

THE NAVY'S ENVIRONMENTAL MAGAZINE

Currents

fall 2010

Navy Hosts Environmental
Ship Embark

Environmental NGOs & Federal Regulators
Onboard USS GEORGE H.W. BUSH

Converting Trash to Gas
Navy Training Works with the Environment
Clean-Up Isn't the End in Sediment Remediation





THE NAVY'S ENVIRONMENTAL MAGAZINE **Currents**

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cover

The Chief of Naval Operations Energy and Environmental Readiness Division and United States Fleet Forces coordinated an environmentally-focused ship embark and tour which gave representatives from the U.S. Environmental Protection Agency and a number of non-governmental organizations a firsthand look at the Navy's environmental stewardship efforts while at sea.

Original photo by Mass Communication Specialist 2nd Class Micah P. Blechner

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Ongoing Gulf Support, Participation in National Oceans Council & Planning for Training at Sea Among Top Priorities

IT'S BEEN AN eventful several months between the spring and summer issues of *Currents* magazine. I'd like to focus in this column on some great work that's been done, and some challenges that lie ahead.

Gulf Oil Spill

Over the spring and summer of 2010, we witnessed what may be the nation's greatest environmental disaster, namely the oil spill in the Gulf of Mexico. Our Navy worked hard to assist the Coast Guard Incident Commander in marshalling over 100,000 feet of boom, dozens of skimmers, personnel and other assets to protect as much of the coastline as possible. Washington DC area staffs worked intensively with the U.S. Environmental Protection Agency and the U.S. Coast Guard to facilitate issuance of an emergency regulation allowing a reduction in the required quantity of onsite spill response assets, enabling increased support to the Gulf effort. The Supervisor of Salvage, Commander, Navy Installations Command, the Regions, the Naval Facilities Engineering Command (NAVFAC) and the Fleets did a magnificent job in providing all possible resources while maintaining a prudent cleanup capability in Navy ports. In the months ahead, Navy will provide oceanographic research assets to help assess the long term effects of the spill. BZ to all concerned!

Stewardship of the Ocean, Coasts & Great Lakes

On 20 July 2010, President Obama issued a long-awaited Executive Order (EO) to promote the protection and sustainability of ocean, coastline and great lakes resources. The



EO establishes a National Oceans Council (NOC) and directs the initiation of comprehensive regionally-based Coastal and Marine Spatial Planning (CMSP). The Navy will actively participate in NOC activities, and in the regional planning groups. Our extensive ongoing environmental planning effort for sea ranges and operating areas will be very useful in helping federal, state and private stakeholders understand the nature of Navy training and testing at sea, and the significant steps we take to ensure that our actions protect and sustain the natural environment. In the months ahead, N45 will work with the Navy Secretariat, the Fleets, Navy Regions and others to flesh out the details for Navy participation in this new endeavor.

Environmental Planning for Training & Testing at Sea

With the completion of the Marianas Island Range Complex Environmental Impact Statement in July 2010, the Navy has completed environmental planning for

Prevention of spills through responsible planning is by far the most efficient and effective approach.

I would also like to reiterate the guidance for elevated vigilance issued in June 2010 by U.S. Fleet Forces Command and Commander, Pacific Fleet. Fleet messages called for even greater care and attention to detail in Navy handling of petroleum and hazardous materials, given that much of our response equipment has been deployed in support of the Deepwater Horizon oil spill. As they so appropriately note, prevention of spills through responsible planning is by far the most efficient and effective approach.

nine of the 14 sea ranges and operating areas included in this "Phase I" Tactical Training Theater Assessment and Planning Program (TAP) effort. Our job has only begun when we complete the planning, permitting, and consultations for each area, because each area also requires substantial monitoring, reporting, and interface with the regulators to support issuance of annual renewal authorizations. The Fleets, NAVFAC and other organizations have done a terrific job in keeping up with

Rear Admiral Cullom (far left) and Vice Admiral Burke (far right, back row) hosted senior environmental and energy officials on an aircraft carrier and destroyer embarkation to demonstrate stewardship and resource conservation at sea. Here embark participants pose on the deck of the USS ENTERPRISE (CVN 65)—the world’s first nuclear-powered aircraft carrier.



this fast-rolling treadmill. At the headquarters level, the Office of the Chief of Naval Operations and Secretary of the Navy staffs have worked hard to improve our processes for interfacing with the regulators, and to build cooperative relationships that will facilitate timely processing of future regulatory actions.

Also in July 2010, the Navy kicked off TAP “Phase II” environmental planning. This effort will encompass five year overarching renewals for all Phase I areas, and also include systems command and Office of Naval Research activities at sea in the study areas. The Fleets have done a great job thus far as action proponents for these Navy-wide efforts. Even though the first renewal environmental impact statements are not due until January 2014, because of the magnitude of the effort, we are on a tight timeline already. Keeping the Phase II effort on track will be challenging but doable over the next few years.

Outreach

The American people want and deserve a Navy that protects the environment and our resources while

protecting our freedom. Many Americans would be surprised at the extent of protective measures the Navy employs during our training and testing activities, and the extent of our commitment to environmental protection ashore. Keeping the public informed of Navy environmental performance is a key component of the Navy environmental program. I encourage every echelon of command to be proactive in this regard. I recently had the honor, with Vice Admiral Bill Burke, of hosting senior environmental and energy officials on an aircraft carrier and destroyer embarkation, to demonstrate stewardship and resource conservation at sea. The Fleets have hosted several similar embarks over the past year.

Within the next few months, the Navy will launch a combined energy-environment-climate change web site, making information on these three priorities more readily available worldwide. Your input on Navy programs and achievements will be greatly appreciated. ⚓

Rear Admiral Philip H. Cullom
Director, Energy and Environmental Readiness

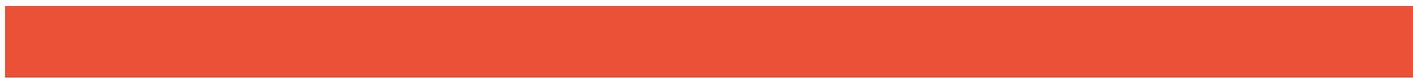
Navy Hosts Environmental Ship Embark

Environmental NGOs & Federal Regulators Onboard USS GEORGE H.W. BUSH

The Chief of Naval Operations Energy and Environmental Readiness Division (N45) and United States Fleet Forces (USFF) coordinated an environmentally-focused ship embark and tour which gave representatives from the U.S. Environmental Protection Agency (EPA) and a number of non-governmental organizations (NGO), including representatives from Oceana, Ocean Conservancy, The Nature Conservancy, and World Wildlife Fund, a firsthand look at the Navy's environmental stewardship efforts while at sea.

"It was the coolest thing I've ever done," said Leigh Henry of World Wildlife Fund—a feeling shared by many after their experience onboard a Navy aircraft carrier on 19–20 May 2010. The embark included an arrested landing onto the USS GEORGE H.W. BUSH (CVN 77), where Commanding Officer Captain Chip Miller welcomed the visitors aboard. The group observed a range of operations aboard the USS GEORGE H.W. BUSH from daytime and nighttime flight operations to the inner-workings of the ship's "shaft alley."

In addition to the usual carrier tour, the group visited areas housing waste management equipment and storage, including plastic waste processors, a metal-glass shredder, the hazardous material issue room, and an engine room to view an oil-water separation unit. These operations and equipment help the Navy minimize its environmental footprint while at sea. For example, the plastic waste processor allows Navy ships to store massive amounts of plastic waste onboard ship for onshore offloading and management, rather than disposing of such waste at sea.





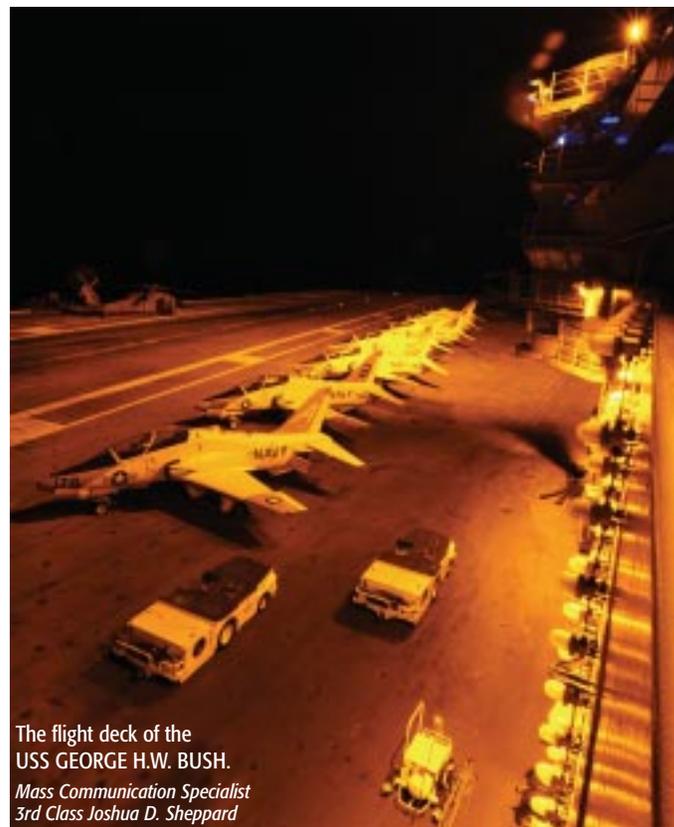
N45 and USFF hosted an environmentally focused ship embark for environmental non-governmental organizations and federal regulators aboard the aircraft carrier USS GEORGE H.W. BUSH. The group was given a firsthand look at Navy operations and environmental stewardship efforts while at sea.
Mass Communication Specialist 3rd Class Nicholas Hall

Following a night on the USS GEORGE H.W. BUSH, the group traveled via helicopter to the USS GONZALEZ (DDG 66) for a different perspective on Navy environmental stewardship. Led by the ship's Commanding Officer, Lynn Acheson, the group observed watchstanders demonstrating marine mammal lookout and reporting measures. The Sailors utilized the Navy's Protective Measures Assessment Protocol—a geographic information system-based program which provides information on species protection for various evaluations such as sonar use, gun shoots, and missile shoots. The group was also invited to the ship's sonar control room, where the crew demonstrated both synthetic training and active sonar transmissions.

A lot of folks really do care about the ocean environment and it shows in their day-to-day work.

