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# Site Management Plan
# Fiscal Years 2007 - 2008

## Former Naval Facilities
## Vieques, Puerto Rico

Prepared for

**Department of the Navy**

**Atlantic Division**

**Naval Facilities Engineering Command**

Contract Task Order 007 and 039

Under the

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Prepared by

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# Contents

**Acronyms and Abbreviations** ..... **v**

**1 Introduction** ..... **1-1**
1.1 Overview of the Site Management Plan ..... 1-1
1.1.1 Overview of this Document ..... 1-1
1.1.2 Objectives of the SMP ..... 1-1
1.1.3 SMP Updates ..... 1-2
1.1.4 Facility Description ..... 1-2
1.1.5 National Priorities List (NPL) Listing ..... 1-3
1.2 Information Repositories ..... 1-3

**2 Site Descriptions** ..... **2-1**
2.1 Eastern Vieques Sites ..... 2-1
2.1.1 Environmental Sites ..... 2-1
2.1.2 Photo-identified (PI) and Potential Area of Concern (PAOC) Sites ..... 2-7
2.1.3 Munitions Response Sites ..... 2-7
2.2 Western Vieques Sites ..... 2-9
2.2.1 Environmental Sites ..... 2-9
2.2.2 Munitions Response Site (SWMU 4) ..... 2-13

**3 Schedules and Funding** ..... **3-1**
3.1 Document Review Schedule ..... 3-1
3.2 Primary Documents ..... 3-2
3.3 Secondary Documents ..... 3-3
3.4 Projected ERP/MRP Funding ..... 3-3

**4 References** ..... **4-1**

## Appendixes

A I. Status of Environmental Remedial Investigation/ Feasibility Study Sites in Vieques, PR....1

A II. Status of Munitions Remedial Investigation /Feasability Study Sites ....2

B I. Site Screening Areas - Environmental Sites, Vieques, PR....3

B II. Site Screening Areas – Munitions Response Sites, Vieques, PR ....8

## Tables

3-1 Vieques Funding, In Thousands .... 3-4

## Figures

1-1 Regional Location Map .... 1-5
1-2 NPL Sites To Be Assessed .... 1-6

2-1 East Vieques Sites.... 2-15
2-2 West Vieques Sites .... 2-17

3-1 Schedules – ERP and MRP Sites .... 3-5
3-2 Actual and Projected Funding from FY 2000 to FY 2007.... 3-6

# Acronyms and Abbreviations

| | |
|---|---|
| AFWTA | Atlantic Fleet Weapons Training Area |
| AFWTF | Atlantic Fleet Weapons Training Facility |
| AOC | Area of Concern |
| AST | aboveground storage tank |
| ATG | air-to-ground |
| AVGAS | aviation gas |
| bls | below land surface |
| CCP | Comprehensive Conservation Plan |
| CCP/EIS | Comprehensive Conservation Plan/Environmental Impact Statement |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act of 1980 |
| CTC | CERCLA Technical Committee |
| DoD | Department of Defense |
| DOI | Department of Interior |
| EBS | Environmental Baseline Survey |
| ECA | Eastern Conservation Area |
| EE/CA | Engineering Evaluation/Cost Estimate |
| EMA | Eastern Maneuver Area |
| ERA | Ecological Risk Assessment |
| ERM | Environmental Resource Management, Inc. |
| ERN | Environmental Restoration, Navy |
| ERP | Environmental Restoration Program |
| ESE | Environmental Science and Engineering |
| FFA | Federal Facility Agreement |
| FS | Feasibility Study |
| FWS | Fish and Wildlife Service |
| FY | fiscal year |
| IAS | Initial Assessment Study |
| IR | Installation Restoration (Program) |
| IRA | interim remedial action |
| JP | jet propellant |
| LIA | Live Impact Area |
| LUC | Land Use Control |
| MEC | munitions and explosives of concern |
| mg/kg | milligrams per kilogram |
| mm | millimeter |
| MOV | Municipality of Vieques |
| MRA | Munitions Response Area |

| | |
|---|---|
| MRA-ECA | Munitions Response Area – Eastern Conservation Area |
| MRA-EMA | Munitions Response Area – Eastern Maneuver Area |
| MRA-LIA | Munitions Response Area – Live Impact Area |
| MRA-SIA | Munitions Response Area – Surface Impact Area |
| MRP | Munitions Response Program |
| MRS | Munitions Response Sites |
| NA | not applicable |
| NACIP | Navy Assessment and Control of Installation Pollutants |
| NASD | Naval Ammunition Support Detachment |
| NAVFAC | Naval Facilities Engineering Command |
| NAVFACENGCOM | Naval Facilities Engineering Command |
| NFA | No Further Action |
| NPL | National Priorities List |
| NSRR | Naval Station Roosevelt Roads |
| OB/OD | open burn/open detonation |
| OE | ordnance and explosives |
| OP-1 | Observation Post - 1 |
| ORS | ordnance-related scrap |
| PA | Preliminary Assessment |
| PAH | polynuclear aromatic hydrocarbon |
| PAOC | Potential Area of Concern |
| PA/SI | Preliminary Assessment/Site Investigation |
| PCB | polychlorinated biphenyl |
| PI | Photo-identified |
| PR | Puerto Rico |
| PRCT | Puerto Rican Conservation Trust |
| PRE | Preliminary Risk Evaluation |
| PREQB | Puerto Rico Environmental Quality Board |
| RA | Remedial Action |
| RCRA | Resource Conservation and Recovery Act |
| RD | remedial design |
| RD/RA | remedial design/remedial action |
| RFA | RCRA Facility Assessment |
| RFI | RCRA Facility Investigation |
| RI | Remedial Investigation |
| RI/FS | Remedial Investigation/Feasibility Study |
| SAR | Small Arms Range |
| SI | Site Inspection |
| SIA | Surface Impact Area |
| SMP | Site Management Plan |
| SVOC | semi-volatile organic compound |
| SWMU | Solid Waste Management Unit |

| | |
|---|---|
| TCRA | Time Critical Removal Action |
| TPH | total petroleum hydrocarbon |
| USEPA | U.S. Environmental Protection Agency |
| USGS | U.S. Geological Survey |
| 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 former Naval Facility on Vieques, Puerto Rico. In addition, the SMP provides Milestones which reflect the 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 Facility Agreement (FFA) under CERCLA Section 120 (Docket Number FFA-CERCLA 02-2007-2001). The former Naval Facility on Vieques includes the former Naval Ammunition Storage 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 as agreed to in the FFA. The Parties identified in the FFA include: the Naval Facilities Engineering Command (NAVFAC), Atlantic; U.S Environmental Protection Agency (USEPA) Region II; Puerto Rico Environmental Quality Board (PREQB); and the U.S. Department of Interior (DOI).

### 1.1.2 Objectives of the SMP

In accordance with the Federal Facilities Agreement, this SMP includes the following:

- A description of 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 (TCRA)s and Non- Time Critical Removal Actions planned or being performed pursuant to the FFA
- Activities and schedules for response actions including at a minimum:
  - Identification of any Primary actions
  - All deadlines
  - All Near Term Milestones
  - All Out Year Milestones
  - All Target dates

- Schedule for initiation of Remedial Designs (RD)s, RAs, including IRAs and Supplemental RAs, Emergency, Time- Critical, and Non-Time Critical Removal Actions and any initiation of other planned response actions covered by the FFA and all Project End Dates

### 1.1.3 SMP Updates

The Navy will prepare a Draft Amendment of the SMP by June 15th 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 proposed by the Navy.

Comments on Draft Amendments will be due to the Navy 30 days after receipt by EPA, Interior, and the Commonwealth of a Draft Amendment. A revised Draft Amendment to the SMP (hereinafter referred to as the "Draft Final Amendment") will be due from Navy no later than 30 days after the end of the EPA/Interior/Commonwealth comment period. The Draft Final Amendment to the SMP shall not become an approved Amendment to the 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 Amendment 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 one-third (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 the center of the island.

#### 1.1.4.1 East Vieques (former VNTR)

The former VNTR, which comprised approximately 14,573 acres, provided ground warfare and amphibious training for Marines, naval gunfire support training, and air to ground training. In the Resource Conservation and Recovery Act (RCRA) Consent Order, the former VNTR has also been referred to as the former Atlantic Fleet Weapons Training Facility (AFWTF) and the Eastern Maneuver Area (EMA). The former VNTR was also described as four separate operational areas, which comprised from west to east: the 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, 14,573 acres of east Vieques (former VNTR) were transferred to the DOI to be operated and managed by the Fish and Wildlife Service (FWS) as a National Wildlife Refuge and Wilderness Area 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 Live Impact Area (LIA) will be managed as a wilderness area and the public must be excluded from these areas in accordance with Public Law 106–398 and Public Law 107–107.

DOI is currently developing a Comprehensive Conservation Plan (CCP) for the Vieques National Wildlife Refuge that will outline its concept for managing the refuge. The environmental restoration of the former VNTR will be based upon potential risks to human health and the environment, with consideration given to the future land use identified in the CCP.

#### 1.1.4.2 West Vieques (former NASD)

On April 30, 2001, 8,114 acres of the former NASD on the west side of Vieques were 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 FWS as part of the Vieques National Wildlife Refuge. The restoration of the former NASD will be based upon potential risks to human health and the environment, with consideration given to the future land use.

### 1.1.5 National Priorities List (NPL) Listing

In 2003, the Governor of Puerto Rico requested USEPA to list the VNTR (and NASD) on the 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 Atlantic Fleet Weapons Training Area (AFWTA) was provided and stated that initial areas of Preliminary Assessment/Site Investigation (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." Regarding submerged lands areas specifically, Navy intends to assess those sites and take appropriate action in accordance with the risk-based site prioritization methodology set out in the Federal Facility Agreement. Work at submerged land areas will be scheduled as part of the normal update process for this SMP. On February 7, 2005, Vieques was placed on the NPL. The areas to be assessed as part of the NPL are shown on Figure 1-2.

As a result of the NPL listing, a Federal Facility Agreement (FFA) is being developed to be signed by the Navy, USEPA, PREQB and DOI. The FFA establishes the procedural framework and schedule for implementing the CERCLA Response Actions on Vieques

## 1.2 Information Repositories

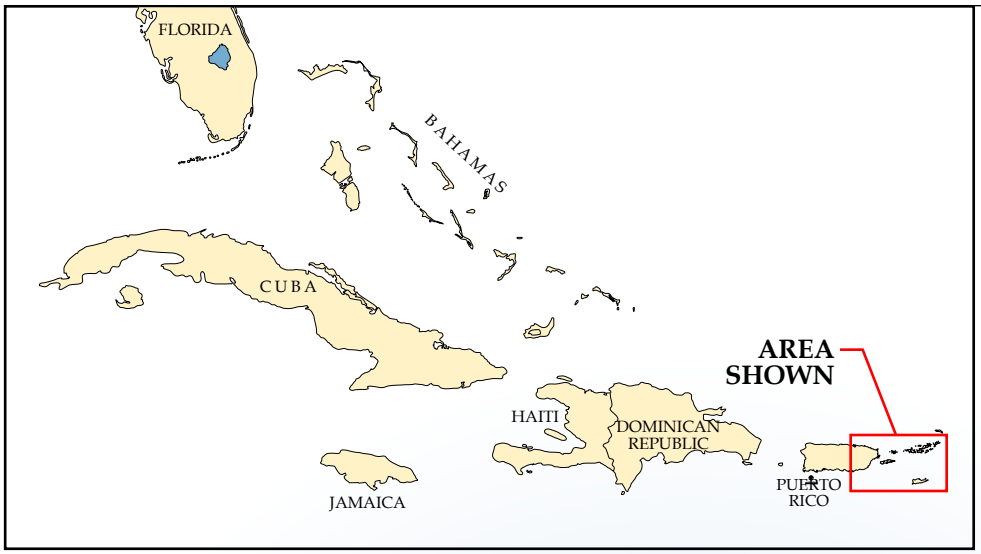
Public Information Repositories have been established to provide convenient access to site-related information for interested parties. Technical documents and other information related to the investigation can be found in:

http://public.lantops-ir.org/sites/public/vieques.

