil samples were collected and submitted for laboratory analysis; the soil samples contained total petroleum hydrocarbon (TPH) concentrations ranging from 568 to 1,790 milligrams per kilogram (mg/kg).

The site was transferred from the PREQB UST program to the CERCLA program in 2000 as part of the closure of the NASD. Information regarding the nature and extent of contamination and potential risks posed by the contamination can be found in the Final RI Report for AOC E (CH2M HILL, 2008f). The risk assessment concluded that the site soils and groundwater do not pose an unacceptable risk for industrial use. The site groundwater, if extracted for consumptive use, would pose an unacceptable risk. However, the groundwater aquifer is unsuitable for use as a source of drinking water without desalinization due to high concentrations of sodium and chloride ions (USGS, 1989).

A MPE Pilot Study was performed at AOC E in June, July, and August 2002 to evaluate the effectiveness of this technology in mitigating the free phase hydrocarbon product accumulation. The Pilot Study showed the technology to be partly successful, but a small amount of free phase product (i.e., a sheen) remained.

Based on supplemental soil and groundwater sampling conducted in 2008, a Pilot Study was implemented between January 2010 and December 2011 that included *in situ* chemical oxidation (ISCO) injection followed by enhanced *in situ* bioremediation (EISB) for groundwater contaminants and nitrate injection for soil contaminants that may pose a continuing leaching concern. The Pilot Study was performed in general accordance with the Final SAP that was submitted in February 2010 (CH2M HILL, 2010h). Post-DBB injection soil samples collected in November 2011 indicated that soil-to-groundwater leaching is not a concern. The ISCO pilot test, covering the entire impacted area, has shown ISCO to be effective in reducing the concentrations of site COCs in groundwater to acceptable levels.

However, the presence of elevated residual persulfate concentrations hinders the ability to monitor for potential rebound of COCs. Therefore, the Navy, USEPA, and PREQB concurred that the pilot study had generally satisfied its objectives and that the site should proceed to an Feasibility Study to address the residual persulfate and potential for contaminant rebound.

The Final Focused Feasibility Study Report was submitted in November 2012 (CH2M HILL, 2012h) that evaluated alternatives to address the residual persulfate and the potential for COC rebound. The PRAP was submitted for public comment and a public meeting was held in November 2013 (CH2M HILL, 2013i). The ROD documenting groundwater monitoring, land use controls, and contingency plans to address potential residual persulfate and potential contaminant rebound is anticipated in mid-2014.

AOC I—Asphalt Plant

AOC I is located on the south side of Route 200 just west of the north gate and consists of two former asphalt truck parking/loading containment areas and the location of two former diesel ASTs. Operations at the plant were conducted from the 1960s until 1998.

The EBS, the Expanded PA/SI Phase II, and the August/September 2004 RI produced 47 surface soil samples, 33 subsurface soil samples, and 7 groundwater samples. Based on the information provided in the Interim RI Report, two additional monitoring wells were proposed in the Supplemental RI Work Plan (CH2M HILL, 2005d). The supplemental field work was completed in December 2005. Based on a newly-defined Human Health Risk Assessment (HHRA) protocol (CH2M HILL, 2007c), the Final RI Report (CH2M HILL, 2008e) was submitted in June 2008 and contains information regarding the nature and extent of contamination at AOC I. Based on supplemental soil and groundwater sampling conducted in 2008, a Pilot Study began in January 2010 that included ISCO injection followed by EISB for groundwater contaminants. The Pilot Study was performed in accordance with the Final SAP that was submitted in February 2010 (CH2M HILL, 2010h). The Pilot Study sampling was completed in November 2012, based on concurrence among the Technical Subcommittee following evaluation of the pilot study data collected to date. The data showed no COC rebound; therefore, a Final Pilot Study Report and Draft No Further Action PRAP were submitted for regulatory review in May 2013. The PRAP was submitted for public comment and a public meeting was held in November 2013 (CH2M HILL, 2013j). The ROD documenting No Further Action is anticipated in mid-2014.

2.2.2 Munitions Response Site (SWMU 4—Inactive OB/Waste Explosive Detonation Range)

SWMU 4, designated as West Vieques UXO 1 in the ERA/SI Report, is an inactive OB/OD site identified at the western end of NASD during the EBS. The site was reportedly used for thermal destruction and burning of retrograde munitions from 1969 to 1979. Other explosive materials disposed at SWMU 4 included material from the rework of munitions (e.g., loose powder, primers), ordnance items from the torpedo shop at Naval Station Roosevelt Roads (NSRR), and flares and cartridge-activated devices (Greenleaf/Telesca, 1984).

Based on the results of the EBS, a phased MEC RI, following the CERCLA process, was conducted to meet the following objectives:

- Identify the specific location of the former OB/OD pits that were not previously documented
- Characterize the nature and extent of the MEC items in the vicinity of the OB/OD pits to evaluate the extent of the “kick out” area
- Evaluate the explosives safety risk of the MEC items identified onsite
- Develop a MEC RI Report for the site

A digital geophysical survey was conducted over an 87-acre area that identified approximately 23,700 buried metallic anomalies (CH2M HILL, 2004d). The survey identified 16 potential OB/OD pits that were later confirmed by the MEC RI. Based on the findings of the MEC investigation, the potential aerial extent of the MEC at SWMU 4 is approximately 180 acres. A total of 11,211 metallic items were removed from the surface or subsurface and inspected during the MEC RI. Approximately 16 percent, or 1,792, of the items removed were found to contain high explosives.

During December 2011, a NTCRA at SWMU 4 was completed during which approximately 24 acres of roads and beaches were cleared of vegetation and subsurface cleared of munitions. A total of 910 MEC and munitions debris (MD) items and materials potentially presenting an explosive hazard (MPPEH) were removed. These items required demolition to eliminate the potential explosive hazard associated with them.

An RI/FS was completed in May 2012 (CH2MHILL, 2012c) to characterize the nature and extent of MEC /environmental contamination, assess potential risks to human health and the environment, and evaluate remedial alternatives at SWMU 4. MEC was identified up to a maximum extent of approximately 2,600 ft from the OB/OD area during the NTCRA. MEC recovered from the vicinity of the OB/OD pits were predominately 20mm high explosive (HE) projectiles; moreover, 20mm projectiles were the predominant MEC type recovered throughout the entire study area (over 90 percent of the MEC recovered). Perchlorate was the most frequently observed and most widespread contaminant within surface and subsurface soil and groundwater in SWMU 4.

Perchlorate was detected above only the leaching-to-groundwater screening criterion (SSL) in soil and was identified as a COC in groundwater based on hypothetical future potable use scenarios for residents and industrial workers. However, these scenarios are unlikely for SWMU 4, since legislation mandated the establishment of a wildlife refuge for the site. No unacceptable ecological risks were identified and no further evaluation or action is warranted for ecological receptors.

A feasibility study was conducted to evaluate remedial alternatives for SWMU 4 to address potential risks identified in the RI. Remedial Action Objectives (RAOs) include minimizing explosive safety risk associated with MEC to be compatible with current and future land use, minimizing the potential for unauthorized access to the site, preventing exposure to perchlorate in groundwater at concentrations that pose a potentially unacceptable human health risk, and ensuring potential human health risk and/or exposure to edible fish and aquatic crab containing contaminant concentrations attributable to past Navy activities are acceptable.

The Proposed Remedial Action Plan was issued for public comment in July 2012. Based on public comment on the Proposed Remedial Action Plan, additional alternatives to address the potential presence of MEC are being considered, which will be documented in a Feasibility Study Addendum. However, to expedite public access to portions of the site based on land use planned by USFWS, an EE/CA and Work Plan for a NTCRA were developed and finalized in March and June 2014, respectively (CH2M HILL, 2014p; CH2M HILL, 2014u). The NTCRA field activities are anticipated to occur in FY15. In addition to expediting public access to certain areas of the site, the information gathered during the NTRCA will be used to refine the munitions alternatives in the Feasibility Study Addendum.

In addition to an NTCRA, a SAP to assess perchlorate in groundwater and biota in Laguna Boca Quebrada is anticipated to be implemented in late 2014. Information gathered during this evaluation will be used to modify the groundwater and biota alternatives, as warranted, in the Feasibility Study Addendum.

Underwater Areas

Please see the discussion under UXO 16 in Section 2.1.3. The portion of UXO 16 located adjacent to the former NASD is shown in **Figure 2-3**.

2.3 Munitions Response Site Prioritization

The MRS Prioritization Protocol (MRSPP) is a tool used by DoD for assigning a relative priority for initiating munitions response actions at munitions response sites (MRSs). The scope of the site prioritization for the MRSs at Vieques was based on the DoD MRSPP published in the October 5, 2005 *Federal Register*. DoD generally considers those MRSs posing the greatest hazard as having the highest priority for munitions response actions. The protocol provides a uniform procedure for assessing explosives safety and environmental risk at MRSs; and is comprised of three hazard evaluation modules: Explosive Hazard Evaluation (EHE) module, the Chemical Warfare Material Hazard Evaluation (CHE) module, and the Health Hazard Evaluation (HHE) module. An MRS priority is established based on the ratings from the EHE, CHE, and HHE modules. Since there are no known or suspected chemical warfare materials at Vieques, the CHE module does not apply to the Vieques MRSs.

The MRS prioritization evaluation for the Vieques MRSs was completed using the best available information from the Expanded Range Assessment / Site Inspection Report (CH2M HILL, 2010c) and the following interim removal actions and MEC investigations:

- LIA and ECA TCRA - UXOs 1 and 4 (CH2M HILL, 2010i);
- NTCRA for subsurface MEC in Roads and Beaches - SWMU 4 (CH2M HILL, 2014p) and UXOs 2, 3, 5, 6, 7, 8, and 11 (CH2M HILL, 2008i)
- NTCRA for surface MEC in the SIA - UXOs 9, 10, and 12 (CH2M HILL, 2009c)
- NTCRA for surface MEC at UXO 13 (CH2M HILL, 2012i)
- NTCRA for road and lighthouse area at UXs 15 (CH2M HILL, 2014o)
- TCRA for subsurface MEC at PAOC EE/UXO 17 (CH2M HILL, 2014q)
- UXO 15 RI (CH2M HILL, 2014c)
- PAOC EE/UXO 17 subsurface MEC investigations (CH2M HILL, 2014q; CH2M HILL, 2012j)
- UXO 18 RI (CH2M HILL, 2014b).

The EHE module was used at MRSs where there is a known or suspected presence of explosive hazard and is comprised of three factors: explosive hazard (based on munitions type and source of hazard), accessibility (based on location of munitions, ease of access and status of property) and receptors (based on population density, population near hazard, types of activities/structures, and ecological or cultural resources).

The HHE module is used for evaluating the potential hazards posed by MC and other chemical constituents at MRSs that considers the contaminants present, environmental migration pathways, and receptors for four media (soil, surface water, groundwater and sediment). However, for the Vieques MRSs, sufficient MC data (designated as those included in final RI reports) exist only for SWMU 4 (CH2M HILL, 2012c) and UXO 1 (CH2M HILL, 2012e). As noted previously, the UXO 1 ROD is anticipated in FY15. As a result, SWMU 4 is the only MRS on Vieques where MC data are included in the relative priority ranking. Based on this information, and the potential for environmental risks at all the Vieques MRSs; a default rating of "medium" was used for each MRS on Vieques. The HHE module will be updated as additional MC data become memorialized in final RI reports from ongoing and future environmental investigations at the MRSs.

For Vieques, the MRS priority was established based on the ratings from the EHE module. Each MRS was assigned to one of eight MRS priorities based on the ratings of the module, where Priority 1 indicates the highest potential hazard and Priority 8 the lowest potential hazard. A summary of the MRSPP scores for the VNTR MRSs is summarized on **Table 2-2**. The detailed scoring for each MRS is provided in **Appendix C**. A total of 16 of the 18 MRSs on Vieques have been ranked a Priority 2 hazard. A Priority 2 hazard is the highest priority rating that can be scored for sites not containing chemical warfare materials. Only two sites needed to have their MRSPP scores adjusted for FY2015: SWMU 4 and UXO 17, as compared to previous iterations, because the data collected since the last update for the other sites have been consistent with those used to develop the previous scores.