—Beth Lowell, Oceana

OPPOSITE: The aircraft carrier USS GEORGE H.W. BUSH (CVN 77).
Original photo by Mass Communication Specialist 1st class Demetrius L. Patton



The flight deck of the USS GEORGE H.W. BUSH.
Mass Communication Specialist 3rd Class Joshua D. Sheppard



Laura Johnson, EPA



Jennifer Greene, The Nature Conservancy



Susan Olcott, Ocean Conservancy



Beth Lowell, Oceana



Tracey Moriarty, N45



Chris Dettmar, N45

Ron Tickle, Beth Lowell, Lieutenant Francis Tay, and Leigh Henry are all smiles before departing Naval Station Norfolk.



The group prepares to depart Naval Station Norfolk for the USS GEORGE H.W. BUSH.

The group flew back to the USS GEORGE H.W. BUSH for a final tour, including a visit to the tribute room of the 41st President and ship's namesake. A catapult shot off the carrier sent the group home, more aware of the Navy's commitment to environmental stewardship and its overall mission.

Recounting their memories of the trip, all of the guests spoke highly of the Sailors' pride and professionalism. "It was a very well-organized and very thorough tour," said Susan Olcott of Ocean Conservancy. "I was impressed—to a one—with everyone we met." Beth Lowell, of Oceana concurred, "A lot of folks really do care about the ocean environment and it shows in their day-to-day work."

"This was an unforgettable experience," said Tracey Moriarty,

director of outreach for N45. "We were impressed with the enthusiasm and professionalism of the young Sailors on both ships. They are doing great things at great personal sacrifice to protect our nation, while also protecting the marine environment where they spend so much of their time," said Moriarty.

LEFT AND OPPOSITE PAGE: Participants in the May 2010 environmentally focused ship embark sit in the Commanding Officer's chair aboard the aircraft carrier USS GEORGE H.W. BUSH.



President George H.W. Bush's Navy ID card on display in the "tribute room" aboard the USS GEORGE H.W. BUSH.

“The pride that these young men and women took in their jobs was amazing,” said Henry, “I think the average age of these folks was 19 and they’re running this massive ship.”

The enormity of the USS GEORGE H.W. BUSH surprised and impressed all the visitors. Jennifer Greene of The Nature Conservancy commented, “I was surprised at how huge the ship was and how complicated. You could so easily get lost in that ship. Also there are no windows, which is understandable—but the lack of fresh air and sunlight must really take a toll.”

“The people who were leading us around even had to stop and ask for directions,” said Henry.

Most guests mentioned the C-2 Greyhound takeoff and landing and helicopter rides as high points of their experience.

“The catapult was the thrilling high point for me,” said Olcott.

“From the search and rescue helicopter you could see the whole layout of the ship,” said Greene. She also identified the group’s time with the marine mammal

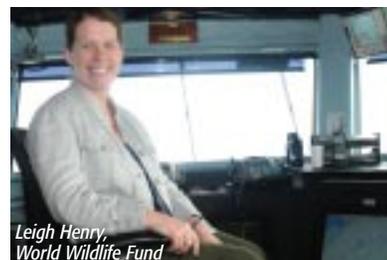


It’s useful for us to understand what the Navy does in terms of mitigation and for us to see the mitigation measures they perform in action.

—Leigh Henry, World Wildlife Fund



Brian Rappoli, EPA



Leigh Henry, World Wildlife Fund



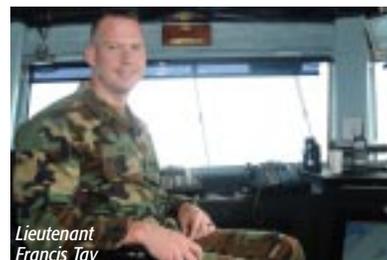
John Quinn, N45



Ron Tickle, N45



Captain Nicholas Cipriano



Lieutenant Francis Tay



A C-2 Greyhound prepares to take the environmental ship embark group from Naval Station Norfolk to the USS GEORGE H.W. BUSH.



The guided-missile destroyer
USS GONZALEZ (DDG 66).
Paul Farley



The bridge of the
USS GONZALEZ.

team as one of her most memorable parts of the trip. “Hearing the Captain talking about the marine mammal program and actually seeing the sonar technicians at work gave me a new appreciation for their work.”

Henry echoed those thoughts. “It’s useful for us to understand what the Navy does in terms of mitigation and for us to see the mitigation measures they perform in action,” she said. “It’s very easy to sit here at your desk and dictate how things should be done, but it’s another thing to see what actually goes on.”

Asked whether there was anything they would change about the experience, some mentioned jokingly that they weren’t able to get enough sleep. “I wish there had been an opportunity for us to tell them what we do,” commented Lowell. “It would have been a good opportunity for a knowledge exchange.”

“I think they could continue to work on waste disposal,” mentioned Olcott. “Historically the Navy has been a leader in recy-

More Insights from Beth Lowell

For more insights from Beth Lowell, read our spotlight interview in the winter 2010 issue of *Currents*. You can browse the *Currents* archives and subscribe to the magazine via the Naval Air Systems Command’s environmental web site at www.enviro-navair.navy.mil/currents.





Ron Tickle, Tracey Moriarty (N45) and the clean wake left by the USS GEORGE H.W. BUSH.



cling and waste disposal at sea and should continue to lead in this area. There's always room for improvement."

"We understand that there are limitations on what can be done [regarding waste disposal at sea] but we're all hoping this can be improved," said Henry. "Other than that, I'd just like to see them keep an open dialogue with the NGO community about what they're doing," she said. "For instance, one of my colleagues is involved in an undersea sound campaign. Not just sound from sonar but from oil and gas and shipping. An International Whaling Commission workshop was held this June in Morocco about the anthropological impact of sound on cetaceans. It would benefit the Navy to be involved."

Olcott pointed out one mutually beneficial relationship that her organization (Ocean Conservancy) currently shares with the Navy. "Our international coastal cleanup is partnering with the military [including the Navy], which helps to foster good relationships around the world. In these kinds of ways, conservation goals and national security goals can both be met," she said.

"I think there are a couple of areas where more focus could be given," she continued. "In terms of marine spatial planning, the Navy could participate as much as possible in data sharing and collecting while at sea."

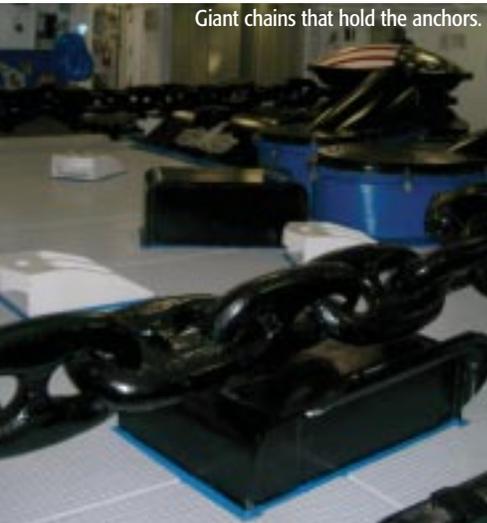
The group walks the flight deck.



The group observes operations from the flight deck.



Giant chains that hold the anchors.





The group tours the oil/water separator room aboard the USS GEORGE H.W. BUSH.



The plastic waste processing room.

All the respondents had good things to say about the Navy's environmental efforts.

"It was very relevant and very valuable," said Olcott. "To see what the Navy is doing on a day-to-day basis gives me a context in which to place the work that I'm doing."

"The Navy should just continue down the pathway that they're on," stated Lowell. "For instance, they're embracing the national ocean policy that was [recently] signed into law."

Lowell summed up the trip by saying, "I've been quite impressed with the Navy's environmental programs in the past. I've been on range tours before, but I'm glad to see the same kind of commitment is happening on the seas as well. Everyone was very proud to be conserving the environment as well as doing their day-to-day job. I hope the Navy does more tours with more folks on land and sea." 📍

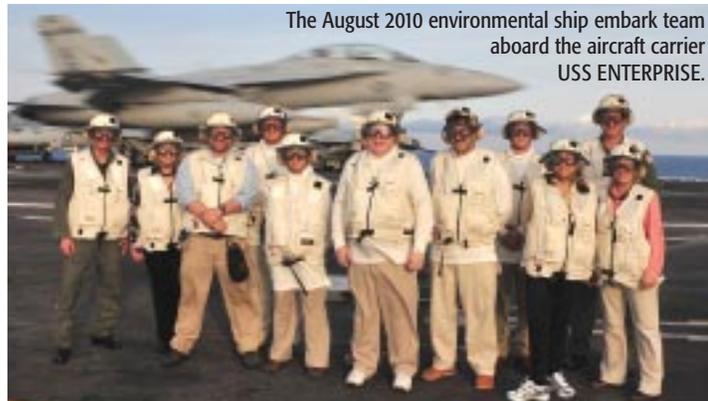
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SECOND ENVIRONMENTAL Ship Embark Held

Building on the successes of the May 2010 Embark, the Navy hosted a second environmentally-focused ship embark on 4-5 August 2010. Participants included Ms. Sharon Burke, Director, Operational Energy Plans and Programs for the Secretary of Defense; Ms. Jackalyn Pfannenstiel, Assistant Secretary of the Navy for Energy, Installations and Environment; Vice Admiral William Burke, Deputy Chief of Naval Operations for Fleet Readiness and Logistics (N4); and Rear Admiral Phil Cullom, Director of Energy and Environmental Readiness (N45). Distinguished visitors also included representatives from the Department of the Interior, Department of State, the Office of Management and Budget, the National Science Foundation, and the Carbon War Room.

The group toured both the USS ENTERPRISE (CVN 65) and USS MASON (DDG 87), observing



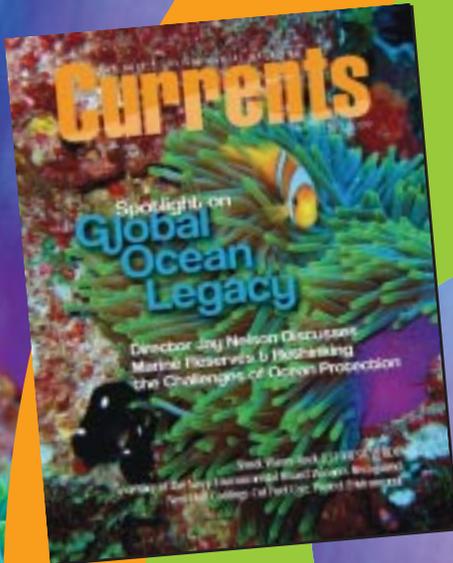
The August 2010 environmental ship embark team aboard the aircraft carrier USS ENTERPRISE.

Basic Phase operations of the Carrier Strike Group. The distinguished visitors gained firsthand knowledge about the Navy's commitment to environmental protection and resource conservation while engaging in the training and operations necessary to keep the fleet combat ready.

Tours and briefings covered plastic waste handling at sea, management of hazardous materials, active sonar use, marine mammal sighting protocols, and operational energy considerations.

