



Fiscal Year 2009 Secretary of Defense Environmental Award

Vieques Naval Installation - *Environmental Restoration - Individual/Team*

INTRODUCTION

The Vieques Naval installation is a 23,000-acre facility located off the southeast coast of Puerto Rico that provided military training to NATO operations. From the mid-1940s until 2003, more than 300,000 munitions items were fired from military training operations that included naval gunfire, air-to-ground bombing, and marine artillery fire. It is estimated that up to 9,000 acres of the property may be contaminated by munitions and explosives of concern (MEC) from these operations.

On April 30, 2001, approximately 8,000 acres of the west end of Vieques, known at the Naval Ammunitions Storage Detachment (NASD), were transferred to federal and local agencies. On April 30, 2003, approximately 15,000 acres of the Vieques Naval Training Range (VNTR), located on the east end of Vieques were transferred to DOI to be operated and managed by the U.S. Fish and Wildlife Service (USFWS) as a National Wildlife Refuge (*Figure 1*).

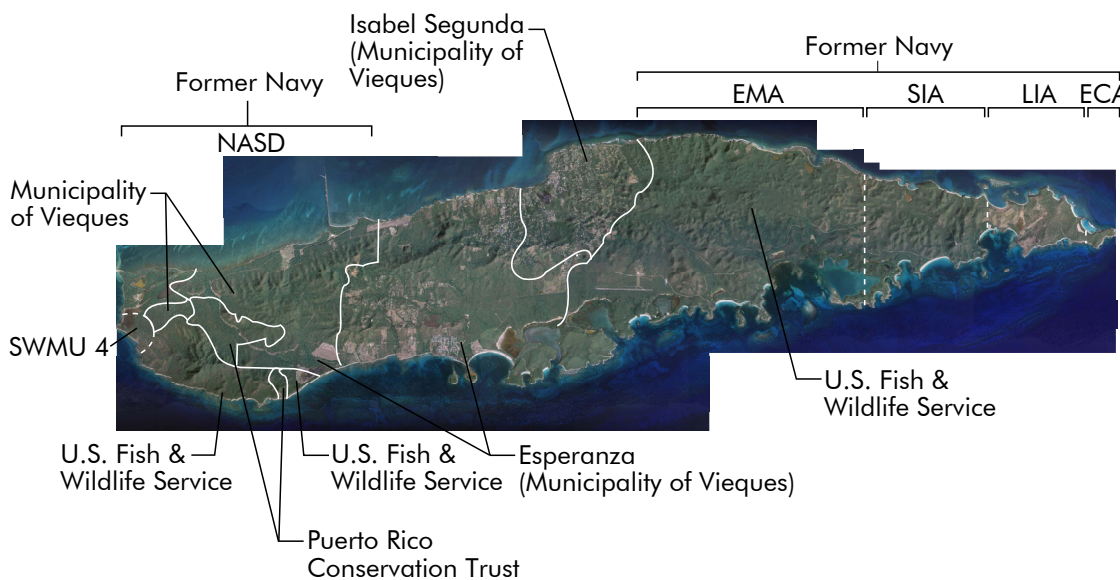


Figure 1. Approximately 23,000 acres of the former naval facility on Vieques Island, Puerto Rico have been transferred to federal and local agencies including the Department of Interior, the Municipality of Vieques and Puerto Rico conservation Trust. Approximately 16,000 acres of the land transferred to DOI is managed by Fish & Wildlife Service as a Wildlife Refuge. NAVFAC Atlantic has entered into agreements with DOI to integrate the cleanup of the facility into the land use plan for the wildlife refuge.

BACKGROUND

On February 7, 2005, Vieques was placed on the National Priorities List (NPL). The Federal Facilities Agreement (FFA), signed in September 2007, establishes a framework for the stakeholder agencies (*Figure 2*) to schedule and implement the Environmental Restoration Program to meet the following objectives:

- Initiate and implement prompt actions to address imminent and substantial threats to human health, safety, and the environment.
- Prioritize response actions, including investigations and remedial actions, based on risk to human health and the environment, anticipated land use, and available funding.