The local repositories are:

- Biblioteca Electrónica
- Calle Carlos LeBrum #449 Isabel Segunda
- Vieques, PR 00765
- Phone/Teléfono: (787) 741-2114

- EPA Repository
- Vieques Office Park
- Road 200, Km. 04
- Vieques, PR 00765



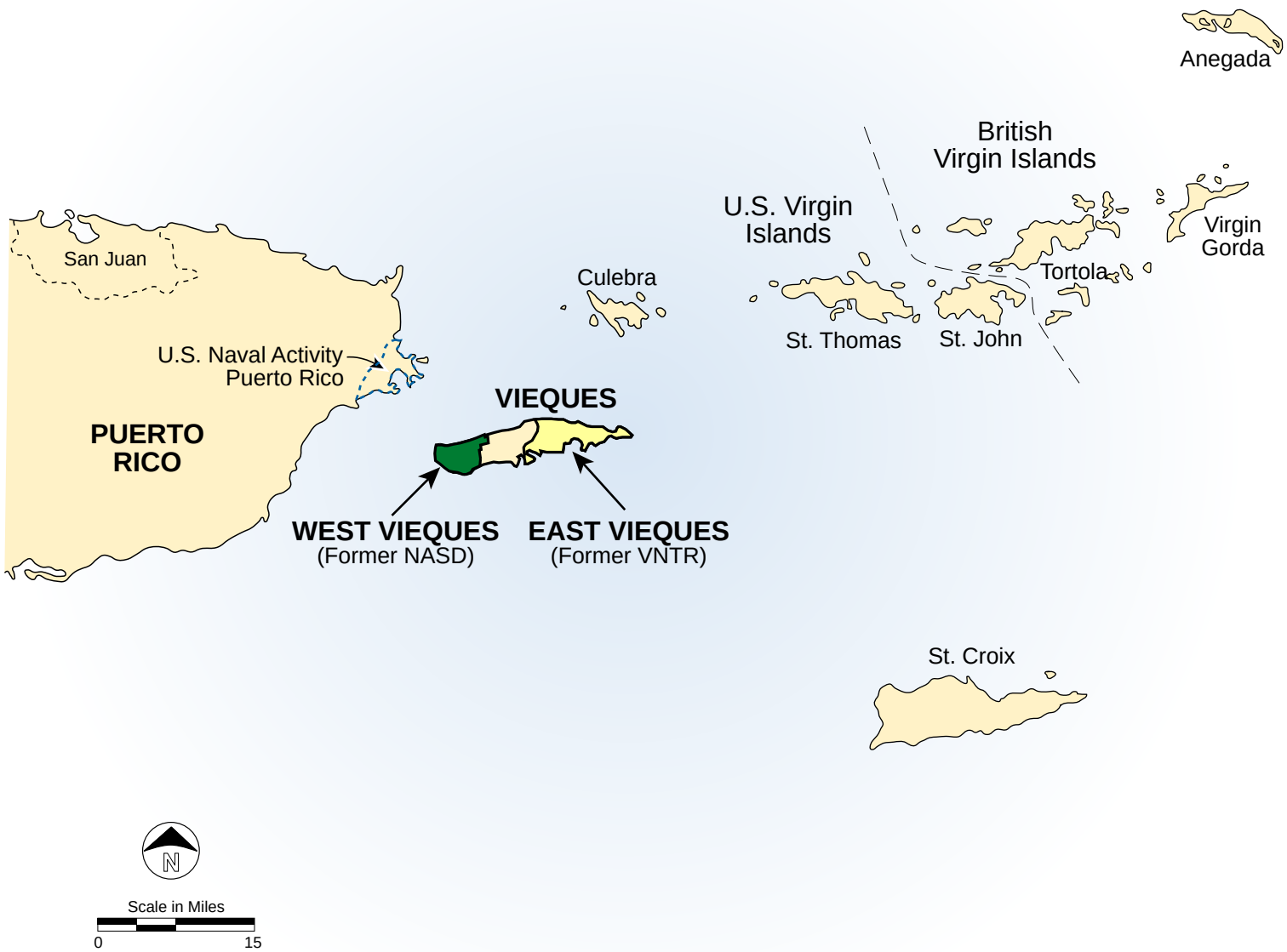
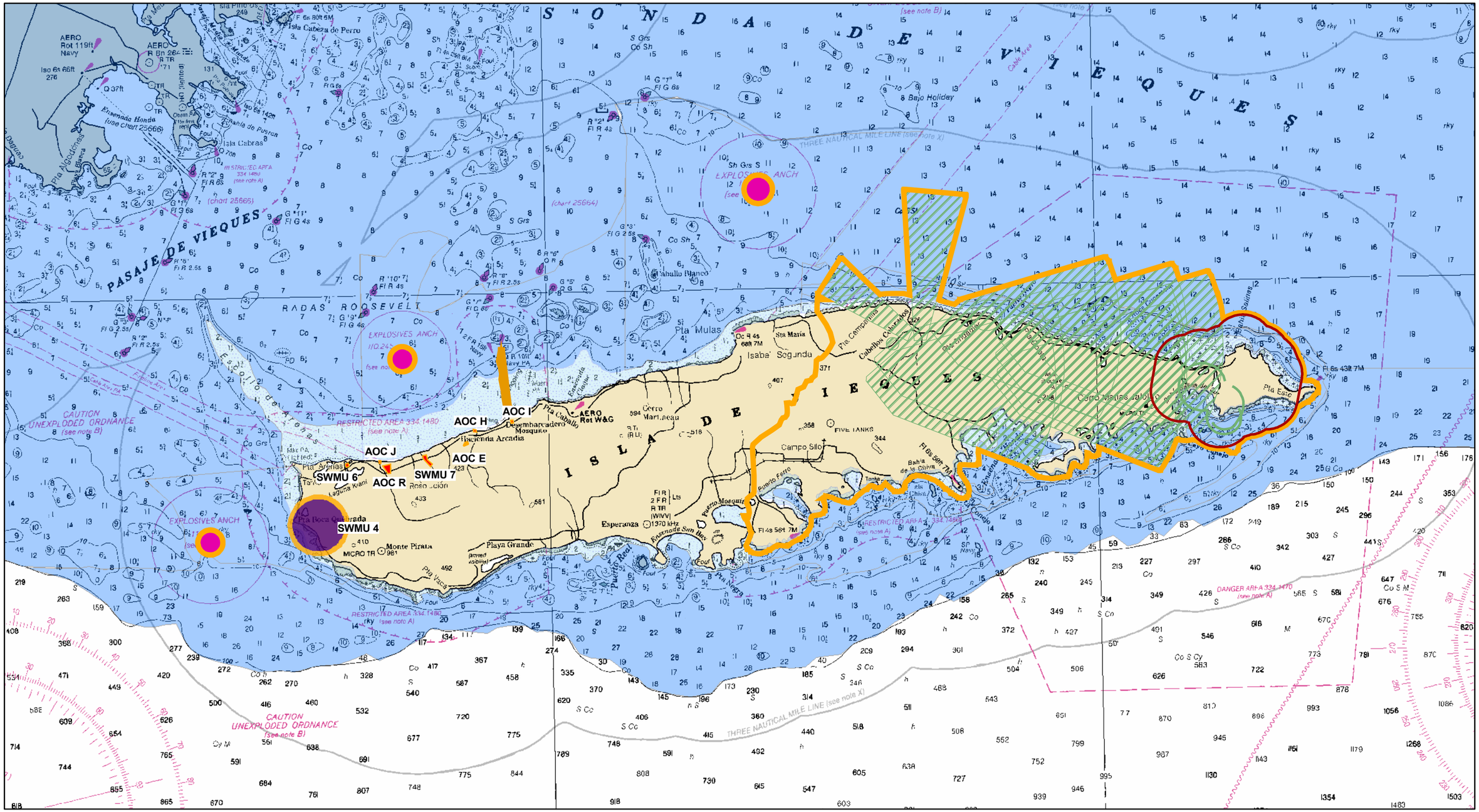




**Figure 1-1**
**Regional Location Map**
*Draft Site Management Plan, Vieques Island, Puerto Rico*




## Legend

- Explosive Saftey Quantity Distance
- Agreed Areas of NPL Site
- Anchorage Location Boundary
- Artillery Safety Fan
- Western Vieques Environmental Sites
- SWMU 4 (Former OB/OD Site)
- Greater Than 0.5 Naval Gunfire Rounds/Acre/Year

**Water Depth**

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

North

0 Miles

File Path: \\tampa\projects\Environmental\Navy CLEAN II_Vieques_ PR\AFWTF\GIS\NOAA.mxd, Date: 06 28, 2004, User: gperdew

**Figure 1-2**
Vieques Sites to be Assessed Under CERCLA
*Draft Site Management Plan, Vieques Island, Puerto Rico*

SECTION 2

# Site Descriptions

This section presents a description of the sites and the current status for the CERCLA response actions that have been completed at the Vieques Facility. The sites are categorized in the appendices to this SMP and the FFA as follows: Remedial Investigation/Feasibility Study sites for the Environmental Response Program (ERP) (Appendix A-1); the Munitions Response Program (MRP) (Appendix A-2); and Site Screening Area sites for the ERP (Appendix B-1) and MRP Site Screening area sites (Appendix B-2). Figures showing the locations of the sites on East Vieques and West Vieques are provided as Figures 2-1 and 2-2, respectively.

## 2.1 Eastern Vieques Sites

### 2.1.1 Environmental Sites

This subsection provides a description of the 12 environmental sites (Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs)) that were identified in a RCRA Consent Order and are currently undergoing investigations through the CERCLA process. The subsection also provides a brief description of the Photo-identified (PI) and Potential Area of concern (PAOC) sites that have been identified, and in some cases, investigated.

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 Preliminary Assessment/Site Inspection [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, June 2004). 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 Draft Background soil inorganics report was submitted in June 2007 (CH2M HILL, June 2007). Once the background report is finalized, the background soil results will be used to assess if the inorganic constituent levels detected in the site-specific soils are consistent with background conditions or indicative of releases from historical waste management activities. Once this is done, the Draft Phase I RFI Report will be revised with this information and re-submitted as a Draft PA/SI Report (to be consistent with the CERCLA terminology) for regulatory review.

The locations of the sites investigated during the Phase I RFI are shown in Figure 2-1. Detailed descriptions of the 12 Consent Order Sites is provided below. Brief descriptions of sites that were identified as potential sites (i.e., PIs and PAOCs), based on analysis of facility records and aerial photo analysis during the Phase I RFI Work Plan development and the Environmental Baseline Survey (EBS) (NAVFACENGCOM, April 2003), are provided in Appendix B-1. Eight of these PI/PAOC sites were investigated as part of a PA/SI conducted in 2006. The Draft PI/PAOC Report for these eight sites will be prepared once the

background soil inorganics report is finalized. The anticipated schedule for deliverable submittal for the following sites, as applicable, is provided in Figure 3-1.

#### 2.1.1.1 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 the former VNTR are shown in Figure 2-1. Approximately 1,800 to 3,120 tons of wastes were disposed of in the 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 problems 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 photo analysis of the landfill indicated that the fill area extended over an area of approximately 50 acres (Lockheed Martin, 1999). 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. 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.

Information regarding the nature and extent of potential contamination at SWMU 1 can be found in the Draft Phase I RFI Report (CH2MHILL, June 2004). A background study has been accomplished which will provide background soil inorganics data to compare with site specific data.

#### 2.1.1.2 SWMU-2 – Fuels Off-Loading Site

SWMU-2 is located in the Camp Garcia area, and is the former location of four aboveground fuel storage tanks. The tanks consisted of two 20,000-gallon tanks, and two 30,000-gallon tanks. These tanks became operational in 1953 and were removed between 1978 and 1979. The refueling process took place every 3 months, and consisted of pumping fuel through an 8-inch submarine line to each of these tanks from a barge. Prior to initiating this refueling process, seawater had to be flushed from the submarine line. The following fuel types were stored at this site during the operational period: diesel fuel, unleaded gasoline, aviation gas (AVGAS), and jet propellant (JP)-5 fuel. The sludge that developed in these tanks was removed by a private contractor to be disposed of on the main island.

The site is overgrown with grass and small shrubs, with only minimal signs of previous activity. During the VSI, there were no signs of previous releases to either the soil or the

water, but no release controls were identified (PREQB-Vargas, 1995). During the site visit conducted on February 2, 2000, no signs of the tanks or piping were present. Only the steel supports for the pipeline for the loading area were present.

Information regarding the nature and extent of potential contamination at SWMU 2 can be found in the Draft Phase I RFI Report (CH2MHILL, June 2004). The soil inorganics data from the background investigation will be compared to the soil inorganics concentrations detected at SWMU 2 to assess whether the constituent concentrations exceeding the screening levels are site-related or consistent with background conditions.

#### 2.1.1.3 SWMU-4 – Waste Areas of Building 303

Building 303 was established as a storage area at Camp Garcia for batteries when it was erected in the 1960s. The SWMU 4 waste areas located in Building 303 comprised a spent battery accumulation area; a catch basin for hydraulic oil; a cleaning/decreasing basin; and a rags, absorbent, and grease storage area, which were designated as AOCs C, D, and E, respectively, per the classifications in the 1988 RCRA Facility Assessment (RFA) (A.T. Kearney, 1988) and the 1995 Revised RFA (PREQB-Vargas, 1995) reports. The 1988 RFA Report and the PREQB revised RFA Report both recommended no further action for all four sites included as SWMU 4.

The 1988 RFA Report referred to the spent battery accumulation areas as being inside Building 303, where batteries and battery acid were stored prior to disposal offsite on Naval Station Roosevelt Roads (NSRR). The acid from spent batteries was stored in a plastic container prior to offsite shipment. Facility personnel stated that this was also the approximate area where spent batteries were stored. During the VSI, there were no batteries/acid at this location (PREQB-Vargas, 1995). This area contained no visible signs of leakage on the concrete floor from previous storage of these materials.

The catch basin for hydraulic oil, approximately 5 feet long and 6 inches wide, is an area inside Building 303 designed to catch any hydraulic oil that may have dripped from the tanks above. During the VSI, there were no signs of leakage on the cement floor under the basin (PREQB-Vargas, 1995).

The cleaning basin was a square metal container, approximately 24 inches long, 18 inches wide, and 12 inches deep, used to hold solvents for the cleaning and degreasing of parts. The unit was formerly located inside Building 303.

The conclusion drawn from examinations of the Spent Battery Accumulation Area was that the potential for migration of waste or accumulated liquids to the soil, groundwater or surface water is very low, as stated in the PREQB 1995 revised RFA Report. During the 1995 revised RFA, no batteries or acid were present at this location, nor were there visible signs of acid leakage on the concrete floor from previous storage of these materials.

The exposure potential from this SWMU is considered minimal, as stated in the PREQB 1995 revised RFA Report. Another site visit was conducted February 2000 during which no staining or signs of contamination were observed on the concrete floor.

An additional building adjacent to Building 303 was identified in 2000. This building was used as a battery accumulation area and was designated as “Corrosive Materials Storage.” In the past it contained spent batteries and battery acid. Another small building was

identified adjacent to Building 303, and was designated as "Flammable Storage." It had been used for the storage of rags, adsorbent material, and grease contained in barrels.

Information regarding the nature and extent of potential contamination at SWMU 4 can be found in the Draft Phase I RFI Report (CH2MHILL, June 2004). The soil inorganics data from the background investigation will be compared to the soil inorganics concentrations detected at SWMU 4 to assess whether the constituent concentrations exceeding the screening levels are site-related or consistent with background conditions.

