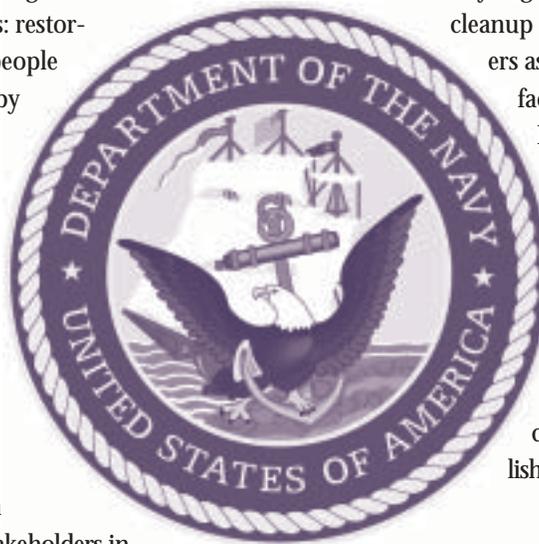


Chapter 1

Environmental Restoration: The Vision

Meeting DoD Requirements

“As a Department of Defense (DoD) organization, our vision aligns with DoD priorities: restoring the environment to protect our people and supporting the defense mission by ensuring continued use of lands necessary for military operations,” said Dave Olson, branch head for the Chief of Naval Operations (CNO) Environmental Restoration and Training branch. To support this vision, CNO’s primary goal is to complete the installation restoration program on schedule by 2014. To do this, we need to continue to involve community organizations, Restoration Advisory Boards (RABs), and other stakeholders in our environmental cleanup programs.



Improving Community Dialogue

The Navy began seeking input on its environmental cleanup program from community stakeholders as early as 1985. In the early 90s, a facilitated keystone dialogue between DoD Service representatives who managed restoration programs and the local communities surrounding their sites reviewed several areas of concern in the cleanup program, including public participation. This marked the beginning of a more interactive approach to cleanup via the current RAB system, which was established in 1994 (Figure 1).

*“The Navy’s primary goal is to complete the program on schedule by 2014.” — Dave Olson
Branch Head,
CNO Environmental Restoration and Training*



Figure 1: RABs serve as an interface between the Navy and the community

Today, RABs add tremendous value to environmental cleanup projects. Non-Navy RAB members, who have widely varied backgrounds and opinions, often bring new perspectives to the table that can make cleanup methods faster, less costly, and/or more agreeable to the community.

In May 2001, DON hosted a RAB Training Workshop in Denver, CO. To read about the workshop, see page 2-13.

S.M.A.R.T. Cleanup

The Department of the Navy's (DON's) strategy for accomplishing Environmental Restoration Program goals focuses on three primary objectives of reducing risk, saving time, and saving money. DON calls this strategy S.M.A.R.T. cleanup — Saves Money and Alleviates Risk in a Timely manner.

Consistent, Smart Spending

It is also crucial to maximize the value of the funds spent on the cleanup process. To achieve this goal, the DON strives to (1) create policy that provides a consistent approach to similar problems, rather than wasting resources "reinventing the wheel," and (2) staying abreast of new innovative technologies and solutions of all types — cleanup, as well as management improvements.

With these tasks in mind, the DON Environmental Restoration Program has released new policies and guidance. Remedial Project Managers (RPMs) and others involved in the Program are streamlining their operations by applying these intellectual tools for consistency and uniform methodology. These tools have saved DON time and money as a result, while protecting human health and the environment. See pages 2-1 (New Policy) and 2-4 (New Guidance) for more information.

• Success Story •

Navy and RAB Develop Educational Tool

San Diego Naval Station

San Diego, CA
NAVFAC Southwest Division

Naval Station (NAVSTA) San Diego provides logistical support for the operating forces of the U.S. Navy, and for dependent activities and other commands as assigned. In the remediation of its Mole Pier Sub-Site and Fire-Fighting Training Facility, NAVSTA San Diego has maintained a good relationship with its RAB and the surrounding community.

RAB Input

Throughout the remediation process, the RAB has accomplished extensive document reviews, and learned about innovative cleanup technologies, the California Environmental Quality Act, unexploded ordnance, environmental cleanup funding and budgeting, and regulatory agency roles and involvement. RAB members have visited the remediation sites annually for six years and have seen the progress in person.