Table 2-1

Operable Units Cross Reference Table

Site Management Plan, FY 2015

Vieques, Puerto Rico

EPA CERCLIS OU Number and Description	Common Site Name
02 - WEST AOC E - UST AREA	AOC E - UST Site 2016
03 - WEST AOC H - POWER PLANT	AOC H - Power Plant
04 - WEST AOC I - ASPHALT PLANT	AOC I - Asphalt Plant
05 - WEST AOC J - SWD AREA	AOC J - Former Staging Area Disp.
06 - WEST AOC R - MAINT BLDG & SWD	AOC R - Former Staging/Ops Area
07 - WEST SWMU 4 - OB/OD AREA	SWMU 4 - OB/OD Site
08 - WEST SWMU 6 - SWD AREA	SWMU 6 - Mangrove Disposal Site
09 - WEST SWMU 7 - SWD AREA	SWMU 7 - Quebrada Disposal Site
10 - UX07 EMA/SIA North Beaches	UXO 7 EMA/SIA North Beaches
11 - EAST SWMU 1 - CAMP GARCIA LF	SWMU 1 - Former Camp Garcia Landfill
12 - UX02 LIVE IMPACT AREA -BEACHES	UXO 2, LIA Beaches
13 - UX03 LIVE IMPACT AREA -ROADS	UXO 3, LIA Roads
14 - UX04 LIVE IMPACT AREA-INTERIOR	UXO 4, LIA Interior
15 - UX05 SIA - RESTRICTED ROAD	UXO 5, SIA Restricted Roads
16 - UX08 SIA South Beaches	UXO 8, SIA South Beaches
17 - UX016 -UNDERWATER SITES	UXO 16, Underwater Areas
18 - UX01 EASTERN CONSERVATION AREA	UXO 1, Eastern Conservation Area
19 - UX06 EMA/SIA Public Roads	UXO 6, EMA/SIA Public Roads
20 - UX09 SIA Exterior	UXO 9, SIA Exterior; SWMU 5, Spent Battery Accumulation Area; SWMU 8, Waste Oil Accumulation Area; SWMU 12, Solid Waste Collection Unit Area; AOC A, Diesel Fuel Fill Pipe Area; PI 1, Water Production Well; PI 17, Amphibious assault exercises, possible small arms bunkers and/or air targets; PI 22, Civilian residences and target area.
21 - UX010 SIA Interior	UXO 10, SIA Interior
22 - UX011 EMA Public Roads	UXO 11, EMA Public Roads
23 - UX012 EMA Interior	UXO 12, EMA Interior; PI 2 Water Production Well, small arms range; PI 3, Water Production well, small arms range; PI 12, Wind Driven and Private Water Production Well; PI 15 Former Location of Civilian Home, possible observation pt or small arms range; PI 16, Former Location of Civilian Home, limited OB/OD may have occurred; PI 18, Small Arms Range; PI 19, Small Arms Range, Artillery Firing Point; PAOC Y, Observed large metal object on east side of roadway; PAOC Z, Observed on overturned tractor-trailer on north side of roadway.
24 - UX013 EMA West	UXO 13, EMA West; PI 23, Water Production Well, Possible Observation Point; PAOC AA, Small Arms Range No. 1; PAOC BB, Small Arms Range No. 2, PAOC CC, Small Arms Range No 3; PAOC DD, Small Arms Range No. 4
25 - UX014 EMA South	UXO 14, EMA South
26 - UX015 Puerto Ferro	UXO 15, Puerto Ferro; PI 9 Ammunition Storage in Earthen Berms and Disposal of Ammunition (OB/OD possibly); PI 13, Lighthouse and ordanance possible launched from site.
27 - UX017 Camp Garcia	UXO 17, Other Sites (PAOC EE, Former Storage of Munitions in Earthen Berms; PAOC FF, Former Artillery Firing Point; PI 14, Scrap Metal, Ammunition Boxes, Shell Casing Disposal)
28 - UX018 Cayo La Chiva	UXO 18, Cayo La Chiva
29 - SWMU 20 Former Helicopter Maintenance Area	SWMU 20, Former Helicopter Maintenance Area, Trenched Area, Disturbed Area, and Bermed Areas used for Fuel Bladder Storage (formerly PI 4)

Table 2-1

Operable Units Cross Reference Table

Site Management Plan, FY 2015

Vieques, Puerto Rico

EPA CERCLIS OU Number and Description	Common Site Name
No EPA OU	SWMU 2, Former Fuels Offloading Site
No EPA OU	SWMU 4 Waste Area Building 303 (east Vieques)
No EPA OU	SWMU 5, Former IRFNA/MAF-4 Disposal Site (west Vieques)
No EPA OU	SWMU 6, Waste Oil and Paint Accumulation Area (east Vieques)
No EPA OU	SWMU 7, Waste Oil Accumulation Area (east Vieques)
No EPA OU	SWMU 10, Former Waste Paint and Solvents Disposal Ground (west Vieques)
No EPA OU	SWMU 10, Sewage Treatment Lagoons (east Vieques)
No EPA OU	SWMU 14, Former Wash Rack (west Vieques)
No EPA OU	SWMU 15, Former Waste Transportation Vehicle Parking Area (west Vieques)
No EPA OU	AOC B, Former Wastewater Treatment Plant (west Vieques)
No EPA OU	AOC C, Drainage Ditch at Former Transportation Shop (west Vieques)
No EPA OU	AOC F, Former UIC Septic Tank (west Vieques)
No EPA OU	AOC F, Rock Quarry (east Vieques)
No EPA OU	AOC G, Pump Station and Chlorination Building at Sewage Lagoons (east Vieques)
No EPA OU	AOC K, Former Water Well (west Vieques)
No EPA OU	AOC L, Abandoned Septic Tank (west Vieques)
No EPA OU	PI 5, Former Airfield and Associated Ditches
No EPA OU	PI 6, Former PCB Storage Pad and Vehicle Wash Pad
No EPA OU	PI 8, Former Motor Pool Maintenance Area
No EPA OU	PI 10, Former Wastewater Leach Field
No EPA OU	PI 11, Pump Station, Sanitary Wastewater Outfall
No EPA OU	PI 20, Observation Point, Quarry
No EPA OU	PI 21, Quarry, Firing Point
No EPA OU	PAOC I, Former Power Plant and Mechanics Shop
No EPA OU	PAOC J, Former Vehicle Maintenance Area
No EPA OU	PAOC K, Former Wash Rack
No EPA OU	PAOC L, Former Paint and Transformer Storage Area
No EPA OU	PAOC M, Former Fuel Facility
No EPA OU	PAOC N, Former Fuel Farm and Filling Station
No EPA OU	PAOC O, Former Boiler Room in Heat Plant Building 238
No EPA OU	PAOC P, Former Water Treatment Pumphouse
No EPA OU	PAOC Q, Former Boiler Room in Heat Plant Building 607
No EPA OU	PAOC R, Former Boiler Room in Heat Plant Building 617
No EPA OU	PAOC S, Former Pipeline and Former Power Plant
No EPA OU	PAOC T, Former public works grounds contractor storage shed, building 305
No EPA OU	PAOC U, Vehicle Maintenance Areas just north of Building 303 at Camp Garcia, Stored petroleum products
No EPA OU	PAOC V, Storage of leaking transformer
No EPA OU	PAOC W, Observed Area of Pooled, discolored water adjacent to main road from Camp Garcia to PI 21
No EPA OU	PAOC X, Debris Area in Ephemeral Stream
No EPA OU	La Chiva Lagoon

Note: EPA only assigns OU numbers to sites where a decision has been made that a Remedial Investigation will be conducted.

TABLE 2-2
Summary of Munitions Response Site Prioritization Protocol Results for Vieques Munitions Response Sites
Site Management Plan, FY 2015
Vieques, Puerto Rico

Site ID	Former Reference	MRS Prioritization Protocol Score
UXO-1	Eastern Conservation Area	2
UXO-2	LIA Beaches	2
UXO-3	LIA Roads	2
UXO-4	LIA Interior	2
UXO-5	SIA Restricted Roads	2
UXO-6	EMA/SIA Public Roads	2
UXO-7	EMA/SIA North Beaches	2
UXO-8	SIA South Beaches	2
UXO-9	SIA Exterior	2
UXO-10	SIA Interior	2
UXO-11	EMA Public Roads	2
UXO-12	EMA Interior	2
UXO-13	EMA West	2
UXO-14	EMA South	2
UXO-15	Puerto Ferro	3
UXO-16	Underwater Areas	2
UXO-17	Camp Garcia	3
UXO 18	Cayo La Chiva	2
SWMU 4 (UXO 1)	West Vieques OB/OD Site	2

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Legend

- Sites – Decision Document
- Sites – Under Investigation
- Camp Garcia

N
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0 2,250 4,500 9,000
Feet

Figure 2-1
East Vieques Environmental Restoration Sites
Site Management Plan, FY 2015
Vieques, Puerto Rico

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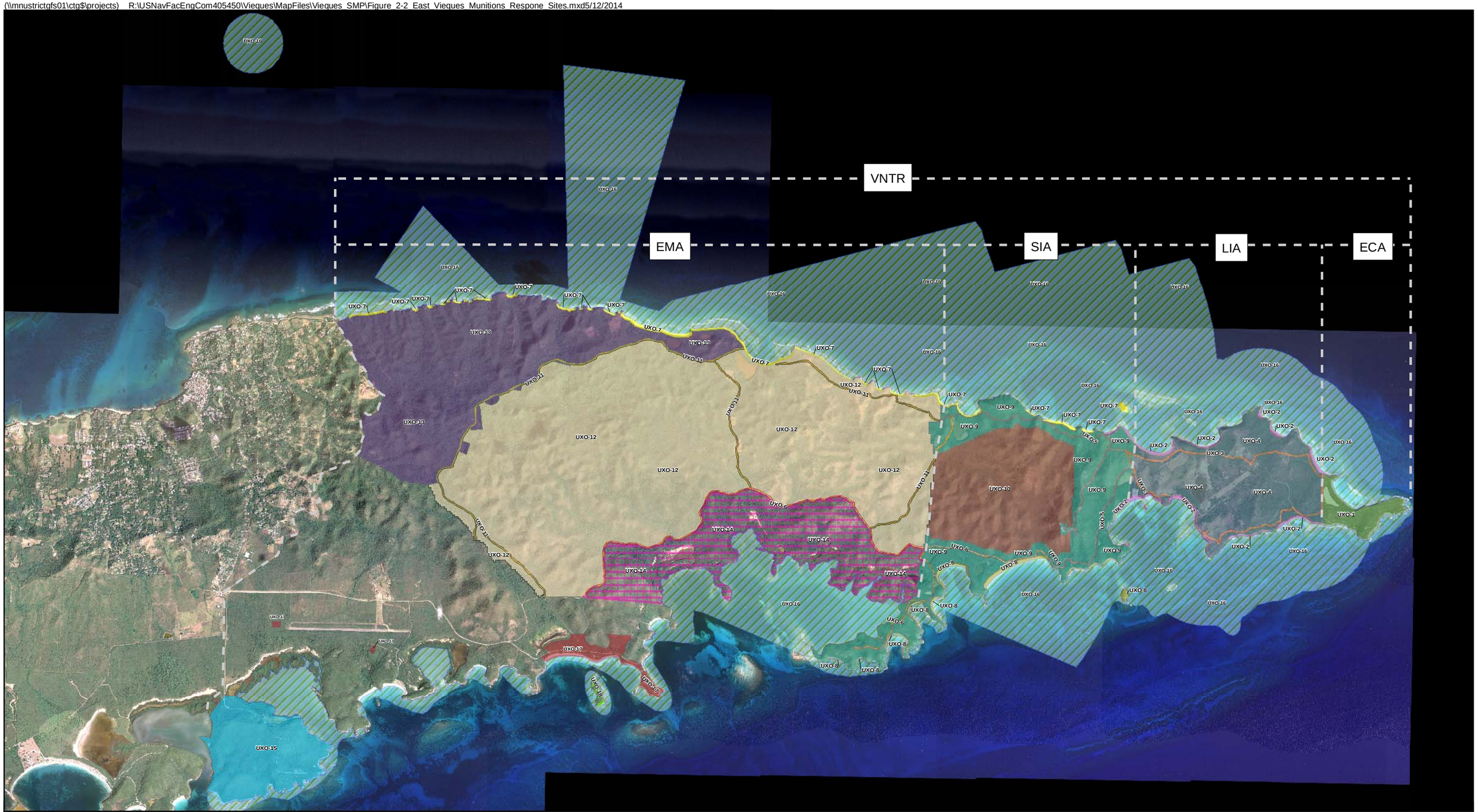