#### 2.1.1.4 SWMU-5 – Spent Battery Accumulation Area

This SWMU is located in the Inner Range portion of Observation Post 1 (OP-1) and is similar to SWMU 4. However, the batteries and battery acid were stored outside on a gravel driveway. According to the PREQB 1995 revised RFA Report, the acid from these batteries was typically emptied into plastic containers and shipped to NSRR. During the VSI, there were nine batteries stored at this site on the gravel driveway. There were no signs of any spills or leaks from these batteries, but no release controls were identified at this SWMU (PREQB - Vargas, 1995).

Based on the site visit conducted on February 2, 2000, release controls (plastic storage trays) for battery storage were in place, but no batteries were present. Although the startup date for SWMU 5 is unknown, the SWMU remained active through May 2003. During the January 2004 site visit, no signs of activity were evident at SWMU 5. No batteries were observed at the site. The plastic trays observed in 2000 had been removed as part of the closure of the former VNTR.

Information regarding the nature and extent of potential contamination at SWMU 5 can be found in the Draft Phase I RFI Report (CH2MHILL, June 2004). The soil inorganics data from the background investigation will be compared to the soil inorganics concentrations detected at SWMU 5 to assess whether the constituent concentrations exceeding the screening levels are site-related or consistent with background conditions.

#### 2.1.1.5 SWMU-6/7 – Waste Oil and Paint Accumulation Area

The PREQB 1995 revised RFA Report indicates that this area was used by the Seabees as a storage area for waste oil and paint. The site consists of a concrete slab and a small chain-link cage area. The waste oil at this location was containerized in 55-gallon drums, and the paint was stored in small containers. Tires and two drums of lubricating oil were present at this site. The waste oil and tires were temporarily stored on a grassy area awaiting shipping offsite to NSRR. The PREQB 1995 revised RFA Report states that this area became active in 1978, and was still active in 1988. During the VSI, there were visible signs of oil leakage onto the ground from the drums, and there were no release controls present (PREQB-Vargas, 1995). Based on the site visit conducted on February 2, 2000, this area was no longer active, and no waste was observed.

According to the 1988 and 1995 RFA Reports, SWMU 7 was another waste oil accumulation area outside Building 303 (Kearney, 1988; PREQB-Vargas, 1995). However, after interviewing onsite Navy personnel, it was determined that there was only one waste oil area; therefore, the combined area will hereafter be referred to as SWMU 6/7, a single SWMU.

Information regarding the nature and extent of potential contamination at SWMU 6/7 can be found in the Draft Phase I RFI Report (CH2MHILL, June 2004). The soil inorganics data from the background investigation will be compared to the soil inorganics concentrations detected at SWMU 6/7 to assess whether the constituent concentrations exceeding the screening levels are site-related or consistent with background conditions.

#### 2.1.1.6 SWMU-8 – Waste Oil Accumulation Area

This particular accumulation area is located outside the generator building at OP-1 on Cerro Matias. According to the 1988 RFA Report, this area contained drums that stored both waste lubricants and oils. These drums were stored on bare soil prior to being shipped offsite to NSRR. The accumulation area began operation in approximately 1978, and was still active at the time of the 1988 RFA. During the VSI, minimal spills of lubricating oil were present in the area of the drums, but there were no release controls visible (PREQB-Vargas, 1995). Based on the site visit conducted on February 2, 2000, release controls were in place, and no leaks or spills were observed. Waste oil was stored in plastic containers and then transported to NSRR.

Information regarding the nature and extent of potential contamination at SWMU 8 can be found in the Draft Phase I RFI Report (CH2MHILL, June 2004). The soil inorganics data from the background investigation will be compared to the soil inorganics concentrations detected at SWMU 8 to assess whether the constituent concentrations exceeding the screening levels are site-related or consistent with background conditions.

#### 2.1.1.7 SWMU-10 – Sewage Treatment Lagoons

According to the 1988 RFA and the PREQB 1995 revised RFA reports, the sewage treatment lagoons for Camp Garcia began service when the adjacent pump station was installed in the early 1950s. These lagoons were divided into two stages for the treatment of domestic waste. Four unlined lagoons were utilized in this process, including two that received the waste, and two that were considered polishing lagoons. Following waste treatment in the polishing lagoons, the remaining liquid was applied to land. Due to the small number of Seabees and civilians (45 people) using the sanitary facilities on a daily basis, the amount of domestic waste generated was small. There were no signs of release at this SWMU, although environmental sampling had not occurred at the time of the 1995 revised RFA (PREQB-Vargas, 1995). During the site visit conducted on February 2, 2000, the four lagoons were overgrown with vegetation and no longer active.

Information regarding the nature and extent of potential contamination at SWMU 10 can be found in the Draft Phase I RFI Report (CH2MHILL, June 2004). The soil inorganics data from the background investigation will be compared to the soil inorganics concentrations detected at SWMU 10 to assess whether the constituent concentrations exceeding the screening levels are site-related or consistent with background conditions.

#### 2.1.1.8 SWMU-12 – Solid Waste Collection Unit Area (formerly AOC B)

This area was formerly referred to as AOC B. However, according to the Consent Order, it was decided that this area should be a SWMU, and was consequently identified as SWMU 12. The collection area contained storage devices used to containerize garbage prior to its disposal at the Vieques Island landfill. The containers used to store this garbage

comprised: wooden boxes, wooden trailers, and both metal dumpsters and cans. During the VSI, only a wooden trailer was visible at this site (PREQB-Vargas, 1995). During the site visit conducted on February 2, 2000, two wooden trailers were sighted; the trailers were contained garbage and parked on a bend in the road below OP 1.

Information regarding the nature and extent of potential contamination at SWMU 12 can be found in the Draft Phase I RFI Report (CH2MHILL, June 2004). The soil inorganics data from the background investigation will be compared to the soil inorganics concentrations detected at SWMU 12 to assess whether the constituent concentrations exceeding the screening levels are site-related or consistent with background conditions.

#### 2.1.1.9 AOC A – Diesel Fuel Fill Pipe Area

According to the 1988 RFA and the 1995 PREQB revised RFA reports, this area contained a pipe used to fill the underground storage tank (UST) located at OP - 1 on Cerro Matias. The UST, as well as the fill pipe, were first put into service in approximately 1978. This site contained a 6-foot by 6-foot area of soil around the fill pipe. During the VSI, this area of soil appeared to be stained with fuel from spills during previous refueling procedures. Because the tank was located 25 feet southwest and downgradient of the fill pipe, this staining did not appear to be coming from the tank. There were no release controls found at this site (PREQB-Vargas, 1995).

The UST was replaced with a new UST in 1997. The closure report indicated that four samples were collected after the lines and tank were removed. The 1997 UST replacement at the site did not indicate the presence of any petroleum-related constituents. Prior to the land transfer in April 2003, the new UST was removed and six subsurface soil samples were collected around its former location. In addition, four subsurface soil samples were collected along the bottom of the fuel line that connected the UST to a generator.

Information regarding the nature and extent of potential contamination at AOC A can be found in the Draft Phase I RFI Report (CH2MHILL, June 2004). The proposed path forward for AOC A is currently being evaluated and discussed among the stakeholder agencies.

#### 2.1.1.10 AOC F – Rock Quarry

According to the 1988 RFA and the 1995 PREQB revised RFA reports, this site is located southwest of the former Camp Garcia landfill, where the gravel that the Navy used for roads and other construction purposes was quarried. However, during the VSI, used tires and some paper waste were visible at this location (PREQB-Vargas, 1995). During the site visit conducted on February 2, 2000, no signs of tires or paper waste were observed. The quarry did not appear to be active.

Information regarding the nature and extent of potential contamination at AOC F can be found in the Draft Phase I RFI Report (CH2MHILL, June 2004). The soil inorganics data from the background investigation will be compared to the soil inorganics concentrations detected at AOC F to assess whether the constituent concentrations exceeding the screening levels are site-related or consistent with background conditions.

#### 2.1.1.11 AOC G – Pump Station and Chlorination Building at Sewage Lagoons

This site, which is located at Camp Garcia, became active in the 1950s. After approximately 30 years of service, this building was shut down due to the decrease in activity at the base. The main purpose of this building was to pump and chlorinate domestic waste. The building was constructed with concrete, and built partially below grade. During the VSI, stains were visible on the concrete due to previous overflowing of the unit. However, there were no signs of damage to the grassy area in general vicinity (PREQB-Vargas, 1995). During the site visit conducted on February 2, 2000, no staining was observed on the chlorination building. The site is inactive and overgrown with vegetation.

Information regarding the nature and extent of potential contamination at AOC G can be found in the Draft Phase I RFI Report (CH2MHILL, June 2004). The soil inorganics data from the background investigation will be compared to the soil inorganics concentrations detected at AOC G to assess whether the constituent concentrations exceeding the screening levels are site-related or consistent with background conditions.

### 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, 2001) and the EBS (NAVFACENGCOM, 2003), several additional potential environmental sites were identified based on the review of historical aerial photos and facility records. The locations of the PI sites and PAOCs are shown on Figure 2-1.

There were a total of 23 PI and 24 PAOC sites identified in the EBS. The EBS Report was reviewed and a site visit was accomplished in September 2001 at many of the PI sites. PI/PAOC sites are described in Appendix B-1. A Draft Phase I RFI Report (CH2M HILL, June 2004) was developed that further described the 47 PI/PAOC sites; however, none of the sites were investigated during the Phase I RFI. The Draft Phase I RFI Report proposed eight of the PI/PAOC sites for a Phase I RFI, which was implemented as a PA/SI under CERCLA due to the 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, January 2006a). A draft PA/SI report will be submitted once the soil inorganics background investigation report has been finalized. The path forward for the remaining PI/PAOC sites is currently under discussion among Navy and regulatory agency representatives.

### 2.1.3 Munitions Response Sites

The former VNTR consists of approximately 14,600 acres and is divided operationally into four Munitions Response Areas (MRA)s that from west to east comprise: the EMA, an area approximately 10,673 acres; the SIA, approximately 2,500 acres; the 900-acre LIA, and the 200-acre ECA on the easternmost tip of Vieques. The Preliminary Range Assessment (CH2M HILL, 2003) identified 62 potential MRSs within these areas. A brief description of the sites and the types of MEC anticipated at each of the sites are summarized in Appendices A-2 and B-2. The four MRAs are further described below.

#### 2.1.3.1 Live Impact Area (MRA-LIA)

In 1965, air-to-ground (ATG) training activity began in the MRA-LIA where several mock-ups, such as old tanks and vehicles, were used as targets for aerial bombing. Beginning in

the mid-1970s, naval gunfire was practiced at the MRA-LIA, where several point and area targets for ships were constructed. Based on the naval gunfire and ATG gunfire that occurred from the 1970s through 2003, the entire 900 acres of the LIA potentially contains MEC.

The MRA-LIA is currently undergoing a time-critical removal action to remove munitions from the surface. Through May 2007 over 350 acres of munitions have been surface cleared of munitions. In May, 2007 a Draft Engineering Evaluation and Cost Analysis for the Subsurface Removal of MEC from the Roads and Beaches was submitted to the regulatory agencies for review.

#### 2.1.3.2 Surface Impact Area (MRA-SIA)

The MRA-SIA was established in the 1950s, when several Marine targets were constructed. Marine artillery ranging from 76-millimeter (mm) to 175-mm rounds were directed toward these targets from artillery gun positions within the MRA-SIA and MRA-EMA. During 1969, the construction of bulls-eye targets 1 and 2, used for inert bombing, established the east and west boundaries of the MRA-SIA. The aerial photo analysis identified numerous craters within the eastern two-thirds of the MRA-SIA, which were caused by mortar and artillery fire, naval gunfire, and aerial bombing. The craters were most visible on the 1962 aerial photographs. In addition, the aerial photo analysis identified several artillery gun positions and OPs within the MRA-SIA that may have been used for artillery fire. The locations of artillery gun positions and the artillery targets are shown in Figure 2-1.

A Phase II Site Inspection of munitions responses sites in the MRA-SIA is on-going. The current phase of the inspection includes conducting geophysical surveys of the roads and beaches for future subsurface removal of MEC. The results of the Phase II SI will be evaluated to assess the next munitions response action for the SIA.

#### 2.1.3.3 Eastern Maneuver Area (MRA-EMA)

The MRA-EMA was established in 1947 and provided maneuvering 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. The heaviest training events occurred from the mid-1950s until the early 1960s.

In 1966, six ranges were established along the northern coast of the MRA-EMA. The Preliminary Range Assessment Report (CH2M HILL, April 2003) describes each of these ranges in detail. The descriptions comprise the current field conditions of the ranges, as well as a summary of the archive data and aerial photo analysis for each range. The aerial photo analysis also identified three additional ranges, the locations of which are shown in Figure 2-1.

The aerial photo analysis identified eight artillery gun positions within the MRA-EMA from which Marine artillery gunfire was directed toward the MRA-SIA and MRA-LIA. The locations of these gun positions and the potential impact areas from these positions are shown on Figure 2-1. The artillery fired from the gun positions ranged from 60 mm to 175 mm rounds. The aerial photo analysis identified 19 additional gun positions that were used for either mortar or artillery gunfire and are shown on Figure 2-1.

A Phase II Site Inspection of several munitions responses sites in the EMA is on-going. The initial phase of the inspection includes conducting geophysical surveys of the roads and beaches for future subsurface removal of MEC.

#### 2.1.3.4 Eastern Conservation Area (MRA-ECA)

The MRA-ECA was not an operational area for munitions use. However, its close proximity to the MRA-LIA, where extensive naval gunfire and ATG bombing took place, resulted in the MRA-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 MRA-ECA. The MRA-ECA, is part of an on-going time-critical removal action to remove munitions from the surface. The surface removal activities for the ECA are anticipated to be initiated in the fall of 2007.

## 2.2 Western Vieques Sites

### 2.2.1 Environmental Sites

This subsection provides a description of the ERP and MRP sites currently under investigation on western Vieques. Sites that were investigated under the PA/SI and recommended for No further Action are not discussed in this section. However, descriptions and status of these sites, as well as sites for which remedial investigations (RIs) are being conducted, are provided in Appendices A-1 and B-1 and their locations are shown in Figure 2-2. The anticipated schedule for deliverable submittal for the following sites, as applicable, is provided in Figure 3-1.