Notification of RAB meetings regularly appears in local newspapers, in both English and Spanish.

Remediation and Education

An educational module developed by the Navy and the RAB received approval from the San Diego Unified School District for use in its classrooms. The module, developed to augment school programs for middle-school-age students interested in environmental issues, has received positive feedback from teachers and has even been translated into Spanish. NAVSTA San Diego Commanding Officer CAPT Len Hering, Sr., hosted a class on a tour of the installation following the successful completion of their in-class module training.

• Success Story •

Landfill, Blast Material Remedied With Community Input

Norfolk Naval Shipyard

Portsmouth, VA
NAVFAC Atlantic Division

The mission of the Norfolk Naval Shipyard (NNSY) is to perform ship construction, repair, and maintenance. Part of its mission is painting ships, which requires the removal of existing ship coatings. Stripping the old coating creates spent abrasive blasting material (ABM), which was disposed of in the New Gosport landfill. ABM typically contains metals such as lead, chromium, and cadmium, which, at elevated levels, may pose a risk to human health and the environment.

Studies Reveal Lead

Studies conducted on the landfill in 1982 revealed low levels of lead from the disposed ABM. Based on further studies conducted in January 2000, it was decided that, beginning in October 2000, the material should be removed.

Community Informed

Before the project began, the Navy began an aggressive information campaign, including providing status updates to the community on the project through fact sheets and flyers.

Landfill to Wetlands

Triple superphosphate was used to pre-treat the soil and stabilize the lead during cleanup, rendering the material non-hazardous and cheaper to dispose of, managing a cost avoidance of \$1.4 million. After the ABM was excavated, in lieu of backfilling the large excavated area with clean fill, the remediation team decided to create a 1.9 acre tidal wetland (Figure 2). The wetland was planted with 18,000 *Spartina Alterniflora* plants and 3,000 *Spartina Patens* plants.

The newly created wetland area of native salt marsh plants increased vegetated buffers in the Chesapeake Bay watershed. By eliminating the need to backfill the area, the project produced a cost avoidance of \$750,000.

During the project, soils were decontaminated through an in-situ treatment process prior to removal. By June 2001, the removal process



Figure 3: A stone marker is presented at the dedication ceremony for the wetlands area at Norfolk Naval Shipyard

was complete, with 55,000 tons of ABM and soils removed.

Wetlands Dedicated

On June 13, 2001, Navy representatives as well as local newspapers and community representatives, including the mayor of Portsmouth, attended a New Gosport wetlands dedication ceremony (Figure 3).

During the ceremony, Portsmouth Mayor James Holley said he was "pleased the citizens of Portsmouth are the beneficiaries of this good project."

"This is a proud day for the Navy and the community," said NNSY Commanding Officer CAPT Mark Hugel. "The NNSY will continue to protect the environment and team with the local community."



Figure 2: Norfolk Naval Shipyard created this 1.9 acre wetland

• Success Story •

Navy and RAB Help Community Members Find Jobs

Treasure Island Naval Station Hunters Point Annex

San Bruno, CA NAVFAC Southwest Division

From the time the Annex (formerly the shipyard) closed, the Bay View/Hunters Point community has been in need of local jobs. Community members have approached the Navy in search of employment in cleanup projects at the former naval shipyard. Bay View representatives expressed an interest in good paying jobs, including blue collar/construction trade positions. The majority of cleanup work available over the past few years at the former shipyard has been for laboratory personnel, geologists, environmental scientists, field technicians, and other positions that require college-level expertise.

Matching Jobs With Skills

In response to these community requests, the Navy provides information about existing positions and seeks opportunities to use Bay View/Hunters Point area workers to perform these jobs when feasible.

The following are some examples in which such efforts have been successful:

- Navy encourages contractors to use local businesses to assist with labor for cleanup projects.
- Navy's cleanup contractor utilizes local companies to handle remediation tasks at Parcel B.
- Local trucking companies are used to safely transport excavated material offsite to disposal facilities.
- Six local companies recently received subcontracts for such activities as asbestos abatement, land surveying, paving, drilling, air monitoring, and tank removal.
- Navy contractors partner with neighborhood career development agencies to match local job seekers with existing job opportunities.

