

Chapter 2

Initiatives in Fiscal Year 2001

DON implemented several initiatives in Fiscal Year 2001 (FY01) to help achieve its goal of completing site closeout rapidly and efficiently. These initiatives include developing policies and guidance, exploring technology innovations, working with stakeholders, and developing new training programs to address emerging issues.

Together, these initiatives allow remediation efforts to be versatile enough to handle the range of issues encountered at DON cleanup sites, but consistent enough to ensure timely completion of tasks without duplication of effort.

DON's investment in these initiatives, particularly in technology, training, research, and innovative contracting methods has paid off as many restoration projects are being accomplished faster and more effectively.



Figure 13: Site investigation in progress

New Policy

Policy is a set of overall principles an organization adopts in order to understand problems and accomplish goals efficiently. Within the DON Environmental Restoration Program, new policy is developed and promulgated each year to provide a DON-wide approach for handling sites with similar cleanup issues. New policies developed in FY01 include the following:

Draft Final Natural Resource Injury Policy

CNO is in the process of developing Natural Resource Injury (NRI) policy. The purpose of the policy is to provide guidance to the field on how to deal with natural resources that have been impacted as a result of a past hazardous substance release.

The policy will state that:

- 1) The injury to the natural resources shall primarily be investigated during the Ecological Risk Assessment (ERA) process;
- 2) To the extent practicable, select a response action that best addresses the NRI caused by past practices;
- 3) Document the response alternative that addresses the injury in the Record of Decision;
- 4) To the extent practicable, select a response alternative that minimizes injury to the natural resources;
- 5) Paying damages shall not be addressed during the installation restoration process;
- 6) The impact to natural resources (NR) at military munitions response sites shall be considered prior to any site preparation or response action;
- 7) ER,N/BRAC funds shall not be used to construct or

repair non-natural resources items; and 8) DON should conduct a Natural Resource Damage Assessment (NRDA) if Navy natural resources have been injured by non-Navy activities. CNO plans to release the final NRI policy in December 2001.

Human Health Risk Assessment Policy

In February 2001, the CNO issued the Human Health Risk Assessment Policy, outlining a three-tiered approach for evaluating sites to determine the appropriate level of remedial action to ensure that sites do not pose a significant risk to human health and the environment.

National Sediments Dialogue

Currently, there is little scientific understanding about mankind's long-term impact on sediments (Figure 14), and even less about how sediment contamination affects sea life. The National Sediments Dialogue (NSD) project, spearheaded by the National Environmental Policy Institute (NEPI), began in January 2000 as a cooperative research effort among Navy, Army, the Environmental Protection Agency (EPA), private and public sectors, port authorities, academia, and several non-profit environmental organizations. The purpose of NSD is to share resources and professional experience in order to build knowledge about human impact on the environment through sediments. The initial phase was a planning effort to engage these participating organizations in collectively exploring sediment-related challenges in developing a



Figure 14: The motion of chemicals through sediments needs to be better understood

nationwide framework to handle sediment issues. In January 2001, the second phase of the NSD began. This phase consisted of a concentrated set of monthly working group meetings to tackle issues that impede effective characterization and remediation of sediments. In addition to work group meetings, NEPI sponsored many sediment conferences, including "Windows on Washington Sediments Panel" and "Contaminated Sediments: Risks and

Remedies," which was a Congressional Roundtable Discussion. During the meetings, participants narrowed the issues to focus on the most prevalent sediment concerns:

- Site Investigation/Data Collection
- Human Health and Ecological Risk Assessment
- Risk-Based Management Priorities
- Remediation: Considerations, Options & Remedy Selection

The National Sediments Dialogue Conference is scheduled for November 1, 2001. A white paper is scheduled for completion following input from conference participants.

For additional information on the National Sediments Dialogue, visit <http://www.nepi.org/sediments.htm>

• Success Story •

BRAC SUCCESS

Offshore Field Tests Conducted

Treasure Island Naval Station Hunters Point Annex

San Bruno, CA
NAVFAC Southwest Division

The Hunters Point Annex of the Treasure Island Naval Station (formerly the shipyard) operated as an industrial complex, performing ship maintenance and related tasks for over 150 years. The facility occupies 500 acres of dry land, including docks, machine shops, warehouses, office buildings, and 440 submerged acres. Under BRAC, the facility has effectively been closed to Navy shipyard operations.

"There is concern about runoff and materials that enter the storm drains and move out into the bay," said Andy Piszkin, Environmental Business Manager for NAVFAC's Southwest Division/Hunters Point. "Standard protocol is to check out the offshore area, since those sediments received runoff from an industrial area."

In 1999, the Navy submitted a toxicity analysis on the biota living in the sediment. As a follow-up, three major field investigations occurred in offshore areas during May and June 2001.

Dynamics Study

A sediment dynamics study collected information on tides, currents, waves, and suspended sediment concentrations to evaluate the movement of sediment around Hunters Point.

Sediment Contaminant Analysis

As part of the Validation Study of the area, three vessels were used to collect samples of sediment, tissue from clams and worms living in the sediment, and fish. Sediment was analyzed for chemical contamination and toxicity to aquatic organisms to evaluate the potential for bioaccumulation of chemicals from sediments into the aquatic food chain.

Fish Evaluated for Chemical Exposure

Surf perch and jacksmelt were collected from the waters at Hunters Point and three other areas around the San Francisco Bay. These fish will be evaluated to determine if chemical concentrations in fish caught at Hunters Point differ significantly from those in fish caught elsewhere in the Bay.

To effectively assess the impacts of potential contamination, investigators had to test the sampling areas during periods of high biological activity.

"It was a tight window," said Piszkin. "In order to get the most valid results, we had to perform all the field efforts during the summer due to weather and ecological factors."

Regulator Participation

Agencies involved in the testing include U.S. Fish and Wildlife Service (USFWS), National Oceanographic and Atmospheric Agency (NOAA), EPA, the California Regional Water Quality Control Board, and California Department of Toxic Substances Control.

Conclusion

Fieldwork was completed in Summer 2001 with sample analysis and data validation scheduled for completion in late 2001 and results to be reported in early 2002.

Draft Final Sediments Policy

Many Navy/Marine Corps installations are bordered or surrounded by water. Those bodies of water are impacted by a wide variety of sources, including non-Navy activities. The cleanup of sediment contamination is an inherently complex program. Therefore, careful thought must go into the planning and design of investigations and any resulting response action. The policy will state how sediment investigations and response actions shall be implemented in the Installation Restoration (IR) Program. The policy will also state that contamination response actions must be linked to an onshore Comprehensive Environmental Response, Compensation, and Liability Act/Resource Conservation and Recovery Act (CERCLA/RCRA) site. CNO plans to release the final Sediments policy in FY02.

Five Year Review Policy

Under CERCLA, Five Year Reviews are required for all cleanup sites at which contaminants will remain on site above levels that will not allow for unlimited use and unrestricted exposure following cleanup. The purpose of the Five Year Review is to evaluate the implementation and performance of the remedy to ensure that it remains protective of human health and the environment. The results of the Five Year Review are presented in a report, which includes a summary of the remedial action(s), any noted deficiencies, recommendations and follow up actions pertinent to the remedy, and a determination of whether the remedy remains protective, or will be protective upon correction of any identified deficiencies. Report summaries are made available to the public (i.e., the RAB or other interested

groups) and regulators for informational purposes. The Navy/Marine Corps Five Year Review Policy was issued in November 2001.



Figure 15: Sediment sampling in progress

Policies & Guidances Online!

Visit <http://5yrplan.nfesc.navy.mil> to view DON policies and guidances on the web.



Figure 16: DON Environmental Restoration policies and guidances on the web

New Guidance

In the context of environmental restoration projects, implementation guidance is a set of step-by-step technical instructions based on Navy policies, which are designed to solve a problem and/or arrive at a correct, science-based conclusion. Typically developed through working groups with specific knowledge of the subject matter, guidance helps the DON Environmental Restoration Program maintain a consistent methodology for cleanup projects, which results in easier regulatory compliance, streamlined processes, and cost savings. New guidance released in FY01 includes:

CNO Guidance: Navy/Marine Corps Installation Restoration Manual

The IR Manual was last updated in 1997. Since that time, the Program has grown and changes have been made to make it more science-based, defensible, and cost effective. The manual is being updated to reflect new policies and guidance as well as new intellectual tools and innovative technologies. The manual is a living document, and will be updated as necessary. DON has posted the manual on the web, for easy access.

For access to the updated IR Manual, visit http://enviro.nfesc.navy.mil/erb/erb_a/restoration/ir_manual/



NAVFAC Ecological Risk Assessment Guidance and Website

On April 5, 1999, CNO issued formal policy for conducting ecological risk assessments (ERAs) within the Navy's Environmental Restoration Program.

The purpose of the ERA website is to provide guidance for implementing the CNO ERA policy. The policy itself identifies a three-tiered process for estimating ecological risks and evaluating the effectiveness and potential ecological impacts of remedial alternatives. The website includes information on a number of topics that Navy staff working in the Environmental Restoration, Navy (ER,N) Program must address in order to carry out their responsibilities, including technology, explanations of program terms, and other useful information.