Currents Continues its Award-Winning Ways

Fall 2009 Issue Receives Awards in Two Competitions



In the spring of 2010, *Currents* magazine was honored with an Award of Excellence by the National Association of Government Communicators (NAGC) as part of their 2009 Blue Pencil & Gold Screen Awards Competition. In addition, the magazine received a third-place award in the Chief of Information (CHINFO) Merit Awards contest.

The NAGC award was issued for our fall 2009 issue which featured our spotlight interview of Jay Nelson, Director of Global Ocean Legacy. Jay discussed the designations of marine reserves including efforts to set aside large expanses of the ocean surrounding the Chagos Islands to protect the reefs, fish populations and other resources that sustain the entire region.

The NAGC Blue Pencil & Gold Screen Awards Competition salutes superior communications efforts of government agencies and recognizes the people who create them. Blue Pencil Award categories are designed for writing, editing, photography, and published products, such as pamphlets, books, newsletters, and other related materials. The 2010 Communicator Awards Competition featured a pool of over 7,000 entries, making it the largest competition of its kind. Of the entries received, the judges selected 48 First Place winners, 48 Second Place awards, and 68 Awards of Excellence. Winners were announced at an awards banquet held in Washington, D.C. on 17 May.

The Chief of Information announced the results of its own internal media award competitions for internal media print and broadcast products by Navy Commands and individuals. *Currents* placed third in the "Magazine Format Publication" category.

The CHINFO Merit Awards Program recognizes exemplary achievements in Navy internal print and broadcast media products produced by Navy commands and individuals in some 22 print and 17 broadcast categories. Print media categories include: newspapers, feature, news, sports writing, photography, familygrams, web publications and cruisebooks among others.

NAGC is a national not-for-profit professional network of federal, state and local government employees who disseminate information within and outside government. Its members are editors, writers, graphic artists, video professionals, broadcasters, photographers, information specialists and agency spokespersons. The complete listing of award winners and participating judges is available on the NAGC web site at www.nagconline.org/documents/bpgs2010.pdf.

For a comprehensive listing of all CHINFO Merit Award winners, visit the Naval Media Center's web site at www.mediacen.navy.mil/index.htm.

Clean-Up Isn't the End in Sediment Remediation

New NESDI Web Site Provides Assistance with Long-Term Monitoring

CONTAMINATED SEDIMENT IS an ongoing problem on military bases around the world, and the effort to clean it up has been anything but clear-cut. But, thanks to the Navy Environmental Sustainability Development to Integration (NESDI) program, a new web site is about to make the process a little easier. The Interactive Sediment Remedy Assessment Portal (ISRAP) is now available to help site managers select an appropriate remediation and monitoring plan for sites that have been identified as contaminated.

Background

Over the last several years, increased environmental scrutiny has led to the identification of numerous contaminated sediment sites in coastal areas of the United States. The Navy and other Services have been faced with the challenge of safely remediating these sites.

Based on more than 200 identified sites on Navy property, the estimated cost

to complete remediation of the contaminated sediments is more than one billion dollars—and this does not include the costs associated with post-remediation monitoring efforts.

Post-remediation monitoring is necessary because little is known about the long-term effectiveness of most of the remediation methods used. However, site owners that have spent millions of dollars on sediment remedies are reluctant to spend even more money on a monitoring program that may

last decades longer. Of the relatively few sites where remedies have been implemented, the limited monitoring data gathered has provided little information regarding the long-term effectiveness of the method or methods used. Even among U.S. Environmental Protection Agency (EPA) Superfund sites that have undergone remedy implementation, short- and long-term monitoring data are often insufficient to fully evaluate the effectiveness of the remedy in meeting the remedial action objectives (EPA,



ISRAP is now accessible to anyone at www.israp.org.

2003a). In addition, the cost of monitoring at these sites varies widely due to differences in scope, magnitude, and duration of monitoring plans, thereby making it difficult to project potential costs at other sites.

Selecting an appropriate containment strategy and monitoring its effectiveness is a complicated task in the marine environment. For instance, one of the most frequent containment strategies is capping, or placing a layer of clean material over the contaminated sediment. In the marine environment, capped sediments can be disrupted by currents, tides, and winds. This initiates concerns about a method's long-term effectiveness. Standard sediment and water sampling techniques are inadequate for this type of monitoring, as they pose the risk of disturbing the integrity of the cap. In addition, conditions such as erosion, future hydrodynamic events, changes to site use and various background factors can impact the remedy.

Working Toward a Solution

Because remedy performance, monitoring requirements and risk reduction are not well understood, and because long-term monitoring can be a major financial burden, the NESDI program identified a need for better monitoring strategies and sensors. Working with input from the EPA, the U.S. Army and industry, the NESDI program sponsored the development of a set of standardized assessment and monitoring protocols to validate the effectiveness of remedial technologies.

Personnel from the Space and Naval Warfare Command—Systems Center Pacific were tasked with providing guidance on this issue. Working in partnership with Environ International Corporation, they developed an interactive solution now known as ISRAP. This portal provides a general framework for sediment remedy modeling, constructed and populated with a variety of possible monitoring needs and tools to address those needs.



With the ISRAP Matrix, users can identify the monitoring needs and associated tools that best suit their needs.

At the heart of the ISRAP site is the matrix, an interactive tool designed to assist Remedial Project Managers (RPM) in selecting appropriate remediation methods, understanding monitoring requirements, and pairing them with effective monitoring tools. The matrices build on the first four steps of EPA's Monitoring Framework Steps (EPA, 2004). By using the matrix to identify monitoring needs and investigate monitoring tools associated with those needs, RPMs can more easily identify monitoring plan objectives and appropriate monitoring tools.



Macroinvertebrate sampling is one way to evaluate remediation effectiveness.

Environ



The process of coring is used to obtain a vertical sediment profile. Coring is used to determine whether there has been any chemical movement through a cap.

common forms of remediation: dredging relies on mass removal of sediment to achieve risk reduction; capping involves burial and creation of a clean sediment surface; and Monitored Natural Recovery (MNR) relies on natural physical, biological and chemical processes to remove or reduce risk. MNR is often chosen in cases where immediate risk factors are relatively low—however, it may also be chosen in instances where active remedies will further disturb the sediment; exposing workers, the community and the environment to even greater risk.

Remediation Monitoring

While currently there are only three major remedies for managing risk from contaminated sediments, there are significantly more approaches to remediation monitoring. While monitoring methods can be broadly categorized as physical, chemical or biological measurements, many different types of testing and monitoring fall under these umbrella terms. For example, physical testing may include measurements of sediment erosion or deposition, ground water advection, surface water flow, and physical characteristics of the sediment (e.g., particle size distribution, porosity, organic carbon content), and sediment heterogeneity. The RPM must decide which data he or she needs and how best to go about getting them.

Using the Matrix

The ISRAP web site provides some basic information on various remediation techniques. Once a technique has been chosen, the RPM can use the matrix for assistance in formulating a monitoring plan. The user first inputs the chosen remediation method, then selects one of three monitoring phases: construction, performance or remedial goal.

The matrices provide a decision-making framework with the following objectives:

- Provide a comprehensive list of monitoring needs
- Identify monitoring tools associated with each monitoring need
- Enable a screening-level comparison of tools when several are available for a particular monitoring need
- Help RPMs focus on key issues associated with site-specific monitoring

needs and tools, to facilitate the design of cost-effective and meaningful monitoring plans.

ISRAP can also be useful in understanding data needs during Remedial Investigation and Feasibility Studies, especially as they pertain to remedies themselves, and post-remedy monitoring.

Types of Remediation

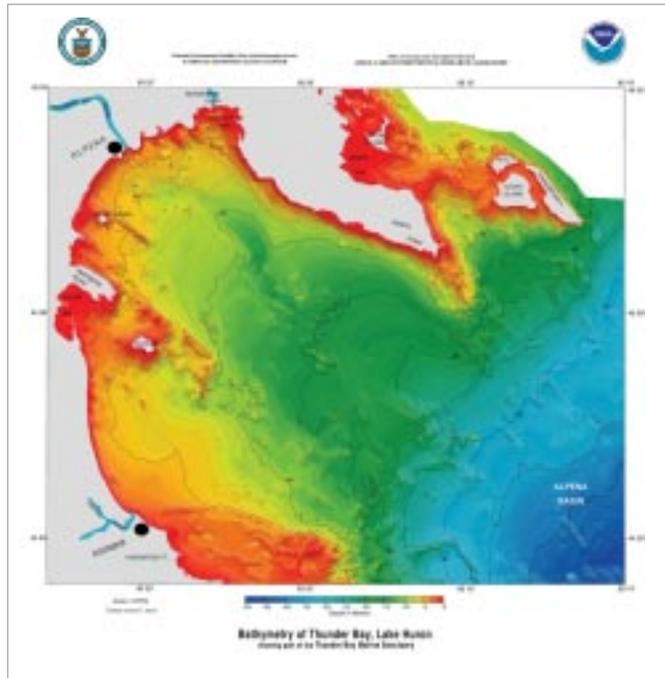
In addition to controlling the source of contaminants, there are three

The construction phase deals with attainment of design criteria and assessment of construction and operations activities. The performance phase attempts to answer the question: Is the remedy mechanism performing as designed? The remedial goal phase addresses whether the remedy achieved its goal of risk reduction.

If a manager selects dredging, for example, and wants to explore the construction phase, he or she is presented with ten monitoring needs, along with a description of each, a discussion of the timing and frequency required. Each monitoring need will have one or more monitoring tools associated with it. For instance, in the dredging example, downstream deposition is one of the monitoring needs. This can be achieved through current velocity measurement, sediment chemical analysis, sediment profile imaging, and/or sediment traps. In most cases, not all of these tools will be required to satisfy each need. The matrix describes each tool and provides information on special considerations to enhance the decision-making process. For each tool selected, information is also provided on factors such as spatial and temporal complexity, the level of expertise required to provide and interpret data. In this way, users can compare tools and select those most appropriate for their purposes.

A Case Study

The Puget Sound Naval Shipyard (PSNS) in Bremerton, Washington is a 1,350-acre site that serves as a home



Bathymetry modeling is used to evaluate sediment stability over time, navigable depths, bottom surfaces for remedy design, and post-remediation bottom elevations.

National Oceanographic and Atmospheric Administration

port for Navy vessels, including aircraft carriers. In 2000, PSNS was identified as a site in need of remediation due to high levels of polychlorinated biphenyls (PCB) and mercury in fish tissue in near-shore waters. This posed an unacceptable risk to human health.

Remediation at PSNS was accomplished through a combination of dredging, capping and MNR.