Meet the Vieques CERCLA Technical Team:

- Christopher Penny, NAVFAC Atlantic Section Head
- Kevin Cloe, NAVFAC ATLANTIC RPM
- Daniel Hood, NAVFAC ATLANTIC RPM
- Madeline Rivera, NAVFAC ATLANTIC Field Site Manager
- Pedro Ruiz, NAVFAC ATLANTIC On-Site QA
- Daniel Rodriguez, USEPA Project Manager
- Wilmarie Rivera, PREQB Project Manager
- Richard Henry, DIO/FWS Project Manager

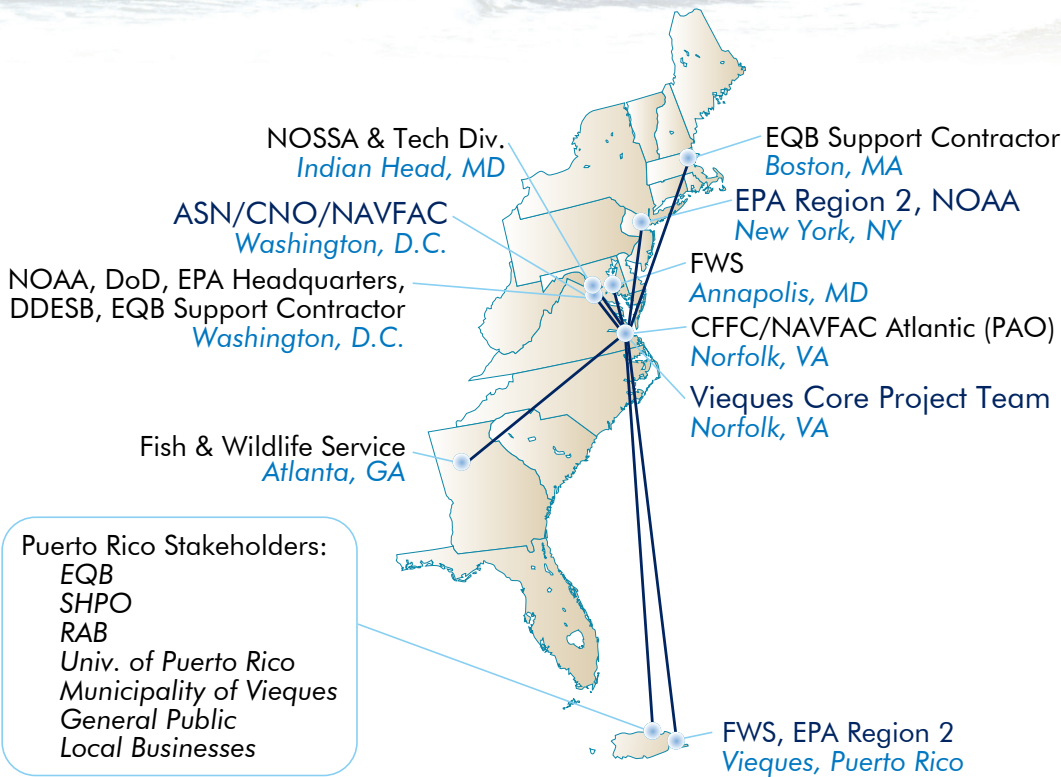


Figure 2.

A wide range of complex site conditions has facilitated NAVFAC Atlantic to team with over a dozen regulatory agencies, most of which are not in close proximity with each other. To promote effective communications a two-tiered stakeholder involvement approach was established; an upper tier of project managers exchange information and resolve program-wide issues. Smaller technical subcommittees are established to resolve detailed technical problems.

- Develop cost-effective and innovative cleanup approaches and technologies to maximize program efficiency.
- Promote public stakeholder participation in the clean-up process.
- Establish partnerships with appropriate federal, state and local authorities to achieve consensus on the proposed cleanup strategies and decisions.

Currently, NAVFAC Atlantic is administering the Environmental Restoration Program.

To improve the public opinion over the lengthy military training activities on Vieques, and to integrate the community into the restoration program, an extensive community involvement program has been established to gain the trust of the community.

Accomplishments

Accelerated Environmental Cleanup

Four remedial actions have been initiated at the early stages of the cleanup process, to accelerate cleanup where the existing contamination poses a potential imminent threat to human health and safety. These actions also provide an early transfer of the property to the stakeholders' beneficial use. The four remedial actions were initiated 3 years ahead of schedule of what would be anticipated under a typical Remedial Investigation/Feasibility Study CERCLA approach. During the last 2 years these projects have surface cleared over 1,000 acres containing munitions. In addition, over 20,300

munitions items have been destroyed and over 9,000,000 pounds of munitions related scrap metal has been processed.

TCRA to Reduce Immediate Risk to Human Health and Safety

Although legislation was passed, prohibiting public access to the former bombing range, known as the Live Impact Area (LIA), recreational boaters frequently anchor into the adjacent scenic waters and trespass into the LIA. As a result, a Time-Critical Removal Action (TCRA) was initiated to rapidly reduce the explosive safety risks to the trespassers by removing the MEC exposed at the ground surface.