For more details on the Ecological Risk Assessment Guidance, visit the ERA website at <http://web.ead.anl.gov/ecorisk/>

NAVFAC Sediments Guidance

Implementation Guide for Assessing and Managing Contaminated Sediment at Navy Facilities

While the fundamental elements of conducting aquatic (sediment) and terrestrial investigations are similar, sediment investigations are often much more complex due to the dynamic nature of water bodies. Developed through the Naval Facilities (NAVFAC) Risk Assessment Workgroup, this procedural guidance for RPMs and their in-house and/or contractor technical support offers insight into common issues encountered when addressing potentially contaminated sediment sites at Navy facilities. It complements existing CNO policies for conducting ecological risk assessments (April 1999), human health risk assessments (February 2001), the use of background chemical levels (September 2000), and other applicable sediment and human health policies, as well as providing supplemental technical details to existing regulatory and DoD guidance.

The scope of this sediment guide includes site identification through assessment, remedial option evaluation, monitoring considerations, and site closeout, along with management decisions in the various phases. The objective of the guidance is to highlight the most pertinent issues and methods involved in assessing and managing sediment sites from start to finish, and to provide applicable references and links for the reader to obtain more in-depth understanding. The guidance will be available in the spring/summer of 2002.

NAVFAC Guidance for Environmental Background Analysis

Volume I: Soil

Volume II: Sediment

For remediation purposes, background refers to the concentrations of chemicals found at a site, that are either (1) naturally occurring or (2) man-made but unrelated to Navy/Marine Corps operations. Information about background conditions can help in establishing site-related human health risks, threats to the environment, requirements for regulatory compliance, and alternative site remediation strategies. In addition, background analyses help to set reasonable remediation target goals. By fostering a higher degree of accuracy in site assessment, background studies create the opportunity to save money on unnecessary cleanup measures and speed up the transfer of remediated property to the public sector.

Developed through the NAVFAC Risk Assessment Workgroup, these guidance documents support and implement the CNO Interim Final Policy on the Use of Background Chemical Levels (September 18, 2000) by providing detailed instructions for evaluating background chemicals in soil and sediment. Background chemicals are derived from natural and man-made sources (i.e., sources

The official DON guidance document for background data analysis is available for reference online at http://enviro.nfesc.navy.mil/erb/erb_a/regs_and_policy/don-background-pol.pdf



not related to site-specific activities or operations), and are not associated with site-related chemical releases. Background analyses are essential for distinguishing between soils and sediments that have been impacted by a site-related chemical release and soils/sediments that have not.

Volume I of the guidance will be available in early 2002 and Volume II will be available in the spring/summer of 2002.

NAVFAC Human Health Risk Assessment Guidance and Website

The Human Health Risk Assessment (HHRA) Guidance website provides guidance for conducting human health risk assessments. The guidance implements the February 2001 Navy Human Health Risk Policy and identifies a three-tiered process for estimating human health risks and evaluating

the effectiveness and potential implementation impacts of remedial alternatives. The primary target audience of this guidance is Navy RPMs, and is focused on issues that RPMs must address in order to carry out their responsibilities, including technology, explanations of program terms, and other useful information.

Technology Innovations

Technology initiatives can take many forms. Effective site cleanup can require traditional construction/earth-moving equipment; scientific processes for monitoring, collecting and analyzing samples; reclamation and purification techniques for removing and/or neutralizing contaminants; and data sharing methods to enable RPMs, the public, and other stakeholders to communicate about the remediation process.

During this fiscal year, DON has invested in, implemented and participated in diverse technology initiatives that are relevant to the cleanup program. Highlights of these follow.



To view the site, visit <http://www-nehc.med.navy.mil/EP-Web/Projects/NEHC/Web/20RA/20Guidance/HHRA/WebSite/index.htm>

The Interstate Technology Regulatory Cooperation (ITRC) workgroup is a state-led coalition working in partnership with industry, public and private stakeholders, and federal agencies to achieve regulatory acceptance of environmental cleanup technologies. This partnership brings together a diverse mix of environmental experts and stakeholders from both the public and private sectors to broaden and deepen technical knowledge and streamline the regulation of new environmental technologies, making it easier to use new technologies and helping the partners maximize resources.

ITRC accomplishes its mission in two ways: it develops guidance documents, and training courses, both classroom and Internet-based, to meet the needs of all the partners, and it works with state representatives to ensure that ITRC products and services have maximum impact among state environmental agencies and technology users.



The ITRC guidance documents and training courses are the products of technical teams that work to balance the needs of the member states and the federal partners to meet the information needs of regulatory staff, technology vendors, and environmental consultants. These products help state environmental agencies gain valuable technical knowledge and develop consistent regulatory approaches for reviewing and approving specific technologies. State regulators lead the ITRC technical teams, which rely on broad-based participation from federal agencies, industry, academia, and other stakeholders in building collective knowledge and collaborative products. The Navy strongly encourages field and headquarters remediation personnel to actively participate on ITRC Technical Teams of interest.



More information about ITRC and the currently active Technical Teams can be found at www.itrcweb.org

• Success Story •

Navy Participates in Tri-Agency Initiative: Permeable Reactive Barriers

In the mid-1990s, based on promising field studies, many site managers had pilot or full-scale permeable reactive barriers (PRBs) installed at their sites, using zerovalent iron as the reactive medium (Figure 17). Zerovalent iron had been proven to degrade chlorinated solvents to meet federal and state requirements for maximum contaminant levels (MCLs).

Recently, two issues emerged concerning this technology. First, some field PRB systems were unable to retain groundwater flow long enough to extract all the contaminants effectively (hydraulic capture and residence time). Second, precipitation of native inorganic constituents from groundwater was observed, leading to concerns about the longevity of the PRBs.

The Air Force Research Laboratory, Air Force Center for Environmental Excellence, and the Army Corps of Engineers, partnered with Naval Facilities Engineering Service Center (NFESC) to investigate these issues and share data at several DoD sites, including the former Naval Air Station Moffett Field (Figure 18), former Lowry Air Force Base and Seneca Army Depot. Later, the DoD team approached the Department of Energy (DOE)

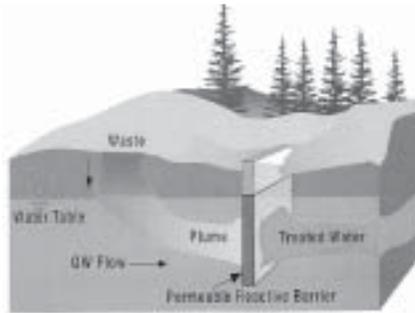


Figure 17: Diagram of permeable reactive barrier (PRB)



Figure 18 : Angled coring and analysis of reactive medium cores, former NAS Moffett Field, CA

and the EPA to form the Tri-Agency Permeable Barrier Initiative and share data at other PRB sites.

Cost Avoidance

At Moffett Field, NFESC estimated that the site could avoid \$500,000 over ten years, \$3 million over 30 years, and much more over the expected life of the trichloroethylene plume by implementing a PRB instead of the existing pump-and-treat method.

Tri-Agency Partnering

The DoD team ultimately worked with the EPA and the DOE to form the Tri-Agency Permeable Barrier Initiative, which coordinates performance assessments of PRBs at various sites. The three agencies have agreed to share their results and issue joint recommendations for future PRB applications.

Project Success

The efforts of the tri-agency team led to the following successes:

- Reassurance to site managers with existing PRBs that PRB performance concerns could be addressed.
- Broader acceptance of a new cost saving technology at numerous other sites with groundwater contamination.
- Broad participation in the NFESC-led initiative from other DoD sectors as well as cooperation established with EPA and DOE that lead to greater credibility to the final recommendations.
- Greater acceptance of the technology by federal and state regulators through EPA participation, thus easing the implementation process.



ARTT/ITRC Interaction

The Navy's Alternative Restoration Technology Team (ARTT) frequently makes recommendations to ITRC, based on the needs of Navy/Marine Corps field installations. Recent technologies implemented through ARTT/ITRC cooperation include the diffusion sampler and SCAPS (Site Characterization and Analysis Penetrometer System). These tools have proven extremely useful for DON cleanup projects in terms of cost savings and overall efficiency.

To learn more about ARTT, visit http://enviro.nfesc.navy.mil/erb/support/work_grp/artt/main.htm
For technology details, visit <http://www.itrcweb.org>

Environmental Restoration on the Web

Online technology is becoming ever faster and more available to DON and civilian personnel nationwide. CNO wanted to provide more information on IR and reduce the size of the Five Year Plan at the same time. Therefore, CNO worked with the NFESC to develop the Five Year Plan website. With support and web hosting services through NFESC, the DON cleanup program is now leveraging the Internet as a tool for sharing public data about cleanup projects, increased availability of training, and distribution of crucial documents, including policy, guidance, and even this report.

The DON Environmental Restoration website (Figure 19) now includes installation summaries, providing an informative snapshot of the cleanup issues and progress at each cleanup site. As a result of the increasing availability and power of this online technology, DON is achieving wider dissemination of cleanup program information while reducing the number of pages and the cost associated with hard-copy documentation.

Interim final and final documents are available for review and download from this site in Adobe PDF (Portable Document Format). Other useful program information can be browsed on the site via standard hyper-text markup language (HTML) pages.

