



Chief of Naval Operations (CNO) Environmental Award FY 2007 Naval Weapons Station Yorktown, Yorktown, Virginia Environmental Restoration - Installation



Introduction

Naval Weapons Station Yorktown (WPNSTA), established in 1918, is the Navy's premier weapons facility located in historic Yorktown, VA. This 10,624-acre installation provides ordnance, technical support, and related services to sustain the warfighting capability of the Armed Forces in support of national military strategy.

As part of the Navy's Mid-Atlantic installation claimant consolidation, Cheatham Annex (CAX), formerly an annex of Fleet Industrial Supply Center, Norfolk, was incorporated with WPNSTA on October 1, 1998. CAX was commissioned in 1943 and covers an additional 2,300 acres. Today, the mission of CAX is provisioning the Atlantic Fleet and improving quality of life by providing recreational opportunities to military and civilian personnel. The 1998 reorganization placed operational control of CAX with WPNSTA; CAPT Babette Bolivar commands both WPNSTA and CAX.



WPNSTA Yorktown and CAX are located along the York River, 15 miles upriver of the environmentally sensitive Chesapeake Bay.

Both Installations are located on the Virginia Peninsula, between the James and York Rivers. The region includes the historic areas of Yorktown and Williamsburg and the historically black community of Lackey. WPNSTA, including CAX, is home to 1,455 service members and 728 civilian employees.

WPNSTA and CAX are two of 66 DoD installations located within the Chesapeake Bay watershed, the Nation's largest estuary. Recreation and commercial fishing are vital industries within the Bay. WPNSTA represents the Navy's largest undeveloped lands within the watershed, yet its prior ordnance production activities also give it the potential to be a significant polluter. WPNSTA and CAX provide vast and varied habitats vital to many species, including the State-threatened bald eagle (*Haliaeetus leucocephalus*) and Mabee's salamander (*Ambystoma mabeei*).

The goal for the Navy Environmental Restoration Program (NERP) at WPNSTA has been to implement fast-tracked remedial actions to guarantee no land use controls.

Background

WPNSTA was added to the National Priorities List (NPL) in October 1992 due to its proximity to sensitive wetlands and the potential impact on the Chesapeake Bay.

CAX was added to the NPL in January 2001. The Federal Facilities Agreement (FFA) for WPNSTA was signed August 1994, and the FFA for CAX was finalized in March 2005. The major challenge for the NERP is resolving ecological receptor concerns, which are much more stringent than those for human health.



Program management for the NERP at WPNSTA and CAX is through the Hampton Roads Integrated Product Team within Naval Facilities Engineering Command, Mid-Atlantic (NAVFAC MIDLANT). Ms. Linda Cole, the Remedial Project Manager, is supported by technical, acquisition, and legal professionals across the NAVFAC MIDLANT organization, and an equally talented and motivated partnering team.

Formed in January 1997, the partnering team consists of personnel from the Navy, U.S. Environmental Protection Agency (USEPA), Virginia Department of Environmental Quality (VDEQ), and environmental consultants. The partnering team's decision to concentrate on source removal for WPNSTA/CAX sites has resulted in maximum protection of ecological resources. This proactive effort resulted in a No Action Record of Decision (ROD) for WPNSTA Site 27, a former chemistry lab neutralization unit and drainage area. In addition, the team has proceeded with an engineering evaluation/cost analysis (EE/CA) at WPNSTA Site 30 where human health concerns for vanadium exist. The removal action being implemented is anticipated to result in a No Further Action ROD.






The WPNSTA Site Management Plan (SMP) is *THE* roadmap for setting and achieving program milestones for upcoming fiscal years. A major revision to the SMP was completed in fiscal year (FY) 2007 and is expected to minimize the effort associated with future annual updates.

WPNSTA's NERP leverages community involvement in the decision-making process. By valuing community participation in remedial action decisions, WPNSTA fosters an atmosphere of openness and trust. The WPNSTA Installation Commander co-chairs meetings of the Restoration Advisory Board (RAB) to educate and involve the public on the Navy's restoration

progress. An example of the trust developed between WPNSTA and the public, RAB meetings recently were reduced from quarterly to semi-annually.

Program Summary

WPNSTA's NERP has the following objectives:

-  Prevent unacceptable risks to human health and the environment.
-  Meet regulatory requirements and deadlines.
-  Share successful cleanup strategies that can be applied across regulatory programs.
-  Maximize innovative technologies and management approaches to support missions and unit readiness, provide cost avoidance opportunities, increase small business participation, and close sites.
-  Foster an atmosphere of openness and trust by improving relations with the community and regulators.

The degree of success in reaching these objectives is detailed in the following section.