A RAB Initiative

To facilitate further successes, the Hunters Point RAB recently approved creation of a new Economic Development Committee to work with the Navy to reach out further into the neighborhoods to provide more possible opportunities for Bay View residents.

Future Jobs

Once remediation is complete, it is also expected that broader job opportunities will become available for local residents as part of the economic redevelopment of Hunters Point. With effective planning from city government, the local community should benefit from greater availability of jobs in the future.

Local Involvement

"Ms. Theodoris Broussard is the Navy contracting officer for Base Realignment and Closure (BRAC)," said Andy Piszkin, Environmental Business Manager for SWDIV/Hunters Point. "In the past, she worked for the shipyard. She understands local concerns — she's from the Hunters Point area and has brought that unique insight into the contracting process."

• Success Story •

BRAC SUCCESS

Navy Works With Local Community for Wetland Restoration, PCB Cleanup

Agana Power Plant

Mongmong, Guam
NAVFAC Pacific Division

Agana Power Plant (APP) is an inactive, government-owned electrical generating facility located near residential homes in Mongmong, Guam. Ten large diesel engines and their associated generators remain at the site, but are no longer in use. Industrial activities at the site included electrical power generation, storage of diesel fuel and lubricants in large above ground tanks, and use of polychlorinated biphenyls (PCBs) in transformers and electrical switching equipment.

PCBs in Soil

A remedial investigation identified PCBs in the soils of the closed power plant facility. Lower concentrations of PCBs were also found in the surrounding neighborhood and in the sediments of the nearby Agana Swamp wetlands.

BRAC Cleanup Team and RAB Partner for Success

The Navy team utilized the existing framework of the BRAC Cleanup Team (BCT) and community-based



Figure 4: Excavation of soil at cleanup site



Figure 5: Restored wetlands at Agana Power Plant, Guam

RAB to establish partnerships with regulatory agencies and the community. These partnerships created a free flow of information, helped to mitigate community concerns, and accelerated cleanup of the affected areas and restoration of the wetlands (Figures 4 and 5).

Excavation and Remediation Necessary

Cleanup personnel determined that excavation was the only acceptable means of remediation. Regulatory agencies were involved in planning the Time Critical Removal Action (TCRA), and responded quickly with specific comments on the TCRA Work Plan.

Successes

- Residents' concerns were addressed through good communication, focused investigations, and timely remedial efforts.
- PCB concentrations were reduced to below remedial goals throughout the project site.
- Work was completed on time and within budget.
- The community has expressed confidence in the cleanup by planting coconut trees in the remediated area.

• Success Story •

BRAC SUCCESS

Remediation Proceeds With Public Trust

Treasure Island Naval Station

San Francisco, CA
NAVFAC Southwest Division

Naval Station Treasure Island (NAVSTA TI) occupies a portion of Yerba Buena Island, which is a 404-acre manmade island in San Francisco Bay. The DoD property was closed on September 30, 1997. In order to remediate petroleum-impacted sites, the Navy has launched comprehensive efforts and awarded two contract task orders (CTOs).

CTOs

One CTO includes pilot studies, full-scale designs, and system construction at tank and pipeline fuel release sites throughout NAVSTA TI.

Pilot studies are currently operating at four sites. Remedial technologies include in-situ systems, such as dual-vapor extraction, soil-vapor extraction, and bioventing/biosparging. The other CTO was awarded for remedial design development and implementation for the excavation of petroleum-impacted materials including soil, fuel pipelines, inactive fuel storage tanks, and associated infrastructure. Cleanup/closure activities at seven sites will take place as a part of this project. Remediation conducted at Site 20, location of the former NAVSTA TI transportation center and automobile hobby shop (Figure 6), resulted in the excavation of 3,000 cubic yards of petroleum-impacted soils.

Impacted soils were removed to depths of 8 to 10 feet below ground surface, loaded into watertight end dump trucks and hauled to a soil drying rack for dewatering prior to offsite disposal. A portion of the excavation extending below the groundwater surface was backfilled with bridging gravel mixed with Oxygen Release Compound in order to enhance natural biodegra-

tion of petroleum hydrocarbons remaining in the groundwater.