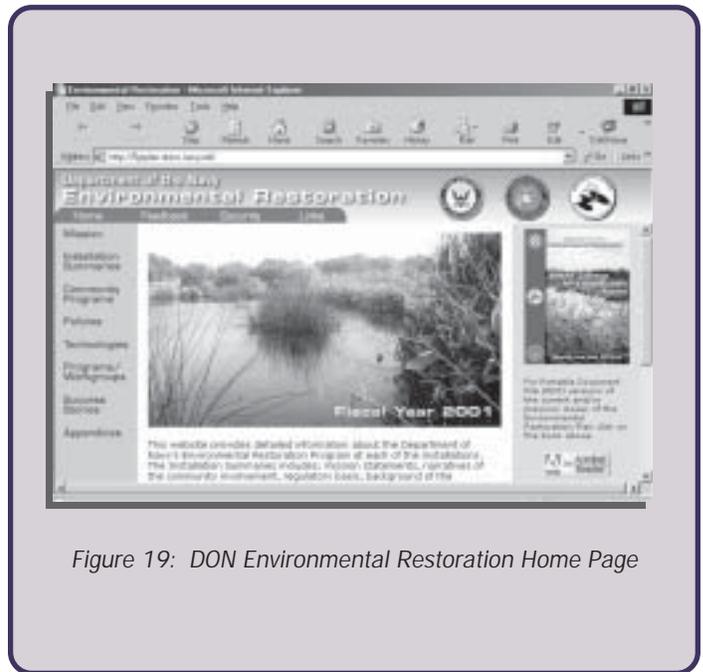


Figure 19: DON Environmental Restoration Home Page

To browse DON cleanup information online visit <http://5yrplan.nfesc.navy.mil/>

Electronic Fact Sheets

In order to make information about the cleanup program readily available for public use, CNO has developed concise fact sheets about specific technologies and cleanup program elements and posted them on the web at <http://5yrplan.nfesc.navy.mil/>. Each of the following full-color factsheets is available for download:

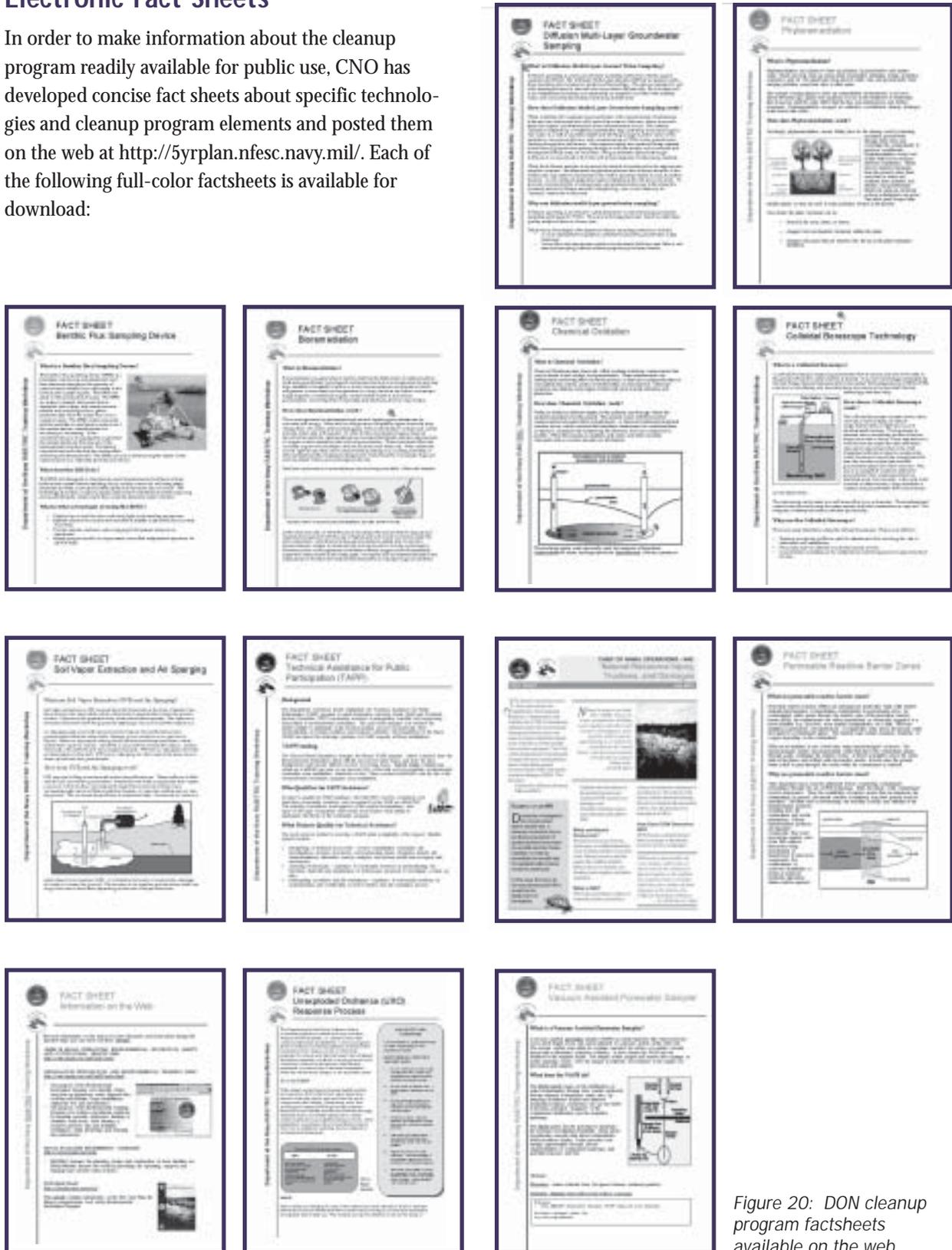


Figure 20: DON cleanup program factsheets available on the web

Successful Technologies

Use of New Technologies Expedites Cleanup

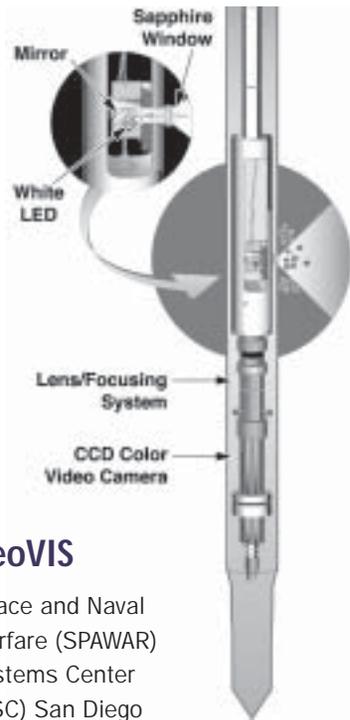


Figure 21:
GeoVis Probe
diagram

GeoVIS

Space and Naval Warfare (SPAWAR) Systems Center (SSC) San Diego has developed GeoVIS, a tool to obtain detailed in-situ information about subsurface soil characteristics on very small spatial scales. The system (Figure 21) uses a miniature color video camera coupled with magnification and focusing lens systems that are integrated into a cone penetrometer probe. The system is designed to characterize soil properties for estimating subsurface water flow and contaminant transport, and to characterize complex contaminants such as non-aqueous phase liquids (NAPLs). Images from GeoVIS are

viewed in real time on a video monitor, recorded, and digitized if desired. Laboratory testing has shown that the standard lens system can distinguish particles ranging in size from 1 mm to 10 mm. GeoVIS provides significant advantages over conventional methods that involve costly and time-consuming sample collection, off-site laboratory analysis, and variable data extrapolation. It also provides a direct means of locating source zones of contamination that have been very difficult to localize using conventional sampling approaches. Most significantly, GeoVIS provides the small-scale tools needed to identify thin layers of highly permeable material that may provide a potential pathway for contaminant transport, and could easily be missed through conventional techniques.

Trident Probe

A new groundwater/surface water migration probe, known as the Trident, was developed by SPAWAR Systems Center, San Diego, Marine Environmental Quality Branch, under the Naval Facilities Engineering Command Environmental Research, Development, Test, and Evaluation (RDT&E) (Y0817) Coastal Contaminant Migration Monitoring project. The probe



Figure 22: Trident Probe

(Figure 22) is used in sediments to detect areas where groundwater may be carrying contaminants into surface water bodies. The Trident consists of three probes that are driven into the sediment with a small, submersible air hammer. One probe measures conductivity, indicating the presence of groundwater that may be fresher than the surface water. Another probe measures temperature, because groundwater often has a different temperature than surface water. The third probe is used to collect water samples for more detailed chemical analysis. Together, this system should allow rapid delineation of coastal groundwater plumes that may be impacting surface waters. The Trident should also be useful for remedial investigations as well as feasibility studies to expedite remedial decisions.

Successful Pilot Studies

Before investing time and taxpayer dollars in a full-scale remediation system, DON does pilot studies of technologies at many cleanup sites. Through pilot studies, restoration personnel can evaluate the effectiveness of a

system for collecting and/or neutralizing the contaminants at a given site. Site characteristics such as ground slope, soil type, temperature, proximity to water sources, and the presence of natural receptors can make cleanup technologies more or less functional at a specific location. These factors can often be identified during a pilot study, and modifications can be made to address these issues in the full-scale system.