Approximately 200,000 cubic yards of sediment containing PCBs was dredged and disposed of in confined aquatic disposal (CAD) cells, located on Navy-owned submerged land. These sediments had PCB concentrations which exceeded the EPA's remedial action objectives. Capping remedies were applied to isolate impacted sediments in a 13-acre area and in the submerged CAD cells. For intact sediments, both thick and thin layer caps were used. Thin layer caps (a minimum of 20 centimeters) provided a layer of clean sediment to mix with underlying sedi-

The Basics About the NESDI Program

THE MISSION OF the NESDI program is to provide solutions by demonstrating, validating and integrating innovative technologies, processes, and materials; and filling knowledge gaps to minimize operational environmental risks, constraints and costs while ensuring Fleet readiness. The program seeks to accomplish this mission through the evaluation of cost-effective technologies, processes, materials and knowledge that enhance environmental readiness of naval shore activities and ensure they can be integrated into weapons system acquisition programs. The NESDI technology demonstration and validation program is sponsored by the Chief of Naval Operations Energy and Environmental Readiness Division and managed by the Naval Facilities Engineering Command. For more information, visit the program's web site at www.nesdi.navy.mil.



ments, thereby facilitating natural recovery. In some areas, a three-foot-thick cap was placed first, and combined with a thin-layer cap to help promote natural recovery. A thick-layer cap was added as needed to isolate sediment, withstand erosion, and provide a clean surface for improved ecological habitat. The CAD cells containing dredged material were capped with a thick layer of clean import material.

retrospective comparison of identified monitoring needs and tools provided useful information. The actual monitoring plan was compared against a hypothetical plan constructed with the help of the matrix. While in many cases, the tools chosen by the matrix were the same as those successfully employed at PSNS, there were other instances where needs or tools identified on the ISRAP site had not

ecotoxicological risk. This method uses water column and/or sediment samples to assess chemical effects on growth, survival and/or reproduction in representative pelagic and benthic species.

Expert Input

The current version of ISRAP represents reviews of ten technical peer reviewers and five potential end users. Experts from the EPA, Navy,

At the heart of the ISRAP site is the matrix, an interactive tool designed to assist Remedial Project Managers in selecting appropriate remediation methods, understanding monitoring requirements, and pairing them with effective monitoring tools.

Natural recovery was assumed to be a key remedial strategy in thin-layer capping. In addition, full MNR was selected in other locations—the goal being the natural chemical transformation (mineralization) of PCBs rather than physical isolation.

Rating the Remedy

The ISRAP matrices were not yet available for use at PSNS, but a

been addressed at PSNS. For example, during the dredging construction phase, one of the identified monitoring needs was ecotoxicological risk monitoring. Of the six monitoring tools associated with this risk, only water column monitoring was chosen. This form of simple chemical analysis usually overestimates toxicological risks. It was later determined that toxicity testing would have been useful in evaluating

industry and U.S. Army Corps of Engineers provided written comments on specific technical issues. The ISRAP was also presented at numerous venues during 2007-2009 and additional verbal comments affected the development of the site. Going forward, ISRAP will be updated as needed with technical information.

ISRAP is currently available and accessible to anyone at www.israp.org. In addition to the matrix, the site contains the full guidance document providing an overview on remediation techniques as well as their associated monitoring tools plus links to related documents and web sites. [⚓](#)

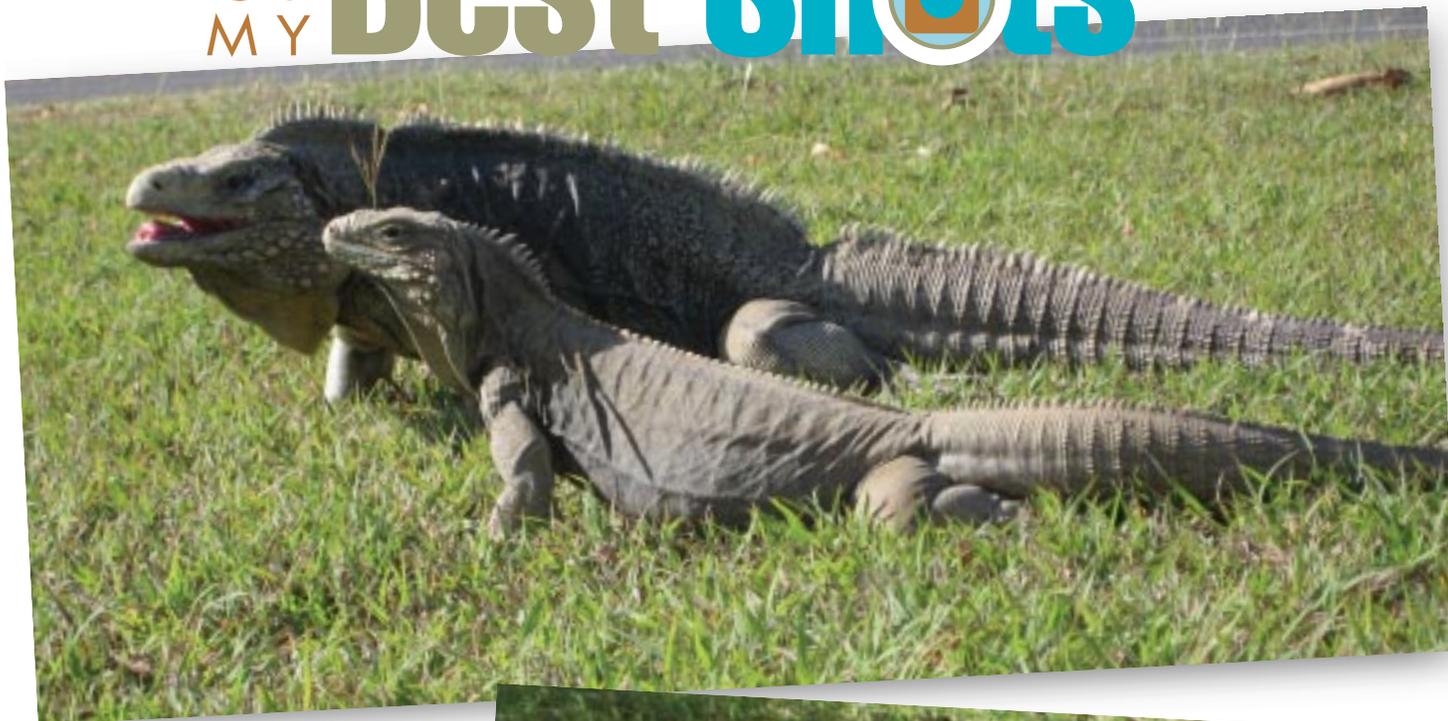
Monitoring Tool	Tool Type	General Location	General Complexity	Number of Analyses	Monitoring Frequency	Minimum Cost	Maximum Frequency	User Access
Remediation Testing	General	Medium	Medium	Low	Medium	Medium	Medium	Medium
Field Sampling	General	Medium	High	Medium	Low	Low	Low	Low
Chemical analysis of field data	General	High	High	High	High	High	High	High
Remote Sampling Device	General	High	High	High	High	High	High	High
Advanced soil water chemical analysis	General	Medium	High	Low	Low	Low	Low	Medium
Advanced chemical analysis (availability unknown)	General	Medium	High	Low	Medium	Low	High	Medium
Surface sediment processor	General	Low	High	Medium	Medium	Low	High	Medium

The tool comparison function of the ISRAP web site aids the decision-making process by offering a quick side-by-side comparison of selected monitoring tools.

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SOME OF MY Best Shots



These pictures of a male and a female Cuban Rock Iguana were taken outside the Veterinarian Clinic at Naval Station Guantanamo Bay (GTMO), Cuba. There were three iguanas observed that morning (two males and one female). Spring is the mating season for iguanas at GTMO. The male iguanas were challenging each other for access to the female mating and we observed several fights between them. I took the photos after the larger of the two males was victorious at one of the competitions.

These pictures were taken with a Canon Power Shot SD 600 (6 megapixels).



Chris Petersen ● Naval Facilities Engineering Command Atlantic ● 757-322-4560 ● chris.petersen@navy.mil

Submit your own Best Shot to Bruce McCaffrey, *Currents'* managing editor, at brucemccaffrey@sbcglobal.net.

Partnering for a Greener Future

Naval Installations Celebrate the 40th Anniversary of Earth Day

ON 22 APRIL 2010, the United States Navy made international headlines with the successful test flight of the camelina biofuel-powered F/A-18F Super Hornet jet, dubbed the “Green Hornet.” The flight demonstration took place at Naval Air Station Patuxent River, MD, and was a critical step toward Navy Secretary Ray Mabus’ goal of fielding a “Great Green Fleet”—a carrier strike group composed of nuclear ships, surface combatants equipped with hybrid electric alternative power systems running on biofuel, and aircraft running on biofuel—by 2016. The Navy is also participating in research and development to identify other biofuel sources with the goal of reducing dependence on foreign energy sources and using fuel with a lower net carbon footprint than petroleum fuels.

In addition to the flight of the Green Hornet, naval installations across the

globe celebrated the 40th anniversary of Earth Day by emphasizing the Navy’s interagency and private sector partnerships with the theme of “Partnering for a Greener Future.” This theme was evident in many of the Navy Earth Day events held in April 2010.

Navy Region Northwest

Naval Facilities Engineering Command Northwest

In celebration of Earth Day’s 40th anniversary, Naval Facilities Engineering Command (NAVFAC) Northwest (NW) personnel attended a number of events to honor the Navy’s ongoing environmental stewardship efforts. Personnel participated in brown bag lunchtime presentations and discussions on noxious invasive weed species, bicycle commuter safety, and on-base recycling. This information was invaluable to many

attendees who were unaware of the large capability and extent of the NAVFAC NW recycling program.

Throughout Earth Week, an information table near the main entrance of the base provided brochures, handouts, and contact information for various environmental and energy conservation programs throughout Navy Region Northwest.

Naval Station Everett, WA

On 21 April, Naval Station Everett hosted an Earth Day 2010 event with the theme “Explore the Outdoors and Make Everyday Earth Day.” Commander Daniel B. Limberg introduced the base-wide event and highlighted the many projects the station has implemented to become more sustainable. An Earth Day Fair included more than 20 vendors and provided information that helped Sailors and base personnel become

It’s important to emphasize, especially on Earth Day, the Navy’s commitment to reducing dependence on foreign oil as well as safeguarding our environment. Our Navy, alongside industry, the other services and federal agency partners, will continue to be an early adopter of alternative energy sources.