Legend

Blue Beach Investigation Area

Munitions Response Sites

- UXO 1 - ECA
- UXO 2 - LIA Beaches
- UXO 3 - LIA Roads
- UXO 4 - LIA Interior
- UXO 5 - SIA Restricted Roads
- UXO 6 - EMA/SIA Public Roads
- UXO 7 - EMA/SIA North Beaches
- UXO 8 - SIA South Beaches
- UXO 9 - SIA Exterior
- UXO 10 - SIA Interior
- UXO 11 - EMA Public Roads
- UXO 12 - EMA Interior
- UXO 13 - EMA West
- UXO 14 - EMA South
- UXO 15 - Puerto Ferro
- UXO 16 -Underwater Areas
- UXO 17 - Camp Garcia Area (PAOC EE, PAOC FF, and PI 14)
- UXO 18 - Cayo de la Chiva

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0 2,250 4,500 9,000 Feet

Figure 2-2
East Vieques Munitions Response Sites
Site Management Plan, FY 2015
Vieques, Puerto Rico

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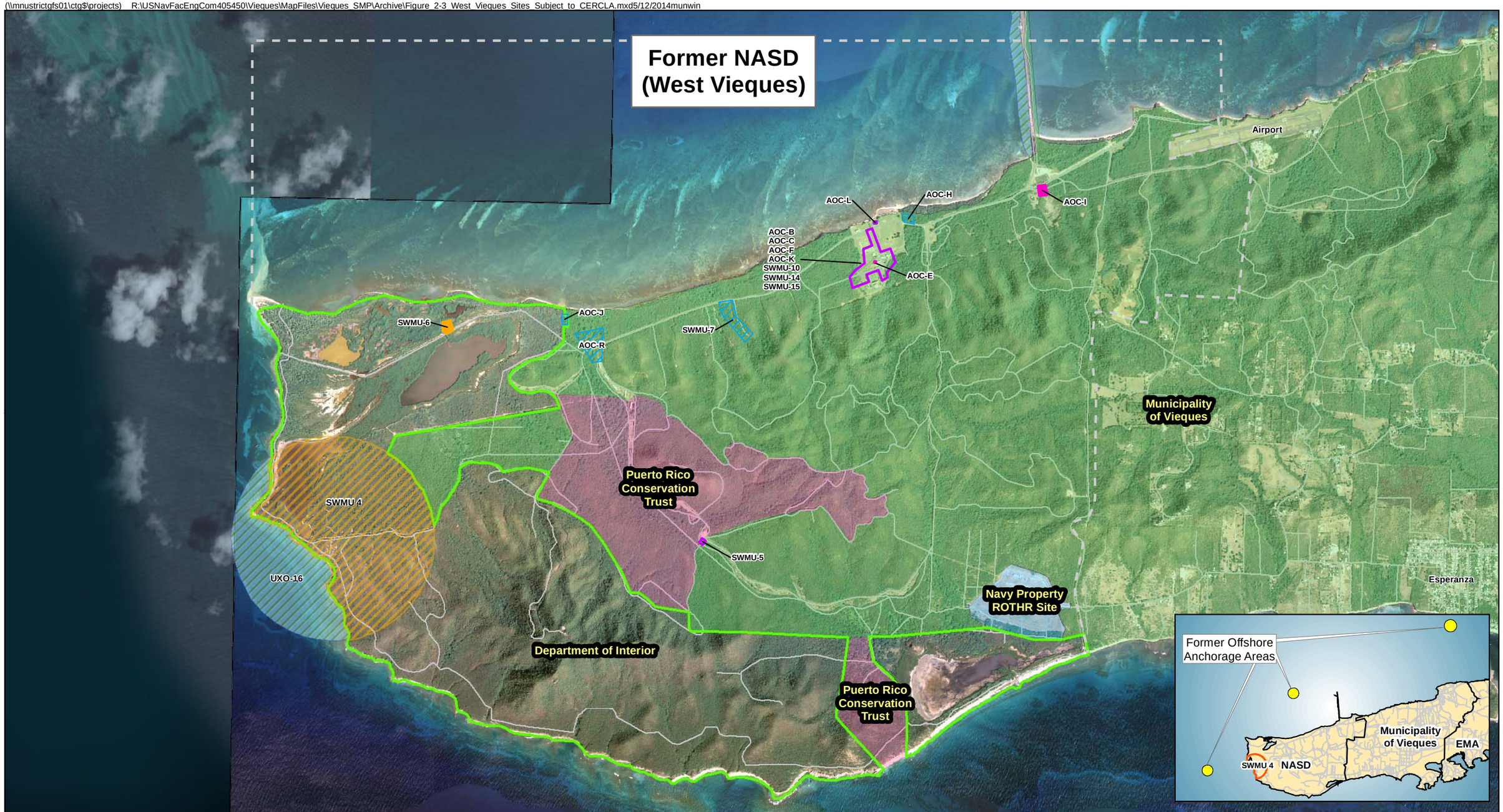

Legend

- Feasibility Study
- Proposed Plan/Record of Decision
- No Further Action Record of Decision
- No Further Action Decision Document
- Feasibility Study Addendum

Vieques Land Ownership

- Department of Interior
- Municipality of Vieques
- Navy Property - ROTHR Site
- PR Conservation Trust

Munitions Response Site

- UXO 16 -Underwater Areas

Vieques Features

- Road

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Feet

Figure 2-3
West Vieques Sites Subject to CERCLA
Site Management Plan, FY 2015
Vieques, Puerto Rico

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SECTION 3

Schedules and Funding

This section presents the SMP schedule based on timelines outlined in the FFA. In addition, the projected funding for the CERCLA Responsive Actions at the Vieques Site is provided. Milestones established in this SMP are subject to the requirements of the FFA, unless otherwise agreed to by the Parties, or unless directed to be changed pursuant to the agreed Dispute Resolution or Extensions process set out in the FFA. The updated Fiscal Year 2015 schedules for field activities and major project deliverables, including both Primary and Secondary documents, are presented in **Figure 3-1**. The tentative schedules for fiscal year (FY) 15 and beyond are summarized in **Table 3-1**. The schedules will be re-evaluated and updated for the SMP as mutually agreed to by the agencies.

3.1 Document Review Schedule

In accordance with the FFA, this SMP presents the proposed schedules for the CERCLA response actions and associated documentation to be undertaken at the Site. The SMP incorporates existing Milestones contained in approved Work Plans. Milestones approved in future Work Plans will become enforceable to the extent allowed under the FFA and shall be included in the next annual amendment to the SMP. The SMP is to be updated annually and a draft of the SMP Amendment submitted to all parties by June 15. A public notice will be published in the local newspaper to provide a 30 day period for the general public to review the Draft Final SMP.

Milestones in the SMP reflect the priorities agreed to by the Parties through a process of “Risk Plus Other Factors” Priority Setting. Site activities have been prioritized by weighing and balancing a variety of factors including, but not limited to:

- The DoD relative risk rankings for the Site
- Current, planned, or potential uses of the Site
- Ecological impacts
- Impacts on human health
- Intrinsic and future value of affected resources
- Cost effectiveness of the proposed activities
- Environmental justice considerations
- Regulatory requirements
- Actual and anticipated funding levels

3.2 Primary Documents

Primary Documents include those documents that are major, discrete portions of RI/FS or Remedial Design/Remedial Action (RD/RA) activities. Examples of primary documents include the following:

- RI/FS Work Plans, including SAP and Quality Assurance Project Plan (QAPP)
- Risk Assessment Work Plans and Reports
- RI Reports
- Initial Screening of Alternatives
- Feasibility Study Reports
- Focused Feasibility Study (FFS) Reports
- PRAPs
- RODs
- Final RDs (including a land use control [LUC] component where such controls are employed as part of the remedy)
- Remedial Action Work Plans (including a LUC component where such controls are employed as part of the remedy)
- SMP
- Remedial Action Completion Reports

3.3 Secondary Documents

All Secondary Documents shall be prepared in accordance with Target Dates established for the completion and transmission of Draft Secondary Documents. Although USEPA, DOI, and the Commonwealth may comment on the Draft Secondary Documents, such documents shall not be subject to dispute resolution and Milestone requirements of the FFA. Examples of Secondary Documents include the following:

- Health and Safety Plans
- Emergency Removal Action Work Plans, to the extent time permits
- TCRA Work Plans
- Site Screening Process (SSP) Work Plans and Reports
- NTCRA Work Plans
- Pilot/Treatability Study Work Plans
- Pilot/Treatability Study Reports
- EE/CA Report
- Well Closure Methods and Procedures
- Sampling and Data Results
- Preliminary/Conceptual Designs, or Equivalents
- Pre-Final RDs
- All Removal Action Memoranda/Closeout Reports
- Periodic Five-Year Review Assessment Report

For documents pertaining to NTCRAs, the Navy will coordinate and consult with DOI pursuant to the Memoranda of Agreement (MOAs), and USEPA.

3.4 Projected ERP/MRP Funding

While Milestones should not be driven by budget targets, such targets should be considered when setting Milestones. Furthermore, in setting and modifying Milestones, the Parties agree to make good faith efforts to accommodate federal fiscal constraints, which include budget targets established by Navy.

After authorization and appropriation of funds by Congress and within 21 days after Navy has received official notification of Navy's allocation based on the current year's Environmental Restoration, Navy ("ER,N") Account, Navy shall determine if the schedules in the SMP can be accomplished with the allocated funds. If Navy determines within the 21-day period specified above that the allocated funds are not sufficient to accomplish the planned Work for the Site (an appropriations shortfall), Navy shall immediately notify the Parties and a re-scoping or rescheduling of activities may be required.

The projected ERN funding for Vieques from FY13 through FY16 and beyond is summarized in **Table 3-2**.

3.5 Site Cleanup Acceleration

Table 3-3 lists the sites where opportunities for accelerated cleanup activities (investigations, interim actions, final actions) have been identified, the strategies (approaches) for acceleration, and an estimate of the acceleration that may be achieved. It is noted that the potential accelerations are estimated as they may be influenced by factors such as planning logistics, resource availability, and weather.