#### 2.2.1.1 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 empty containers of lubricants, oil, solvents, and paints; broken glass; and rubble. 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. A fence separates the site from Highway 200, thereby limiting access. While the physical appearance of the waste items may diminish the aesthetic appeal of the site, the historical data collected suggest the waste does not pose an unacceptable risk to human health or ecological receptors (CH2M HILL, February 2007b). However, it was concurred upon by the Navy and the regulatory agencies that there is 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 poses an unacceptable uncertainty regarding a potential future source of contamination and, therefore, will be removed. An Engineering Evaluation/Cost Analysis (EE/CA) was prepared for public comment (CH2M HILL, December 2005) and a revised draft removal action work plan was submitted for regulatory review in April 2007. It is anticipated that the removal action process will commence in late 2007. Information

regarding the nature and extent of contamination and the risk assessment conclusions for SWMU 6 can be found in the Final RI Report (CH2M HILL, February 2007).

#### 2.2.1.2 SWMU 7 – Former Quebrada Disposal Site

SWMU 7 is located within the north central portion of the former NASD, immediately south of Highway 200, and includes a steep embankment and bottom of an ephemeral stream. The site was reportedly used for waste disposal between the early 1960s and late 1970s. The Navy ceased facility wide operations on the former NASD on April 30, 2001. The land transfer was completed on May 1, 2001, and the Navy has had no presence at the main operational area since that date. The main operational area of the former NASD sat largely undisturbed from May 2001 until early 2003 when the MOV began utilizing a small number of existing buildings for public works vehicle storage and maintenance activities. No activity at SWMU 7 has been reported since the late 1970s.

The ephemeral stream varies from 20 to 30 feet wide and 10 to 20 feet deep. More than 1,500 cubic yards of material are estimated to be present at the site (Greenleaf, 1984). Material disposed at the site included tires, sheet metal, drums, cans, bottles, batteries, and construction rubble. No known hazardous waste disposal occurred at this site.

The concentrations of inorganics in soil samples collected downgradient of the site were either less than or comparable to background concentrations, suggesting that surface runoff is not transporting inorganic contamination from the source area.

A visual site survey was conducted by a unexploded ordnance (UXO) avoidance team, and a magnetometer survey was conducted within the proposed sampling area as part of the UXO avoidance survey that was conducted as a safety measure prior to intrusive sampling during the expanded PA/SI (CH2M HILL, 2000). No live ordnance and explosives (OE) were identified at SWMU 7. The site is currently covered by dense vegetation. Information regarding the nature and extent of potential contamination at SWMU 7 can be found in the Draft RI Report (CH2M HILL, March 2004).

The risk assessment for the RI concluded that the site-related constituent levels do not pose an unacceptable risk to human health or to ecological receptors, based on existing and future land use. However, it was concurred upon by the Navy and the regulatory agencies that there is 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 7 poses an unacceptable uncertainty regarding a potential future source of contamination and, therefore, will be removed. An EE/CA was prepared for public comment (CH2M HILL, December 2005) and a revised removal action work plan was submitted for regulatory review in April 2007. It is anticipated that the removal action process will commence in late 2007.

#### 2.2.1.3 AOC E – Former Underground Storage (UST) Tank Site 2016

AOC E is located within the public works area of the former NASD at the former location of a 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 hydrocarbons (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 Draft Remedial Investigation/ Feasibility Study (RI/FS) Report for AOC E (CH2M HILL, February 2004). 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 multi-phase vacuum extraction (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) remains.

Based on agency review of the Draft RI/FS Report, additional sampling of groundwater and soils was requested by USEPA. A sampling and analysis plan was submitted to the regulatory agencies on August 23, 2004. Additional groundwater sampling was accomplished in August 2004 but the proposed soil sampling was postponed until further regulatory review of the proposed sampling approach could be completed. A Supplemental RI Work Plan was submitted in November 2005 (CH2M HILL, November 2005a) which included soil sampling and additional groundwater sampling. The field work was completed in December 2005. Based on a newly defined human health risk assessment protocol (CH2M HILL, May 2007b), the Draft RI/FS Report will be revised and submitted as a revised Draft RI Report for regulatory review and will include the data collected since the original RI fieldwork.

#### 2.2.1.4 AOC H – Abandoned Former Power Plant

AOC H is located on the north side of Route 200 just east of the public works area. It consists of an abandoned power plant that operated from 1941 to 1943. The power plant building was reportedly used for fire-fighter training from the 1960s through the 1980s. Fire-fighting activities reportedly consisted of placing diesel fuel on tires and igniting the tires inside the building. The diesel fuel was stored in a 2,000- to 3,000-gallon above ground storage tank (AST) located on the western side of the power plant building.

Information regarding the site conditions at AOC H and the risk assessment conclusions can be found in the Draft RI Report for AOC H (CH2M HILL, April 2004). The human health and ecological risk assessments concluded that the site does not pose an unacceptable risk to human health and the environment from site-related constituents. Regulatory agency comments on the Draft RI Report have been resolved through agency dialogue, and the Final AOC H RI Report was submitted in July 2007.

#### 2.2.1.5 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. Information regarding the nature and extent of contamination at AOC I can be found in the Interim RI Report (CH2M HILL, January 2005a). Based on the information provided in the Interim RI Report, two additional monitoring wells were proposed in the Supplemental RI Work Plan (CH2M HILL, November 2005b). The supplemental field work was completed in December 2005. Based on a newly defined human health risk assessment protocol (CH2M HILL, February 2007b), the Draft RI Report will be prepared and submitted for regulatory review and will include the data collected since the original RI fieldwork.

#### 2.2.1.6 AOC J – Former Operations/Staging Area Disposal Site

AOC J encompasses an area of approximately 1.2 acres. The area was used as a solid waste disposal site associated with construction staging activities. The depth of disposal appears to be 2 to 4 feet deep (ERM, 2000). It was used between the mid-1960s and 1973, after which the waste was removed from the site and placed in a municipal landfill off base. During a site visit conducted by CH2M HILL on September 14, 2000, 106-mm shell casings and 20-mm ammunition boxes were observed. Site visits during the EBS indicated there was visible debris consisting of scrap metal from construction equipment, shell casings, glass fragments, and wood waste (ERM, 2000).

Information on the nature and extent of potential contamination and the risk assessment conclusions for AOC J can be found in the Final RI Report (CH2M HILL, May 2007). The risk assessment for the RI concluded that the site-related constituent levels do not pose an unacceptable risk to human health or to ecological receptors, based on existing and future land use. However, it was concurred upon by the Navy and the regulatory agencies that there is 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 AOC J poses an unacceptable uncertainty regarding a potential future source of contamination and, therefore, will be removed. An EE/CA was prepared for public comment (CH2M HILL, December 2005) and a revised removal action work plan was submitted for regulatory review in April 2007. It is anticipated that the removal action process will commence in late 2007.

#### 2.2.1.7 AOC R – Former Operations/Staging Area

AOC R is located in the public works area of the former NASD and consists of an area used as a construction staging area and public works operational area used from about 1965 to 1971. The large concrete pad at the site was present before the Navy owned the area and can be seen in 1937 aerial photographs. In the late 1960s, a carpentry shop and enlisted club were located at the pad. Light vehicle maintenance activities such as oil changes were conducted near the pad to the northwest. Additionally, a large AST was once located south of the pad.

The Expanded PA/SI at AOC R included the collection of 34 surface soil samples (CH2M HILL, 2002). Because elevated levels of several constituents (relative to regulatory screening criteria) were identified during the Expanded PA/SI, the site was recommended for an RI. The Draft Work Plan for the RI was submitted for regulatory review in April 2004. After the discovery of several munitions items at the onset of the RI activities, the Work Plan was revised to add UXO avoidance procedures and resubmitted to the agencies in February 2005. Regulatory comments were submitted to the Navy in June 2005. The supplemental field work at AOC R was completed in January 2006 in accordance with the Final RI Work Plan (CH2M HILL, November 2005c). Preliminary evaluation of the RI data indicates additional data are needed to adequately assess the nature and extent of contamination and potential human health and ecological risks. Currently the RI data is being evaluated and additional sampling will be recommended. It was also concurred upon by the Navy and regulatory agencies that debris identified at the site will be removed as a potential source of contamination. An EE/CA was prepared for public comment (CH2M HILL, December 2005) and a revised removal action work plan was submitted for regulatory review in April 2007. It is anticipated that the removal action process will commence in late 2007. The additional data discussed above will be collected in conjunction with the removal action.

#### 2.2.1.8 Environmental Sites Recommended For No further Action

The results of both Expanded PA/SIs for the Former NASD recommended a total of nine sites for no further action in the No Further Action Report for Nine Sites (CH2M HILL, October 2006). The No Further Action recommendation was based on several data sources including: review of historical aerial photos, interviews with former employees, review of archived records, and site inspections. In addition, samples were collected at the sites and analyzed for: inorganics, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOC)s, polychlorinated biphenyls (PCB)s, and pesticides. Furthermore, a quantitative human health risk assessment and a qualitative ecological survey were completed for each site. The human health risk assessment concluded the sites did not pose an unacceptable risk to human health. In February 2007 the PREQB issued a statement detailing their decision on the No Further Action document. The statement generally concurs with the no further action determinations. However, details of site closeouts and any additional requirements are being discussed by the Navy and PREQB.

### 2.2.2 Munitions Response Site (SWMU 4)

SWMU 4 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 and primers), ordnance items from the torpedo shop at NSRR, and flares and cartridge-activated devices (Greenleaf, 1984).

Based on the results of the EBS, a phased MEC RI, following the CERCLA process, was conducted to meet the following objectives: 1) identify the specific location of the former OB/OD pits that were not previously documented, 2) 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, 3) evaluate the explosives safety risk of the MEC items identified on-site, and 4) develop an 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 (NAEVA, 2003).

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.

The Expanded PA/SI identified constituents in soil above regulatory screening criteria (CH2M HILL, 2000). The RI Work Plan was finalized in February 2007 (CH2M HILL, February 2007a) and the RI field work was completed in March 2007. Once the data are validated, they will be evaluated to determine whether additional data are necessary or whether they are sufficient to sufficiently characterize the nature and extent of contamination and assess potential human health and ecological risks.

A Draft MEC Remedial Investigation Report has been submitted to further assess the impacts from the MEC (CH2M HILL, 2004). A Draft Engineering Evaluation/Cost Analysis Report ( CH2M HILL, May 2007), which evaluates the removal of subsurface MEC from the roads and beaches in the vicinity of SWMU 4 was submitted to the regulators. The timing for implementing the additional munitions removal activities at the site will be based on a prioritization of the site.

Currently SWMU 4 is managed by the FWS as part of the wildlife refuge. Access to the site is restricted with a perimeter fence. The road accessing the site from the east is gated. FWS is in the process of finalizing a Comprehensive Conservation Plan/Environmental Impact Statement (CCP/EIS) for the Vieques National Wildlife Refuge that will provide long-term guidance for the management and public use of these lands. It is anticipated that future land use scenarios for western Vieques and the SWMU 4 area will be addressed in the CCP.

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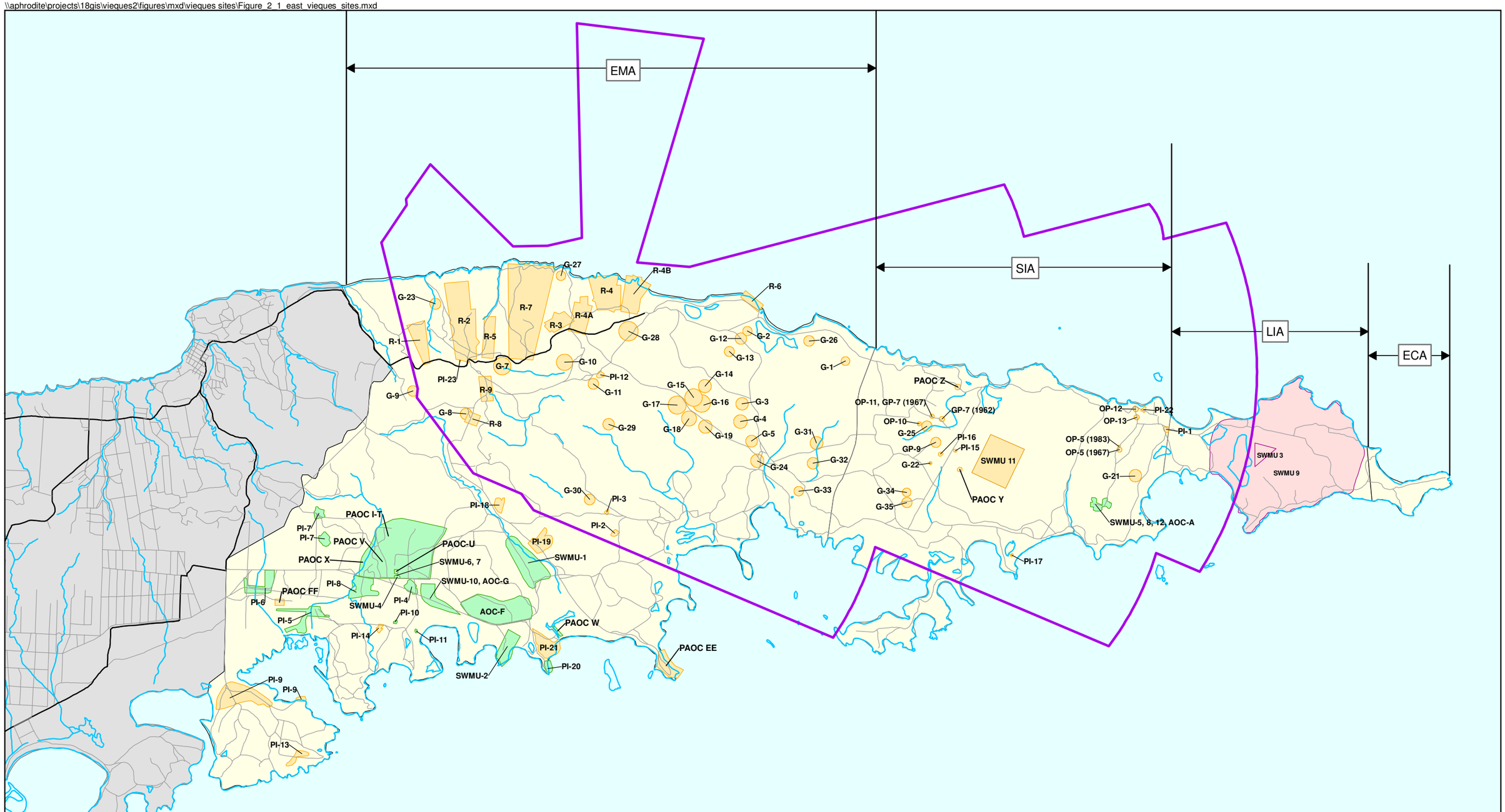