Accomplishments

Fast Track Cleanup

The transfer of operational control of CAX to WPNSTA facilitated a similar transfer of the site cleanup program, enabling the Navy, regulators, and community to merge two teams into one and reduce the number of people required to manage similar work at both facilities. One team operates from a single vision and is able to transfer lessons learned between facilities. For example, the team minimizes Land Use Controls and long-term Navy commitment at NERP sites through source removals, allowing for subse-



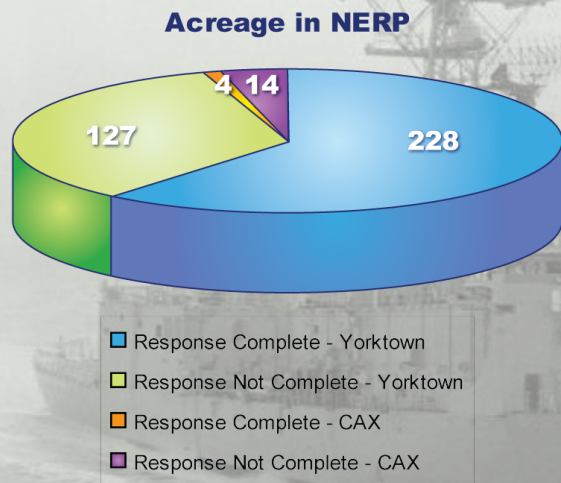
We the Partnering Team of WPNSTA Yorktown/CAX and our technical support sub-groups will expeditiously clean up and restore the facilities using cost effective, best available technology that will ensure protection of the environment and human health.

- WPNSTA Partnering Team Mission Statement



quent property reuse or development. This approach was demonstrated during the remedial actions performed at WPNSTA Sites 3 and 4 and then was applied at CAX Site 1. When land use controls are necessary, they are maintained through regionalized master planning and implemented via the Environmental Management System.

There are 373 acres in the NERP Program at WPNSTA and CAX, of which 232 acres are now response complete.



Fast-tracking cleanup efforts have enhanced the military mission of WPNSTA. For example, the site investigation of the Military Response Program (MRP) closed Marine Pistol and Rifle Range at CAX was accelerated during 2007, allowing the land to be considered for an RV park for military members, civilians, and their families.

Innovative Technology Demonstration/Validation and Implementation

The remedial action at the WPNSTA Site 6 Impoundment Area was completed in FY 2007 and validated the success of the innovative Dar-amend™ bioremediation technology. Approximately 14,000 tons of explosive- and PAH-contaminated soil were excavated and treated to

a significant contaminant mass reduction of 99.9992 percent. By choosing treatment over excavation and landfill disposal, the Navy removed significant contamination (50.44 tons of explosives) from the environment and reduced restoration costs by achieving residential cleanup goals and eliminating the need for land use controls at the site. In addition, through optimization of the treatment process, there was a cost avoidance of \$310,024.



The WPNSTA Yorktown Site 6 Impoundment Area following restoration. The restored wetland with riparian buffer provides excellent ecologic habitat.

WPNSTA's NERP also partnered with the College of William and Mary's Virginia Institute of Marine Science (VIMS) to field test their cutting edge in-situ explosives detection system. This technology will be instrumental for field testing of residual explosive compounds. As a result of this success, VIMS is now working with the Office of Naval Research to transfer this technology into field testing of oil spills at sea.

Innovation and sound judgment also accelerated cleanup of a landfill along the York River at CAX. As part of the remedial action, 4,000 tons of sediment were excavated. The contractor recommended cement to stabilize the saturated sediment prior to loading and hauling it to the disposal facility. Concerned that this process



would contribute to air pollution, primarily carbon dioxide, a byproduct of cement production and significant source of global warming, the team worked with the contractor to bench test mixing cells, allowing the sediment to dry-out prior to off-site transport. This approach eliminated the need for 250 tons of cement and avoided \$59,408 in cost with the lightened sediment load and reduced landfill disposal fees.

Partnerships Addressing Environmental Cleanup Issues Between DoD and Other Entities







WPNSTA's NERP team works to include both technical experts and the community in the decision-making process. WPNSTA borders National Park Service (NPS) property along the Colonial National Historic Parkway. The Navy coordinated closely with NPS to conduct a baseline ecological risk assessment (BERA) of WPNSTA Site Screening Area 25, an area bordering NPS property and near a bald eagle nesting site. Because mercury detections indicated levels above screening-level criteria, the team agreed, with NPS concurrence, to move directly to a baseline over a less stringent screening level ecological risk assessment.

Successful coordination between DoD and other stakeholders is exemplified at a former landfill (Site 1) at CAX on the York River. The Navy held meetings with local environmental stakeholders including the USEPA's Biological Technical Assistance Group (BTAG), RAB members, VIMS, the Virginia Marine Resources Commission (VMRC), and the Virginia Department of Conservation and Recreation (VADCR) to solicit input on possible alternatives for shoreline stabilization, restoration, and wetlands creation. These experts have extensive knowledge in both shoreline protection and the sensitive ecosystems that make up the York River estuary.

The result was a better plan for shoreline protection and the addition of an upland riparian buffer. Breakwaters were chosen over the proposed revetment as more environmentally beneficial; allowing for creation of a beach and transition zone and reducing nutrient and sediment loading into the York River.

Walter Priest, a tidal marsh expert from VIMS, and John McCloskey of the U.S. Fish and Wildlife Service (FWS) worked closely with the remediation contractor to design the final grade so that a sensitive marsh area would fill and drain with each tidal cycle. By working together, the site restoration was a success.