—The Honorable Ray Mabus, Secretary of the Navy



The Navy celebrates Earth Day by showcasing a supersonic flight test of the “Green Hornet,” an F/A-18 Super Hornet strike fighter jet powered by a 50/50 biofuel blend. The test, conducted at NAS Patuxent River, MD, drew hundreds of onlookers that included Secretary of the Navy Ray Mabus, who has made research, development, and increased use of alternative fuels a priority for the Department of the Navy.
Kelly Schindler



Fair goers at Naval Station Everett learn about recyclable materials, paper vs. plastic and green house gases. Here they try guessing the number of aluminum cans on display at Naval Station Everett Recycle’s information table.
Denise Lesniak

more environmentally aware. The Fleet and Family Readiness Outdoor Recreation program also supported the fair and promoted earth-friendly outdoor adventures. In addition, five teams participated in a dumpster dive competition to collect the most recyclable material from dumpsters on base. At the end of the dive, 87 percent of the contents from the dumpsters was diverted from the waste stream. Observers were surprised to learn how much trash can actually be recycled.

Naval Base Kitsap, WA

In recognition of Earth Day, Naval Base Kitsap personnel visited Clear Creek Elementary School in Silverdale, WA. Navy presenters demonstrated the importance of having plants in ditches on the side of the road for erosion control by constructing two devices—one which consisted of plants and soil shaped into a small ditch, and the other which just had soil shaped into a small ditch. Water was then poured into the demonstration ditches to show the children how much faster the ditch with the plants drained in comparison to the ditch with soil only. In addition, Sailors from Naval Base Kitsap teamed up with local elementary students to “green up” Trident Lakes park. Volunteers contributed approximately 75 hours to clear



Naval Avenue Learning Center students assist Captain Mark R. Whitney, Commander, PSNS & IMF, in planting an apple tree in the school's garden.

Richard Chaffee

invasive shrubs and dying trees before replanting the one-acre area with 200 grand fir and 100 western red cedar trees. Students also toured the park and learned about the impacts of storm water, how to identify wetlands, and observed as contractors re-stocked a lake with 1,000 rainbow trout.

Puget Sound Naval Shipyard and Intermediate Maintenance Facility, WA

Personnel at Puget Sound Naval Shipyard (PSNS) and Intermediate Maintenance Facility (IMF) rolled up their sleeves and pitched in on events on base and in the local communities. Events included tree plantings at local schools and orphanages, education events, trash pick-ups on base and surrounding beaches, clean up at local naval tourist attractions and community trails, and a children's poster exhibit.

PSNS & IMF Sailors cleared a trail, re-leveled a walkway bridge and repaved the entrance area to the building at

the Stillwaters Environmental Center at Clear Creek Trail. As part of the clearing, approximately 200 pounds of wood were recycled and used for other areas of the trail.

Naval Air Station Whidbey Island, WA

An early-April kick-off event helped to bring attention to the goals and challenges of environmental practices and awareness at Naval Air Station (NAS) Whidbey Island. The Navy Whidbey Recycle crew hosted a reception and mini environmental fair featuring base resources in the areas of recycling, energy and environmental awareness. This event was open to all base personnel including active duty, civilian and contract personnel and family members.

Each year NAS Whidbey Island hosts a popular "dumpster dive" waste characterization study. The dumpster dive is a highlight of the Earth Month calendar as NAS Whidbey Island personnel teach Sailors, Marines and civilians to be more diligent in sorting out recyclable materials

before tossing out the trash. This year, the dive was extremely successful with an 82 percent recycle rate, improving seven percent over the past several years.

Navy Region Southwest

Navy Region Southwest (NRSW) focused attention on the importance of reuse and recycling with several Earth Day events. At NRSW's Office Clean Up Day, personnel turned in excess furniture and office supplies to the NRSW Furniture Reuse program, and at NRSW's E-waste Collection program, broken and obsolete electronics were collected for final disposal through the Defense Reutilization and Marketing Service. Functional electronics were redistributed to other departments and commands.

Volunteers celebrated their achievements with a cookout lunch following the clean up activities. The day ended with Rear Admiral William D. French participating in a ribbon cutting ceremony for a new water vending machine offering Navy Exchange patrons the option to refill personnel water containers instead of buying single-use plastic water bottles.

Naval Base Ventura County, CA

Naval Base Ventura County celebrated Earth Day all month long with activities including beach cleanups, electronic waste recycling programs, and a community education and outreach booth. Three tons of residential electronic waste—including 5,000 pounds of computer monitors, 108 television monitors and 1,500 pounds of miscellaneous waste such as cell phones and cables—were kept out of landfills thanks to the first residential e-waste recycling event. A similar event for government e-waste kept another 22,000 pounds of e-waste out of landfills.



Sailors, Marines and civilians teamed up to pull 1.34 tons of recyclables from designated dumpsters during the NAS Whidbey Island 2010 Waste Characterization Study.

Oliver Elam

The beach cleanup drew nearly 30 people, including four Cub Scouts from Den 3246 in Port Hueneme, CA. Environmental specialists were on hand to provide guided nature walks along the beach at Point Mugu, and telescopes were set up for bird-watching.

“We wanted to show that the Navy does a good job of environmental stewardship in addition to carrying out its mission,” said Dan Shide, installation environmental program manager and one of the coordinators of the Earth Day activities. “Hopefully events like these will increase people’s awareness of Earth Day and the resources surrounding us—their importance and significance,” he said.

Naval Base San Diego, CA

Naval Base San Diego had two focuses for Earth Week: to be green and to develop partnerships with the community in order to promote and support the Navy’s energy and environmental goals.

“We made a real push to not only do our part for Earth Day, but also forge into the community to share what we do and to work on continuing partnerships with our

surrounding neighbors,” said Capt. Rick Williamson, Naval Base San Diego’s commanding officer.

The week started on 20 April when Naval Base San Diego opened its redesigned main gate after a ten month construction period. The renovation included low impact landscaping.



Natural Resources Program Manager Martin Ruane leads an “Into the Wild” guided nature walk as part of the 13 April beach clean-up event at Naval Base Ventura County, Point Mugu.

Andrea Howry

“We added artificial grass and landscaping that requires little to no water,” said Lt. J.G. Joel Overson, NAVFAC Southwest Construction Manager. “The great thing about the design is that it requires very little water and maintenance, yet remains green year round—a very welcoming sight when first entering the base.”

On Earth Day, Naval Base San Diego sponsored a San Diego Bay Harbor Clean Up. Naval Base San Diego’s liquid cargo department traveled the waterways between the piers to pickup over 900 pounds of trash. Eight Sailors spent several hours removing the trash that had collected underneath the piers and within the port security barriers. Later, an electronic waste turn-in event collected over ten tons of electronic appliances and 22.5 tons of electronic equipment.

Naval Air Station Kingsville, TX

Commands and activities at NAS Kingsville used the nationwide Earth

Day celebration as an opportunity to recycle and properly dispose of old appliances. Base personnel were encouraged to look at their old appliances to determine if they could cost-effectively be replaced with new, energy efficient models.

“Navy Region Southeast is taking energy conservation seriously,” said Lt. Brent Simmons, NAS Kingsville site manager. “We are going to have to become more aware of our role in providing a greener future for our planet, and we need to be active leaders in energy conservation and environmental stewardship. This is the way ahead for all of us.”

Navy Region Midwest

Naval Station Great Lakes, IL

More than 140 volunteers at Recruit Training Command (RTC) conducted trash and debris pick-up on base as part of Naval Station Great Lakes’s 2010 Spring Beautification Appearance

Program, held in conjunction with the national recognition of Earth Day. The trash consisted mainly of paper collected along the fences that surround the command. The effort by the RTC volunteers to help keep the command spruced up was apparent by the 92 bags of trash collected during the cleanup.

Navy Region Mid-Atlantic

Naval Base Sugar Grove, WV

Each year, Navy Information Operations Command (NIOC) Sugar Grove extends its Earth Day activities into a month-long celebration of spring. Activities include invasive species removal, reintroduction of native plants, Arbor Day ceremonies, Earth Day celebrations, road and river litter pickup, and educating the population on base and in the community about environmental issues.

The principal event for the month was the annual Safety, Health and Environ-



Volunteers help clean up Naval Station Great Lakes on Earth Day as part of the 2010 Spring Beautification Appearance Program. The 146 volunteers collected 92 bags of trash that had accumulated along the fences surrounding the command during the winter.

Sue Krawczyk



Volunteers collecting trash as part of NIOC Sugar Grove's Earth Day events.
Sugar Grove

mental Fair, held 15 April. All local public school 4th grade classes and home schools were invited to attend, and more than 150 students participated. Command personnel, school-age students and area citizens were provided with literature on safety, health, natural resource and environmental issues by representatives from the Department of Defense Chesapeake Bay Program, Virginia and West Virginia State Police and Departments of Natural Resources, the U.S. Fish and Wildlife Service, the West Virginia Department of Agriculture, the American Red Cross and other county, state and federal agencies.

On the following day, more than 35 volunteers participated in a river cleanup, collecting 27 bags of trash. This annual cleanup is held during the first two weeks of April each year and promotes partnerships in conjunction with West Virginia's Rehabilitation Environmental Action Plan—the "WV Make It Shine Program."

National Naval Medical Center, Bethesda, MD

The National Naval Medical Center's Environmental Programs Division organized several events throughout Earth Week, including educational presentations and a base-wide cleanup. About 30 staff members from various departments volunteered to help during the cleanup. Additionally, more than 200 local students attended educational presentations in the command's picnic pavilion.

Naval Station Norfolk, VA

Military and civilian volunteers worked side-by-side cleaning up Naval Station Norfolk during Clean the Station Day on 30 April—part of a week of Earth Day activities. Clean the Station Day is a semi-annual event organized by Naval Station Norfolk Special Operations Department that



FRCE poster contest winners: 1st Place Sasha Buslovich (right), 2nd Place Ginny Schnorenberg (center), and 3rd place Timmy Glennon (left). An awards ceremony was held 26 April in the Executive Board Room with the Commanding Officer, Colonel L. Scott Loch, presenting the awards.

FRCE



Volunteers from NAS Jacksonville spent their morning scouring the shoreline on foot and in boats to pick up more than 5,000 pounds of trash and debris.
NAS Jacksonville

all local commands participate in to help clean and beautify the base.

Participants took part in multiple beautification processes, from planting bushes, trees and flowers, to picking up garbage and debris. “It’s good stewardship, it’s good fellowship and it’s good camaraderie,” said Capt. Kelly M. Johnson, commanding officer of Naval Station Norfolk.

Navy Region Southeast Fleet Readiness Center East

Fleet Readiness Center East (FRCE) Industrial Environmental Division held their fourth annual Earth Day Art Poster Competition in partnership with Annunciation Catholic Parish Middle School. Students were asked to translate the theme “What Does Earth Day Mean to Me?” into art using any media, style or pattern they desired, incorporating recycled materials if possible.