**Legend**

- Site Screening Areas - Environmental Sites
- Site Screening Areas - Munitions Response Sites
- Munitions Remedial Investigation Sites
- Artillery Safety Fan
- Major Roads
- Minor Roads

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Meters

Figure 2-1
East Vieques Sites To Be Assessed under CERCLA
Draft Site Management Plan
Vieques, Puerto Rico

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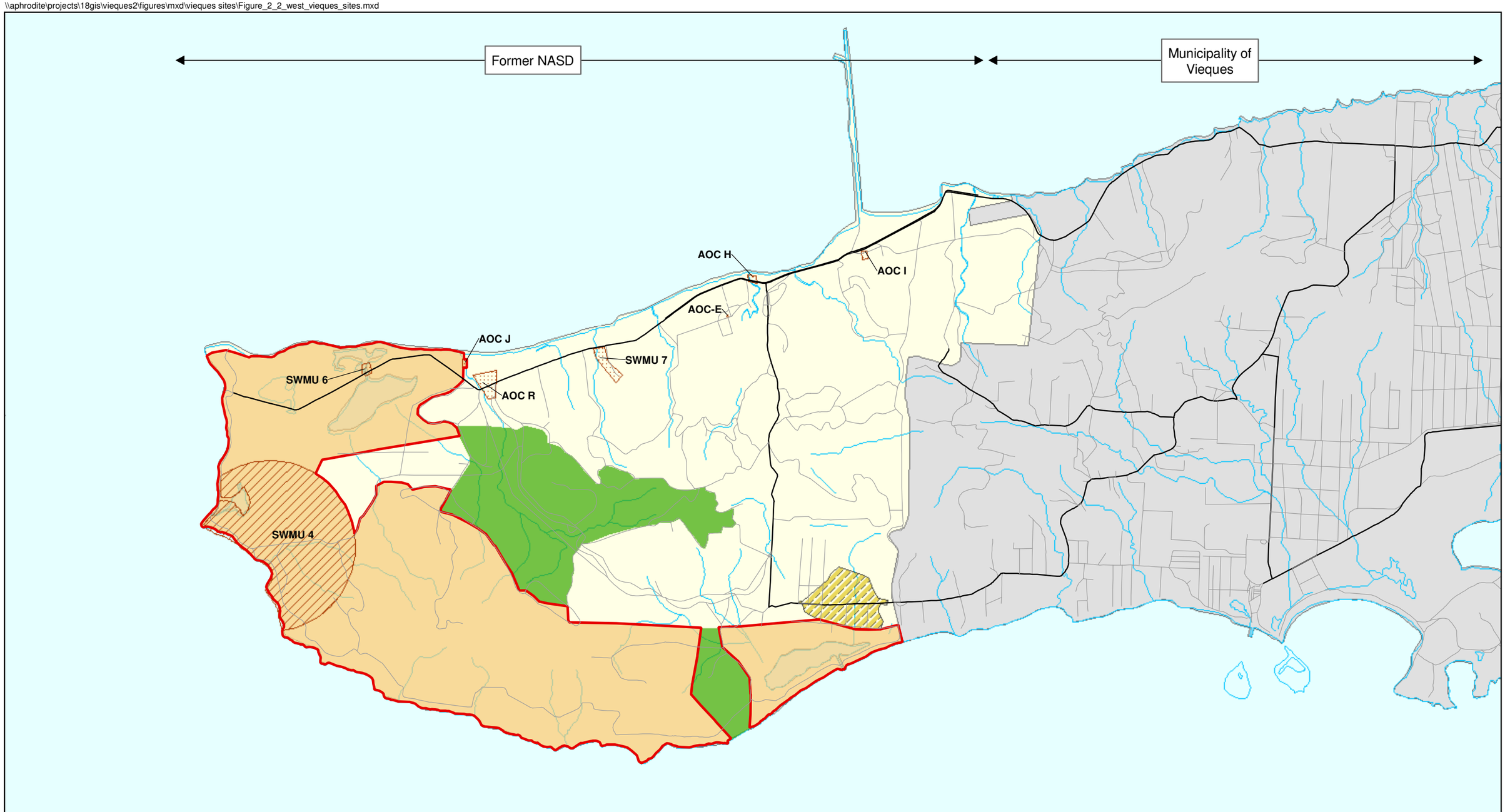


**Legend**
- Major Roads
- Minor Roads
- Property Line
- Environmentall Remedial Investigation / Feasibility Study Sites
- Munitions Rewponse Site
- PR Conservation Trust
- Navy Property - ROTHR Site
- Dept. of Interior

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Figure 2-2
West Vieques Sites To Be Assessed under CERCLA
Draft Site Management Plan
Vieques, Puerto Rico

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SECTION 3

# Schedules and Funding

This section presents the SMP schedule requirements 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 schedules, presented in Figure 3-1, will be re-evaluated and updated for the SMP on an annual basis

## 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 15th. .

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: (I) the DoD relative risk rankings for the Site; (ii) current, planned, or potential uses of the Site; (iii) ecological impacts; (iv) impacts on human health; (v) intrinsic and future value of affected resources; (vi) cost effectiveness of the proposed activities; (vii) environmental justice considerations; (viii) regulatory requirements; and (ix) actual and anticipated funding levels.

Unless the Parties agree to another time period, all draft documents shall be subject to a 60-day period for review and comment. In cases involving complex or unusually lengthy reports, EPA, Interior, or the Commonwealth may extend the 60-day comment period for an additional 20 days by written notice to Navy prior to the end of the 60-day period. On or before the close of any comment period, EPA, the Interior, and the Commonwealth shall transmit their written comments to the Navy.

Following the close of any comment period for a draft document, Navy shall give full consideration to all written comments on the draft document submitted during the comment period. Within 30 days of the close of the comment period on a Draft Secondary Document, Navy shall transmit to EPA, Interior, and the Commonwealth its written response to comments received within the comment period. Within 60 days of the close of the comment period on a Draft Primary Document, Navy shall transmit to EPA, Interior, and the Commonwealth a Draft Final Primary Document, which shall include Navy's response to all written comments received within the comment period. While the resulting Draft Final Document shall be the responsibility of Navy, it shall be the product of consensus to the maximum extent possible.

The Navy may extend the period for either responding to comments on a Draft Document or for issuing the Draft Final Primary Document for an additional 20 days by providing timely notice to EPA, Interior and the Commonwealth. In appropriate circumstances, this time period may be further extended in accordance with the FFA.

The Draft Final Primary Document shall serve as the final Primary Document if no Party invokes dispute resolution regarding the document or, if invoked, at the completion of the dispute resolution process should Navy's position be sustained.

If Navy's determination is not sustained in the dispute resolution process, Navy shall prepare, within not more than 35 days, a revision of the Draft Final Document that conforms to the results of dispute resolution.

## 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. Primary Documents are initially issued by Navy in draft subject to review and comment by EPA, Interior, and the Commonwealth. Following receipt of comments on a particular Draft Primary Document, Navy will respond to the comments received and issue a Draft Final Primary Document subject to dispute resolution. The Draft Final Primary Document will become the Final Primary Document 30 days after issuance if dispute resolution is not invoked or as modified by decision of the dispute resolution process. Examples of primary documents include the following:

- RI/FS Workplans, including Sampling and Analysis Plan and QAPP
- Risk Assessment Work Plans and Reports
- RI Reports
- Initial Screening of Alternatives
- FS Reports
- FFS Reports
- Proposed Plans
- Records of Decision
- Final Remedial Designs (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)
- Site Management Plan
- 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 EPA, Interior, 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
- Time Critical Removal Action Work Plans
- Site Screening Process (SSP) Work Plans and Reports
- Non-Time Critical Removal Action Work Plans
- Pilot/Treatability Study Work Plans
- Pilot/Treatability Study Reports
- Engineering Evaluation/Cost Analysis Report
- Well Closure Methods and Procedures
- Sampling and Data Results
- Preliminary/Conceptual Designs, or Equivalents
- Prefinal Remedial Designs
- All Removal Action Memoranda/Closeout Reports
- Periodic Five Year Review Assessment Report

For documents pertaining to non-time critical removal actions, Navy will coordinate and consult with Interior pursuant to the MOAs, and EPA.

## 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 FY08 through FY12 and beyond is summarized in Table 3-1. The historical and projected funding is illustrated on Figure 3-2.

TABLE 3-1
Vieques Funding, In Thousands

| Fiscal Year | Eastern Environmental | Western Environmental | Eastern Munitions | Western Munitions | Totals |
|---|---|---|---|---|---|
| FY08 | 1,993 | 226 | 19,000 | 1000 | 22,219 |
| FY09 | 1,691 | 211 | 19,000 | 1000 | 21,902 |
| FY10 | 179 | 182 | 19,000 | 1000 | 20,361 |
| FY11 | 1,597 | 203 | 19,000 | 1000 | 21,800 |
| FY12 & beyond | 6,003 | 92 | 133,643 | 115 | 139,853 |
| **Totals** | **11,463** | **914** | **209,643** | **4,115** | **226,135** |

**FIGURE 3-1**
**Vieques Enviromental and Munitions Response Schedules**
**Site Management Plan**
***Former Naval Facility Vieques, Puerto Rico***
***August 13, 2007***

| *Month:* | June-07 | | | | July-07 | | | | August-07 | | | | | September-07 | | | | October-07 | | | | November-07 | | | | | December-07 | | | | January-08 | | | | Fe | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Week Ending:* | 6/8 | 6/15 | 6/22 | 6/29 | 7/6 | 7/13 | 7/20 | 7/27 | 8/3 | 8/10 | 8/17 | 8/24 | 8/31 | 9/7 | 9/14 | 9/21 | 9/28 | 10/5 | 10/12 | 10/19 | 10/26 | 11/2 | 11/9 | 11/16 | 11/23 | 11/30 | 12/7 | 12/14 | 12/21 | 12/28 | 1/4 | 1/11 | 1/18 | 1/25 | 2/1 | 2/8 |
| **Site Management Plan** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **ENVIRONMENTAL REPORTS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **West Vieques** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AOC E RI Report | Interim Deliverable | | | | | | | | RI Report | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AOC E FS Report (if necessary) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AOC H RI Report | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AOC H NFA Proposed Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Note: Final Prop | |
| AOC H NFA Record of Decision | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AOC I RI Report | Interim Deliverable | | | | | | | | RI Report | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AOC I FS Report (if necessary) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AOC R RI Report | Note: Will follow removal action | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SWMU 4 RI Report | Note: Will follow collection of supplemental data | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SWMU 4 FS Report (if necessary) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Removal Action Work Plan, AOCs J/R SWMUs 6/7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Removal Action Report, AOCs J/R SWMUs 6/7 | Note: Will be prepared upon receipt of validated confirmatory data | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **East Vieques** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Background Soil Inorganics Report | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PA/SI Report 12 Consent Order/8 PI/PAOC Sites | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Expanded SI Work Plan (if necessary) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PA/SI Work Plan for Other PI/PAOC Sites (if nec.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **MUNITIONS REPORTS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **East Vieques** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EE/CA For Roads /Beaches | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Prescribed Burn Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Air Monitoring Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subsurface MEC Removal Action Work Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MPPEH/MD Processing Work Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ERA/Phase II Report | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **West Vieques** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EE/CA For Roads /Beaches (SWMU 4) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**LEGEND**

Navy Preparation of Draft Document
Regulator Review
Comment Responses/Draft Final Document
RAB Review/Final Document

**FIGURE 3-1**
**Vieques Enviromental and Munitions Response Schedules**
**Site Management Plan**
***Former Naval Facility Vieques, Puerto Rico***
***August 13, 2007***

| *Month:* | bruary-08 | | | March-08 | | | | April-08 | | | | May-08 | | | | | June-08 | | | | July-08 | | | | August-08 | | | Target Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Week Ending:* | 2/15 | 2/22 | 2/29 | 3/7 | 3/14 | 3/21 | 3/28 | 4/4 | 4/11 | 4/18 | 4/25 | 5/2 | 5/9 | 5/16 | 5/23 | 5/30 | 6/6 | 6/13 | 6/20 | 6/27 | 7/4 | 7/11 | 7/18 | 7/25 | 8/1 | 8/8 | 8/15 | |
| **Site Management Plan** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **ENVIRONMENTAL REPORTS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **West Vieques** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AOC E RI Report | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AOC E FS Report (if necessary) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AOC H RI Report | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AOC H NFA Proposed Plan | posed Plan is prepared following agency review | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AOC H NFA Record of Decision | | | | | | | | | | | | | | | | | | | | | Note: Final ROD results from Navy-regulatory agency process | | | | | | | |
| AOC I RI Report | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AOC I FS Report (if necessary) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AOC R RI Report | | | | | | | | | | | | | | | | | | | | | | | | | | | | Draft 8/09 |
| SWMU 4 RI Report | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SWMU 4 FS Report (if necessary) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Removal Action Work Plan, AOCs J/R SWMUs 6/7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Removal Action Report, AOCs J/R SWMUs 6/7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | Draft 8/09 |
| **East Vieques** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Background Soil Inorganics Report | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PA/SI Report 12 Consent Order/8 PI/PAOC Sites | | | | Note: Draft Final prepared only after resolution of comments | | | | | | | | | | | | | | | | | | | | | | | | |
| Expanded SI Work Plan (if necessary) | | | | | | | | | | | | | | | | | | | | | | | | | Note: Draft Final prepared only after resolution of comments | | | |
| PA/SI Work Plan for Other PI/PAOC Sites (if nec.) | | | | | | | | | | | | Note: Draft prepared after concurrence upon agency about which, if any, other PI/PAOC sites requires a PA/SI | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **MUNITIONS REPORTS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **East Vieques** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EE/CA For Roads /Beaches | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Prescribed Burn Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Air Monitoring Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subsurface MEC Removal Action Work Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MPPEH/MD Processing Work Plan | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ERA/Phase II Report | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **West Vieques** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EE/CA For Roads /Beaches (SWMU 4) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**LEGEND**