Table 3-1
FY15 and Beyond Tentative Schedule
Site Management Plan, FY 2015
Vieques, Puerto Rico

Site	Site Name	FY15 (Oct 14 through Sept 15)	FY16 (Oct 15 through Sept 16)	FY17 (Oct 16 through Sept 17)
Environmental Restoration Program				
West Vieques				
AOC E	Former UST Site 2016	ROD, RA Work Plan, LTM	LTM	LTM
SWMU 6	Former Mangrove Disposal Site	FS Addendum	FS Addendum, PRAP	ROD, RA Work Plan
East Vieques				
SWMU 1	Former Camp Garcia landfill	Status Report, Remedial Action Field Work	Remedial Action Field Work, Remedial Action Completion Report	
SWMU 20	Former Helicopter Maintenance Area, Trenched Area, Disturbed Area, and Bermed Areas used for Fuel Bladder Storage	RI Field Work, RI Report	RI Report, FS Report	FS Report, PRAP
Munitions Response Program				
West Vieques				
SWMU 4	Inactive OB/Waste Explosive Detonation Range	NTCRA Field Work, FS Addendum	FS Addendum, NTCRA After Action Report	FS Addendum, PRAP
East Vieques				
UXO 1	Eastern Conservation Area	ROD, RA Work Plan	RA Work Plan, RA Field Work	RA Field Work, RA Completion Report
UXOs 2, 7, 8	LIA Beaches, EMA/SIA North Beaches, SIA South Beaches	Beach Dynamics Field Work	Beach Dynamics Report, RI SAP Addendum	RI SAP Addendum, RI Field Work
UXOs 3, 5, 6, 11	LIA Roads, SIA Restricted Roads, EMA/SIA Public Roads, EMA Public Roads	RI SAP Addendum	RI SAP Addendum, RI Field Work	RI Field Work, RI Report
UXOs 4, 9, 10, 12, 14	LIA Interior, SIA Exterior, SIA Interior, EMA Interior, EMA South	RI Status Report, RI Report (OU-12.1 and OU-14.1)	TBD, based on RI Status Report, RI Report (OU-12.1 and OU-14.1)	TBD, based on RI Status Report
UXO 13	EMA West	RI SAP Addendum, NTCRA Field Work, RI Field Work	NTCRA Field Work, RI Field Work, NTCRA After Action Report	NTCRA After Action Report, RI Report
UXO 15	Puerto Ferro	NTCRA After Action Report (signs, 2 beaches/1 trail), EE/CA for PI 9 East, Supplemental RI SAP Addendum, RI Field Work, NTCRA Work Plan PI 9 East, NTCRA Field Work (1 beach), NTCRA After Action Report (1 beach)	NTCRA Work Plan PI 9 East, RI Report, NTCRA Field Work PI 9 East, NTCRA After Action Report (1 beach)	NTCRA Field Work PI 9 East, NTCRA After Action Report PI 9 East, RI Report, FS Report
UXO 16	Underwater Areas	ESI Field Work adj to SWMU 4, ESI Report adj to SWMU 4, NTCRA Work Plan adj to UXO 18, NTCRA Field Work adj to UXO 18, Wide Area Assessment Work Plan, Wide Area Assessment Field Work, NTCRA EE/CA adj to PI 9 East, NTCRA Work Plan adj to PI 9 East	ESI Report adj to SWMU 4, NTCRA Field Work adj to UXO 18, Wide Area Assessment Field Work, NTCRA After Action Report adj to UXO 18, Wide Area Assessment Report, NTCRA Work Plan adj to PI 9 East, NTCRA Field Work adj to PI 9 East	Wide Area Assessment Report, RI SAP, NTCRA Field Work adj to PI 9 East, NTCRA After Action Report adj to PI 9 East
UXO 17	Other Sites (PAOC EE)	TCRA Field Work, TCRA After Action Report	RI SAP Addendum	RI Field Work, RI Report
UXO 18	Cayo La Chiva	RI/FS Report, PRAP	PRAP, ROD	RA Work Plan, RA Field Work

SAP - Sampling and Analysis Plan; SI/ESI - Site Inspection/Expanded Site Inspection; RI - Remedial Investigation, FS - Feasibility Study, ROD - Record of Decision; RD - Remedial Design; RA - Remedial Action
LTM - Long-term Monitoring; NTCRA - Non-Time-Critical Removal Action; TBD - To Be Determined; MEC - Munitions and Explosives of Concern

Table 3-2

Vieques Programmed Funding, In Millions ($)

Site Management Plan, FY 2015

Vieques, Puerto Rico

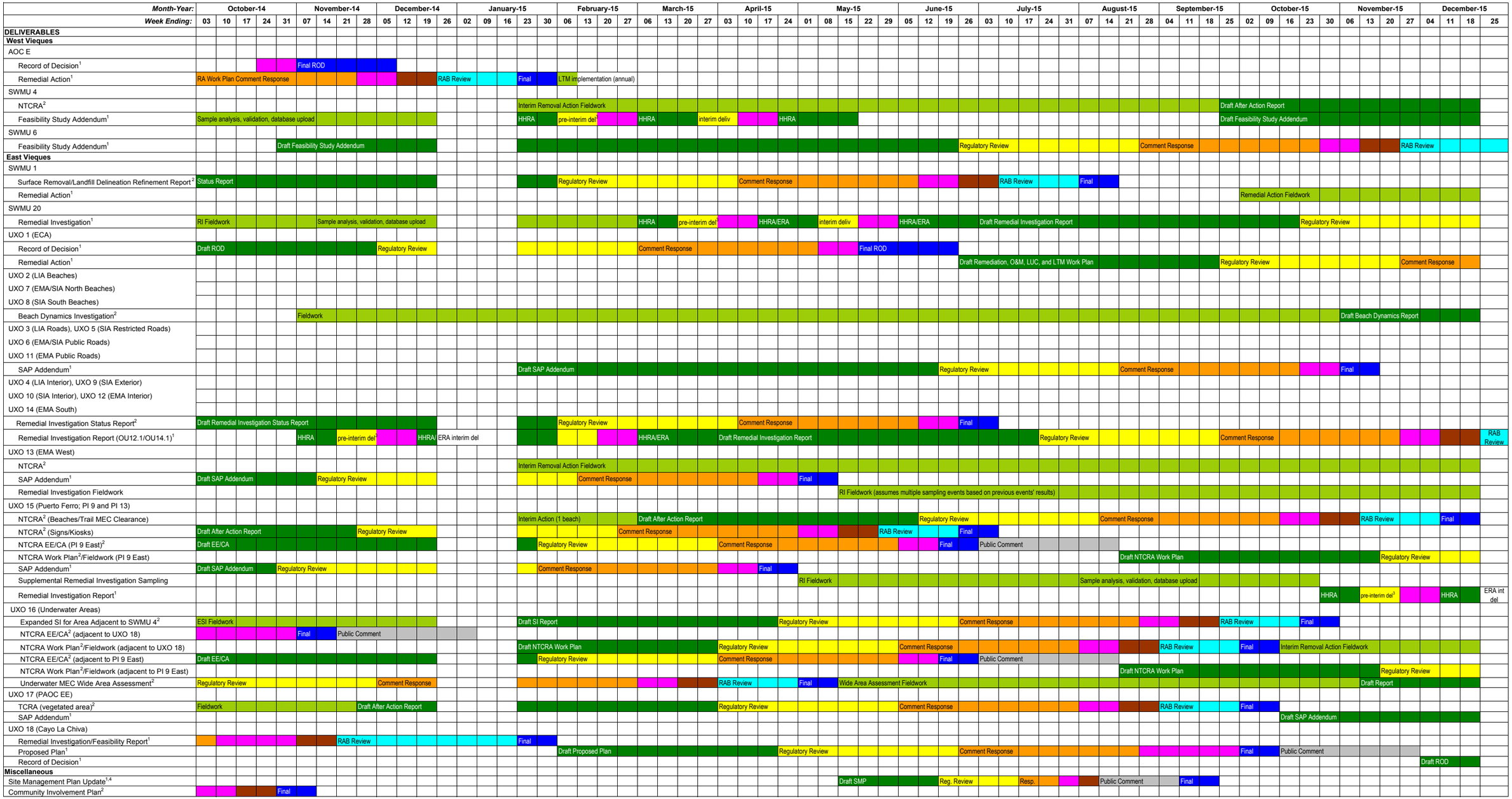
Fiscal Year	Environmental (52 Sites)	Munitions (18 Sites)	Totals
Through FY14	$28.9	$173.5	**$202.4**
FY15	$0.3	$17.1	**$17.4**
FY16 & Beyond	$14.8	$295.3	**$310.1**
Total Expenditure	**$44.0**	**$485.9**	**$529.9**

Table 3-3
Site Acceleration
Site Management Plan, FY 2015
Vieques, Puerto Rico

Site	Milestone (Requestor)	Acceleration Strategy	Estimated [1] Acceleration
Former NASD - AOC E	Use of site for vehicle maintenance (MOV)	Expedite Remedial Action implementation	6 months
Former NASD - SWMU 4	Public access for recreational purposes (Public/PREQB/USFWS)	Implement NTCRA for areas targeted for public access prior to final remedy selection for site	4 years
Former NASD - UXO 16 (adjacent to SWMU 4)	Public access for recreational purposes (Public/PREQB/USFWS)	Implement Expanded Site Inspection adjacent to SWMU 4 beach prior to investigation of UXO 16 as a whole	10 years
Former VNTR - UXO 15	Public access for recreational purposes around historic lighthouse (Public/PREQB/USFWS)	Implement NTCRA for areas targeted for public access prior to final remedy selection for site	7 years
Former VNTR - UXO 18 (Cayo La Chiva)	Prioritize final remedy for Cayo La Chiva (PREQB)	Combine RI and FS	1 year
Former VNTR - UXO 16 (adjacent to UXO 18)	Prioritize final remedy for Cayo La Chiva (PREQB)	Implement NTCRA for waters around Cayo La Chiva to reduce explosive safety risk for potential recreational users of waters off Playa La Chiva	10 years

Notes:
[1] Estimated acceleration based on information currently available and is subject to change based on factors that may influence timing and duration of acceleration strategy

FIGURE 3-1
Vieques Munition Response and Enviromental Restoration Program Schedule
Site Management Plan
Former Naval Facility Vieques, Puerto Rico



LEGEND

- Navy Preparation of Draft Document
- Regulator Review
- Regulatory Extension
- Preliminary Responses to Comments
- Comment Resolution (telecon, if needed)
- Draft Final Document Production
- RAB Review
- Public Comment
- Final Document
- Navy Extension
- Agency-specific Document
- Field Sampling, Analysis, Validation, Database Upload (dotted to indicate field sampling interval); fieldwork start dates and durations are approximate and may be affected by factors such as weather, resources and services availability, and site conditions

NTCRA = Non-Time-Critical Removal Action; SAP = Sampling and Analysis Plan; ROD = Record of Decision; EE/CA = Engineering Evaluation/Cost Analysis
HHRA = Human Health Ecological Risk Assessment; ERA = Ecological Risk Assessment
Draft Final submittals are prepared only after resolution of regulatory agency comments

Final submittals are prepared only after receipt of EPA approval of Draft Final submittals

Notes:

[1] Is or includes Primary Document
[2] Is or includes Secondary Document
[3] Pre-interim deliverable comprises ProUCL run (summarized in the associated RAGS Table 3, along with maximum detects where ProUCL is not used), detects/exceedance tables and figures
[4] Draft due June 15 of each year
Addenda to the Master SAP will be submitted on an as-needed basis prior to UXO site-specific investigations. Submittal dates and corresponding regulatory review times will be addendum-specific and determined at the time each addendum is submitted.

SECTION 4

References

**** Documents denoted with an asterisk below are included to make the references list comprehensive, but are not referenced in the text of this document.***

Primary Documents:

* A. T. Kearney, Inc. and K. W. Brown & Associates, Inc. 1988. *Phase II RCRA Facility Assessment of the Atlantic Fleet Weapons Training Facility (LANT) Including the Eastern Maneuver Area, Camp Garcia and Inner Range, Vieques Island, Puerto Rico.* October.

* Baker Environmental, Inc. (Baker). 1992. *Final Preliminary Assessment Narrative Report Site Inspection Forms and Pascore, Sites 1, 2, and 3 Naval Ammunition Facility Vieques Island.* October.

* CH2M HILL. 2000a. *Final Expanded Preliminary Assessment/Site Investigation [Phase I]. U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.* October.

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* CH2M HILL. 2001d. *Final Work Plan for Groundwater Baseline Investigation at U.S. Navy's Eastern Maneuver Area, Vieques Island, Puerto Rico.* September 6.

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* CH2M HILL. 2002e. *Final Preliminary OE/MEC Site Investigation Work Plan for Blue Beach and Red Beach, Eastern Maneuver Area, Vieques Island, Puerto Rico.* November.

* CH2M HILL. 2003a. *Final Master Work Plan, Atlantic Fleet Weapons Training Facility, Vieques Island, Puerto Rico.* June.

* CH2M HILL. 2003b. *Final Site Specific Work Plan Phase I RCRA Facility Investigation, Atlantic Fleet Weapons Training Facility, Vieques Island, Puerto Rico.* June 12.

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* CH2M HILL. 2003d. *Site Management Plan FY 2002-2003, Former U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.* August.