• Success Story •

Pilot Studies Implemented for Fuel Farm Cleanup

China Lake Naval Air Weapons Station

China Lake, CA
NAVFAC Southwest Division

The former fuel farm at Armitage Field, located at Naval Air Weapons Station (NAWS) China Lake, operated for more than forty years. The former fuel farm consisted of four 50,000 gallon concrete-reinforced Underground Storage Tanks (USTs) and two 100,000-gallon USTs.

An estimated one million gallons of light non-aqueous phase liquid (LNAPL), principally jet fuel, was released into the subsurface during the operational period of the fuel farm. An estimate of the total hydrocarbons released has been recently refined to be approximately 250,000 gallons.

Pilot Tests Implemented

The Navy removed six USTs and developed a Mobile Product Recovery System to skim the free-phase fuels from the subsurface.

In 1998, the Navy evaluated remedial designs by conducting pilot tests of the following technologies:

- Free-product skimming
- Vacuum-enhanced product pumping
- Total fluid recovery
- Soil vapor extraction
- Tests on various product recovery skimmer pumps

Cone-penetrometer testing (CPT) was used to optimize placement of extraction wells away from zones of high clay content and cemented sands.

Full-Scale Technology Deployed

Because of the success in pilot testing, efficiency, and relative ease of deployment in the field, the Navy contracted to design and construct a full-scale treatment removal system using vacuum-enhanced skimming and soil vapor extraction.

Navy Goals Met

The full-scale system has recovered a total of 16,860 gallons of fuel from the subsurface with only 340 gallons of groundwater extracted, contributing to a 98 percent recovery rate. To date, the system has recovered 18,181 gallons of free-phase LNAPL and 22,047 gallons of product from the vapor phase.

• Success Story •

Soybean Oil Used for Pilot Test Site Cleanup

Mid-South Naval Support

Millington, TN

NAVFAC Southern Division

Naval Support Activity (NSA) Mid-South has had several different roles over the years and today provides a variety of command and community support services. At one point it served as a Naval Air Station, performing degreasing activities associated with aircraft maintenance operation. Disposal of trichloroethene (TCE) and other solvents in the apron area has created several plumes of ground-water contamination containing these compounds in the shallow aquifer beneath the airfield (Figure 23).

Bioremediation Considered

Different approaches to bioremediation of the main TCE plumes were investigated and evaluated. In January of 2000, SOUTHDIV decided to test soybean oil as an inexpensive, innocuous remedy for chlorinated hydrocarbon contamination in one of the two largest plumes. The pilot project consists of a single injection of

soybean oil into the aquifer to stimulate microbial reductive dechlorination of the TCE, causing it to degrade in place to carbon dioxide and water. Because the contaminated zone lies beneath an in-use flight line, a low-impact technique was required to address the contamination while flight operations continue.

Soybean Oil Injected

In August 2000, the Navy began injecting 6,000 gallons of non-aqueous phase liquid (NAPL) soybean oil under pressure into eight injection wells (Figure 24). The soybean oil slowly dissolves in the aquifer and provides a food source that the microorganisms can utilize in their metabolic processes that degrade the solvents. Currently, the oil is dissolving into groundwater, the concentrations of solvents are declining and a change in the site geochemistry is occurring as expected. The demonstration of this project should be complete by summer of 2002.

RAB Kept Abreast

Chaired by NSA Mid-South Commanding Officer CAPT Wanda L. Riddle and Millington Mayor George R. Harvell, Jr., the RAB has five members from the general community and meets once every



Figure 24: Soybean oil injection in progress

four months to be updated on remedial progress.

"We keep them informed and they are generally happy," said Jim Reed, SOUTHDIV RPM.

"We believe, in the right circumstances, this technology has the ability to clean up the sites in a very cost-effective manner that was not possible before," said Cliff Casey, technical lead with SOUTHDIV.

Remedy Useful Elsewhere

Widespread implementation of this cost-effective technology is being achieved by employing the systematic approach of the successful pilot test and coordinating with other Engineering Field Divisions and Activities (EFDs, EFAs) and NFESC through the Navy's Alternative Restoration Technology Team to further demonstrate the technology.



Figure 23: Airfield remediation site, NSA Mid-South

Outreach

Private citizens, businesses, local government officials, regulators, members of non-profit organizations, and others often need solid information about DON Environmental Restoration projects. Even members of RABs, who become familiar with the issues through frequent meetings about local sites, can benefit from new information about the cleanup process itself, exposure to new technologies and explanations of technical program elements. Likewise, input from RABs and people outside the Program can be quite valuable for DON cleanup personnel. Local interests in economic development, preferences for future land use and ideas for alternative cleanup methods can be taken into account when an effective, open dialogue exists between DON and stakeholders.

To facilitate and improve this dialogue, DON began several initiatives this year.



Figure 25: EQ Pelican, Navy's environmental quality mascot, browses DON Environmental Restoration outreach materials at Navy Earth Day 2001, Washington, D.C.

• Success Story •

Training Workshop Fosters Communication Among RABs

Denver, CO

DON recognizes the contribution that each RAB member makes to the Environmental Restoration Program. To ensure RAB members have the tools and information they need to do their job effectively, CNO hosted a workshop May 18 through 20, 2001. This workshop provided training for RABs on a variety of topics regarding RAB operations and the environmental cleanup process (Figure 26).

The Workshop brought together more than 120 RAB installation and community co-chairs from around the world to provide DON

and the community with a better understanding of the issues facing RABs, and how to better balance the community's desires with DON policies and procedures.



Figure 26: Workshop session underway

Training included sessions on the technical aspects of environmental cleanup, such as remediation technologies and military munitions response (formerly unexploded

ordnance), as well as a session on the organizational structure of RABs and the responsibility of RAB members in representing the views of the affected local community. Attendees were able to share their successes and concerns with other RAB members and DON, and suggest improvements in RAB processes.

Participants walked away from the workshop having received a consistent message regarding DON installation restoration policies and RAB operations, as well as a better understanding of the contribution of RABs to the overall success of the installation restoration program.

• Success Story •

RAB Suggestion Reduces Cost

Jacksonville Naval Air Station

Jacksonville, FL
NAVFAC Southern Division

Occupying 3,896 acres along the St. Johns River, Naval Air Station (NAS) Jacksonville is a multi-mission base hosting more than 100 tenant commands. One of its missions, the maintenance and repair of aircraft, requires the use of chlorinated solvents, mainly TCE, to clean aircraft parts. In addition, in the past, paint sludge and spent solvents were disposed of on the ground surface. Subsequently, Operable Unit 3 (OU 3), in which a Naval Aviation Depot (NADEP) is located, showed signs of contamination.

Site Evaluation

Based on an engineering evaluation of the site, restoration personnel determined that interim remedial actions were not necessary. Following a Remedial Investigation/Feasibility Study (RI/FS), enhanced biodegradation was selected for areas showing signs of TCE contamination; and Chemical Oxidation was chosen for those areas where paint sludge and solvents had been disposed.

RAB Input

The NAS Jacksonville RAB consists of individuals from the Navy, the Florida Department of Environmental Protection, the EPA, the City of Jacksonville government and the

local community. When presented with the remedial alternatives, the RAB suggested Monitored Natural Attenuation as a remedial means that would entail no risk of exposure to the contamination. The partnering team followed the RAB's suggestion, thereby avoiding the exposure risk and also creating a cost avoidance of approximately \$700,000.

"Public input is essential in the process to ensure they are going to support the team's decision or to let the regulatory committee know they do not support the decisions made in the process," said Dana Gaskins, SOUTHDIV RPM. "The RAB provided input that has shown the team it is interested in what is going on at the activity in the cleanup of our sites."

Semi-Annual Newsletter Will Foster Communication

Participants at the May training workshop expressed interest in continuing the information exchange started in Denver. As a result of that interest, CNO will develop a semi-annual newsletter highlighting important policy developments, technology advancements, and other information that will be useful to RAB members (Figure 27). In addition, CNO invites RAB members to submit success stories, sample RAB newsletters, and other tools that they wish to share. By sharing information, RABs can learn from each other. The newsletter will be distributed to all RAB co-chairs and will be posted on the CNO website.



Figure 27: Sample of newsletter

• Success Story •

Base Protects Environment, Health With Excavation/Treatment Action

Camp Lejeune Marine Corps Base

Camp Lejeune, NC NAVFAC Atlantic Division

Marine Corps Base (MCB) Camp Lejeune is a military training facility, providing training for Marine air and ground task forces. Among numerous training camps there is Camp Geiger, within which is located Site 89. From 1942 to 1990, the area that comprises Site 89 was used for industrial purposes, including a vehicle maintenance yard, a vehicle storage lot, and a staging and storage area for the Defense Reutilization and Marketing Office (DRMO). During a Site 89 investigation, chlorinated solvents, which originated from the degreasing and cleaning of mechanical parts as well as improper storage of solvents, were detected in the groundwater, posing a specific threat to Edward's Creek, which borders the site. The most predominant contaminant present was 1,1,2,2-tetrachloroethane.