CAX Site 1

-  27,995 cubic yards (yd³) of contaminated soil, landfill debris and marsh excavated and disposed
-  480 yd³ of metal debris recycled
-  2,700 tons of stone used to construct two breakwaters
-  3,000 yd³ of sand placed behind the breakwaters
-  13,000 salt meadow hay and smooth cord grass seedlings planted to stabilize the beach and upland slope
-  Upland riparian buffer planted



Before: The CAX Site 1 shoreline prior to start of the removal action. Note the steep elevation from the top of the landfill to the shoreline.



These projects are examples of the Navy's willingness to make the most of the opportunity afforded by these remediation efforts by using proven restoration practices to blend the sites back into the landscape and make them functional components of a the aquatic system.

- Walter Priest, NOAA Restoration Center at VIMS



After (nearly the same orientation as the Before photo): The CAX Site 1 shoreline following the remedial action. The slope is now gently rolling and there is a wide, sandy beach along the shoreline.

In another partnership with FWS, the team created a quarter-acre ephemeral pond at a former burn pad residue disposal area where 57,000 tons of soil and debris were removed. Numerous native plants were introduced at the site, including wetland and upland species, thus providing valuable habitat for amphibians and reptiles. Land use controls became unnecessary after the remedial action was completed.



As part of the WPNSTA Yorktown Site 4 restoration, a wetland area and pond was incorporated into the final grading. The success of the Site 4 cleanup demonstrates WPNSTA Yorktown's commitment to partnerships and environmental restoration.

These restored wetlands, along with the rare freshwater wetlands and created riparian buffer at WPNSTA Site 6, contribute to the DoD's Chesapeake Bay Restoration Goal of achieving a

net resource gain of 25,000 acres of restored tidal and non-tidal wetlands by 2010 and to the \$19M+ of DoD funding spent indirectly to meet Chesapeake Bay Restoration goals in FY 2006.

Partnerships also enhance military readiness. WPNSTA's NERP worked with VDEQ on an approach for closure of the Thermal Treatment Unit at the Explosive Ordnance Disposal Range that would allow the range to remain operational for emergencies, research and development, and training yet met State requirements for partial closure.

Stakeholder interaction also includes in-house education and outreach programs. The team prepared two fact sheets for distribution to CAX's Morale, Welfare, and Recreation (MWR) Program for two NERP sites used for recreation. The documents, "Catch and Release Fishing Policy for Youth Pond and Penniman Lake" and "Construction Activities Near Cabins 169 and 170 at Cheatham Annex" gave MWR personnel an effective way to convey risk information to recreational users and CAX employees. The team also worked with MWR to reuse a site access road as an integral part of a new hiking and running trail.

RABs

WPNSTA's NERP has a long history of providing public education and outreach. The Technical Review Committee (TRC) first met in March 1989 and later became the WPNSTA RAB. Through the RAB, the Navy has forged a positive relationship with the community.

Public notices for meeting dates are published in two local papers, the *Daily Press* and the *Virginia Gazette*; meetings are regularly attended by community members. The RAB allows the Navy to convey site status information



and to provide site visit opportunities to the public.

A significant achievement in 2006 was the roll-out of a web-based information repository to streamline public education efforts. Through the ENTERPRISE system, the public can search for documents available for public review.

Opportunities for Small and Small Disadvantaged Businesses in Environmental Restoration

Small businesses work with NERP through both prime contractor and sub-contractor opportunities. Through the Environmental Multiple Award Contract (EMAC) contract, the Navy has the option to sole-source directly to four small business interests. In addition, Bhatte Environmental, an 8(a) contractor, and Field Support Services, Inc. have individual small business set-aside contracts. Almost \$1 million was awarded to small business interests in FY06/07. In addition to prime contract opportunities, the Navy's large business contractors provide small businesses with subcontract awards.

Reducing Risk to Human Health and the Environment

As described previously in this document, cleanup remedies for WPNSTA/CAX are based on more conservative ecological cleanup goals. This approach offers better protection to human health and the environment.

Complete removal of contaminated soil and debris presents a permanent solution and eliminates future risk to health and the environment. This rationale was applied for the source removal of landfill debris along the York River at CAX Site 1 and is being implemented as a per-

manent remedy for the debris at another disposal area (CAX Site 7) along the York River.

Under a Time-Critical Removal Action, the beach at Site 7 - Old DuPont Disposal Area was cleared of debris and 250 linear feet of geotextile tubes were installed to protect the shoreline from further erosion into the ecologically sensitive York River. Geotubes are large, sand-filled fabric tubes used as an innovative, interim solution that is very cost-effective for a short-term remedy. When remedial action is implemented, these tubes will be allowed to rupture, restoring sand to the shoreline at minimal cost.

The NERP at WPNSTA Yorktown and CAX is an example of what can be accomplished when the military works as partners with regulators and community members to support military readiness and ensure protection of human health and the environment.



Protection of the environment continues with the installation of Geotubes at CAX Site 7. The Geotubes protect the York River from debris sloughing. A debris and contaminated soil removal action in Fiscal Year 2008 will protect human and ecological receptors from potential risks.