Community Cooperation

Remedial efforts at NAVSTA TI continue to require cooperative efforts with both local environmental regulatory agencies and the surrounding island community. The Navy continues to actively work with the California Regional Water Quality Control Board (RWQCB) to develop and implement cleanup goals that are protective of the residential community and San Francisco Bay's ecological resources. Monthly consensus-building meetings are attended by the Navy, the RWQCB, and IT Corporation to share information and foster the decision-making process. Former NAVSTA TI military housing units are leased to civilians and, as such, the island's residents are very interested in the Navy's environmental restoration activities. The Navy encourages community participation in the petroleum remediation program, and recently hosted a site tour and update at the June 2001 Treasure Island RAB meeting.



Figure 6: Soil excavation at Site 20, location of the former NAVSTA TI transportation center and automobile hobby shop

• Success Story •

Community Supports Landfill Remedy

Dahlgren Naval Surface Warfare Center

Dahlgren, VA

NAVFAC Chesapeake Activity

Naval Surface Warfare Center Dahlgren (NSWC) Dahlgren is approximately 4,300 acres, located 40 miles south of Washington, D.C. along the Potomac River. This Naval facility, established in 1918, conducts research, development, testing, and evaluation of surface ship weaponry.

Contamination Located

The Navy has identified several sources of contamination at NSWC-Dahlgren. One is Site 17, the 1400 Area Landfill (Figure 7), five acres in size, which received municipal waste for three to four years in the 1970s. Mercury canisters may also have been disposed of in this area,

and low levels of mercury were detected in groundwater underlying Site 17 and in stream sediments nearby.

Landfill Cap Selected

The Navy evaluated wetland mitigation requirements, waste consolidation, ground water level monitoring data, mercury sediment removal options, care of hybrid poplar trees in the area, and comparison to other established landfill technologies. After studying these, the Navy decided to add a vegetative soil cap with phytoremediation to the Site 17 landfill (Figure 8). Though slightly more expensive than a standard soil cap, phytoremediation has the benefit of ground water control — providing additional short- and long-term benefits.

During biannual meetings with the RAB, community members supported the technology proposed by NSWC.

“The RAB was very supportive of the remedial approach,” said RPM Ryan Mayer. “The few concerns that were raised were addressed at the public meeting.”

Figure 7: Site 17 landfill, NSWC Dahlgren, VA



Figure 8: Diagram of phytoremediation cap

Cap Added

The landfill cap construction began in April 2000 and was completed by November of that year, with institutional controls and portable sprinkler systems being put into place due to drought conditions in the fall of 2000. In addition, some vegetation was replaced in the summer of 2001. Mayer said the landfill cap has endured several significant rainstorms since completion and has stood up very well. The affected wetland areas have been revegetated according to plan.

“Overall, we are very pleased with the results of the cap, and will be monitoring the vegetative cap layer to ensure it is functioning as designed,” he said. “NSWC maintains a great relationship with the RAB.”



• Success Story •

Pearl Harbor Remediates Plume, Recycles Petroleum

Pearl Harbor Naval Station

Pearl Harbor, HI NAVFAC Pacific Division

Naval Station (NAVSTA) Pearl Harbor provides berthing, support, and maintenance for surface ships and submarines, as well as training and housing for personnel. The base has fuel storage, a refinery, waste oil recovery facilities, and many fuel delivery pipelines that have existed since the early 1920s. A 20-acre free-phase petroleum plume was discovered in 1991, migrating toward the harbor.

With input from the RAB, which consists of the State of Hawaii Department of Health, the EPA, the

University of Hawaii, Leeward Community College, Hawaii's Thousand Friends, Life of the Land, the Aiea Neighborhood Board and concerned citizens, NAVSTA Pearl Harbor implemented several measures to remediate the plume:

- Installation of a barrier wall, including an interceptor/ collection trench and a low-permeability liner, (Figures 9 and 10), to divert the plume away from the harbor.
- Use of sump pumps to collect fuel/oil product from "funnel sections" of the barrier wall.
- Integration of skimmers and a reservoir for capture and storage of reclaimed petroleum.