Public, Officials Notified

After discovering the chlorinated solvents, immediate action was taken to notify the public, as well as the proper regulatory officials, to minimize the possibility of exposure to Camp Lejeune employees and



Figure 28: Site 89, hot spot evacuation



Figure 29: Treated soil bins

residents, and recreational users of Edward's Creek. Flyers were handed out, and a public meeting was held. In addition, the hunting area was shut down and a fence was put up to prevent access to the contaminated area.

Remedy Decided

Through the course of several partnering meetings, it was decided that a Time Critical Removal Action (TCRA) was warranted because of the concentration of contaminants

discovered. Excavation of soil (Figure 28) followed by Low Temperature Thermal Desorption (LTTD) was selected as the on-site treatment. The TCRA required extensive site preparation, including engineered containment pads for both the fuel source and the LTTD unit, storage bins for excavated and treated soils (Figure 29), and the establishment of an on-site laboratory to provide real time analytical data.

Soil Removed, Treated

From May 2000 to May 2001, the contaminated soil was excavated and treated with the use of LTTD. In the end, a total of 35,862 tons of contaminated soil had been excavated, treated, and replaced, reducing the presence of contaminants to the partnering team's recommended level of one part-per-million (ppm).

RAB Updated Consistently

Throughout the procedure, Camp Lejeune's RAB, comprised of residents of both Jacksonville, NC, and MCB Camp Lejeune, as well as representatives from the commercial fishing industry, were updated on the remedial progress. In June, the RAB was taken to Site 89 to see the LTTD.

Technical Assistance for Public Participation

DoD established the Technical Assistance for Public Participation (TAPP) program (Figure 30) to assist RAB and Technical Review Committee (TRC) community members in interpreting scientific and engineering data related to environmental restoration. The goal of the program is to enhance the public's ability to participate in the decision-making process by improving their understanding of overall conditions and response activities. DON has issued guidance for TAPP requests at Navy installations, including funding levels, TAPP qualification criteria, eligible projects, steps to apply for TAPPs, and reporting requirements.



Web site to find TAPP Fact Sheet
<http://5yrplan.nfesc.navy.mil>

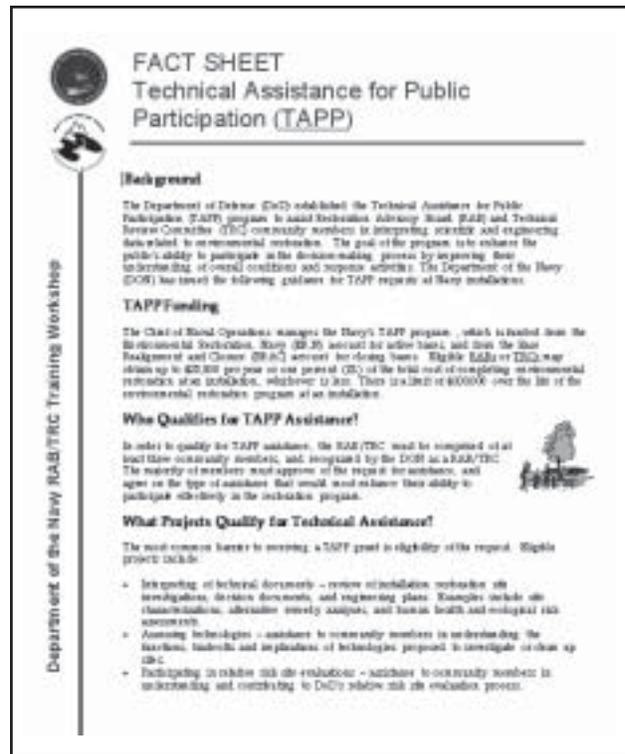


Figure 30: TAPP fact sheet

Training

Environmental training (Figure 31) provides DON personnel, regulators, and the public with the knowledge and perspective to handle cleanup projects effectively. Training can be used to familiarize communities with new technologies, which makes for easier understanding and acceptance. RPMs work with the installations to identify training needs at the local level. This information is sent up the chain, and then the Civil Engineer Corps Officer School (CECOS) provides training as required.

This year, DON has developed new classroom training courses and invested in Internet and CD-ROM-based training technology to make classes more easily accessible. Partnerships with ITRC have also made new classes available to DON and RAB personnel this year.



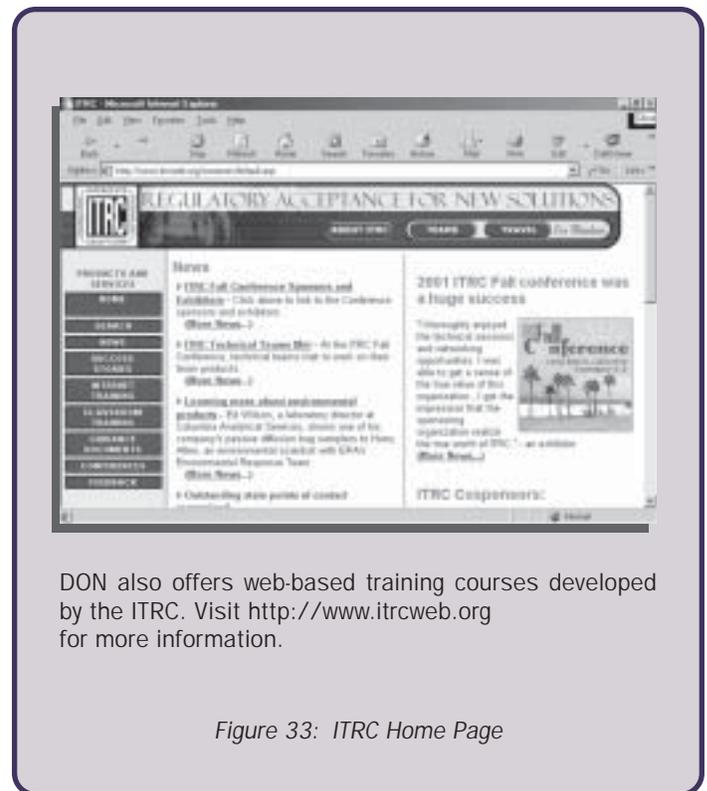
Figure 31: Classroom instruction



Figure 32: Training

Remediation Innovative Technology Seminars

Remediation Innovative Technology Seminars (RITS) provide training on new and innovative technologies, methodologies, and guidance under the DON Environmental Restoration Program. The RITS program is sponsored by NAVFAC in coordination with its geographical EFDs and EFAs, and the NFESC, which develops the seminars. The RITS training serves as one of many ways the Navy promotes innovative technologies to enable site restorations to take place faster, consume less energy, and provide better results at lower cost. Currently, RITS is offered twice a year at each EFD/ EFA location. New RITS topics are developed for each seminar series. Since its inception in 1997, the RITS program has offered more than 30 presentations. These presentations can be viewed on the web.



DON also offers web-based training courses developed by the ITRC. Visit <http://www.itrcweb.org> for more information.

Figure 33: ITRC Home Page

See past RITS presentations on the web at http://enviro.nfesc.navy.mil/erb/erb_a/support/riits/riits-oct01.htm
Click on Past RITS



NEW Environmental Background Analysis Course

“Background” refers to the concentrations of chemicals found at a site that are either (1) naturally occurring or (2) man-made. This course provides an overview of the step-by-step process for conducting background analysis, and also gives suggestions for presenting background data in a format that is useful and comprehensible to regulators and the public. Students will achieve an understanding of how background analyses can be used to help set reasonable remediation target goals. This course is currently being offered at CECOS, Port Hueneme, CA.

COMING SOON Munitions Response Program (MRP) Course

The issue of military munitions (formerly unexploded ordnance, or UXO) is an ongoing concern at closed, closing, transferring, and inactive DON ranges. This course is being designed as an introduction to the issues surrounding military munitions, including public and worker safety, the potential for soil/groundwater contamination, removal versus controlled detonation options, site characterization, and institutional controls. CECOS received input from the Army and the ITRC during the development of this course. Classroom instruction will be available in 2002.

New seminar topics are selected based on input from the Navy's RPMs and focus on the most recent challenges to the Navy's environmental cleanup program and new DoD environmental restoration policies and guidance. Each presentation is structured and formatted to provide background information, technical guidance, regulatory concerns, cost information, technology transfer tools, lessons learned, references, and points of contact.

While the RITS is developed primarily for the Navy's Environmental Restoration and BRAC environmental professionals, it is also available to other DoD personnel, the Navy's environmental cleanup contractors, and environmental regulators. Registration for the current RITS series is also available on the web.

Register for current RITS on the web at
http://enviro.nfesc.navy.mil/erb/erb_a/support/rits/rits-oct01.htm
Click on Resgistration



• Success Story •

Children Learn About Art and the Environment

Treasure Island Naval Station Hunters Point Annex

San Bruno, CA
NAVFAC Southwest Division

The Hunters Point Annex of Treasure Island Naval Station (formerly the shipyard) is located in the Bay View community of southeastern San Francisco. It was identified for closure in 1991 as part of BRAC. Due to past shipyard activities, a variety of organic and inorganic

contaminants have impacted the site and are now being remediated.

Student Outreach

On May 24, 2001, over 350 fifth grade students from five Hunters Point neighborhood elementary schools went on a field trip to the shipyard as part of the Bay View Opera House Environmental Education Program (BEEP).