Navy Preparation of Draft Document

Regulator Review

Comment Responses/Draft Final Document

RAB Review/Final Document

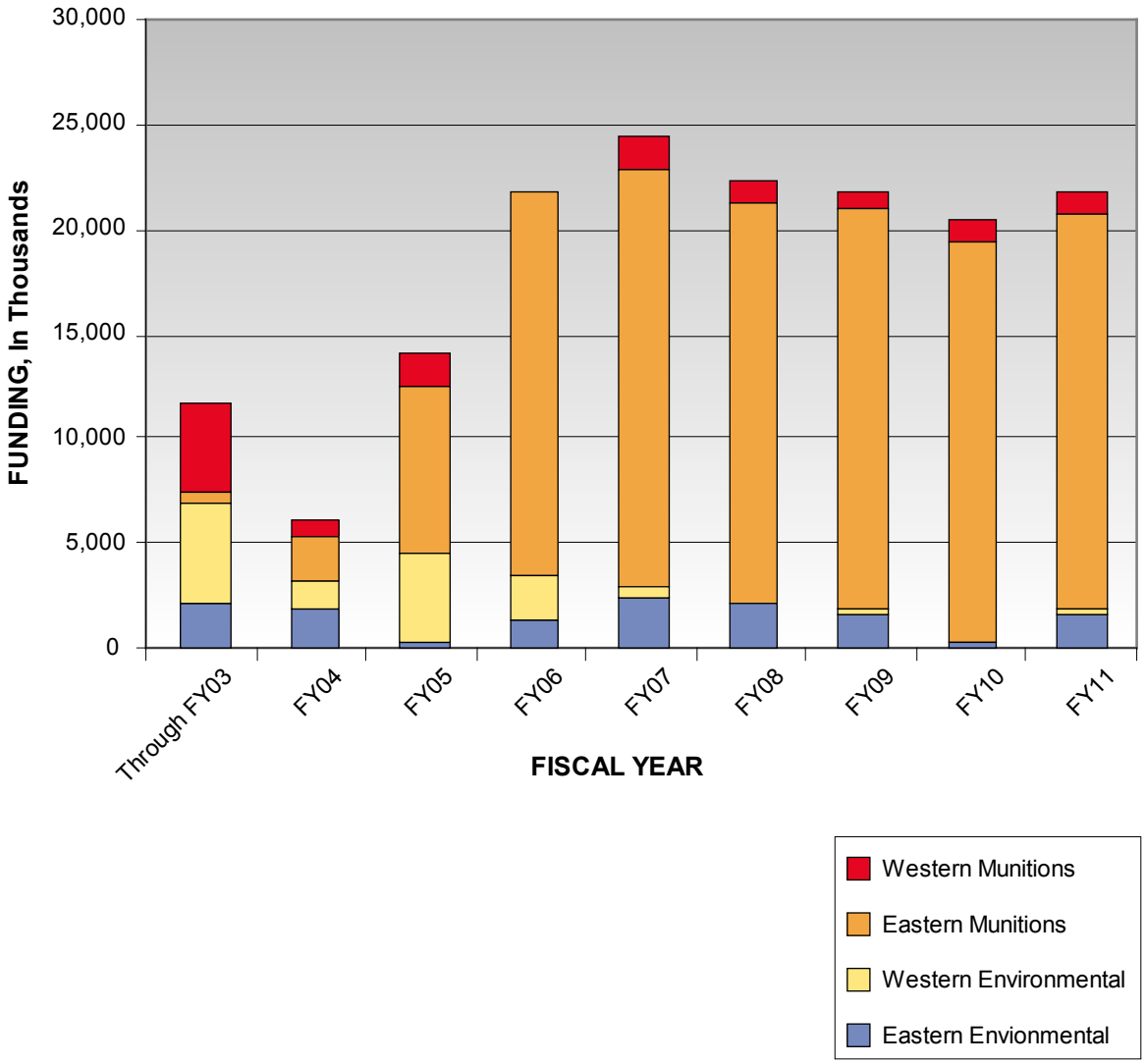


**FIGURE 3-2**
Vieques Funding FY03 - FY11
*Draft Site Management Plan*
*Former Naval Facility Vieques, Puerto Rico*

SECTION 4

# References


Baker Environmental, Inc. November 1999. Final Results of the Hydrogeologic Investigation, Vieques Island, Puerto Rico.

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

CH2M HILL, May 2007a. Final Master Quality Assurance Project Plan, Environmental Restoration Program, Vieques, Puerto Rico.

CH2M HILL, May 2007b. Draft Engineering Evaluation/Cost Analysis Report, Munitions Response Program, Vieques, Puerto Rico.

CH2M HILL, February 2007a. Final Remedial Investigation Report Solid Waste Management Unit (SWMU) 6, Former Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL, January 2007. Draft East Vieques Background Soil Inorganics Investigation Report, Former Vieques Naval Training Range, Vieques Island, Puerto Rico

CH2M HILL, January 2007a. Final Environmental Remedial Investigation Work Plan Solid Waste Management Unit (SWMU) 4, Former Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL, January 2007b. Draft East Vieques Background Soil Inorganics Investigation Report, Former Vieques Naval Training Range, Vieques Island, Puerto Rico.

CH2M HILL, October 2006. Final No Further Action Report for Nine Sites, Former U.S. Naval Ammunition Support Detachment, Vieques, Puerto Rico.

CH2M HILL, January 2006a. Final Preliminary Assessment/Site Inspection Work Plan for Eight PI/PAOC Sites, Former Vieques Naval Training Range (VNTR), Vieques Island, Puerto Rico.

CH2M HILL, December 2005. Draft Final Engineering Evaluation/Cost Analysis for Area of Concern J and R, and Solid Waste Management Units 6 and 7, Former Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL, November 2005a. Final Supplemental Remedial Investigation Work Plan for Area of Concern (AOC) E, The Former U.S. Naval Ammunition Support Detachment (NASD), Vieques Island, Puerto Rico.

CH2M HILL, November 2005b. Final Supplemental Remedial Investigation Work Plan for Area of Concern (AOC) I, The Former U.S. Naval Ammunition Support Detachment (NASD), Vieques Island, Puerto Rico.

CH2M HILL, November 2005c. Final Remedial Investigation Work Plan for Area of Concern (AOC) R at the Former U.S. Naval Ammunition Support Detachment (NASD), Vieques Island, Puerto Rico

CH2M HILL. May 2005. Phase I RFI Data Summary Report for the 9 SWMUs and 3 AOCs Identified in the RCRA Consent Order, Former Atlantic Fleet Weapons Training Facility, Vieques Island, Puerto Rico.

CH2M HILL. May 2005. Draft Final Groundwater Baseline Investigation at the U.S. Navy's Eastern Maneuver Area, Former Atlantic Fleet Weapons Training Facility, Vieques Island, Puerto Rico.

CH2M HILL. January 2005a. Interim Remedial Investigation Report for Area of Concern (AOC) I at the Former U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. January 2005b. Final Remedial Investigation/Feasibility Study Work Plan for AOC R at the Former U.S. Naval Ammunition Support Detachment (NASD), Vieques Island, Puerto Rico.

CH2M HILL. January 2005c. Draft Time Critical Removal Action/Interim Measures Work Plan, Surface Munitions of Explosives Concern at Munitions Response Area-Live Impact Area, Munitions Response Sites 1 through 4, 6, 16, 17, and 30, Former Vieques Naval Training Range (VNTR), Vieques, Puerto Rico.

CH2M HILL. November 2004. Final Expanded Range Assessment and Phase I Site Inspection Work Plan for Former Vieques Naval Training Range (VNTR), Vieques Island, Puerto Rico.

CH2M HILL. November 30, 2004. Draft Site Specific Work Plan Phase I RCRA Facility Investigation for Eight PI/PAOC Sites, Former Atlantic Fleet Weapons Training Facility, Vieques Island, Puerto Rico.

CH2M HILL. September 2004. Final SWMU 4 MEC Remedial Investigation Report, Former U.S. Naval Ammunition Support Detachment, Vieques, Puerto Rico.

CH2M HILL. August 2004. Final Remedial Investigation/Feasibility Study Work Plan for AOC I and AOC R at the Former U.S. Naval Ammunition Support Detachment (NASD), Vieques Island, Puerto Rico.

CH2M HILL. July 2004. Draft Final Closure Plan, Open Burn/Open Detonation Site, Former Atlantic Fleet Weapons Training Facility, Vieques, Puerto Rico.

CH2M HILL. June 2004. Draft Phase I RCRA Facility Investigation Report, Former Atlantic Weapons Training Facility, Vieques Island, Puerto Rico.

CH2M HILL. April 2004. Draft Remedial Investigation Report Area of Concern (AOC) J, Former U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. April 2004. Draft Remedial Investigation Report Area of Concern (AOC) H, Former U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. March 2004. Draft Remedial Investigation Report Solid Waste Management Unit (SWMU) 7, Former U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. February 2004. Draft Remedial Investigation/Feasibility Study Report for Area of Concern (AOC) E, Former U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

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

CH2M HILL. July 2003. Final Remedial Investigation/Feasibility Study Work Plan for Solid Waste Management Unit (SWMU) 6, SWMU 7, Area of Concern (AOC) H, and AOC J, Former U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. June 12, 2003. Final Master Work Plan, Atlantic Fleet Weapons Training Facility, Vieques Island, Puerto Rico.

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

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

CH2M HILL. November 18, 2002. Final Expanded Preliminary Assessment/Site Investigation, Phase II Seven Sites, Former U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. October 16, 2002. Final Soil, Surface Water, and Sediment Background Investigation Report, U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. May 2002. Final Site Management Plan FY 2001-2002, Former NASD Facility, U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. May 2002. Final Remedial Investigation/Feasibility Study Work Plan for Area of Concern (AOC) E, Former U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. November 9, 2001. Final Ordnance and Explosives (OE) Site-Specific Work Plan for Solid Waste Management Unit 4.

CH2M HILL. October 2001. Final Ordnance and Explosives Master Workplan for the Former U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. September 2001. Final Work Plan For Community Relations RCRA Facility Investigation, Atlantic Fleet Weapons Training Facility, Vieques Island, Puerto Rico.

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

CH2M HILL. July 2001. Preliminary OE Site Assessment Report for the Green Beach Area of Former U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. May 2001. Draft Final Community Relations Plan, Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. March 2001. Final Initial Ordnance and Explosives Site Assessment Workplan for the Green Beach Area, U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. March 2001. Closure of Fuel Underground Storage Tanks No. 1 and No. 2 Building 2015, U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. February 2001. Final Description of Current Conditions Report, Atlantic Fleet Weapons Training Facility, Vieques Island, Puerto Rico.

CH2M HILL. January 2001. Final Master Work Plan, U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. December 2000. Workplan and Sampling and Analysis Plan for Soil, Groundwater, Surface Water, and Sediment Background Investigation. Former U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. December 2000. Final Phase II Site Specific Work Plan Expanded Preliminary Assessment/Site Investigation for U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

CH2M HILL. October 2000. Live Impact Area Soil Sampling Report, U.S. Navy Facility, Vieques Island, Puerto Rico.

CH2M HILL. October 2000. Finding of Suitability for Early Transfer for U.S. Naval Ammunition Support Detachment, Vieques Island, Puerto Rico.

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

CH2M HILL. May 2000. Draft Addendum to the Site Specific Work Plan Expanded Preliminary Assessment/Site Investigation, U.S. Naval Ammunition Support Detachment, Vieques, Puerto Rico.

CH2M HILL. March 2000. Site Specific Work Plan Expanded Preliminary Assessment/ Site Investigation, U.S. Naval Ammunition Support Detachment, Vieques, Puerto Rico.

Department of Defense (DoD). January 2004. Sampling and testing of perchlorate at DoD installations. Interim guidance.

Environmental Resource Management, Inc. (ERM). October 2000. Environmental Baseline Survey; Final.

Environmental Science and Engineering (ESE). 1988. Preliminary Assessment/Site Investigation for SWMU 5, SWMU 6, and SWMU 7.

Environmental Science and Engineering, Inc. (ESE). May 1986. Confirmation Study to Determine Possible Dispersion and Migration of Specific Chemicals – U.S. Naval Station, Roosevelt Roads, Puerto Rico and U.S. Naval Ammunition Facility, Vieques: Evaluation of Data from First and Second Rounds of Verification Sample Collection and Analysis.

Geo-Marine, Inc. 2003. Draft Final Integrated Natural Resources Management Plan, Plan Years 2003-2012, Navy Lands on Vieques, Vieques Island, Puerto Rico.

Greenleaf/Telesca Planners, Engineers, Architects, Inc. and Ecology and Environment, Inc. (Greenleaf) September 1984. Initial Assessment Study, Naval Station Roosevelt Roads, Puerto Rico.

A.T. Kearney, Inc. and K.W. Brown & Associates, Inc. October 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.