"Regular and routine interaction with the regulatory agencies and making presentations at the RAB meetings have kept everyone informed," said Liane Rosen, PACDIV RPM.

The project was completed in November 2001.

NAVSTA Pearl Harbor and PACDIV achieved cost avoidance on this project in the following ways:



Figure 10: After the sheetpiles are installed

- Using the same Remedial Action Contractor (RAC) for two simultaneous cleanup projects reduced the relative costs of management and supervision for each project.
- Installation of the liner by the RAC contractor, rather than incurring standby costs by having the liner installed by another group.
- In-situ sampling prior to trench excavation simplified soil disposal, and minimized stockpile storage while providing safer operations.

"Our goal of keeping the oil out of the harbor is being met with this removal action," Rosen said.



Figure 9: Workers install pre-assembled liners, Pearl Harbor, HI

• Success Story •

BRAC SUCCESS

BRAC Air Station Cleaning Up, Hosting Leasees

Alameda Naval Air Station

Alameda, CA
NAVFAC Southwest Division

Naval Air Station Alameda was placed on the BRAC list in 1993 and had operational closure in 1997. Before the Navy acquired the site in 1940, it had served as a borax processing plant, an oil refinery, and an airport. Because of these activities, coupled with the Navy's facilities such as gas service stations, fuel storage areas, jet engine test cells, aircraft repair and maintenance activities, and fuel pipelines, the area became contaminated.

New Leasees

Today, the population of Alameda Point, as it is called now, includes various leasees, including residential, commercial, and industrial tenants. To make the new Alameda Point completely inhabitable and to facilitate complete base closure and reuse, a number of contract task orders (CTOs) have been awarded for the development and implementation of corrective action plans.

Closure Strategy

Contamination at NAS Alameda was caused by various operational activities, as well as leaks and spills from underground storage tanks (USTs) and pipelines. Historically, preventative and corrective measures were not as prevalent as they are today. In 2001, the Navy and the San Francisco Bay Regional Water Quality Control Board developed a closure strategy for contaminated sites. The strategy identifies sites that require remediation to eliminate significant human health and ecological risks, as well as sites where natural attenuation is suitable, or no further action is needed. The strategy identifies sites with free-floating product as high priorities, along with sites where gasoline constituents, specifically benzene, toluene, ethylbenzene, xylene, and methyl tertiary butyl ether (MTBE), pose significant human or ecological risks.

CTOs

One CTO provides for the removal of jet fuel floating on the groundwater under former jet engine test

cells. A dual vacuum extraction system is being installed and, pending successful performance of this system, a full-scale collection and treatment system is scheduled for 2002. Remediation has also begun on another area, believed to have been contaminated by leaking underground tanks and fuel lines. Dual vacuum extraction will be tested at this location also. By consolidating these pilot tests, operation becomes more cost-effective and timely. The test dual vapor extraction system is pictured on the following page in Figure 11.

Other CTOs include the removal of hydrocarbons from two former fuel storage areas, the cleanup of groundwater contamination at two fuel storage sites, and the removal and abandonment of the remaining underground fuel lines at Alameda Point.

Among the Alameda sites is a 100-year-old former oil refinery.

"We've had to deal with a lot of the residual oil waste," said Greg Lorton, remedial project manager. "Essentially crude oil and heavy oily wastes are under the site. We

Continued page 1-10

• Success Story •

BRAC Air Station Cleaning Up, Hosting Leasees (cont.)

Continued from page 1-9

think over time the oil seeped down from the refinery, and it may have been covered with dirt.”

“The heavy waste is a thick liquid, and in some cases is a tar-like solid, as opposed to gasoline, diesel, or jet fuel. It is our most complex site in terms of petroleum remediation sites because many of the technologies we normally use to clean up petroleum don’t work for this,” said Lorton. “We are reviewing lots of alternatives, from excavation to bioremediation. Soil vapor extraction, dual vacuum extraction won’t work — they can’t readily evaporate the heavy oils.”

Community Input

Remedial efforts at Alameda Point require cooperative efforts with

both local environmental regulatory agencies and the surrounding island community. Preliminary public meetings were held to discuss strategies for cleanup and to obtain public comment. Alameda leasees, some of whom are civilian residents, are keenly interested in the Navy’s environmental restoration activities. The Navy encourages community participation and hosts site tours and presents program updates at the RAB meetings.