Hands-on Learning

Students visited the facility to learn about environmental issues, play scientist for the day, and paint. They tried on protective clothing and dug for pretend contamination in specially con-

structed sandboxes. City officials were on hand to show the students what the shipyard will look like when it is converted to civilian use.

Artistic Expression

The shipyard is home to the studios of local artists. Students toured the studios and learned techniques of painting, producing pieces such as the one pictured to the left.

"Our participation in the BEEP is an opportunity for us to tell our story about the former Hunters Point Naval Shipyard, its role in shaping our nation's history, and the plans for its future," Commander Ken Rado said.



Figure 34: Image of a U.S. Navy vessel, created by a fifth-grade student

Optimization

For all aspects of the cleanup process, DON is constantly seeking new approaches that will save taxpayer dollars (Figure 35), accomplish remediation more efficiently, and save time. This year, DON RPMs and

contractors have successfully optimized monitoring operations at several cleanup sites.



Figure 35: Optimization makes more efficient use of cleanup dollars

• Success Story •

Systems Optimize Solvent Removal

Barstow Marine Corps Logistics Base

Barstow, CA

NAVFAC Southwest Division

Marine Corps Logistics Base (MCLB) Barstow is successfully addressing solvent contamination at the Yermo Annex through Air Sparging and Soil Vapor Extraction (AS/SVE).

Groundwater and Vadose Zone Plume

Groundwater at the Yermo Annex is contaminated with volatile organic compounds (VOCs), which in this case are primarily TCE and tetrachloroethene (PCE). The plume was approximately 12,000 feet in length at its longest measurement and 4,000 feet wide and approximately 40 feet into the groundwater. Over time, these sources leached into the groundwater, resulting in contamination in the parts-per-billion (ppb) range. Past concentrations have run as high as 490 ppb, with a trend of significant

decreases in concentrations over time. There is a risk to human health from ingesting this groundwater.

Enhancing Cleanup with AS/SVE

The selected remedy consists of pump-and-treat to contain the plume along the base boundary with enhancement from two AS/SVE systems (Figure 36) near the source areas. The AS/SVE systems work as follows:

1. Air is injected into groundwater to volatilize contaminants in soil.
2. Extraction wells vacuum contaminated air from the soil.
3. Contaminated air is purified with vapor phase carbon and discharged to the atmosphere after it has been filtered for organic compounds.

Reducing Environmental Hazards

Concentrations of freon at the site have decreased to negligible levels, indicating that freon was localized and limited in the subsurface. VOC concentrations have also generally decreased over the last two years. Cumulative contaminant rates indicate that continued operation of the AS/SVE system is necessary. However, VOC emission rates have remained below the Mojave District Air Quality Management District's allowable levels (36 lbs/day for VOCs, 600 lbs/day for freon).

The annual cost to operate the Area of Concern (AOC) 16 AS/SVE system is approximately \$180,000. Compared to the pump-and-treat system, the AS/SVE systems are much more efficient, economical, and effective.

Figure 36: Treatment pad for pump and treat, and AS/SVE systems



• Success Story •

Navy Optimizes MTBE Plume Characterization

Naval Base Ventura County, Port Hueneme

Port Hueneme, CA
NAVFAC Southwest Division

Naval Base Ventura County (NBVC) Port Hueneme is the Navy's only deep-water port between San Diego and Washington State, furnishing training, administrative and logistical support for the Construction Battalion (CB or "Seabees"). A methyl tertiary butyl ether (MTBE) plume was identified in June 2000, and was found to be migrating up to one foot per day in the semi-perched groundwater aquifer on base.

CPT Conducts Analysis

A cone penetrometer truck (CPT) was used to collect groundwater samples and analyze them on-site using a mobile laboratory. The results indicated that the plume was confined to the semi-perched aquifer, and was approximately 4,800 feet long and 500 feet wide at the 2 ppb contour.

RAB Gets Tour

The MTBE Control and Containment Project was initiated to address community and regulatory

concerns. The community was briefed on the MTBE Control and Containment Project through newspaper articles, fact sheets and a RAB presentation. After the system was completed, it was featured in a RAB tour of the MTBE projects on the base.

Contaminated Water Pumped

After evaluating several methods of containment, the Navy selected a conventional pump-and-treat system, pictured below, due to its proven effectiveness even at very low MTBE concentrations.

The contaminated water was pumped through 15 extraction wells to a surface treatment pad, before being transferred to the City of Oxnard Waste Water Treatment Plant. Initially, only six of the extraction wells, pumping at two gallons per minute each, were needed to contain the plume.

Monitoring in Progress

The Navy periodically monitors the water as it is pumped to the surface, and pretreatment using activated carbon will be provided if needed to ensure that the discharge complies with all permit requirements and does not adversely affect the operations of the Waste Water Treatment Plant.

Navy Conserves Resources

Because the Navy cleanup team was able to rapidly characterize the plume and quickly implement a containment system to halt its migration, significant time and money were saved.



Figure 37: MTBE control and containment system treatment pad, Naval Base Ventura County, Port Hueneme, CA

• Success Story •

Navy Optimizes Monitoring Through Project Team Agreement

Key West Naval Air Station

Key West, FL

NAVFAC Southern Division

Naval Air Station (NAS) Key West is comprised of several installations in various parts of the lower Florida Keys, encompassing 5,000 acres. At present, NAS Key West maintains several aviation operations, a research laboratory, communications intelligence, counternarcotics air surveillance operations, a weather service, and several other related activities. There are numerous Solid Waste Manage-

ment Units (SWMUs), IR and BRAC sites, an Area of Concern, and UST sites located at NAS Key West. Monitoring (Figure 38) is ongoing at a number of these sites to ensure the continued protection of human health and the environment.

Unnecessary Monitoring Eliminated

Due to the number of sites and the need for various levels of monitoring at each site, the NAS Key West project team identified the need to optimize the overall monitoring program. The project team, includ-

ing regulatory agency representatives, worked to create an effective and efficient optimization process. A database query was performed to identify fractions for each sample location that had not been detected for two quarters. Results from this query were verified using quality assurance/quality control procedures to prevent errors, and were reviewed to determine if the monitoring of certain chemical fractions could be safely eliminated at select locations. As a result, unnecessary monitoring was eliminated, avoiding approximately \$17,000 in analytical costs for performance monitoring. By generating more streamlined data packages, there was a 75 percent reduction in laboratory costs, avoiding the Navy \$210,000. Limited data validation, which takes approximately half the time full validation takes, translated into an avoidance of \$4,500. By scheduling quarterly monitoring of SWMUs 1, 2, 5, 7, IR Site 7, and Poinciana to coincide with quarterly monitoring at UST sites, there was an avoidance of \$3,000 per event.

By optimizing the monitoring program, NAS Key West managed a total cost avoidance of \$234,500.



Figure 38: Monitoring in progress at NAS Key West

Balancing DON Mission and Cleanup

DON's primary mission is national defense. Whenever practicable, the DON cleanup program works to accomplish remediation projects without disrupting ongoing operations at installations. The two success stories below demonstrate the extremes: one in which mission is altered to accommodate cleanup, and one in which cleanup and mission go on simultaneously with minimal conflict. DON expects to encounter both circumstances in the future, but will strive to make cleanup and mission as compatible as possible for all cleanup projects.



Figure 39: Navy's mission and site cleanup are crucial priorities

• Success Story •

Command Relocated to Facilitate Cleanup

San Diego Naval Station

San Diego, CA
NAVFAC Southwest Division

The property on which Naval Station (NAVSTA) San Diego is located was deeded to the U.S. government by the city of San Diego on September 3, 1919 to build a docking and fleet repair base. The property consisted of 21 water acres and 77.2 land acres, with the former being mostly tidelands and marsh flats. The station is now homeport for approximately 60 Navy ships and home base to 50 separate commands, each having specific and specialized fleet support purposes. It is the workplace for approximately 48,000 military and civilian personnel.

Soil and sediments in the area of Mole Pier (Installation Restoration Sub-Site 2A) were contaminated with arsenic, lead, hexavalent chromium, dioxins, and polynuclear aromatic hydrocarbons (PAHs) as a result of past ship maintenance practices. In order to perform the removal at the lowest cost and with the highest probability of achieving site closure, it was necessary to relocate the Consolidated Divers Unit (CDU) command. This relocation required a great deal of logistical support and coordination with CDU to ensure that command readiness was not jeopardized during the move. Relocating the CDU allowed for complete excavation of all contaminated soil down

to 10 feet below ground surface. Following Navy residential closure of this site, the area is planned for designation as a park.

NAVSTA San Diego's environmental program is making continuous progress in the cleanup of the site. Almost 90 percent of the CERCLA removal has been completed. Over 70,000 cubic yards of soil have been excavated and transported off site for disposal.

• Success Story •

Remediation Efforts Blend With Operations

El Centro Naval Air Facility

El Centro, CA
NAVFAC Southwest Division

Naval Air Facility (NAF) El Centro was commissioned on May 1, 1946 as a Naval Air Station. For the first 35 years of operation, the facility's mission was devoted to aeronautical escape system testing, evaluation, and design. Today, the facility provides realistic training to active and reserve aviation units and activities of the Navy's operating and training forces. Squadrons visit NAF El Centro to practice gunnery, bombing, carrier landings, and air combat. NAF El Centro personnel provide essential

support to the training squadrons and units, including flight operations, logistics, billeting, messing, hangars, ramps, aircraft parking space, administration, and supply transport.