A.T. Kearney, Inc. and K.W. Brown & Associates, Inc. October 1988. Phase II RCRA Facility Assessment of the Naval Ammunition Facility, Vieques Island, Puerto Rico.

Lockheed Martin Technology Services. August 1999. Aerial Photographic Analysis, U.S. Navy Atlantic Fleet Weapons Training Facility, Solid Waste Management Units 1 and 10, Areas of Concern F and G, Vieques Island, Puerto Rico.

Municipality of Vieques. 2001. Memorial General Plan de Ordenación Terretorial de Vieques.

Naval Facilities Engineering Command. April 1, 2003. Draft Final Environmental Baseline Survey, Vieques Naval Training Range, Vieques Island, Puerto Rico.

Naval Facilities Engineering Command. April 2003. Final Draft Preliminary Range Assessment Report, Vieques Naval Training Range, Vieques Island, Puerto Rico.

Puerto Rico Environmental Quality Board (Herminio Concepcion Vargas). September 1995. Revised RCRA Facility Assessment Report, Atlantic Fleet Weapons Training Facility, Vieques, Puerto Rico.

United States Environmental Protection Agency, Region II. January 10, 2000. Resource Conservation and Recovery Act (RCRA), Section 3008(h) Order on Consent – Atlantic Fleet Weapons Training Facility (AFWTF), Vieques PR, EPA ID #PRD980536221, Administrative Order on Consent Docket No. RCRA-02-2000-7301.

U.S. Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual.

U.S. Environmental Protection Agency (USEPA). 1994. Amended Guidance on Preliminary Risk Evaluations (PREs) for the Purpose of Reaching a Finding of Suitability to Lease.

U.S. Navy, Naval Facilities Engineering Command, Atlantic Division (Atlantic Division). September 2003. Summary of NFA Report for Nine Sites. Prepared by CH2M HILL.

U.S. Navy, NAVFAC Atlantic. Interim RI Report for AOC I, January 2005, Prepared by CH2M HILL.

U.S. Geological Survey (USGS). 1989. Reconnaissance of the Ground-Water Resources of Vieques Island, Puerto Rico. By Sigfredo Torres-Gonzalez. Report 86-4100.

# Appendixes

APPENDIX A STATUS OF REMEDIAL INVESTIGATION / FEASIBILITY STUDY SITES IN VIEQUES PR

I. Status of Environmental Remedial Investigation/ Feasibility Study Sites in Vieques, PR

| Site Designation | Description of Site | Status |
|---|---|---|
| SWMU-6 Mangrove Disposal Site (West Vieques- DOI Property) | Disposal of trash (lubricants, oils, solvents, and paint) ~1965-1980 | Final Remedial Investigation Report submitted in February 2007. Draft Removal Action Work Plan for debris under regulatory review. |
| SWMU-7 Quebrada Disposal Site (West Vieques- MOV Property) | Disposal of trash (lubricants, oils, solvents, and paint) ~1965-1980 | Draft Removal Action Work Plan for debris under regulatory review. |
| AOC-E Former Waste Oil UST at Bldg. 2016 (West Vieques- MOV Property) | Waste oil UST - contaminated soil found during removal of UST | Supplemental RI activities completed; Revised RI Report underway. |
| AOC-H Abandoned Power Plant (West Vieques- MOV Property) | Operated 1941-1943; AST; used for Fire Fighter training ~1960s-1980s | Draft Final Remedial Investigation Report submitted May 2007. |
| AOC-I Asphalt Plant (West Vieques- MOV Property) | Former AST storage area stained with asphalt emulsion. | Supplemental RI activities completed. RI Report is being prepared. |
| AOC-J Former Operations/ Staging Area Disposal Site (West Vieques – MOV Property) | Solid and potentially hazardous waste disposal site ~1965-1973 | Draft Removal Action Work Plan for debris under regulatory review. |
| AOC-R Former Staging and Operations Area (West Vieques – DOI Property) | Construction staging and Public Works operations; AST; vehicle maintenance ~1965-1971 | Draft Removal Action Work Plan for debris under regulatory review. |

APPENDIX A

II. Status of Munitions Remedial Investigation Sites, Vieques, PR

| Site Designation | MRA | Parcel | MRS | MEC Area Type | Description of Site | Status |
|---|---|---|---|---|---|---|
| SWMU-9 Explosive Ordnance Firing Range (LIA Bombing Range) | LIA | C-1, 2, 3, 4, 5, 6 | 1 - 31 | Bombing Range | 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 is underway to remove surface munitions from the site |
| SWMU-3 Waste Explosive Ordnance Detonation Area (LIA OB/OD) | LIA | C-4 | 29 | OB/OD | Area is a former open burn/open detonation area located within LIA. | A TCRA is underway to remove surface munitions from the site |
| SWMU-4 Inactive OB/Waste Explosive Detonation Range (West Vieques- DOI Property) | West Vieques | NA | NA | OB/OD | An open burn/open detonation area where there was thermal destruction of unserviceable munitions from approximately 1965-1980. | Final RI Work Plan submitted (CH2M HILL, January 2007). RI field investigation implemented in 2nd fiscal quarter 2007.Draft EE/CA for subsurface removal of roads and beaches is underway. |

APPENDIX B SITE SCREENING AREAS VIEQUES PR

I. Site Screening Areas - Environmental Sites, EAST Vieques, PR (DOI Property)

| Site Designation | Description of Site | Status |
|---|---|---|
| SWMU-1 | Camp Garcia Landfill (EMA) | The Draft PA/SI Report (revised Draft Phase I RFI Report) will be prepared following regulatory approval of the Final Background Investigation Report. |
| SWMU-2 | Fuels Off-Loading Site | The Draft PA/SI Report (revised Draft Phase I RFI Report) will be prepared following regulatory approval of the Final Background Investigation Report. |
| SWMU-4 | Waste Areas of Building 303 (Camp Garcia), including:<br>– Spent Battery Accumulation Area<br>– Catch Basin for Hydraulic Oil<br>– Cleaning/Degreasing Basin<br>– Rags, absorbent and grease storage area | The Draft PA/SI Report (revised Draft Phase I RFI Report) will be prepared following regulatory approval of the Final Background Investigation Report. |
| SWMU-5 | Spent Battery Accumulation Area located at Observation Post 1 (OP-1) | The Draft PA/SI Report (revised Draft Phase I RFI Report) will be prepared following regulatory approval of the Final Background Investigation Report. |
| SWMU-6 | Waste Oil and Paint Accumulation Area (Seabees Area at Camp Garcia). To include any releases from the adjacent Lubricating Oil Storage Area | The Draft PA/SI Report (revised Draft Phase I RFI Report) will be prepared following regulatory approval of the Final Background Investigation Report. |
| SWMU-7 | Waste Oil Accumulation Area (outside Building 303 at Camp Garcia) | The Draft PA/SI Report (revised Draft Phase I RFI Report) will be prepared following regulatory approval of the Final Background Investigation Report. |
| SWMU-8 | Waste Oil Accumulation Area (Inner Range at OP-1) | The Draft PA/SI Report (revised Draft Phase I RFI Report) will be prepared following regulatory approval of the Final Background Investigation Report. |
| SWMU-10 | Sewage Treatment Lagoons (Camp Garcia) | The Draft PA/SI Report (revised Draft Phase I RFI Report) will be prepared following regulatory approval of the Final Background Investigation Report. |
| SWMU-12 | Solid Waste Collection Unit Area (OP-1) | The Draft PA/SI Report (revised Draft Phase I RFI Report) will be prepared following regulatory approval of the Final Background Investigation Report. |
| AOC-A | Diesel Fuel Fill Pipe Area (OP-1) | The Draft PA/SI Report (revised Draft Phase I RFI Report) will be prepared following regulatory approval of the Final Background Investigation Report. |
| AOC-F | Rock Quarry (Camp Garcia) | The Draft PA/SI Report (revised Draft Phase I RFI Report) will be prepared following regulatory approval of the Final Background Investigation Report. |

APPENDIX B SITE SCREENING AREAS VIEQUES PR

I. Site Screening Areas - Environmental Sites, EAST Vieques, PR (DOI Property)

| Site Designation | Description of Site | Status |
|---|---|---|
| AOC-G | Pump Station and Chlorination Building at Sewage Lagoons (Camp Garcia) | The Draft PA/SI Report (revised Draft Phase I RFI Report) will be prepared following regulatory approval of the Final Background Investigation Report. |
| PAOC-I | Building 401, interviews and records indicate former power plant and mechanics shop northeast of Bldg. 303 at Camp Garcia (structure still exists). No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was observed (NAVFACENGCOM, 2003). | Additional evaluation to be determined via inter-agency discussions. |
| PAOC-J | Interviews and records indicate former vehicle maintenance area at Camp Garcia immediately north of the main road (all structures were demolished prior to 1980). Interviewees not aware of any hazardous waste or hazardous material releases at site; no evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was observed during site inspection (NAVFACENGCOM, 2003). | The PA/SI field work was completed in April 2006. The Draft PA/SI Report will be prepared following regulatory approval of the Final Background Investigation Report. |
| PAOC-K | Interviews and records indicate 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 observed (NAVFACENGCOM, 2003). | The PA/SI field work was completed in April 2006. The Draft PA/SI Report will be prepared following regulatory approval of the Final Background Investigation Report. |
| PAOC-L | Interviews and records indicate former paint and transformer storage area (structure still exists). Interviewees not aware of any hazardous waste or hazardous material releases at site; no evidence of PCB, hazardous waste, hazardous material, petroleum, or munitions storage or disposal was observed during site inspection (NAVFACENGCOM, 2003). | The PA/SI field work was completed in April 2006. The Draft PA/SI Report will be prepared following regulatory approval of the Final Background Investigation Report. |
| PAOC-M | Interviews and records indicate 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 observed (NAVFACENGCOM, 2003). | Additional evaluation to be determined via inter-agency discussions. |

APPENDIX B SITE SCREENING AREAS VIEQUES PR

I. Site Screening Areas - Environmental Sites, EAST Vieques, PR (DOI Property)

| Site Designation | Description of Site | Status |
|---|---|---|
| PAOC-N | Records indicate former fuel farm and filling station (demolished 1992). Interviews indicate that this area is the current location of the Camp Garcia refueling station. Interviews also indicate no releases occurred at this facility. No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was observed during the site inspection (NAVFACENGCOM, 2003). | The PA/SI field work was completed in April 2006. The Draft PA/SI Report will be prepared following regulatory approval of the Final Background Investigation Report. |
| PAOC-O | Interviews and records indicate former boiler room in the heat plant building (Building 238 Camp Garcia (CG), demolished 1989). No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was observed (NAVFACENGCOM, 2003). | Additional evaluation to be determined via inter-agency discussions. |
| PAOC-P | Interviews and records indicate former water treatment facility pump house (Building 500CG, demolished 1989). No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was observed (NAVFACENGCOM, 2003). | Additional evaluation to be determined via inter-agency discussions. |
| PAOC-Q | Interviews and records indicate former boiler house in heat plant building (Building 607, demolished 1984). No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was observed (NAVFACENGCOM, 2003). | Additional evaluation to be determined via inter-agency discussions. |
| PAOC-R | Interviews and records indicate former boiler house in heat plant building (Building 617, demolished 1984). No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was observed (NAVFACENGCOM, 2003). | Additional evaluation to be determined via inter-agency discussions. |
| PAOC-S | Records indicate former POL pipeline (demolished 1984). Interviews indicate that this area is the current location of the Camp Garcia refueling station. Interviews also indicate no releases occurred at this facility. No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was observed during the site inspection (NAVFACENGCOM, 2003). | The PA/SI field work was completed in April 2006. The Draft PA/SI Report will be prepared following regulatory approval of the Final Background Investigation Report. |
| PAOC-T | Interviews and records indicate 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 observed (NAVFACENGCOM, 2003). | Additional evaluation to be determined via inter-agency discussions. |

APPENDIX B SITE SCREENING AREAS VIEQUES PR

I. Site Screening Areas - Environmental Sites, EAST Vieques, PR (DOI Property)

| Site Designation | Description of Site | Status |
|---|---|---|
| PAOC-U | NEW PAOC – Vehicle Maintenance area just north of Building 303 at Camp Garcia. Current and historic storage of hazardous waste, hazardous material, and petroleum products. Some staining of soil outside of building near container storage pallets (NAVFACENGCOM, 2003). | The PA/SI field work was completed in April 2006. The Draft PA/SI Report will be prepared following regulatory approval of the Final Background Investigation Report. |
| PAOC-V | NEW PAOC – Interviews indicate storage of leaking transformer, possible PCB contamination Two soil samples collected, one constituent detected which was below screening criteria (NAVFACENGCOM, 2003). | Additional evaluation to be determined via inter-agency discussions. |
| PAOC-W | NEW PAOC – Observed area of pooled, discolored water adjacent to the main road from Camp Garcia to PI-21. No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was observed. Site Interviewees had no knowledge of past activity (NAVFACENGCOM, 2003). | Additional evaluation to be determined via inter-agency discussions. |
| PAOC-X | NEW PAOC – Quebrada (intermittent stream channel) located north from the main road and west from Camp Garcia, adjacent to the former vehicle maintenance area. Observed an automobile body, tires, scrap metal, and construction-related solid waste and debris (NAVFACENGCOM, 2003). | Additional evaluation to be determined via inter-agency discussions. |
| 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). | The PA/SI field work was completed in April 2006. The Draft PA/SI Report will be prepared following regulatory approval of the Final Background Investigation Report. |
| 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 observed (NAVFACENGCOM, 2003). | Additional evaluation to be determined via inter-agency discussions. |
| PI-6 | Interviews and records indicate ASTs and facilities associated with the former location of the site drinking water system. Observed the following facilities:<br>– several intact ASTs and one storage tank | Additional evaluation to be determined via inter-agency discussions. |