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Appendix A
Status of Remedial Investigation/ Feasibility Study Sites

Appendix A-1
Environmental Sites

APPENDIX A-1

Status of Remedial Investigation/Feasibility Study Sites in Vieques, Puerto Rico Environmental Sites

East Vieques Sites

Site Designation	Description of Site	Status
SWMU 1 Camp Garcia Landfill	Camp Garcia Landfill (EMA)	SWMU 1 is included in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites submitted in June 2008. The site was recommended for an ESI. The ESI field investigation was completed in May 2009. A Draft SI/ESI Report was submitted in October 2009. The Draft Final SI/ESI Report was submitted in June 2010. The Final SI/ESI Report was submitted August 2010. The site was recommended for a Streamlined RI/FS which was completed and the Final RI/FS Report was issued in April 2011. The Proposed Plan, which recommended enhanced native soil cover and institutional controls as the remedial alternative, was provided for public comment in July 2011. The Record of Decision for this site was signed in September 2011. A Final Remedial Action Implementation, Operations and Maintenance, Land Use Control, and Long-Term Monitoring Work Plan was issued in July 2012. Remedial Action implementation was initiated in September 2012 but was halted when more debris was encountered on the surface than was anticipated and Material Potentially Presenting an Explosive Hazard (MPPEH) was encountered. Based on this finding, the Navy recommended removing the vegetation across the landfill in order to ensure all debris at the landfill surface could be removed. As a result, a work plan to clear the landfill surface of the debris and potential munitions-related items, as well as refine the boundary of the landfill using subsurface geophysics was finalized in September 2013 and field work took place between September 2013 through April 2014. The surface clearance was completed with approximately 10,960 lbs of RRD and 671 lbs of MD being removed. Geophysics was completed which identified around 100 trenches/areas of buried debris. A Technical Memorandum is being developed which summarizes the results of the field work and discusses a path forward for the site. It is anticipated that an explanation of significant differences for the SWMU 1 ROD will also be prepared.
SWMU 20 (formerly PI 4)	Interviews and records indicate location of former helicopter maintenance area, barracks, and a mess hall. Observed several large segments of concrete culverts/pipes and concrete foundation slabs with a septic vault box to the south of the concrete slabs. Observed two large, rectangular, bermed areas formerly used for fuel bladder storage (from interviews). No evidence of munitions, hazardous waste, hazardous material, or petroleum disposal was observed (NAVFACENGCOM, 2003)	PI 4 is included in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites submitted in June 2008, which recommended the site for an ESI. The ESI field investigation was completed in May 2009. A Final SI/ESI Report was submitted in August 2010. A Final Supplemental ESI and Pilot Study Sampling and Analysis Plan was submitted in September 2011. The Supplemental ESI determined that the extent of TCE in groundwater had not been sufficiently delineated, so the Supplemental ESI was halted and an RI SAP was developed for the site to determine the extent of the TCE-related contamination in groundwater. Because the site is the subject of an RI, its designation was changed from PI 4 to SWMU 20. A Final Remedial Investigation SAP was submitted in April 2013. Field work was conducted between May and October 2013 where 18 new monitoring wells were installed. Groundwater samples were collected from 32 monitoring wells and the results identified a TCE plume that extends at least 650 feet in a south-southeast direction. Additional monitoring wells are needed to delineate the downgradient TCE extent so a Technical Memorandum is currently being developed to address this additional work. Field work is anticipated to occur in the summer of 2014..

West Vieques Sites

Site Designation	Description of Site	Status
SWMU 6 Mangrove Disposal Site (West Vieques-DOI)	Disposal of trash (lubricants, oils, solvents, and paint) ~1965-1980	The Final RI Report was submitted in February 2007 and the Final Interim Removal Action Work Plan was submitted in February 2008. The interim removal action was completed in June 2009. A Final Construction Completion Report was submitted in March 2010. Because the site conditions were changed due to the removal action (i.e., creation of lagoon from previous periodically-inundated wetland setting), supplemental post-removal confirmatory surface water and sediment sampling was conducted in February. Based on preliminary evaluation of the surface water and sediment data, biota sampling was done in February 2012 in the SWMU 6 lagoon and the data gathered combined with the surface water and sediment data to assess potential human health and ecological risks. A Final Feasibility Study with Post Removal ERA and HHRA risk assessments was submitted in January 2013. A SAP to further delineate the extent of sediment containing contaminants of concern (COCs) above likely remediation goals in order to refine the alternatives included in the Feasibility Study was submitted as Draft Final to the RAB for review in April 2014. Field work is anticipated to occur in the summer of 2014.
SWMU 7 Quebrada Disposal Site (West Vieques-MOV)	Disposal of trash (lubricants, oils, solvents, and paint) ~1965-1980	Final RI Report submitted in March 2008. Final Removal Action Work Plan submitted February 2008. Waste characterization sampling performed in February 2008. Waste characterization risk assessments were completed and a removal action was conducted in the first calendar quarter of 2009. A Final Construction Completion Report was submitted in March 2010. Based on post-removal confirmatory human health and ecological risk assessments, the site was proposed for No Further Action in a Proposed Plan issued to the public in July 2011. A No Further Action Record of Decision for this site was signed in September 2011.
AOC E Former Waste Oil UST at Bldg. 2016 (West Vieques-MOV)	Waste oil UST - contaminated soil found during removal of UST	The Final RI Report was submitted in July 2008. A Final Pilot Study SAP for treating soil and groundwater was submitted in February 2010. The pilot study was implemented between January 2010 and December 2011. Based on the pilot study results, a Final Focused Feasibility Study was submitted in November 2012 that evaluated alternatives to address the residual persulfate and the potential for COC rebound. A PRAP was submitted for public comment and a public meeting was held in November 2013. A Draft ROD was submitted for regulatory review in March 2014 and it is anticipated the ROD will be signed in mid-2014. Additionally, a Remedial Action Work Plan which includes Groundwater Monitoring and Institutional Controls with Contingency Plans is being developed and will be submitted after the ROD is signed.
AOC H Abandoned Power Plant (West Vieques-MOV)	Operated 1941-1943; AST; used for Fire Fighter training ~1960s-1980s	Final RI Report submitted July 2007. Proposed Plan for NFA issued for public comment in January 2008. Final NFA ROD issued in September 2008.
AOC I Asphalt Plant (West Vieques-MOV)	Former AST storage area stained with asphalt emulsion.	The Final RI Report was submitted in June 2008. A Final Pilot Study SAP for treating groundwater was submitted in February 2010. Pilot study began in January 2010 and the field work was completed in November 2012. The data showed no COC rebound; therefore, a Draft Pilot Study Report and Draft No Further Action PRAP were submitted for regulatory review in May 2013. A PRAP was submitted for public comment and a public meeting was held in November 2013. A draft ROD was submitted for regulatory review in March 2014 and it is anticipated the ROD will be signed in mid-2014.

West Vieques Sites

Site Designation	Description of Site	Status
AOC J Former Operations/Staging Area Disposal Site (West Vieques-DOI)	Solid and potentially hazardous waste disposal site ~1965-1973	Final RI Report submitted in May 2007. Final Removal Action Work Plan submitted February 2008. Waste characterization sampling performed in February 2008. Waste characterization risk assessments were completed and a removal action was conducted in the 1st calendar quarter of 2009. A Final Construction Completion Report was submitted in March 2010. Based on post-removal confirmatory human health and ecological risk assessments, the site was proposed for No Further Action in a Proposed Plan issued to the public in July 2011. A No Further Action Record of Decision for this site was signed in September 2011.
AOC R Former Staging and Operations Area (West Vieques-MOV)	Construction staging and Public Works operations; AST; vehicle maintenance ~1965-1971	Final Removal Action Work Plan submitted February 2008. Waste characterization sampling performed in February 2008. Waste characterization risk assessments were completed and a removal action was conducted in the 1st calendar quarter of 2009. Supplemental RI field work was completed in August 2009. A Final Construction Completion Report was submitted in March 2010. The Final RI Report was submitted in February 2011, which concluded the post-removal site conditions pose no unacceptable human health or ecological risks. Therefore, the site was proposed for No Further Action in a Proposed Plan issued to the public in July 2011. A No Further Action Record of Decision for this site was signed in September 2011.

Appendix A-2
Munitions Response Sites

APPENDIX A-2

Status of Remedial Investigation/Feasibility Study Sites in Vieques, Puerto Rico Munitions Response Sites

East Vieques Sites

MRS/Site Designation	Operational Area	Sites Within MRS	Description of Site	Status
UXO-1 Eastern Conservation Area	ECA		Adjacent to LIA bombing range. Bombing prohibited since the 1970s.	A TCRA was completed to remove surface munitions from the site. A NTCRA was completed in February 2011 which removed subsurface munitions from roads and beaches. A Final Remedial Investigation Sampling and Analysis Plan was submitted in January 2011 and field work was completed in February 2011. Results of the RI were presented in the Final RI Report dated July 2012. Based on the RI, the Final Feasibility Study was completed in October 2012. A Draft PRAP was submitted to the regulatory agencies for review in January 2013. USFWS completed the restoration plan for the ECA in March 2014. The PRAP was finalized in July 2014; the preferred alternative in the PRAP is Focused Additional MEC Removal and LUCs. The public meeting to present the preferred alternative is anticipated to be held in the summer of 2014
UXO 2 LIA Beaches	LIA		The LIA was established in 1964; since 1974 over 150,000 rounds and 4,700 tons of Naval gunfire; over 40,000 rounds (10,000 tons) of ATG bombing.	A TCRA was completed to remove surface munitions from the site. A NTCRA is underway to remove subsurface munitions from beaches. The Final Master SAP describing planned RI activities was submitted January 2013. In addition, a Beach Dynamics Investigation Quality Assurance Project Plan (QAPP) is currently being developed to understand the beach and near shore sand mobility. RI field work is anticipated to begin following the conclusion of the beach dynamics study.
UXO 3 LIA Roads	LIA		The LIA was established in 1964; since 1974 over 150,000 rounds and 4,700 tons of Naval gunfire; over 40,000 rounds (10,000 tons) of ATG bombing.	A TCRA was completed to remove surface munitions from the site. A NTCRA is underway to remove subsurface munitions from UXO 3. The Final Master SAP describing planned RI activities was submitted in January 2013.

East Vieques Sites

MRS/Site Designation	Operational Area	Sites Within MRS	Description of Site	Status
UXO 4 LIA Interior	LIA	OB/OD Site (SWMU 3)	The LIA was established in 1964; since 1974 over 150,000 rounds and 4,700 tons of Naval gunfire; over 40,000 rounds (10,000 tons) of ATG bombing.	A TCRA was initiated in July 2005 to remove surface munitions from the site. Approximately 68 acres of a densely vegetated area containing a high density of submunitions remains to be cleared. The Final Master SAP describing planned RI activities was submitted January 2013 with Addendum 1 finalized in February 2013 and Addendum 2 finalized in April 2013. RI field activities were initiated in January 2013 and are ongoing.
UXO 5 SIA Restricted Roads	SIA		The SIA was established in the 1950s when Marine artillery targets were constructed for Marine artillery fire from the SIA and EMA During 1969, additional targets were established for inert bombing and strafing runs.	A NTCRA has been completed which removed surface munitions from the SIA. A second NTCRA is underway to remove subsurface munitions from UXO 5. The Final Master SAP describing planned RI activities was submitted January 2013.
UXO 6 EMA/SIA Public Roads	EMA		The SIA was established in the 1950s when Marine artillery targets were constructed for Marine artillery fire from the SIA and EMA. Marine artillery gun positions were constructed in the EMA in the 1950s and 1960s to direct artillery fire towards the targets in the SIA.	A NTCRA is underway to remove surface munitions from the SIA. A second NTCRA is underway to remove subsurface munitions from UXO 6. The Final Master SAP describing planned RI activities was submitted January 2013.
UXO 7 EMA/SIA North Beaches	EMA/ SIA		The SIA was established in the 1950s when Marine artillery targets were constructed for Marine artillery fire from the SIA and EMA Marine artillery gun positions were constructed in the EMA in the 1950s and 1960s to direct artillery fire towards the targets in the SIA.	A NTCRA is underway to remove surface munitions from the SIA A second NTCRA is underway to remove subsurface munitions from UXO 7. The Final Master SAP describing planned RI activities was submitted January 2013. In addition, a Beach Dynamics Investigation QAPP is currently being developed to understand the beach and near shore sand mobility. RI field work is anticipated to begin following the conclusion of the beach dynamics study.
UXO 8 SIA South Beaches	SIA		The SIA was established in the 1950s when Marine artillery targets were constructed for Marine artillery fire from the SIA and EMA.	A NTCRA is underway to remove surface munitions from the SIA A second NTCRA is underway to remove subsurface munitions from UXO 8. The Final Master SAP describing planned RI activities was submitted January 2013. In addition, a Beach Dynamics Investigation QAPP is currently being developed to understand the beach and near shore sand mobility. RI field work is anticipated to begin following the conclusion of the beach dynamics study.