Underground Storage Tanks

NAF El Centro contains a legacy 10-acre fuel farm that was used from 1942 to 1958. Twelve 50,000-gallon and eleven 25,000-gallon concrete underground storage tanks were formerly used to store aviation gasoline. Fuel and fuel components have had an impact on soil and groundwater at Site 7.



Figure 41: NAF El Centro representatives accept FY 2000 CNO Environmental Restoration award

CNO Award

The success and innovation implemented to continue operations during remediation were a contributing factor to NAF El Centro receiving the CNO Environmental Restoration Award (Figure 41) for two straight years.

Minimal Interference

The Navy is operating a 131 well vacuum-enhanced pumping system at the cleanup site. Regular flight operations have continued without impacts from the on-going remediation activities (Figure 40). The Remedial Action Contractor (RAC) and installation restoration personnel have "blended into the activity." To date, over 34,800 pounds of hydrocarbons have been removed from the subsurface.



Figure 40: Flight operations continue at NAF EL Centro during remediation

IR/MILCON Cooperation

Although DON IR projects and military construction (MILCON) projects are paid for with separate funding sources, it is sometimes possible to coordinate IR and MILCON projects in order to make both happen at a reduced total cost (Figure 42). Through forward thinking and careful deployment of contractor resources, DON has achieved this coordination at several installations this year.



Figure 42: DON can sometimes save dollars by combining IR and MILCON projects

• Success Story •

Single Contractor Saves Navy Dollars on Double Project

Mechanicsburg Naval Support Activity

Mechanicsburg, PA
NAVFAC Northeast Activity

The mission of the Naval Support Activity (NSA) Mechanicsburg is to coordinate and provide common base support services to tenant activities and other Naval units close to the base. The facility occupies 824 acres of land, the largest portion of which is designated as storage grounds.

Paint Creates Concern

The most notable landmarks at NSA Mechanicsburg were three water towers, which originally were painted, and later re-painted, using a lead-based paint.

Shallow soils beneath the tanks became contaminated with lead and polychlorinated biphenyls (PCBs) from the paint, which had been sandblasted. Sampling performed during the 1999 site inspect characterized the horizontal (from 90 to 160 feet in diameter) and vertical (approximately 18 inches deep) extent of soil contamination.

Removal and Demolition

It was decided to remove the contaminated soil and demolish the three water towers. To save time and money, the same RAC was used to accomplish both the remediation and the MILCON tasks.

“Using the RAC for both efforts gave us the advantage of coordinating the execution schedules, thereby eliminating the potential

conflict of having two different contractors on the same site,” said Edward Boyle, Engineering Field Activity Northeast RPM.

No Further Action

Soil removal began in June of 2000, and the back filling of the excavation was completed by late August 2000. By July of 2001, a No Further Action Decision Document was finalized.

RAB Pleased

Information related to the soil removal action was posted in a local newspaper for public review. Additionally, a presentation was given to the RAB explaining the details of the demolition and soil removal. According to a report by Mr. Boyle, the RAB was pleased with the Navy’s actions.

• Success Story •

Combined Projects Make CERCLA History



Figure 43: Combined aquatic disposal (CAD) pit dredging, Puget Sound, WA

Puget Sound Naval Complex

Bremerton, WA NAVFAC Northwest Activity

After over a century of repairing naval vessels, Puget Sound Naval Shipyard (PSNSY) was faced with the cleanup of historic contamination, and the newer challenge of homeporting nuclear powered aircraft carriers. Located on Sinclair Inlet west of Seattle, PSNSY has been owned and operated by the Navy since 1891. In the mid-1990s, planning and permitting began for MILCON Project P-338 to provide deeper and wider berths for nuclear-powered aircraft carriers.

Based on chemical and biological testing, approximately 125,000 cubic yards of the sediment were found to be unsuitable for open-water disposal. During this same timeframe, but under a separate process, the Navy was proposing remediation of marine sediments that were contaminated with PCBs and mercury.

Regulatory Requirements/Community Involvement

A major accomplishment of this project was the ability to gain community, Tribal, and regulator support for a combined aquatic disposal (CAD) pit (Figure 43), which was not only the first such pit constructed in Puget Sound, but also the first constructed under a CERCLA cleanup action. This was the first CERCLA project to gain National Marine Fisheries Service (NMFS) concurrence since the listing of the Puget Sound Chinook salmon as a threatened species.

Cost Avoidance Measures

One of the most dramatic successes was the low per-unit price for dredging and disposal. Because two projects were combined, more than 395,000 cubic yards of contaminated sediment and sediment unsuitable for open-water disposal were dredged and safely deposited in the CAD pit.

Alternative Safe Sediment Use

As the project neared completion with 40,000 cubic yards of sediment remaining to be dredged, a plan to beneficially use the remaining suitable sediment as a final CAD cap (Figure 44) was presented

to the regulators. The regulators approved this approach, which resulted in additional savings.

Project Successes

- First integration of an IR cleanup and MILCON project using a Navy RAC vehicle.
- First CAD pit ever used for a CERCLA Remedial Action in the United States.
- Successful on-time completion of the project.
- Cost avoidance of \$32 million compared to upland disposal.

Lessons Learned

- Integration of projects with unique regulatory drivers should start early to allow ample coordination with regulators, local Tribes, the community, and stakeholders.
- Due to the unique regulatory framework, Tribal and community involvement, and specialized construction, both the CLEAN and RAC II contractors had to remain flexible and responsive.

Figure 44: Placing sediment cap, west end of OU B



Resolution

Environmental restoration is a complex, sometimes controversial process. Technical aspects of cleanup can be misinterpreted, or plans for remediation and closeout of a site may run contrary to the desires of some organizations or individuals. DON is committed to working with concerned parties to resolve such issues as they arise (Figure 45).

This year, DON installations demonstrated this commitment by successfully addressing disputes surrounding several cleanup projects.



Figure 45: Resolving disputes takes cooperation and understanding from all parties

• Success Story •

Navy Addresses Public Fears, Safely Disposes of Napalm

Seal Beach Naval Weapons Station Fallbrook Detachment

Fallbrook, CA
NAVFAC Southwest Division

In 1973, DoD began storing Vietnam-era napalm canisters at Naval Weapons Station (NWS) Seal Beach Detachment Fallbrook. By 1978, the nation's entire remaining napalm stockpile, consisting of 34,563 crated canisters containing 2.6 million gallons of napalm, had been consolidated there.

In March of 1998, the Navy initiated what would become a highly publicized operation to demilitarize the weapons on-site and recycle all major components at locations throughout the U.S.

Recycling Napalm

To recycle the napalm, all canisters are punched, drained, and shred-

ded, with the shreds being sent to a commercial smelter for recycling. The napalm itself is reformulated into usable fuel for industrial furnaces, and the wood from the napalm crates is used for the same purpose.

Politicians Rally Constituents

Although the Navy had followed all the regulatory requirements for a CERCLA removal action, politicians representing numerous communities across the nation rallied their constituents, creating great public concern. As a result of the 1998 election year, political activity was intensified.

Napalm Refused

When the first shipment of napalm departed via railway for its intended recycler, the subcontractor refused the shipment due to intense

pressure from communities and environmental groups. This action prompted other subcontractors across the nation to decline the recycling/demilitarization task.

Navy Informs Public

In response, the Navy held meetings on all levels with representatives from diverse groups, including the public. Finally, another firm with the proper permits accepted the challenge, and provided extensive public outreach.

"Once we informed the public what napalm was made of, people realized there really was not a danger," said Suzanne Benoit Albertsen, the Naval Facilities Engineering Service Center contracting officer's technical representative. In March of 2001, the final canister of napalm was demilitarized.

• Success Story •

Community/Regulator Trust Facilitates Site Closure

Quantico Marine Corps Base

Quantico, VA NAVFAC Chesapeake Activity

Marine Corps Base (MCB) Quantico, VA was established as a Marine Corps training camp in 1917. Past storage and disposal practices for chemicals and waste products have led to variable levels of metals, organic contaminants, petroleum wastes, and/or pesticides at the base.

Renewed Relationships

Though previous cleanup and closure efforts were met with significant resistance, a new level of synergy and team spirit has developed among the Marine Corps, the Navy, contractors, the Commonwealth of Virginia, and the EPA, reducing the time and financial burden of Navy investigative requirements previously demanded as a result of misunderstandings between the organizations.

This cooperation has been achieved through partnering between regulatory agencies and project managers. As a result, discussions on the cleanup approach have opened up.

"This constitutes a great leap forward in cooperation and trust from previous cleanup efforts," said Andrew Gutberlet, EFA Chesapeake RPM. "The improved level of trust that has developed over the past year between the regulators and the Navy has allowed an unprecedented closure of sites."

Thus far, MCB Quantico has received no negative feedback from the community regarding its cleanup efforts.