Thirty-one students submitted Earth Day posters and a panel of five judges from the FRCE Environmental Division reviewed the submissions for originality, theme, clarity, and overall artistic merit. An awards ceremony was held 26 April in the Executive Board Room with FRCE’s commanding officer, Colonel L. Scott Loch, presenting the awards. All participating students received a letter of appreciation from Colonel Loch along with literature about Earth Day and ways to conserve and protect our planet.

Naval Air Station Jacksonville, FL

Nearly 190 volunteers observed Earth Day at the annual NAS Jacksonville Shoreline Clean-up on 22 April at Mulberry Cove Marina. Volunteers from NAS Jacksonville and tenant commands spent their morning scouring the shoreline on foot and in boats to pick up more than 5,000 pounds of trash and debris. Each year,

volunteers from NAS Jacksonville pick up junk deposited by wind, water, and careless people alongside five miles of the St John’s river. The river is designated by the U.S. Environmental Protection Agency as one of only 14 American Heritage Rivers.

“The quality of a river’s water is largely determined by activities within the land area surrounding it—that’s why keeping our shoreline clean is important,” said Angela Glass, Assistant Natural Resources manager and organizer of the event.

NAS Jacksonville Commanding Officer Capt. Jack Scorby Jr. told the volunteers that keeping the installation clean and presentable takes more than a one-day event. “Today’s event showcases how we truly care for our base. We want to maintain our leadership as environmental stewards within the Jacksonville community. ‘Going green’ is not

something we do just once a year—it's our commitment to keep our base and shoreline clean year round," said Capt. Scorby.

The event concluded with a barbeque and an award presented to the group who found the most unusual piece of debris during the clean-up. The award went to volunteers from the Air Operations Ground Electronics Maintenance Division, who pulled three padded office chairs from the shoreline.

Naval Air Station Pensacola, FL

Earth Day 2010 at NAS Pensacola was a great success. During the beach cleanup, 55 volunteers picked up over 1,000 pounds of debris. Items that were removed from the beach included a tire, Styrofoam trash, video games, plastic bottles, cigarette butts, and construction debris. The base newspaper, GOSPORT, covered the event and the Public Affairs Office also dedicated the weekly "NAS Pensacola Live" TV show to Earth Day. Additionally, the Pensacola Public Works

Department removed airfield sweeper spoil piles, deteriorated Conex boxes, and an assortment of scrap steel. Two large dumpsters of scrap metal were recycled along with twenty old fuel containers and cylinders.

Marine Corps Installations East

Marine Corps Base Camp Lejeune, NC

Marine Corps Base (MCB) Camp Lejeune sponsored an Earth Day celebration at Marston Pavilion and partnered with local waterway stewards and keepers for a beach cleanup. The outside common spaces and the adjacent waters of Wallace Creek were utilized to support displays including MCB Camp Lejeune's Open Water Spill team and a personal electronics turn-in, which collected TVs, computers, monitors, cell phones and small appliances.

Students from the MCB Camp Lejeune middle school enjoyed informal discussions with Environmental Conservation and Compliance

personnel, interacted with displays, and observed 'Baldy' the green sea turtle from the Beasley Turtle Hospital. During the beach cleanup, twenty five Marines and sixteen civilians canoed along the New River coast to pick up trash and debris.

Navy Region Hawaii

Naval Base Pearl Harbor, HI

More than 40 Sailors assigned to Afloat Training Group Middle Pacific (ATG MIDPAC) worked together to clean up Rainbow Bay Marina in Pearl Harbor on 22 April. Chief Operations Specialist Brian Dallke, who is majoring in environmental studies, coordinated the event as part of the command's participation on Earth Day. ATG MIDPAC spent the whole morning filling more than 80 bags of trash, segregating recyclables such as cardboard, cans and bottles.

Overseas Commands

Naval Base Guam

Children on Naval Base Guam (NBG) learned how to promote environmental awareness and encourage conservation of resources during Earth Day events held on Guam. The NBG Child Youth Program celebrated Earth Day with a series of activities revolving around gardening.

"Earth Day is special because it's a day when we really focus on environmental issues," said Therese Meno, recreation specialist for the NGB Child Youth Program. "It's an opportunity to teach the next generation of teachers and leaders about conservation of our resources and maintaining a green world. By teaching them now, we're helping to instill green habits that will hopefully grow and develop with them as they get older. And 20 years



Twenty-five Marines and sixteen civilians canoed along the New River coast to pick up trash and debris at Camp Lejeune.

MCB Camp Lejeune



Chief Boatswain's Mate Todd Demers, assigned to ATG MIDPAC, picks up trash at Rainbow Bay Marina.

Mass Communication Specialist 2nd Class Mark Logico

Children from the Commander, Fleet Activities Chinhae (CFAC) Youth Center, along with staff from the Navy Hospital Branch Health Clinic-Chinhae, and Seabees attached to Naval Mobile Construction Battalion 1 Detachment Chinhae, participated in tree planting activities and trail cleanups on the installation. The youth center provided a plaque to commemorate the planting of a Korean Apple Flower Tree. Pre-school children from the youth center took the morning shift and cleaned up the first few hundred yards of the trail around the perimeter of the installation, while the adults cleaned up the remainder of the trail in the afternoon. The trail is considered the most important natural resource on CFAC and provides a nice view of the City of Chinhae and its coastline.

The CFAC Environmental Division also partnered with the Energy Manager and the Noncombatant Evacuation Operations Exercise Team to display some simple yet effective awareness tools and to share information on pollution prevention practices, such as recycling, reusing, and reducing waste in everyday situations.

Navy Region Center Singapore

Navy Region Center (NRC) Singapore scheduled activities every weekend in April 2010 to raise awareness of sustainable infrastructure and energy and water consumption reduction. Activities included a regional water quality control board working group symposium and a meeting with the

from now, Earth Day will take on a whole new meaning because these kids would have taken it to a whole new level.”

Students participated in a variety of activities, including planting sunflower seeds and tree seedlings. The NBG Child Youth Program also recycled as part of the Navy's efforts to conserve resources and reduce their carbon footprint.

“We have recycling bins that we use for plastic containers, aluminum and paper, and those are a part of the

base-wide recycling programs,” Meno said. “It's great for us because the kids really get into it.”

Commander, Fleet Activities Chinhae, Korea

Students from C.T. Joy Elementary School toured the Inland Fisheries Institute in Chinhae, Korea, during Earth Day 2010. The mission of the Institute is to find cures for diseases in indigenous fish species of Korea. The tour gave students a greater appreciation and understanding of some of the efforts that are taken to improve the natural environment.



Navy and Marine Corps commands worldwide understand the importance of maintaining strong ecosystems as they maintain a strong capability to defend our nation and allies, and will continue to showcase successes on Earth Day as they pursue those priorities year-round.

Regional Environmental Coordinator to explore a possible solar panel project for NRC Singapore.

On Earth Day, NRC Singapore held the annual Environmental and Safety Fair. More than 190 participants were asked to bring an aluminum can to support the NRC Singapore Qualified Recycling Program. Participants were encouraged to answer questions on environmental or safety issues to raise awareness and as an incentive to win an Environmental Management System t-shirt. The next day, NRC Singapore's Environmental Division co-sponsored a beach cleanup with Singapore National Environmental Agency and the Chaplain's Office. The cleanup collected more than 30 bags of non-biodegradable trash.

Naval Base Yokosuka, Japan

As part of Earth Day activities, Yokosuka Base opened the doors to its greenest building, the co-generation plant, to students from Kinnick High School. The \$97.1 million project was funded and built by NORESKO in a partnership with the Navy, and is the largest energy savings performance contract in Department of Defense history. Navy and NORESKO personnel jointly operate the plant to ensure optimum performance. The plant

averages 81 percent efficiency, far above the 35 percent efficiency of a conventional plant. Throughout the tour, Kinnick High School students were shown the technical aspects of the plant and its generators, as well as the environmental benefits.

Conclusion

Like the other events highlighted here, taking advantage of technology like the Yokosuka co-generation plant to protect the environment, conserve energy, and educate future generations about responsible stewardship of our planet is a great example of accomplishing what Earth Day founders intended 40 years ago. Navy and Marine Corps commands worldwide understand the importance of maintaining strong ecosystems as they maintain a strong capability to defend our nation and allies, and will continue to showcase successes on Earth Day as they pursue those priorities year-round. 📍

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Navy Training Works with the Environment

Navy Takes Care of the Oceans While Providing Realistic Training

THE NAVY PUTS environmental concerns at the forefront every time a ship trains at sea, a process which includes rigorous mitigation efforts.

Any time a U.S. Navy ship trains at sea—whether launching missiles or detecting threats with sonar or simply dropping anchor—Sailors consider what effect their actions have on the environment.

The Navy places environmental concerns at the forefront during training, from basic unit-level exercises to complex war games involving dozens of ships, submarines and aircraft plus thousands of personnel.

“We do everything we possibly can to preserve this delicate ecosystem we live in,” White said. “Our commanders must remain aware of the environment at sea to be effective leaders, and they demand that their crews understand the impact their units, sensors and weapons have on that environment.”

White said the Navy works hard to take care of the oceans, while at the same time creating realistic training in the most demanding military range of operations—the Navy operates at sea, on land and in the air—to make sure Sailors are prepared for real-world threats.

encounter when they enter into these areas of the world.”

Environmental concerns, as well as the Navy’s training needs, are considered during every aspect of exercise planning, according to Captain Aaron Jacobs, Commodore of Destroyer Squadron 24 (DESRON 24). The squadron’s responsibilities include planning and executing exercises for CSFTL.

“We are aligned with Navy policy,” Jacobs said. “On a more personal level, I’m a Sailor and a diver, preserving our environment and marine life is important to me.”

We do everything we possibly can to preserve this delicate ecosystem we live in.

—Rear Admiral Garry R. White

“We recognize that the Navy is a part of the environment we operate in, and if one is impacted negatively, both are impacted,” said Rear Admiral Garry R. White, Commander, Strike Force Training, Atlantic (CSFTL) in Norfolk, Va. CSFTL oversees training for the U.S. Second Fleet, which operates primarily in the Atlantic Ocean.

“It is critical that our Carrier Strike Groups, Amphibious Ready Groups, independently deploying units, and, most importantly, our Sailors that we are deploying and potentially sending into harm’s way are fully prepared to handle any contingency they may encounter,” White said. “The most effective way to do this is by replicating what they are likely to

During planning, the squadron sends detailed exercise plans to the Navy’s U.S. Fleet Forces Command (USFF) Operations Environmental Support Branch for review, a significant step in the environmental protection process.