East Vieques Sites

MRS/Site Designation	Operational Area	Sites Within MRS	Description of Site	Status
UXO 9 SIA Exterior	SIA	OP-5, OP-12, OP-13, PI-1, PI-17, PI-22, G-21	The SIA was established in the 1950s when Marine artillery targets were constructed for Marine artillery fire from the SIA and EMA.	A NTCRA is underway to remove surface munitions from UXO 9. The Final Master SAP describing planned RI activities was submitted January 2013 with Addendum 1 finalized in February 2013 and Addendum 2 finalized in April 2013. RI field activities were initiated in January 2013 and are ongoing.
UXO 10 SIA Interior	SIA	OP-1, PAOC Y, SWMU 11	The SIA was established in the 1950s when Marine artillery targets were constructed for Marine artillery fire from the SIA and EMA	A NTCRA is underway to remove surface munitions from UXO 10. The Final Master SAP describing planned RI activities was submitted January 2013 with Addendum 1 finalized in February 2013 and Addendum 2 finalized in April 2013. RI field activities were completed in March 2014. As of May 2014, the RI data is being evaluated to determine the appropriate path forward for the site (whether additional RI sampling is needed or a FS of potential remedial alternatives can be prepared).
UXO 11 EMA Public Roads	EMA		Marine artillery gun positions were constructed in the EMA since the 1950s to direct artillery fire towards the targets in the SIA.	A NTCRA is underway to remove both surface and subsurface munitions, if any are identified, and metal debris from UXO 11. The ERA/SI recommended that an RI/FS be conducted at UXO 11. The Final Master SAP was submitted January 2013.
UXO 12 EMA Interior	EMA	G-1 through G-5, G-10 through G-19, G-22, G-25, G-26, G-28 through G-32, G-34, G-35, GP-7, GP-9, PI-2, PI-3, PI-12, PI-15, PI-16, PI-18, PI-19, OP-7, OP-10, OP-11, PAOC- Z, Range 8	Marine artillery gun positions were constructed in the EMA since the 1950s to direct artillery fire towards the targets in the SIA.	The Final Master SAP describing the planned RI activities was submitted January 2013 with Addendum 1 finalized in February 2013 and Addendum 2 finalized in April 2013. RI activities were completed in March 2014. A brush fire occurred in February 2011 across 215 acres which allowed easy access to inspect and surface clear munitions in the area. Another brush fire occurred in March 2013 across 300 acres; as a result, an Emergency Removal Action was completed to remove surface MEC from the exposed landscape. As of May 2014, the RI data is being evaluated to determine the appropriate path forward for the site (whether additional RI sampling is needed or a FS of potential remedial alternatives can be prepared).

East Vieques Sites

MRS/Site Designation	Operational Area	Sites Within MRS	Description of Site	Status
UXO 13 EMA West	EMA	Ranges 1 through 6, Range 9, G-7 through G-9, G-23, G-27, PI-23	During 1966, six ranges were established in the MRS and used for the firing of small arms, grenades, rockets. These ranges were deactivated in 1999	A NTCRA is underway to remove surface munitions from the SIA. The Final Master SAP describing the planned RI activities was submitted January 2013. It is anticipated RI activities will take place following completion of the NTCRA.
UXO 14 EMA South	EMA	G-33	Range 10 was located within UXO 14 and was used for frontal assaults using M-1, M-14 rifles; M-2 carbines, Browning Automatic 13 rifles, service pistols, and 45 caliber machine guns. Demolition charges up to ¼ pound were detonated to simulate combat	The ERA/SI recommended that an investigation should be conducted at UXO 14 to assess human health and ecological risk. The Final Master SAP describing the planned RI activities was submitted January 2013 with Addendum 1 finalized in February 2013 and Addendum 2 finalized in April 2013. RI field activities were completed in March 2014. As of May 2014, the RI data is being evaluated to determine the appropriate path forward for the site (whether additional RI sampling is needed or a FS of potential remedial alternatives can be prepared).
UXO 15 Puerto Ferro	EMA	PI-9, PI-13	UXO 15 contains an area that was alleged to have been used as an area of ammunitions storage with earthen berms and small OB/OD. Also the MRS is described to have ordnance possibly fired from the site toward the LIA/SIA.	The ERA/SI Report recommended further investigation of the site. A Final ESI SAP was submitted in May 2011. However, based on additional information gathered since that time, modifications to the original approach were developed and documented in the Final ESI SAP Addendum (CH2M HILL, 2012). Fieldwork was completed in May 2013, and an initial RI findings technical memorandum was finalized in May 2014. Additional RI sampling activities are planned in 2015. In addition, an EE/CA and Work Plan for an NTCRA for the road leading to the historic lighthouse was finalized in May and June 2014, respectively. The NTCRA is anticipated to occur in the summer of 2014 to expedite public access to the lighthouse; in addition, a NTCRA will occur at three beaches and trail in accordance with the NTCRA for the roads and beaches.

East Vieques Sites

MRS/Site Designation	Operational Area	Sites Within MRS	Description of Site	Status
UXO 16 Underwater Areas				Previous studies identified MEC and metallic anomalies on the sea floor at Bahia Salina del Sur and Bahia Icacos areas, which are adjacent to the former LIA. The ERA/SI Report recommended additional investigation to further characterize the nature and extent of underwater MEC. In 2013, available bathymetry data within UXO 16 were compiled in order to develop a plan for conducting a side-scan sonar survey. The side-scan sonar survey is intended to help plan the wide area assessment of underwater munitions, including avoiding underwater obstacles during the assessment. The side-scan sonar survey began in November 2013 and was completed in January 2014. A wide area assessment work plan is currently being developed to provide a preliminary evaluation of the nature and extent of the underwater MEC. In addition, an EE/CA for an NTCRA of underwater munitions adjacent to Cayo La Chiva (UXO 18) was submitted for regulatory review in April 2014. Further, a revised Quality Assurance Project Plan (QAPP) for an Expanded Site Inspection (ESI) of the underwater area adjacent to SWMU 4 was finalized in April 2014. Field activities are anticipated to occur in late 2014.
East Vieques UXO 17	EMA	PAOC EE	PAOC-EE is a suspected location of former storage of munitions in earthen berms.	The ERA/SI recommended removing the metal debris, one flare and small arms that were identified. An expanded SI was completed in December 2011 and identified two MEC. As a result, an RI will be completed for PAOC EE as described in the Final Master Sampling and Analysis Plan for the East Vieques Terrestrial UXO Sites. A TCRA was initiated in May 2014 to identify and remove munitions identified at and near the surface.
UXO 18 Cayo La Chiva	EMA		A site inspection of the island adjacent to Blue Beach, a public beach, identified five 5” rocket munitions items. Historical records did not identify this site as a munitions operations site.	The Final Master SAP describing the planned RI activities was submitted January 2013 with Addendum 1 finalized in February 2013 and Addendum 2 finalized in April 2013. RI activities began in January 2013 and were completed in November 2013. A Draft RI/FS Report was submitted for regulatory review in May 2014.

West Vieques Sites

MRS/Site Designation	Operational Area	Sites Within MRS	Description of Site	Status
West Vieques SWMU 4 Inactive OB/Waste Explosive Detonation Range (West Vieques- DOI Property)	West Vieques	NA	An open burn/open detonation area where there was thermal destruction of unserviceable munitions from approximately 1965-1980.	The NTCRA to clear the subsurface MEC from the roads and beaches identified 266 MEC items. Final EE/CA NTCRA for subsurface removal of roads and beaches (East and West Vieques) has been initiated. See SWMU 4 in Section 2.2.2 for a summary of the RI/FS process and status The Proposed Remedial Action Plan was issued for public comment in July 2012. Based on public comment on the Proposed Remedial Action Plan, additional alternatives to address the potential presence of MEC are being considered, which will be documented in a Feasibility Study Addendum. To expedite public access to portions of the site, an EE/CA and Work Plan for a NTCRA at proposed public areas was finalized in March and June 2014, respectively. The NTCRA field activities are anticipated to occur in FY15. In addition, a SAP to assess perchlorate in groundwater and biota in Laguna Boca Quebrada was submitted for regulatory review on November 1, 2013 (CH2M HILL, 2013x). Information gathered during this evaluation will be used to modify the groundwater and biota alternatives, as warranted, in the Feasibility Study Addendum.

Appendix B
Site Screening Areas

Appendix B-1
Environmental Sites

APPENDIX B-1
Site Screening Areas—Environmental Sites
Vieques, Puerto Rico

East Vieques

Site Designation	Description of Site	Status
SWMU 2	Former Fuels Off-Loading Site. was the location of four ASTs including two 20,000-gallon tanks and two 30,000-gallon tanks, which were used to store diesel fuel, unleaded gasoline, aviation gas, and JP-5 jet fuel. These tanks became operational in 1953 and were removed in 1978 and 1979 (NAVFACENGCOM, 2003).	Based on historical data and data collected during the Phase I RFI, SWMU 2 was recommended for an ESI in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The ESI field investigation was completed in May 2009, which included additional soil sampling. The Final SI/ESI Report was issued in August 2010. Based on the findings of the Phase I RFI/ESI, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
SWMU 4	Former Waste Areas of Building 303 (Camp Garcia), including: – Spent Battery Accumulation Area – Catch Basin for Hydraulic Oil – Cleaning/Degreasing Basin – Rags, absorbent and grease storage area (NAVFACENGCOM, 2003).	Based on historical data and data collected during the Phase I RFI, SWMU 4 was recommended for NFA, pending a groundwater evaluation at Camp Garcia, in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The regional monitoring wells were installed and groundwater samples collected during the ESI field investigation completed in May 2009 and the Final SI/ESI Report was issued in August 2010. Based on the Phase I RFI and groundwater sampling findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
SWMU 5	Former Spent Battery Accumulation Area located at Observation Post 1 (OP-1). The batteries and battery acid were stored outside on a gravel driveway (NAVFACENGCOM, 2003).	SWMU 5 is included in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The site was recommended for no action based on evaluation of the sample data collected during the Phase I RFI. Therefore, the site was included in the Final No Action Decision Document issued in January 2009.
SWMU 6	Former Waste Oil and Paint Accumulation Area (Seabees Area at Camp Garcia). According to the 1988 RFA, this area was used by the Seabees as a storage area for waste oil and paint which was containerized in 55-gallon drums, and the paint was housed in small containers (NAVFACENGCOM, 2003).	Based on historical data, SWMU 6 was recommended for an ESI in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The ESI field investigation was completed in May 2009, which included additional soil sampling. The Final SI/ESI Report was issued in August 2010. Based on the findings of the ESI, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
SWMU 7	Former Waste Oil Accumulation Area (outside Building 303 at Camp Garcia). Marines used the waste oil accumulation area to store waste oil from the maintenance of their vehicles (NAVFACENGCOM, 2003).	Based on historical data, SWMU 7 was recommended for an ESI in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The ESI field investigation was completed in May 2009, which included additional soil sampling. The Final SI/ESI Report was issued in August 2010. Based on the findings of the ESI, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.