The TCRA is a multi-disciplinary program including vegetation clearance, MEC removal, munitions demolition, target demilitarization, and scrap metal processing. MEC that cannot be moved is detonated in-place using explosives. Munitions debris and range-related debris generated by in-place detonation of munitions are processed on-site using several technologies: waterjet cutting, hammermill crushing, cutting with a petrogen torch, and thermal treatment with a flashing furnace. The processing minimizes the danger of transporting explosive materials offsite and enhancing the recycle value of the scrap metal.

The TCRA has effectively reduced the explosive safety risk by completing the following:

- Removing MEC from 640 acres to reduce explosive safety risk to the public and allow FWS access to manage the natural resources of the area.

- A total of 17,012 munitions items have been detonated onsite to minimize the explosive hazard to FWS workers and the public accessing the area.
- More than 6.4 million pounds of scrap have been collected and processed onsite for off-site recycling. Recycling proceeds are re-invested into the cleanup operation.

NTCRA Actions to Support Teaming Agreement with USFWS

To accelerate the development of the wildlife refuge, NAVFAC Atlantic entered into a teaming agreement with USFWS to integrate the Environmental Restoration Program into the USFWS land use plan. Fast tracked remedial actions initiated to support this agreement were two Non-time-critical Removal Actions (NTCRA), which included the surface and subsurface removal of MEC from roads and beaches, and the surface clearance of MEC from areas that will be accessible to the public and FWS. These NTCRAs also provides USFWS access to manage the natural resources of the wildlife refuge, including the sea turtle nesting areas along the beaches of the LIA (Figure 3).

During the last 2 years of implementing these remedial actions a total of 387 acres have been surface cleared of MEC; over 3,300 munitions have been destroyed through detonations (Figure 4), over 2.6 million pounds of munitions related scrap metal has been collected for off-site recycling; and over 2,900 metallic anomalies (338 items were munitions related items) have been removed from the subsurface.

NTCRA Action to Return Land Transferred to the Municipality of Vieques to its Beneficial Use

To accelerate the beneficial use of the land the Navy transferred to the local Municipality of Vieques, another remedial action initiated was a NTCRA at four abandoned environmental waste sites. Focusing on the end game for these sites accelerated the return of 16 acres of waste dump sites to beneficial use.

During the NTCRA at the four sites over 11,000 tons of wastes were excavated (Figure 5). The waste contained contaminated soil, approximately 22 tons of lead contaminated hazardous waste, inert munitions, and non-hazardous solid waste. Over 8,000 tons of the soil was transported to the local landfill for the beneficial re-use as a daily soil cover. As a result, less native soil was required for daily cover, saving approximately \$2 million as well as conserving local resources of native soil. Post-excavation soil sampling and risk assessments are being used to demonstrate that the sites can be returned to the DOI and Municipality of Vieques for beneficial use.



Figure 3.

To support a teaming agreement between the Navy and F&W, over 370 acres have been surface cleared of munitions to allow F&W access to monitor the natural resources of the area. Vieques is the only Caribbean island that provides habitats for three endangered species of sea turtles. During munitions response activities the beaches are monitored by NAVFAC contracted biologists for sea turtle nesting habitats.

Streamlined Approaches

The Navy developed and obtained regulatory acceptance of a decision analysis framework on how to address sites identified from historical documentation. The decision analysis framework was used to achieve “No Action” determinations for 10 sites. As a result, 21 acres of land are now available for unrestricted use, saving tens of thousands of dollars and several years that would have been associated with investigating these sites under the traditional CERCLA approach. An additional 21 sites, representing another 132 acres, have been proposed for No Action using the same decision analysis framework.

The Navy successfully implemented an Improved Record of Decision (iROD) format for Area of Concern (AOC) H. The streamlined iROD format facilitated translation of the entire ROD into Spanish. With the signing of this No Action ROD, 2 acres of land were returned to the MOV for unrestricted use.

Innovative Technology Demonstration/ Validation and Implementation

One of the greatest technical challenges has been to locate and recover munitions over a large terrestrial and marine environment. Innovative geophysical techniques were used to reduce restoration costs by rapidly detecting munitions sites at a relatively low cost. An aerial survey using a helicopter equipped with magnetometers identified potential surface



Figure 4.

Unexploded ordnance that is unsafe to move is detonated in place using explosives. During the last 2 years, over 20,300 munitions items have been blown in place (BIP). As part of the public outreach program members of the RAB and the media have been allowed to observe the detonations from a safe distance to better understand the cleanup process.

and subsurface munitions over a densely vegetated 15,000-acre area within 1 month (*Figure 6*). A total of 45 potential munitions sites were identified. This technique reduced investigation costs by over \$1M and reduced the project schedule by 6 months, when compared to a traditional transect approach.