Cooperation Pays Off

All site data gathered from laboratory analysis and site visits were used to determine the best course of action for each Area of Concern (AOC). Over the past fiscal year,

because of cooperation among MCB Quantico and the EPA, 57 AOCs were closed. Public meetings over clean-up efforts are held on an annual or semi-annual basis.

Progress Continues

Based on estimates, the closure of these AOCs has avoided costs of \$15 million, and at least five years of additional investigation, negotiation and closure. Cleanup is proceeding on 160 other AOCs. In addition, a watershed-level study is being conducted to examine the possible migration of contamination to the Potomac River, and what effects, if any, it has had.

"It may be a daunting task, but I honestly feel that we can get the base entirely cleaned before the budget deadline," said Gutberlet.

Property Transfer

Typically, once remediation of a particular site is deemed complete based on regulatory guidelines and the intended future use of the property, the site is either redeveloped for use within DON or transferred to the public sector. For BRAC and other transferring sites,

DON works intensely with the RABs, local governments and organizations, and business representatives throughout the process to plan site closeout based on community needs. DON had some very successful property transfers this year, with extensive input and involvement from local communities.

• Success Story •

BRAC SUCCESS

City, Navy Agree to Early Transfer

Mare Island Naval Shipyard

Vallejo, CA

NAVFAC Southwest Division

Before its BRAC listing in 1993, the Mare Island Naval Shipyard (MINSY) was the oldest shipyard on the West Coast, dating back to 1856. In 1998, the City of Vallejo chartered a unique partnership with the Navy to pursue the “early transfer” of over 3,500 acres of the island’s 5,000-plus acres for commercial interests. In May 2000, Southwest Division began an aggressive schedule to turn the concept into reality. Two separate early transfer parcels were designated — the Eastern Early Transfer Parcel and the Western Early Transfer Parcel. The Eastern Parcel includes about 700 acres of the industrial core of the former shipyard as well as residential and other developed areas of the island. The Western Parcel includes the Navy’s former dredge ponds that the City plans to reactivate as a commercial disposal facility for the San Francisco Bay region.

Navy Expedites Transfer

Early transfer is a real estate transaction that allows DoD property to be transferred to others before all remedial response actions have been taken, provided that areas deemed unsuitable for transfer by regulatory agencies receive environmental remediation. For this project, the Navy will pay the City of Vallejo, via Environmental Services Cooperative Agreements, to complete remaining environmental cleanup work. In this way, the City and its developers can concurrently conduct cleanup and redevelopment activities to expedite reuse.

FOSET Document Reviewed

Before the transfer could be completed, however, the Navy was required to submit a Finding of Suitability for Early Transfer (FOSET) document for public comment. Agencies and groups reviewing the FOSET included the EPA, the

California Department of Toxic Substances Control, the California State Regional Water Quality Control Board, ARC Ecology, and the Mare Island RAB. The RAB consists of 12 members who are residents from the local community.

Actions Approved

Many regulators and members of the community watched closely as the Navy worked toward the largest early transfer conducted to date. At the end of July 2001, a final version of the FOSET for the Eastern Parcel was signed, the terms of which having been met with approval by many of the aforementioned groups. The draft FOSET for the Western Parcel was released for public review in October of 2001.

BRAC Environmental Coordinator Jerry Dunaway said the RAB was “very supportive, with the ultimate result of a quicker cleanup. They were happy — they wanted to see this happen.”

• Success Story •

BRAC SUCCESS

Stakeholder Involvement Facilitates Rapid Transfer

Guam Naval Complex

NAVFAC Pacific Division

The Guam Land Use Plan was designed to transfer 19 parcels covering approximately 2,741 acres of property from the U.S. Navy to the Government of Guam. These areas were declared excess property after the 1995 BRAC round.

Environmental Concerns

Environmental issues revolved around the environmental suitability of each parcel for transfer according to its intended reuse. Concerns focused on human health and environmental protection.

RAB/Partnering

The complex challenge of responding to each community and regulatory concern required strong leadership from NAVFAC's Pacific Division in coordinating with other Naval activities, and the Government of Guam agencies (Figure 46). The Navy formed a BCT, providing a forum in which to monitor environmental restoration activities. Frequent communication and open dialogue encouraged a spirit of cooperation among

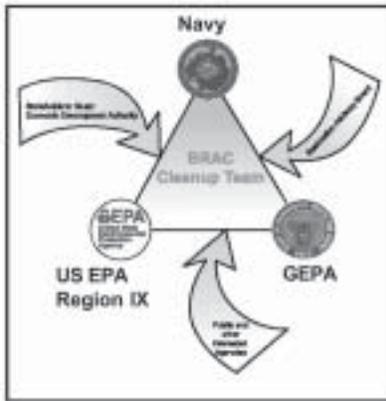


Figure 46: Regulatory and community involvement in Guam transfer

participants and a commitment to reach agreement on difficult issues.

The BCT provided information to the community through the RAB and an extensive public outreach program. The outreach program involved:

- Fact Sheets
- Administrative Record/ Information Repository
- RAB Meetings
- Notices of Availability of Documents
- Presentations and Briefings
- Public Comment Periods

Technical Cleanup Solutions

Of the 19 parcels in the land-use plan, 7 were unsuitable for transfer and required continuing environmental work. Mindful of the goal of accelerated property transfer, the Navy elected to obtain a FOSET under the 1996 amendment to CERCLA that established the early transfer authority (ETA). The ETA allows accelerated property transfer, provided certain conditions are met.

Positive Outcome

The BCT and stakeholders concurred with the need for quick turnover, satisfying a key condition of conveyance. This team approach enabled participants to achieve transfer while satisfying applicable environmental protection laws and regulations. Future use of these properties will also convey economic and social benefits to the people of Guam.

Conclusion

Early planning, careful and constant communication between stakeholders and the Navy fostered an understanding of the issues. Success, in this case, was largely the result of accelerated action by the participants.

Environmental Restoration Awards

Every year CNO recognizes the top performers. These star performers (on left in photos below) receive the DRUM-E award for outstanding service to the Installation Restoration Program. The award recipients for FY01 are pictured with Dave Olson, CNO, (on the right in the photos) in Figure 47.

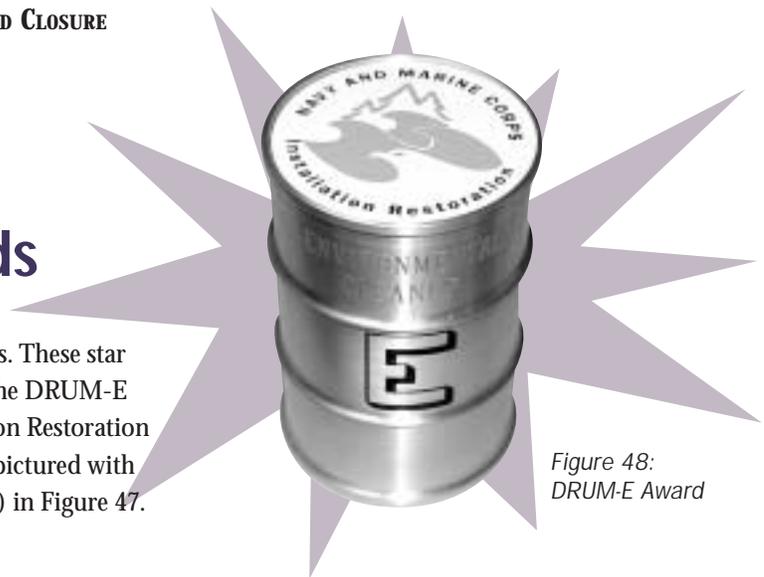


Figure 48:
DRUM-E Award



Southwest Division

Restoration Employee of the Year
Ms. Anne Okamura



Naval Facilities Engineering Service Center

Restoration Employee of the Year
Mr. Robert L. Kratzke, PE



Southern Division

Restoration Employee of the Year
Mr. J. Dudley Patrick



Pacific Division

Restoration Employee of the Year
Mr. Thomas Macchiarella



Engineering Field Activity Northwest

Restoration Employee of the Year
Mr. Jai Jeffery



Atlantic Division

Restoration Employee of the Year
Mr. Christopher Penny



**Engineering Field
Activity Chesapeake**
Restoration Employee of the Year
Mr. Walter Legg
(not pictured)

**Engineering Field
Activity West**
Restoration Employee of the Year
Mr. William A. Radzevich
(not pictured)



Northern Division
Co-Restoration Employees of the Year
Messers **Lonnie Monaco (top)**
and **Mike Fohner (bottom)**



Conclusion

The DON Environmental Restoration Program has had an impressive array of accomplishments this year. New policy and technical guidance for remediation and implementation of new technologies through diverse DoD, government, and private partnerships will help drive the Program forward. Increased use of the Internet to facilitate information sharing among DON and stakeholders and a focus on community outreach will encourage stakeholder involvement.

DON also worked on initiatives to strengthen the organization, including developing additional training for cleanup personnel and stakeholders and conducting pilot studies and optimization to ensure cleanup effectiveness and efficient use of taxpayer dollars. For BRAC sites, the Navy has worked toward facilitating property transfer for economic development.

All of these efforts will help the Environmental Restoration Program meet its goal to conduct effective cleanup while supporting DON's military mission.