APPENDIX B SITE SCREENING AREAS VIEQUES PR

I. Site Screening Areas - Environmental Sites, EAST Vieques, PR (DOI Property)

| Site Designation | Description of Site | Status |
|---|---|---|
| | without ends<br>– a concrete building containing electric pumps<br>– a small vehicle washpad and water well pump house<br>– a ground transformer near the washpad<br>– a concrete pad that could potentially have contained PCB-containing transformers (NAVFACENGCOM, 2003). | |
| PI-7 | Interviews and records indicate 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, staff observed large quantities of construction debris, including utility poles, scrap metal, and concrete. No evidence of hazardous waste, hazardous material, or petroleum disposal or storage was observed in this location. No items of concern identified in northern portion of site (NAVFACENGCOM, 2003). | The PA/SI field work was completed in April 2006. The Draft PA/SI Report will be prepared following regulatory approval of the Final Background Investigation Report. |
| PI-8 | Interviews and records indicate 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). | Additional evaluation to be determined via inter-agency discussions. |
| PI-10 | Interviews and records indicate site of a 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). | Additional evaluation to be determined via inter-agency discussions. |
| PI-11 | Interviews and records indicate 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). | Additional evaluation to be determined via inter-agency discussions. |
| PI-20 | Interviews and records indicate area used as observation point during landing exercises conducted at PI-21, and potentially used as a quarry in the past. No evidence of prior disposal activities or other contamination observed (NAVFACENGCOM, 2003). | Additional evaluation to be determined via inter-agency discussions. |

APPENDIX B

II. Site Screening Areas – Munitions Response Sites, East Vieques, PR (DOI Property)

| Site Designation | MRA | Parcel | MRS | MEC Area Type | Description of Site | Status |
|---|---|---|---|---|---|---|
| PI-1 | SIA | B-2 | 2 | Strafing target | Within LIA. Interviews and records indicate former location of an aircraft-strafing target and water production well for residents prior to Navy activities. No evidence of hazardous waste or hazardous material or petroleum storage or disposal was observed. Non-explosive munitions were observed throughout the site (NAVFACENGCOM, 2003). | Site will be assessed during ongoing Expanded Range Assessment/ Phase II Site Inspection |
| PI-2 | EMA | A-5 | 44 | NA | Interviews and records indicate existing water production well and former small arms range. No evidence of munitions, hazardous waste, hazardous material, or petroleum storage or disposal was observed (NAVFACENGCOM, 2003). | Site will be assessed during ongoing Expanded Range Assessment/ Phase II Site Inspection |
| PI-3 | EMA | A-5 | 14 | NA | Interviews and records indicate former water production well and former small arms range. No evidence of munitions, hazardous waste, hazardous material, or petroleum storage or disposal was observed (NAVFACENGCOM, 2003). | Site will be assessed during ongoing Expanded Range Assessment/ Phase II Site Inspection |
| PI-9 | EMA | A-8 | 12 | Photo-Identified Munitions Storage | Field reconnaissance identified artillery casings; Aerial photos identified Open storage of probable munitions in 1959 and 1962. Containers within bermed areas, disposal of white material in large trench at north end of EBS identified as a potential OB/OD. | The site will be further evaluated under the ongoing Expanded Range Assessment/ Phase II Site Inspection |
| PI-12 | EMA | A-8 | 33 | NA | Interviews and records indicate water production well prior to 1970s, private residence prior to 1940s (NAVFACENGCOM, 2003). Location within the marine artillery safety fans indicates the site may be a potential MRP site | Site will be assessed during the phased munitions site inspection. |
| PI-13 | EMA | A-8 | 46 | Gun Position | Interviews indicate firing point for rocket-related ordnance in the 1950s-1960s. No evidence of contamination observed (NAVFACENGCOM, 2003). | Site will be assessed during the ongoing Expanded Range Assessment/ Phase II Site Inspection |
| PI-14 | EMA | A-9 | 41 | Munitions Storage | Interviews indicate possible disposal area for scrap metal, ammunition boxes, shell casings, and miscellaneous debris. Observed a partially cleared area with possible deposited material, but no evidence of metal debris or other waste (NAVFACENGCOM, 2003). | Site will be assessed during the ongoing Expanded Range Assessment/ Phase II Site Inspection |

APPENDIX B

II. Site Screening Areas – Munitions Response Sites, East Vieques, PR (DOI Property)

| Site Designation | MRA | Parcel | MRS | MEC Area Type | Description of Site | Status |
|---|---|---|---|---|---|---|
| PI-15 | EMA | A-8 | 6 | Range | Interviews indicate possible observation post or a small arms range (SAR). This site consists of a low-lying area that has been disturbed by cattle. Observed one discarded compressor cylinder and a practice bomb, but observed no other indications of disposal activities (NAVFACENGCOM, 2003). | Site will be assessed during the ongoing Expanded Range Assessment/ Phase II Site Inspection |
| PI-16 | EMA | A-8 | 6 | Disposal | Interviews indicate potential use of area for the disposal of munitions. No evidence of human disturbance was observed at this site (NAVFACENGCOM, 2003). | Site will be assessed during the phased munitions site inspection. |
| PI-17 | SIA | B-5 | 6 | Target | Interviews and records indicate area was historically used for landing exercises and might have been used as a target area or munitions storage area. No evidence of human disturbance was observed at this site (NAVFACENGCOM, 2003). | Site will be assessed during the ongoing Expanded Range Assessment/ Phase II Site Inspection |
| PI-18 | EMA | A-5 | 44 | Small Arms Range | Interviews indicate potential SAR. Observed an area that had recently been cleared of vegetation. No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was observed. | Site will be assessed during the ongoing Expanded Range Assessment/ Phase II Site Inspection. |
| PI-19 | EMA | A-5 | 40 | Gun Position | Observed an area that had recently been cleared of vegetation. No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was observed (NAVFACENGCOM, 2003). | Site will be assessed during the ongoing Expanded Range Assessment/ Phase II Site Inspection |
| PI-21 | EMA | A-9 | 44 | Gun Position | Interviews and records indicate possible location of a former artillery firing point. Observed the remains of small sheet metal structure, with pipes protruding from the embankment. An area of dark-colored or stained soil was also observed immediately below the outlet of the pipes (NAVFACENGCOM, 2003). | Site will be assessed during the ongoing Expanded Range Assessment/ Phase II Site Inspection |
| PI-22 | SIA | B-2 | 2 | Potential Target Area | Interviews, site features, and records indicate this area was formerly used for loading and unloading of range support materials and for landing exercises. Adjacent to the LIA (NAVFACENGCOM, 2003) | Site will be assessed during Expanded Range Assessment/ Phase II Site Inspection |

APPENDIX B

II. Site Screening Areas – Munitions Response Sites, East Vieques, PR (DOI Property)

| Site Designation | MRA | Parcel | MRS | MEC Area Type | Description of Site | Status |
|---|---|---|---|---|---|---|
| PI-23 | EMA | | 44 | Observation Point | Large pit, not resembling a foxhole training pit, present on historical photographs. Former water production well and observation point. Adjacent to training range (NAVFACENGCOM, 2003). | Site will be assessed during the ongoing Expanded Range Assessment/ Phase II Site Inspection |
| PAOC-Y | EMA | A-9 | 44 | NA | Observed a large metal object on the east side of the roadway. No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was observed. Site personnel had no knowledge of past activity (NAVFACENGCOM, 2003). | Site will be assessed during the phased munitions site inspection. |
| PAOC-Z | EMA | A-3 | 29 | Target | Observed an overturned tractor-trailer on the north side of the roadway. No evidence of hazardous waste, hazardous material, petroleum, or munitions storage or disposal was observed. Site personnel had no knowledge of past activity (NAVFACENGCOM, 2003) | Site will be assessed during the phased munitions site inspection. |
| PAOC-EE | EMA | A-9 | 44 | Munitions Storage | Site of former storage of munitions in earthen berms (NAVFACENGCOM, 2003). | Site will be assessed during the phased munitions site inspection. |
| PAOC-FF | EMA | A-9 | 44 | Gun Position | Site of former artillery gun placement (NAVFACENGCOM, 2003). | Site will be assessed during the phased munitions site inspection. |
| Surface Impact Target Area (SWMU 11) | SIA | B-1, 2, 3, 4 | 1 - 7 | Artillery/ Bombing Targets | Established in the 1950s for marine exercises; aerial photos indicate munitions craters covered over 1,800 acres; since 1974 over 100,000 rounds (over 2100 tons) of marine artillery fired at SIA. | The site will be further evaluated under the MRP Phase II Site Inspection |
| OP-5 | SIA | B-1 | 1 | Gun Position | Field reconnaissance detected bomb fragments, projectile fragments, small arms; was approved for firing of up to 300 rounds of 155mm per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| OP-11, OP-12, OP-13, | EMA | A-4 | 6 | Photo-Identified Gun Position | OP-12 was present prior to 1967; OP-13 was deteriorated in 1967; P-15 was identified in the EBS as a potential OP. | The site will be further evaluated under the MRP Phase II Site Inspection |
| G-21 | SIA | B-3 | 2 | Photo-identified Gun Position | Aerial photos identified mortar at G-21. | The site will be further evaluated under the MRP Phase II Site Inspection |

APPENDIX B

II. Site Screening Areas – Munitions Response Sites, East Vieques, PR (DOI Property)

| Site Designation | MRA | Parcel | MRS | MEC Area Type | Description of Site | Status |
|---|---|---|---|---|---|---|
| G-1 | EMA | A-3 | 22 | Gun Position | Field reconnaissance did not detect MEC within the open area of the gun position; was approved for firing of up to 300 rounds of 155mm per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| G-2 | EMA | A-5 | 18 | Gun Position | Field reconnaissance detected small arms MEC; was approved for firing of up to 300 rounds of 155mm per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| G-3 | EMA | A-5 | 17 | Gun Position | Field reconnaissance detected small arms MEC; was approved for firing of up to 300 rounds of 155mm per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| G-4 | EMA | A-5 | 17 | Gun Position | Field reconnaissance detected small arms MEC; was approved for firing of up to 300 rounds of 155mm per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| G-5 | EMA | A-5 | 17 | Gun Position | Field reconnaissance did not detect MEC within the open area of the gun position; was approved for firing of up to 300 rounds of 155mm per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| G-7 | EMA | A-1 | 32 | Gun Position | Field reconnaissance did not detect MEC within the open area of the gun position; was approved for firing of up to 300 rounds of 155mm per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| G-8 | EMA | A-5 | 30 | Gun Position | Field reconnaissance did not detect MEC within the open area of the gun position; was approved for firing of up to 300 rounds of 155mm per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| GP-7 | EMA | A-1 | 32 | Target | Field reconnaissance detected MEC items including MK–76 inert bombs and 20mm; was approved for firing of up to 300 rounds of 155mm per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| GP-9 | EMA | A-1 | 16 | Gun Position | Field reconnaissance detected bomb rack and bomb brace; was approved for firing of up to 300 rounds of 155mm per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| OP-10 | EMA | A-4 | 6 | Gun Position | Aerial photos identified OP-10 was a cleared area in 1962 but re-vegetated in 1967. | The site will be further evaluated under the MRP Phase II Site Inspection |
| G-9 through G-19, G-22 through G-35 | EMA | A-1, 2, 3, 4, 5, 6, 8, 9 | 6, 9, 10, 11, 15, 17, 18, 21, 23, 24, 26, 27, 28, 31, 33, 34, 35, 37, 43, 44, 46 | Photo-identified artillery Gun Positions | Aerial photo analysis identified the following number of revetted gun positions: 3 at G-9; 6 at G-10; 9 at G-12; 6 at G-13; 3 at G-14; 6 at G-15; 10 at G-16; 6 at G-17; 3 at G-18; 4 at G-19; 6 at G-20; mortar at G-22; 3 at G-24; 6 at G-25; 6 at G-26; 4 at G-27; 6 at G-28; 4 at G-29; 6 at G-30; 6 at G-31; 6 at G-32; 6 at G-33; 8 at G-34; 8 at G-35; PI-13, PI-18, PAOC-FF identified from interviews for EBS. | The site will be further evaluated under the MRP Phase II Site Inspection |

APPENDIX B

II. Site Screening Areas – Munitions Response Sites, East Vieques, PR (DOI Property)

| Site Designation | MRA | Parcel | MRS | MEC Area Type | Description of Site | Status |
|---|---|---|---|---|---|---|
| Range 1 (PAOC AA) | EMA | A-1 | 37 | Small Arms Range | Field reconnaissance detected small arms MEC; was approved for firing of up to 30,000 rounds of 9mm per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| Range 2 (PAOC BB) | EMA | A-1 | 36 | Small Arms Range | Field reconnaissance detected small arms MEC; was approved for firing of up to 30,000 rounds of 9mm per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| Range 3 (PAOC CC) | EMA | A-1 | 1 | Rifle Grenade Range | Field reconnaissance detected small arms and 40 mm MEC; was approved for firing of up to 30,000 rounds of 9mm per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| Range 4, 4a, 4b (PAOC DD) | EMA | A-1 | 2, 3, 4 | 40MM and Rocket Ranges | Field reconnaissance detected expended rocket motors MEC and ORS; was approved for firing of up to 30,000 rounds of 9mm per day, 500 40mm grenades per day, 100 LAWS per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| Range 5 | EMA | A-1 | 5 | Hand grenade Range | Field reconnaissance did not detect MEC; was approved for firing of up to 500 hand grenades per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| Range 6 | EMA | A-2 | 20 | Open Detonati on range | Field reconnaissance detected small arms MEC; was approved for use of up to 1,000 lbs. of C4 per day. | The site will be further evaluated under the MRP Phase II Site Inspection |
| Photo-identified Ranges 7, 8, 9 | EMA | A-1, 5, 9 | 14, 30, 32, 38, 44 | Small Arms Ranges | Aerial photo analysis identified Range 7 may have been used for longer-range weapons and had numerous targets/impact areas; Range 8 and Range 9 were visible in 1994. | The sites will be further evaluated under the MRP Phase II Site Inspection |