“We put together quite a bit of effort to develop a remedial cleanup strategy,” said Lorton. “We worked closely with the

regulatory control board and contractors to develop a remediation strategy that would protect the environment and be economical. We did not focus on cleanup problems that did not impact human health or the environment.”



Figure 11: Dual Vapor Extraction system

Investing in Technology

Although the Navy makes annual strides in the restoration of existing sites, new sites are also discovered each year. Without additional funding, the Navy must seek out technologies that will enable restoration personnel to characterize and complete sites more quickly and cost-effectively. Through partnerships with the Interstate Technology and Regulatory Cooperation (ITRC), joint efforts with other organizations and contractors, and the input of RAB members, the Navy continues to test and implement new cleanup technologies. Turn to page 2-6 for more details.



• Success Story •

Innovative Technology Cleaning Up Fire Fighting Facility

San Diego Naval Station

San Diego, CA

NAVFAC Southwest Division

Since 1997, a Multi-Phase Extraction and Treatment (MPET) system has been successfully operating to remove petroleum fuels in soil and groundwater at Naval Station (NAVSTA) San Diego. The MPET system uses bioslurping to recover petroleum hydrocarbons. The extraction system consists of 31 extraction wells that are interconnected with a centrally located MPET System. Each well is designed to remediate an area within a radius of 40 feet.

MPET Extracts Volatile Contaminants

The MPET System (Figure 12) works by drawing air into groundwater via specially installed two-inch wells drilled in the ground. The air “slurps” or bubbles through the groundwater. The air picks up volatile contaminants as it is pulled by a vacuum upward through the water and soil. The air is then pulled out of the ground and run



Figure 12: Multi-phase extraction system, NAVSTA San Diego, CA

through a treatment system. The treatment system captures the contaminants from groundwater and soil, and the treated air is released. The groundwater is then treated and discharged to the sewer system. A programmable Logic Controller controls the MPET system. The system includes automatic operating safety features, such as instant shut-off for any alarm condition and controlled evacuation of liquids from tanks and process equipment.

System to Continue Through 2003

The system has recovered about 15,000 gallons of free product since 1997, and is expected to operate at this site for approximately 18 more months to achieve feasible limits. Thereafter, in-situ bioremediation can be used to continue cleanup activities. Once cleanup is complete, the MPET system can be redeployed elsewhere. The regulatory agencies agreed with the Navy to transfer this site to a non-CERCLA investigation and cleanup program that addresses petroleum contamination.