“We include the details of the exercise, such as whether we will be using active sonar or live gunfire, where the

exercise will take place and when,” Jacobs said. “From this, the Operations Environmental Support Branch develops mitigation procedures designed to lessen the impact on the environment as much as possible while maintaining quality training.”

DESRON24 sends all exercise participants messages detailing the mitigation measures, and reinforces procedures during pre-exercise conferences. Coalition partners from other nations are informed of any restrictions or measures.

CSFTL Chief of Staff Captain John M. Kersh was previously assigned at Naval Station Mayport in Jacksonville, FL, near calving grounds of the endangered North Atlantic Right Whale. There he gained valuable experience incorporating specific environmental measures during training.

Exercise planners include environmental mitigations early in the process, building them seamlessly into the daily rhythm of the ship.

“Exercises are planned months in advance,” Kersh said. “We know when they will be, and we build in all these measures from the beginning. We reach out to subject matter experts and pull them into the process as well. This way we are able to take care of our environmental impact and meet our training needs at the same time.”

Planning for environmental contingencies helps Navy leaders get better at their jobs, according to Kersh.

“Maritime exercises and anti-submarine warfare training are complex undertakings anyway, and incorporating these measures adds another level of benefit as it makes us better planners,” he said.



Boatswain's Mate Seaman Kossivi Ahonkloo looks through his binoculars while standing an aft lookout watch aboard the guided-missile destroyer USS PORTER (DDG 78). PORTER was participating in a group sail activity in the Atlantic Ocean to prepare for its role with DESRON 24 in an upcoming Joint Warrior exercise.

Mass Communication Specialist 3rd Class Candice Villarreal

The Navy's approach to mitigating possible environmental impacts of live training are broken down into three general areas—avoidance, minimization and monitoring.

First, the Navy strives to avoid any environmental impact. When this is not possible mitigation measures are put in place; these are continually monitored and updated. Marine Species Awareness Training (MSAT) and the Protective Measures Assessment Protocol (PMAP) system are

examples of Navy programs designed to ensure the protection of the maritime environment.

The Navy requires all personnel standing watch, as well as aircraft crews, to go through MSAT. Training includes education on environmental protection, legal requirements, Navy stewardship commitments and identifying various marine mammals. While all bridge personnel, or watchstanders, keep an eye on the horizon, any

time a ship or surfaced submarine moves through the water it is the lookouts which are key in monitoring the marine environment, looking for any changes or disturbances which might indicate marine mammals and other marine life, such as sea turtles.

When a lookout spots a marine mammal the bridge team begins pre-planned responses, which can include changing course or speed and warning nearby Navy ships, even those not involved in training, to temporarily adapt procedures as needed. Other standard mitigations involve travel-

USFF Annual Exercise Schedule

THE SCHEDULING OF naval exercises is driven by global force presence requirements and rotations of assets. Although these exercises do not occur on a regular seasonal rotation, the table below provides some insights into what the yearly exercise schedule might look like in any given year. On average, USFF on the east coast sponsors two Carrier Strike Group Fleet Response Training Plans (FRTTP), two Amphibious Readiness Group FRTTPs and about 25 independent deployers per year—some years more, occasionally less.

WHAT	FREQUENCY	WHERE	DETAILS
Joint Task Force Exercise (JTFEX): Exercise designed to build upon previous demonstrated Battle Group competencies across all warfare areas. Consists of a nominal 21 days underway, usually conducted six to eight weeks prior to deployment.	Two to four times per year	Typically Dam Neck, VA south to Jacksonville, FL	<ul style="list-style-type: none"> ■ Integrated joint training ■ Complex live training events—involves several ships, submarines and aircraft ■ May include participants from other services and other nations ■ Centers on a Carrier Strike Group or Amphibious Ready Group ■ Includes a collection of ships, aircraft and support elements designed to certify forces in maritime operations and command & control
Composite Training Unit Exercises (COMPUTEX): Exercise performed by each Carrier Strike Group before departing for a six-month deployment.	Two to six times per year	Typically Dam Neck, VA south to Jacksonville, FL	<ul style="list-style-type: none"> ■ Integrated training ■ Complex live training events—involves several ships, submarines and aircraft ■ May include participants from other services and other nations ■ Centers on a Carrier Strike Group or Amphibious Ready Group ■ Includes a collection of ships, aircraft and support elements designed to conduct integrated at-sea & amphibious combat operations ■ Designed to forge the battle group into a cohesive, fighting team
Southeast Anti-Submarine Warfare (ASW) Integration Training Initiative (SEASWITI): Exercise that provides a learning forum in the Southeast region to enhance the effectiveness and quality of ASW training by coordinating assets, knowledge and technology.	Two to four times per year	South Carolina south to Florida	<ul style="list-style-type: none"> ■ Designed to increase ASW readiness and proficiency training throughout the fleet ■ Week-long coordinated multi-platform exercise ■ Incorporates non-ASW events such as gunnery exercises and counter piracy
Other exercises as needed	As needed to support emergent requirements	East Coast and Gulf of Mexico	<ul style="list-style-type: none"> ■ Mine warfare ■ Air warfare ■ Anti-piracy



All Officers of the Deck, like Michael Lundahl aboard the guided-missile destroyer USS MAHAN (DDG 72), are responsible for safe execution of the ship's plan and navigation, while ensuring that the ship operates in accordance with environmental directives.

Mass Communication Specialist 2nd Class Jason R. Zalasky

Exercise planners include environmental mitigations early in the process, building them seamlessly into the daily rhythm of the ship.

ling at safe speeds for avoiding collisions with marine mammals and increased vigilance when whale or other animal activity is spotted.

As Officer of the Deck aboard the guided-missile destroyer USS MAHAN (DDG 72) Lieutenant (junior grade) Michael Lundahl is responsible for safe execution of the ship's plan and navigation, while ensuring that the ship operates in accordance with environmental directives.

"Since I arrived onboard my first ship, I have been trained to navigate the ship to avoid a whale if it surfaced in front of the ship," Lundahl said. "I also know that sonar must be reduced in power or secured based on the presence of marine mammals. The orders are updated through regular training...and the Commanding Officer's nightly orders to the watch team."

That training becomes second nature to Sailors on watch, and Lundahl said he is simultaneously aware of the natural beauty around him. He has seen numerous schools of dolphins playing in a ship's wake and whales surfacing in the Pacific Ocean.

"I was mindful of where the last known position was relative to the ship and if it were possible for marine mammals to get close enough to be hit," he said. "Personally, it was a glorious experience witnessing the majestic beauty of the largest of Earth's creatures."

Civilian marine biologists sometimes go to sea with the Navy to help watch for and identify marine mammals, and to conduct counts of animal populations to help clarify what species are present in the training areas and determine if the training has any effect on animal behavior.

The PMAP software system is a set of standard operating protective measures, policies and planning tools for all levels of at-sea training. Using PMAP, Navy commanders can input training plans and locations and immediately receive detailed environmental information, including graphic representations of protected and sensitive areas such as coral reefs or marine sanctuaries, and relevant guidelines to comply with Navy and federal government regulations.

The Navy must comply with federal laws including the National Environmental Policy Act, the Marine Mammal Protection Act, the Endangered Species Act and the Clean Water Act. The National Marine Fisheries Service and the U.S. Environmental Protection Agency are major partners in this effort.

The USFF Environmental Readiness Division and Fleet Area Control &



Members of a visit board, search and seizure team race toward a simulated suspect vessel during a COMPUTEX—a joint and combined training exercise to prepare for deployment by certifying readiness in a number of mission areas.

Cryptologic Technician (Maintenance) 2nd Class Alberto Delgado

Surveillance Facilities (FACSFAC) are vital links in studying the environments in which the Navy trains. Their responsibilities include developing in-depth Environmental Impact Statements (EIS), creating and updating mitigation measures and ensuring compliance with federal laws.

“We have established a long-standing relationship with the USFF environmental team and the environmental planners serving the FACSFAC,” White said. “As a result of the work with these teams, we have developed a complex geography that takes the

requirements and cautions in the existing EISs into account during exercise design and into execution.”

It is a process which the Navy constantly updates and refines in partnership with top scientists, federal government agencies and the public, according to Hank Eacho, head of the USFF Operations Environmental Support Branch.

“We are always looking ahead, applying the best available science, getting feedback from commanders in the field, implementing new

measures and studying how effective they are,” Eacho said.

Specific mitigation measures apply to particular training efforts such as “live fire” events, surface to surface, small arms training, air to surface bombing, mine countermeasures and sonar use.

In particular, the Navy is judicious in its use of sonar, a crucial tool required to stay ahead of emerging threats. The Navy uses two types of sonar—active and passive. Passive sonar involves listening to sounds through underwater microphones, while active sonar

systems send out sound waves to be analyzed as they bounce off objects in the water. Sonar is a complex system which requires highly-trained operators.

“Sonar is important as it is the Navy’s eyes and ears below the water,” White said. “More countries are acquiring submarines and as the technology improves, these platforms are becoming quieter and harder to detect. Sonar is vitally important to our training. We must (and do) design exercises where we are not unduly limited by the environment; exercises where our operations and protecting the environment and every species in it are compatible.”

and radar systems and live fires. This phase involves classroom and in-port synthetic training as well as live exercises.

The integrated training phase brings together individual ships or groups to train together as a large, combined force.

Composite Training Unit Exercises (COMPTUEX) are part of the integrated phase of training. These are complex live training events which involve a large number of ships, submarines and aircraft, including participants from other services and other nations. The exercises usually

include a Joint Task Force Exercise, an event which focuses on training battle group staffs. Command and control and decision-making are the primary focus of these exercises.

The schedule for live Navy exercises on the East Coast remains fluid, depending on training needs. Exercise planners work with USFF and the Chief of Naval Operations to keep the public involved and informed as much as possible.

All these efforts, from the highest Navy leadership to the Sailor standing watch, go into making Navy training as safe, challenging and environmentally responsible as possible.

Generations of Americans have come to depend on our ability to deliver a secure nation through the ability to train naval forces at sea.

—Rear Admiral Garry R. White

Sonar mitigation measures include additional lookouts, establishing safety zones and reducing or securing the sonar if marine mammals are sighted in the safety zones.

The Navy breaks down training into three general phases—basic, integrated and sustainment. The Navy often uses the concept of “crawl, walk, run” when referring to the training cycle, and puts measures in place to protect the environment at every step along the way.

The basic training phase focuses on individual ships and Sailors and is also called unit-level training. This phase involves training for one ship, submarine or aircraft or small groups. Sailors and staff work on basic skills such as navigation, seamanship, communications, sonar

center on a Carrier Strike Group, including an aircraft carrier, Carrier Air Wing and support elements, or Amphibious Ready Group, a collection of ships, aircraft and support elements designed to conduct amphibious operations.