East Vieques

Site Designation	Description of Site	Status
SWMU 8	Former Waste Oil Accumulation Area (Inner Range at OP-1). According to the 1988 RFA, the waste oil accumulation area contained drums of both waste lubricants and oils prior to them being shipped offsite to NSRR (NAVFACENGCOM, 2003).	SWMU 8 is included in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The site was recommended for NFA based on evaluation of the sample data collected during the Phase I RFI. Therefore, the site was included in the Final No Action Decision Document issued in January 2009.
SWMU 10	Former Sewage Treatment Lagoons (Camp Garcia). According to the 1988 RFA, the sewage treatment lagoons for Camp Garcia went into service in the early 1950s. There were four unlined lagoons: two of them to serve as equalization/treatment lagoons, and the other two to provide polishing treatment (NAVFACENGCOM, 2003).	Based on historical and data collected during the Phase I RFI, SWMU 10 was recommended for an ESI in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The ESI field investigation was completed in May 2009, which included additional soil and groundwater sampling. The Final SI/ESI Report was issued in August 2010. Based on the findings of the Phase I RFI/ESI, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
SWMU 12	Former Solid Waste Collection Unit Area (OP-1). The solid waste collection area served as a solid waste storage and transfer area, prior to pickup of the solid waste for disposal at the off-site Vieques Municipal Landfill (NAVFACENGCOM, 2003).	SWMU 12 is included in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The site was recommended for NFA based on evaluation of the sample data collected during the Phase I RFI. Therefore, the site was included in the Final No Action Decision Document issued in January 2009.
AOC A	Former Diesel Fuel Fill Pipe Area (OP-1). According to the 1988 RFA, this area contained the fill pipe for a diesel UST formerly located at OP-1 (NAVFACENGCOM, 2003).	Based on removal of the former tank and fuel fill pipe and historical confirmatory soil data, AOC A was recommended for an ESI in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The ESI field work was completed in May 2009, which involved additional soil excavation and confirmatory soil sampling. The Final SI/ESI Report was issued in August 2010. Based on the findings of the ESI, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
AOC F	Former Rock Quarry (Camp Garcia). This site was used to obtain gravel used by the Navy for construction of roads and other construction projects. During the 1995 RFA, used tires and some paper waste were visible at this location (NAVFACENGCOM, 2003).	AOC F is included in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The site was recommended for NFA based on evaluation of historical sample data. Therefore, the site was included in the Final No Action Decision Document issued in January 2009.
AOC G	Former Pump Station and Chlorination Building at Sewage Lagoons (Camp Garcia). This site is located adjacent to the old sewage treatment lagoons (SWMU 10) at Camp Garcia. The site consists of a building that housed a pump station and chlorination equipment used in the past for the chlorination of the lagoon system effluent. These facilities were placed into operation in the 1950s and are no longer in service (NAVFACENGCOM, 2003).	Based on data collected during the Phase I RFI, AOC G was recommended for an ESI in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The ESI field investigation was completed in May 2009, which involved additional soil sampling. The Final SI/ESI Report was issued in August 2010. Based on the findings of the Phase I RFI/ESI, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
PAOC I	Former power plant and mechanics shop (Bldg. 401) northeast of Bldg. 303 at Camp Garcia. No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was identified at the site (NAVFACENGCOM, 2003).	The SI field investigation was completed in May 2009, during which soil sampling was conducted at PAOC I. The Final SI/ESI Report was issued in August 2010. Based on the SI findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.

East Vieques

Site Designation	Description of Site	Status
PAOC J	Former vehicle maintenance area at Camp Garcia immediately north of the main road (all structures were demolished prior to 1980). No evidence of hazardous waste, hazardous material, petroleum, or munitions storage, disposal, or releases was identified at the site (NAVFACENGCOM, 2003).	Based on data collected during the SI, PAOC J was recommended for NFA, pending a groundwater evaluation at Camp Garcia, in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The regional monitoring wells were installed and groundwater samples collected during the ESI field investigation completed in May 2009 and the Final SI/ESI Report was issued in August 2010. Based on the SI and groundwater sampling findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
PAOC K	Former wash rack area north of main road (structure demolished prior to 1980). No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was identified at the site (NAVFACENGCOM, 2003).	Based on data collected during the SI, PAOC K was recommended for NFA, pending a groundwater evaluation at Camp Garcia, in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The regional monitoring wells were installed and groundwater samples collected during the ESI field investigation completed in May 2009 and the Final SI/ESI Report was issued in August 2010. Based on the SI and groundwater sampling findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
PAOC L	Former paint and transformer storage building.	Based on data collected during the SI, PAOC L was recommended for an ESI in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The ESI field investigation was completed in May 2009, during which contaminated soil surrounding the building was removed and confirmatory soil and groundwater samples were collected. The Final SI/ESI Report was issued in August 2010. Based on the soil removal and confirmatory sample findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
PAOC M	Former dispatch office, fuel facility, and sleeping quarters (Building 4503, demolished 1991). No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was identified at the site (NAVFACENGCOM, 2003).	The SI field investigation was completed in May 2009, during which soil samples were collected and screened for potential contamination; no release was suspected based on the screening. The Final SI/ESI Report was issued August 2010. Based on the SI findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
PAOC N	Former fuel farm and filling station (demolished 1992). No evidence of hazardous waste, hazardous material, petroleum, or munitions storage, disposal, or releases was identified at the site (NAVFACENGCOM, 2003).	Based on data collected during the SI, PAOC N was recommended for NFA, pending a geophysical survey to confirm no underground fuel pipeline, in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The geophysical survey was conducted during ESI field investigation completed in May 2009, which indicated no underground fuel pipeline was present. The Final SI/ESI Report was issued August 2010. Based on the SI and geophysical survey findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
PAOC O	Former boiler room in the heat plant building (Building 238, demolished 1989). No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was identified at the site (NAVFACENGCOM, 2003).	The SI field investigation was completed in May 2009, during which soil sampling was conducted at PAOC O. The Final SI/ESI Report was issued in August 2010. Based on the SI findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.

East Vieques

Site Designation	Description of Site	Status
PAOC P	Former water treatment facility pump house (Building 500, demolished 1989). No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was identified at the site (NAVFACENGCOM, 2003).	The SI field investigation was completed in May 2009, during which soil sampling was conducted at PAOC P. The Final SI/ESI Report was issued in August 2010. Based on the SI findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
PAOC Q/R	PAOC Q is a former boiler house in heat plant Building 607 (demolished 1984). No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was identified at the site (NAVFACENGCOM, 2003). PAOC R is a former boiler house in heat plant Building 617 (demolished 1984). The former location of this building is suspected to be near PAOC Q based on historical aerial photographs.	The SI field investigation was completed in May 2009, during which soil sampling was conducted at PAOC Q/R. The Final SI/ESI Report was issued in August 2010 and recommended additional soil sampling. The Final SI/ESI Addendum Report was issued in June 2011. Based on the SI and Supplemental SI findings, the site was included in the Final No Action/No Further Action document issued in September 2011.
PAOC S	Former above ground petroleum pipeline (demolished 1984). An additional area was added to this site, referred to as the power plant. No evidence of hazardous waste, hazardous material, petroleum, or munitions storage, disposal, or releases was identified at the site (NAVFACENGCOM, 2003).	Based on data collected during the SI, PAOC S was recommended for NFA, pending a geophysical survey to confirm no underground fuel pipeline, in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The geophysical survey was conducted during the ESI field investigation completed in May 2009, which indicated no underground fuel pipeline was present. The Final SI/ESI Report was issued in August 2010. Based on the SI and geophysical survey findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
PAOC T	Former public works grounds contractor storage shed (Building 305, demolished 1991). No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was identified at the site (NAVFACENGCOM, 2003).	The SI field investigation was completed in 2006, during which soil sampling was conducted at PAOC T. The Final PA/SI Report was submitted in June 2008. Based on the SI findings, the site was included in the Final No Action Decision Document issued in January 2009.
PAOC U	Former vehicle maintenance area just north of former Building 303 at Camp Garcia. Historic storage of hazardous waste, hazardous material, and petroleum products. Some staining of soil outside of building near container storage pallets (NAVFACENGCOM, 2003).	The SI field investigation was completed in 2006, during which soil and groundwater sampling was conducted at PAOC U. The Final PA/SI Report was submitted in June 2008. Based on the SI findings, the site was included in the Final No Action Decision Document issued in January 2009.
PAOC V	Former storage area for a leaking transformer.	In 2002, soil samples were collected at the location of a former leaking transformer; one PCB was detected below risk-based screening criteria. Based on these findings, the site was included in the Final No Action Decision Document issued in January 2009.
PAOC W	Former area of pooled, discolored water adjacent to the main road from Camp Garcia. The area is part of Laguna La Chiva. No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was identified. Site Interviewees had no knowledge of past activity (NAVFACENGCOM, 2003).	The Mangrove Forest Health and Status Report (2002) determined that the discolored water was likely due to increased organic matter caused by the road crossing the lagoon cutting off normal water circulation with the sea. Based on this information, the site was included in the Final No Action Decision Document issued in January 2009.

East Vieques

Site Designation	Description of Site	Status
PAOC X	Quebrada (intermittent stream channel) located north from the main road and west from Camp Garcia, adjacent to the former vehicle maintenance area. Formerly contained an automobile body, tires, scrap metal, and construction-related solid waste and debris (NAVFACENGCOM, 2003).	The SI field investigation was completed in May 2009, during which the debris in the quebrada and along its banks was removed and confirmatory soil samples collected. The Final SI/ESI Report was issued in August 2010. Based on the debris removal and confirmatory soil sample findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
PI 5	Surface water drainage from the runway area; interviews and records indicate historically the location of the fire department and temporary tents; beach matting was installed in the area in the past. No evidence of munitions, hazardous waste, hazardous material, or petroleum storage or disposal was identified at the site (NAVFACENGCOM, 2003).	The SI field investigation was completed in May 2009, during which soil samples were collected. The Final SI/ESI Report was issued in August 2010. Based on the SI findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
PI 6	Former ASTs and facilities associated with the former location of the site drinking water system. The following facilities were observed: – several intact ASTs and one storage tank without ends – a concrete building containing electric pumps – a small vehicle washpad and water well pump house – a ground transformer near the washpad – a concrete pad potentially used to store PCB-containing transformers (NAVFACENGCOM, 2003).	The SI field investigation was completed in May 2009, during which soil samples were collected. The Final SI/ESI Report was issued in August 2010. Based on the SI findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
PI 7	Southern portion was formerly a quarry and tar disposal area, northern portion was a communications facility. At the south end of the southern portion of the site, drums containing asphalt were observed. Two drums were also observed in the former quarry. No items of concern identified in northern portion of site (NAVFACENGCOM, 2003).	Based on data collected and observations made during the SI, PI 7 was recommended for an ESI in the Final PA/SI Report for 12 Consent Order Sites and 8 PI/PAOC Sites issued in June 2008. The ESI field investigation was completed in 2009, during which the drums and associated contaminated soil were removed and soil and groundwater samples were collected, and the Supplemental ESI field investigation was completed in 2010 during which additional soil samples were collected. The Final SI/ESI Report was issued in August 2010 and the Final SI/ESI Addendum Report was issued in June 2011. Based on the drum/contaminated soil removal and soil and groundwater sample findings, site was included in the Final No Action/No Further Action document issued in September 2011.
PI 8	Former motor pool maintenance area located south of the main road. Past storage and potential storage of hazardous materials and petroleum products. Observed a large area with dark colored/stained soils (NAVFACENGCOM, 2003).	The SI field investigation was completed in May 2009, during which soil sampling was conducted at PI 8. The Final SI/ESI Report was issued in August 2010. Based on the SI findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.
PI 10	Possible former sewage-drying lagoon. Observed two rectangular openings in the forest partially surrounded by the remains of low earthen berms. Dark colored soils were observed on portions of the enclosed areas. Evidence of limited solid waste disposal in immediate vicinity (NAVFACENGCOM, 2003).	The SI field investigation was completed in May 2009, during which soil sampling was conducted at PI 10. The Final SI/ESI Report was issued in August 2010. Based on the SI findings, the site was included in the Final No Action/No Further Action Decision Document issued in September 2010.