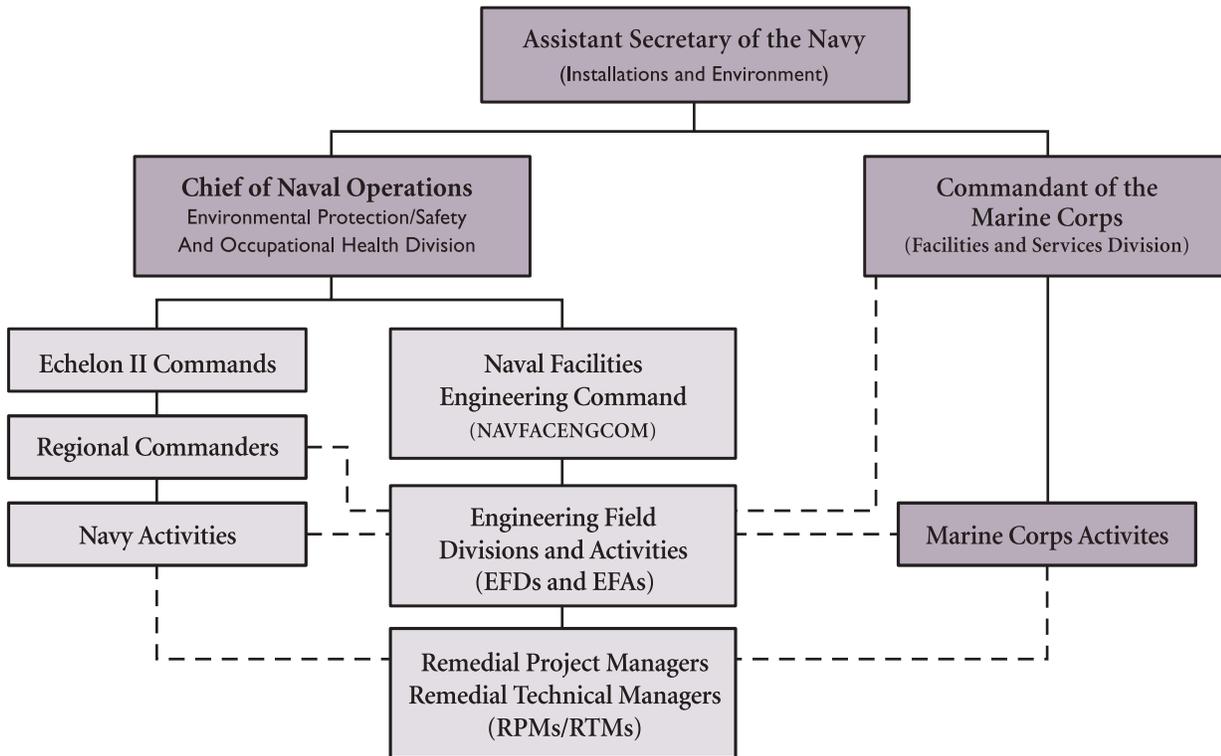
Conclusion

Dialogue with community members, effective use of financial resources, consistent processes for completing the work, and a strong commitment to developing effective technology — these are sound elements of the Environmental Restoration Program's vision of completing all sites by 2014.



*To our Remedial Project Managers
and Remedial Technical Managers,
the Department of the Navy says “Thank You!”
for handling the decisions that make
cleanup happen everyday!*

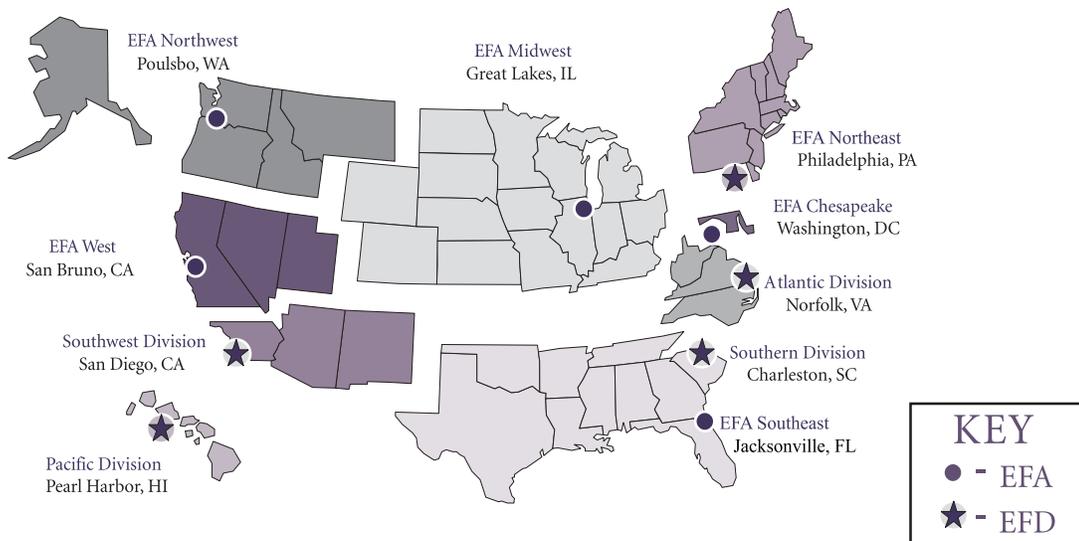
Department of the Navy



NAVFACENGCOM Cleanup Roles

- Environmental Support & Project Execution
- Base Realignment & Closure
- Contracting
- Design and Construction

Engineering Field Divisions and Activities





Policy

Guidance

World Wide Web

New Technology

Training

Outreach

Partnerships

Pilot Studies

Optimization

Property Transfer

Innovative Contracting