Partnerships Addressing Environmental Cleanup Issues Between DoD and Other Entities

A wide range of complex site conditions (munitions hazards, environmental contamination, cultural artifacts, endangered species, and underwater munitions) has required the involvement of over a dozen agencies in Puerto Rico and elsewhere (*Figure 2*).

To accommodate such a large stakeholder group and accelerate cleanup decision making, a tiered stakeholder teaming approach was established. An upper tier of agency project managers meets periodically to exchange information,

perform joint scoping, and resolve program-wide issues. Smaller technical subcommittees meet on a regular basis, including site visits as needed, to resolve more-detailed technical issues in environmental restoration, munitions cleanup, community involvement, and risk assessment.

The tangible results of this approach have included:

- Development of biological mitigation measures that ensure threatened and endangered vegetation and sensitive habitats are protected, while enabling the Environmental Restoration Program to meet its objectives.
- Prioritization of munitions response actions by integrating the anticipated land uses and the explosive safety risks of munitions
- Standardization of protocols for human health risk assessment and ecological risk assessment that are applied uniformly at all sites. The application of these



Figure 5.

An accelerated remedial action has included the removal of over 11,000 tons of contaminated solid waste and site restoration at 4 abandoned waste sites. As a result, 16 acres of land are now available for beneficial use. This approach saved tens of thousands of dollars and several years that would have been associated with investigating these sites under the traditional CERCLA approach.

protocols reduces the time and effort to complete each risk assessment by several months and several thousand dollars.

- Joint selection of field sampling locations through stakeholder agency site visits to expedite investigation work plan completion.

The implementation of this strategy has allowed the stakeholders to consistently meet deliverable schedules identified in the Federal Facilities Agreement.

Community Involvement/ Restoration Advisory Board

The heart of the community involvement program is the Restoration Advisory Board (RAB), which maintains effective communication about the progress of the cleanup and helps to gain support from the public on technical decisions. Quarterly RAB meetings are held on a quarterly basis.

To build trust in the community the Navy has established a more comprehensive community involvement program.

During FY08 and FY09 the following community involvement activities have been initiated on Vieques:

- Bilingual facilitation of quarterly RAB meetings, including simultaneous translation equipment and interpreters.
- Spanish translation of documents.
- RAB site visits to observe controlled detonations from a safe distance.
- Workshops to educate the community on the explosive hazards on-site and the process for estimating risks to human health.
- At the request of the community, but not required by the regulations, air monitoring has been conducted to ensure that the emissions from munitions detonations are not exceeding ambient air quality criteria.
- Distribution of monthly flyers to the public, bi-monthly project status reports to the RAB, and semi-annual newsletters.



Figure 6.

Pictured is a magnetometer mounted to the base of a helicopter. This effective, innovative technology was used to rapidly identify large munitions and target areas hidden in thick vegetation and shallow underwater areas. This was used over a 15,000 acre area.

- Solicitation of RAB comments on draft final response action documents (work plans, reports).
- Establishment of a community computer with access to the Administrative Record (AR) and a public website.
- Hosting a Media Day on Vieques, including a site visit, which resulted in positive media coverage, both locally and in the continental US.
- Participation in a Children's fair, which educated the public on explosives safety.

These activities have resulted in a positive change in public opinion, which has been reflected in supportive articles in the local newspapers and in the RAB members formally expressing their appreciation and support for the Navy to continue the community involvement program.

Opportunities for Small and Small Disadvantaged Businesses in Environmental Restoration

One of the Program challenges was to execute a large and complex cleanup program while meeting NAVFAC small busi-

ness goals. Of the \$41.5M funded allocated for FY08 and FY09, 60 percent of the prime contracts (\$24.9M) were awarded to small businesses, significantly exceeding NAVFAC's goal of 40 percent. During this time over \$7.4 M of the contracts were awarded to 8a small disadvantaged businesses.

An employment initiative by the Vieques team was the training and hiring of 81 local residents of Vieques, which is a HUB zone distressed area. The residents were OSHA-trained and subsequently hired by the munitions contractors to assist in the cleanup by removing vegetation and collecting munitions-related debris. To ensure their safety, the trained locals work alongside experienced UXO technicians. The integration of this local workforce has had significant benefits to the project: 1) the salaries of local workers, have contributed over \$5.0M to the local economy during the last 2 years, 2) project costs by have been reduced by over \$12M, and 3) the local workers take pride in making a difference in the cleanup of their community and have helped promote the success of the program throughout the community.