East Vieques

Site Designation	Description of Site	Status
PI 11	Pump house used for the former wastewater treatment system and/or salt water supply system. Observed a diesel engine in a vegetated area adjacent to the station and a stained area immediately under the outfall of an open pipe projecting from the side of the pump house (NAVFACENGCOM, 2003).	Based on a site visit and evaluation of historical soil sample data collected at PI 11, the site was included in the Final No Action Decision Document issued in January 2009.
PI 20	Former observation point during landing exercises, and potentially used as a quarry in the past. No evidence of prior disposal activities or other contamination identified (NAVFACENGCOM, 2003).	Based on historical information and a site visit, the site was included in the Final No Action Decision Document issued in January 2009.
PI 21	Possible location of a former artillery firing position, but no corroborating evidence was identified or observed. The area was used as quarry. ERI 200 aerial photography identified a vertical tank, pits, disturbed ground, pits containing discolored liquid. Pits containing discolored liquid were subsequently determined to be just low-lying areas where surface water collected and algae formed.	Based on evaluation of historical information, including aerial photographs, and a site visit, an SI field investigation was completed in April 2013, which included soil sampling at the location of the former vertical tank. Based on evaluation of the data, a No Action Decision Document was developed and a draft final version was submitted for RAB review in May 2014.
Laguna La Chiva	In October 2007, NOAA collected three sediment samples from Laguna La Chiva as part of an island-wide sediment evaluation (NOAA, 2010). Pesticide concentrations (primarily DDT, DDE, and DDD) were detected at concentrations higher than at other lagoons on Vieques sampled by NOAA and the Navy and above various ecological screening levels commonly used on Vieques. None exceeded United States Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs) for residential soil, but fish and crab concentrations were not modeled from the sediment concentrations to determine if they may pose an unacceptable risk based on human consumption.	Based on evaluation of historical information a Final Site Inspection/Remedial Investigation SAP was submitted in April 2013 (CH2M HILL, 2013h). Sampling took place in May 2013 where 16 sediment samples (representing 12 locations) across Laguna La Chiva and 7 soil samples within the surrounding upland area were collected. The results of this sampling showed that the sediment and soil constituent concentrations do not pose a potentially unacceptable risk to human or ecological receptors. A No Action Decision Document was submitted to the regulatory agencies as Draft in February 2014.

West Vieques

Site Designation	Description of Site	Status
SWMU 5	Interviews and records indicate that this site was a IRFNA/MAF-4 Disposal Site (drone fuel). One-time (1975) disposal of 7,000 pounds of drone fuel (inhibited red fuming nitric acid/mixed amine fuel #4[IRFNA/MAF-4]) reportedly emptied into low spot on ground (Program Management Company, 2000).	The site was investigated during a PA/SI. Based on the findings of the PA/SI, this site was included in the No Further Action Report for Nine Sites issued in October 2006. In February 2007, PREQB concurred with the NFA findings.
SWMU 10	Interviews and records indicate that this site was a former waste paint and solvent disposal ground at Building 4001 within the Public Works Area. It was suspected that small quantities of paint, solvents, and thinners were disposed of on the ground outside Building 4001 (Program Management Company, 2000).	The site was investigated during a PA/SI. Based on the findings of the PA/SI, this site was included in the No Further Action Report for Nine Sites issued in October 2006. In February 2007, PREQB concurred with the NFA findings.
SWMU 14	Interviews and records indicate that this site was a former wash rack near Bldg. 2016 within the Public Works Area. It was used for cleaning Navy vehicles. Degreasing solvents possibly used in this area (Program Management Company, 2000).	The site was investigated during a PA/SI. Based on the findings of the PA/SI, this site was included in the No Further Action Report for Nine Sites issued in October 2006. In February 2007, PREQB concurred with the NFA findings.
SWMU 15	Interviews and records indicate that this site was a former waste transportation vehicle parking area within the Public Works Area. The parking area was reported to have trucks parked there with drums that may have leaked (Program Management Company, 2000).	The site was investigated during a PA/SI. Based on the findings of the PA/SI, this site was included in the No Further Action Report for Nine Sites issued in October 2006. In February 2007, PREQB concurred with the NFA findings.
AOC B	Interviews and records indicate that this site was a former wastewater treatment plant (WWTP) and disposal ground located on southwest end of the Public Works Area. The WWTP effluent was discharged to disposal lagoons (Program Management Company, 2000).	The site was investigated during a PA/SI. Based on the findings of the PA/SI, this site was included in the No Further Action Report for Nine Sites issued in October 2006. In February 2007, PREQB concurred with the NFA findings.
AOC C	Interviews and records indicate these drainage ditches were near a former transportation shop within the Public Works Area. These ditches collect surface runoff from surrounding area. One of the ditches was observed as having an oily sheen (Program Management Company, 2000).	The site was investigated during a PA/SI. Based on the findings of the PA/SI, this site was included in the No Further Action Report for Nine Sites issued in October 2006. In February 2007, PREQB concurred with the NFA findings.
AOC F	Interviews and records indicate area used as a former UIC septic tank that is near the former Enlisted Men's Club at the former Public Works Area (Program Management Company, 2000).	The site was investigated during a PA/SI. Based on the findings of the PA/SI, this site was included in the No Further Action Report for Nine Sites issued in October 2006. In February 2007, PREQB concurred with the NFA findings.

West Vieques

Site Designation	Description of Site	Status
AOC K	Interviews and records indicate the site was a former water well just northeast of the Public Works Area. The well was used as a potable water well from 1941 to 1979. It was plugged and abandoned in 1979 but was rehabilitated in 1997 by the USGS (Program Management Company, 2000).	The site was investigated during a PA/SI. Based on the findings of the PA/SI, this site was included in the No Further Action Report for Nine Sites issued in October 2006. In February 2007, PREQB concurred with the NFA findings.
AOC L	Interviews and records indicate the site was an abandoned septic tank and drainage field located north of the Public Works Area about 200 feet from the beach. The actual historical use of the site is unknown (Program Management Company, 2000).	The site was investigated during a PA/SI. Based on the findings of the PA/SI, this site was included in the No Further Action Report for Nine Sites issued in October 2006. In February 2007, PREQB concurred with the NFA findings.

Appendix B-2
Munitions Response Sites

APPENDIX B-2
Site Screening Areas—Munitions Response Sites
East Vieques, Puerto Rico

MRS/ Site Designation	Operational Area	Sites Within MRS	Description of Site	Status
East Vieques UXO 17	EMA	PAOC FF and PI-14	PI-14 was described as two pits with light toned material and possible debris. PAOC-FF was identified as a potential former artillery firing point. However, the ERA/SI did not identify any MEC at any of the locations.	The ERA/SI recommended removing the metal debris, and two unused flares that were identified at the PI 14 site. No munitions-related items were found at the PAOC FF site. Based on this, PI 14 and PAOC FF were included in the Final No Action Decision Document issued in December 2010.

Appendix C
DoD Site Prioritization Protocol Scoring

APPENDIX C
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Site		**Alias**
UXO 1		Eastern Conservation Area
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	Submunitions identified during TCRA
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	Area surface cleared, but erosion likely
Table 4 - EHE, Ease of Access Data Element	10	No barrier exists; however, this is the most remote portion of east Vieques
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	1	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	Sea turtle nesting area
Total Score	94	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 28 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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Site		**Alias**
UXO 2		LIA Beaches
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	Submunitions identified during TCRA and NTCRA
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	Area surface cleared, but erosion likely
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	1	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	Sea turtle nesting area
Total Score	94	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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Site		**Alias**
UXO3		LIA Roads
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	Submunitions identified during TCRA
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	Area surface cleared, but erosion likely
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	1	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	
Total Score	94	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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Site		**Alias**
UXO4		LIA Interior
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	Submunitions identified during TCRA
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	Area surface cleared, but erosion likely
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	1	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	5	
Total Score	96	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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Site		**Alias**
UXO5		SIA Restricted Roads
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	Submunitions identified during Non-TCRA
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	1	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	
Total Score	94	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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Site		**Alias**
UXO6		EMA/SIA Public Roads
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	MEC projectiles/submunitions identified during NTCRA
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	3	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	
Total Score	96	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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Site		**Alias**
UXO7		EMA/SIA North Beaches
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	MEC projectiles identified during NTCRA
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	Area surface cleared, but erosion likely
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	3	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	Sea turtle nesting area
Total Score	96	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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DoD Site Prioritization Protocol Scoring

Site		**Alias**
UXO8		SIA South Beaches
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	MEC projectiles were identified during the NTCRA
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	area surface cleared, but erosion likely
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	1	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	Sea turtle nesting area
Total Score	94	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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DoD Site Prioritization Protocol Scoring

Site		**Alias**
UXO9		SIA Exterior
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	Submunitions were identified in the NTCRA
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	1	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	5	
Total Score	96	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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DoD Site Prioritization Protocol Scoring

Site		**Alias**
UXO10		SIA Interior
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	Projectiles identified during NTCRA and a submunition was identified in adjacent UXO-9
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	1	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	
Total Score	94	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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DoD Site Prioritization Protocol Scoring

Site		**Alias**
UXO11		EMA Public Roads
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	MEC projectiles were identified along east end during NTCRA
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	3	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	
Total Score	96	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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DoD Site Prioritization Protocol Scoring

Site		**Alias**
UXO12		EMA Interior
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	MEC items identified after brush fire and during NTCRA
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	3	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	
Total Score	96	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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DoD Site Prioritization Protocol Scoring

Site		**Alias**
UXO13		EMA West
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	MEC identified during NTCRA
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	3	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	
Total Score	96	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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Site		**Alias**
UXO14		EMA South
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	Grenades identified during SI
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	3	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	
Total Score	96	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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Site		**Alias**
UXO15		Puerto Ferro
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	25	no sensitive
Table 2 - EHE, Source of Hazard Data Element	8	ob od and munitions transferred
Table 3 - EHE, Location of Munitions Data Element	25	
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	3	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	5	lighthouse
Total Score	91	
Table 10 - EHE Rating	B	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**3**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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Site		**Alias**
UXO16		Underwater Areas
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	MEC projectiles identified during SI
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	3	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	
Total Score	96	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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Site		**Alias**
UXO 17		Camp Garcia
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	Flares, small arms, bulk primary explosives found during investigation
Table 2 - EHE, Source of Hazard Data Element	5	Other disposal area
Table 3 - EHE, Location of Munitions Data Element	25	
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	3	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	
Total Score	91	
Table 10 - EHE Rating	B	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**3**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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Site		**Alias**
UXO18 Cayo La Chiva		EMA Interior
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	MEC projectiles were identified in SI
Table 2 - EHE, Source of Hazard Data Element	10	
Table 3 - EHE, Location of Munitions Data Element	25	
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	3	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	3	
Total Score	96	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
Table 21 - HHE, Hazard Rating	D	Risks are considered "potential" for all sites at this point due to lack of environmental data. A rating of "medium" has been used.
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**5**	

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Site		**Alias**
SWMU 4		West Vieques OB/OD Site
EHE Module	**Score**	**Comment**
Table 1 - EHE, Munitions Type Data Element	30	
Table 2 - EHE, Source of Hazard Data Element	8	
Table 3 - EHE, Location of Munitions Data Element	25	
Table 4 - EHE, Ease of Access Data Element	10	
Table 5 - EHE, Status of Property Data Element	5	
Table 6 - EHE, Population Density Data Element	1	
Table 7 - EHE, Population Near Hazard Data Element	5	
Table 8 - EHE, Types of Activities/Structures Data Element	5	
Table 9 - EHE, Ecological and/or Cultural Resources Data Element	5	
Total Score	94	
Table 10 - EHE Rating	A	
CHE Module	**Score**	**Comment**
Total Score	N/A	No known or suspected chemical warfare material
Table 20 - CHE Rating	N/A	
CHE Module	**Score**	**Comment**
Table 21 - HHE, Groundwater Data Element	N/A	No known or suspected groundwater MC hazard
Table 22 - HHE, Surface Water – Human Endpoint Data Element	N/A	No known or suspected surface water (human endpoint) MC hazard
Table 23 - HHE, Sediment – Human Endpoint Data Element	N/A	No known or suspected sediment (human endpoint) MC hazard
Table 24 - HHE, Surface Water – Ecological Endpoint Data Element	N/A	No known or suspected surface water (human endpoint) MC hazard
Table 25 - HHE, Sediment – Ecological Endpoint Data Element	N/A	No known or suspected sediment (ecological endpoint) MC hazard
Table 26 - HHE, Surface Soil Data Element	N/A	No known or suspected surface soil MC hazard
Table 27 - HHE, Supplemental Contaminant Hazard Factor	---	
Table 28 - HHE, Hazard Rating	**N/A**	No known or suspected HHE hazard
Table 29 - MRS Priority	**Priority**	
EHE Module Rating	**2**	
CHE Module Rating	**N/A**	No known or suspected chemical warfare material
HHE Module Rating	**N/A**	No known or suspected HHE hazard