“A COMPTUEX is the Navy’s most arduous and dynamic pre-deployment exercise which trains to the widest range of missions, functions and tasks,” said Jim Casey, a member of the Integrated Training Branch at USFF. “It involves the most days at sea, a wide variety of ships, aircraft and support elements, and typically includes the greatest amount of weapons training and ordnance expenditure.”

The sustainment training phase, designed to keep the Navy at the highest level of readiness, might

“Going to sea is what we do, it is where our mission lies,” White said. “While we must always consider the resources required to generate and maintain a world-wide deployable force, we can never forget that the resources of time, money and more importantly, the environment, cannot be taken for granted. Generations of Americans have come to depend on our ability to deliver a secure nation through the ability to train naval forces at sea. Equally, they deserve to inherit the bounty and the beauty of the sea.” 📍

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The CNO Presents Environmental Awards for Fiscal Year 2009

Recipients Recognized for Exception Environmental Accomplishments

THE CHIEF OF Naval Operations (CNO) Admiral Gary Roughead recognized 25 Navy individuals, ships, and installations for their exceptional environmental stewardship during the environmental awards ceremony held 1 June 2010 at the U.S. Navy Memorial and Naval Heritage Center in Washington, DC.

The awardees were recognized for reducing or eliminating hazardous materials, working with governmental and nongovernmental organizations to conserve natural resources, preserving land and restoring plant and animal species.

“I have been most impressed this year with the degree to which the commands and individuals partnered with civic leaders, students and volunteers from local communities,” said Roughead. “Because they’re not only preserving the environment, they’re leading the Navy, indeed, to be a more responsible neighbor and community builder.”

Roughead discussed the relationship between the creative and innovative ‘green’ tactics used by the award winners and how they can help achieve the Navy’s overall energy conservation goals set by Secretary of the Navy Ray Mabus.

“It is through your example, through your skill, through ingenuity, through your dedication, through your involvement with those who can introduce us to new and better ways of doing things, that we can meet those goals,” said Roughead to the awardees.



Master of Ceremonies Rear Admiral Philip Cullom, Director, CNO Energy and Environmental Readiness Division, welcomed the winners and distinguished visitors at the CNO Environmental Awards ceremony, introduced Deputy Chief of Naval Operations for Fleet Readiness and Logistics, Vice Admiral William Burke, and narrated the awards presentation.



The CNO, Admiral Gary Roughead, delivers remarks during the Fiscal Year 2009 CNO Environmental Awards ceremony.

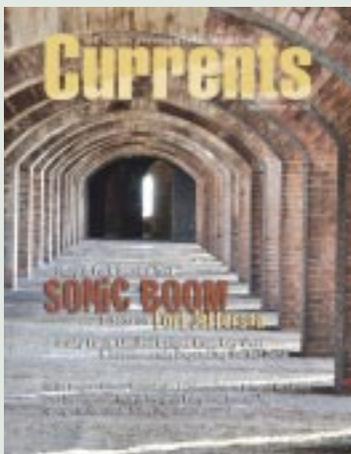
I have been most impressed this year with the degree to which the commands and individuals partnered with civic leaders, students and volunteers from local communities.

—Admiral Gary Roughead

For More Insights

FOR INSIGHTS INTO the Fiscal Year 2009 CNO environmental award winners, see our article entitled “CNO Environmental Awards Recognize Exceptional Stewardship: Efforts of Fiscal Year 2009 Winners Highlight the Range of the Navy’s Commitment” in the summer 2010 issue of *Currents*. You can browse the

Currents archive at www.enviro-navair.navy.mil/currents or visit us on Facebook by searching for “U.S. Navy Currents magazine.” A detailed listing of the awardees is also available on the Navy Newsstand site at www.navy.mil/search/display.asp?story_id=51273.







ABOVE AND PREVIOUS PAGE: FY09 CNO environmental award winners receive their awards from the CNO, Admiral Gary Roughead.

Roughead identified the importance of staying technologically progressive in the 'green' industry and continuing to build on the award winning environmentally friendly initiatives.



Roughead identified the importance of staying technologically progressive in the 'green' industry and continuing to build on the award winning environmentally friendly initiatives.

Photos by STUDIO M

"I applaud all of the Sailors [and Navy civilians] that are here today, who are the leaders in environmental conservation in their own right," said Roughead.

CONTACTS

Note: This article was written by Mass Communication Specialist 2nd Class (SW) Kyle P. Malloy and originally appeared on the Navy Newsstand site (at www.navy.mil) as story number NNS100601-10. For more news from the Chief of Naval Operations, visit www.navy.mil/local/cno. [📍](#)

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Developments of Interest— April 2010 through June 2010

THIS ARTICLE HIGHLIGHTS significant environmental regulatory changes and indicators suggesting future changes to the regulatory landscape.

The U.S. Environmental Protection Agency (EPA) has been active in rulemaking areas related to lead, including lead based paint, lead emissions from piston aircraft that use leaded fuel, and the National Ambient Air Quality Standards (NAAQS) for lead. Driving these revisions is the current scientific understanding that lead affects childhood development and intelligence at lower levels than were previously understood to be harmful. In 2008, EPA lowered the NAAQS for lead by a factor of ten. In 2010, EPA is reviewing and will issue a determination addressing whether lead emissions from aircraft using leaded aviation gasoline constitute a health threat.

In December 2008, as directed by Public Law 110-314, the Consumer Product Safety Commission lowered the levels of lead allowed in new paint in consumer uses from 600 parts per million (ppm) to 90 ppm, and implemented limits on lead in children's products.

In response to a petition, EPA has indicated that they will review and may lower the levels of lead in painted surfaces that would trigger the residential Renovation, Repair and Painting rule requirements (i.e., revise the definition of lead-based paint). EPA intends to apply clearance sampling requirements following renovation, and may lower the levels of lead dust allowed on floors and windowsills sampled for clearance.

In addition, EPA is again taking up the issue of regulating public and commercial buildings renovation, repair, and painting. As currently contemplated, the definition of such buildings would include all federally owned buildings not already regulated as residential or child occupied.

Over a decade has passed since EPA first considered regulating lead based paint in public buildings, commercial buildings, and steel structures. Nevertheless, the extension of lead based paint renovation, repair, and painting requirements to public and commercial buildings could impact the Department of Defense (DoD) maintenance practices and costs, due to the extensive inventory of older buildings. Impacts of residential rule changes will be less significant to DoD due to the privatization of most DoD housing.

Additional regulatory and environmental news items of interest (9 April 2010 through 25 June 2010) include the following:

Air

Minimizing Use of Hexavalent Chromium in DoD Systems (DFARS Case 2009-D004)—Proposed Rule (08-April-10)
<http://edocket.access.gpo.gov/2010/2010-7262.htm>

Clean Air Act Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule—Final Rule (03-June-10)
<http://edocket.access.gpo.gov/2010/2010-11974.htm>

Primary NAAQS for Sulfur Dioxide—Final Rule (22-June-10)
<http://edocket.access.gpo.gov/2010/2010-13947.htm>

Standards of Performance for Stationary Compression Ignition and Spark Ignition Internal Combustion Engines between 10 and 30 Liters per Cylinder (08-June-10)
<http://edocket.access.gpo.gov/2010/2010-12911.htm>

Emission Standards for Commercial and Industrial Solid Waste Incineration—Proposed Rule (04-June-10)
<http://edocket.access.gpo.gov/2010/2010-10821.htm>

Easy Access

FOR EASY AND direct access to many of the web addresses included in this regulatory summary, select the "Digital Currents" button from the *Currents* page on the Naval Air Systems Command's environmental web site at www.enviro-navair.navy.mil/currents.



National Emission Standards for Hazardous Air Pollutants for Boilers and Process Heaters—Proposed Rules (04-June-10)

- at Area Sources:
<http://edocket.access.gpo.gov/2010/2010-10832.htm>
- at Major Sources:
<http://edocket.access.gpo.gov/2010/2010-10827.htm>

Accelerated Phase-Out of Hydrofluorocarbons (HFC) Proposed by the United States, Canada, and Mexico (07-May-10)

<http://www.epa.gov/ozone/intpol/mpagreement.html>

Substitutes for Ozone-Depleting Substances HCFC-22, HCFC-142b—Notice (16-June-10)

<http://edocket.access.gpo.gov/2010/2010-14510.htm>

Water

Stormwater: Low Impact Development—Unified Facilities Criteria Document Finalized (06-April-10)

http://www.wbdg.org/cccb/browse_cat.php?o=29&c=4

Revisions to the Drinking Water Total Coliform Rule—Proposed Rule (17-June-10)

<http://www.epa.gov/safewater/disinfection/tcr/regulation.html> - tcr1989

Energy

Energy Efficiency and Sustainable Design Standards for New Federal Buildings—Proposed Rule (28-May-10)

<http://edocket.access.gpo.gov/2010/2010-12677.htm>

Health & Safety

Occupational Safety and Health Administration Walking-Working Surfaces and Personal Protective Equipment (Fall Protection Systems)—Proposed Rule (24-May-10)

<http://edocket.access.gpo.gov/2010/2010-10418.htm>

Occupational Exposure to Infectious Diseases and Agents—Notice and Request for Comment (06-May-10)

<http://edocket.access.gpo.gov/2010/2010-10694.htm>

Safe Work Practices in Shipbreaking (07-April-10)

<http://www.osha.gov/Publications/3375shipbreaking.pdf>

Materials

Identification of which Non-Hazardous Secondary Materials are Solid Wastes (when used for fuel)—Proposed Rule (04-June-10)

<http://edocket.access.gpo.gov/2010/2010-10837.htm>

Lead Based Paint: Science Advisory Board Lead Review Panel Meeting (for developing the hazard standards for floors and window sills in residences and public and commercial buildings) (03-June-10)

<http://edocket.access.gpo.gov/2010/2010-13386.htm>

Lead Based Paint: Clearance and Clearance Testing Requirements for the Renovation, Repair, and Painting Program—Proposed Rule (06-May-10)

<http://edocket.access.gpo.gov/2010/2010-10102.htm>

Lead Based Paint: Amendment to the Opt-Out and Recordkeeping Provisions in the Renovation, Repair, and Painting Program—Final Rule (06-May-10)

<http://edocket.access.gpo.gov/2010/2010-10100.htm>

Lead Based Paint: Renovation, Repair, and Painting Program for Public and Commercial Buildings—Advance Notice of Rulemaking (06-May-10)

<http://edocket.access.gpo.gov/2010/2010-10097.htm>

Other

Disposing of Unneeded Federal Real Estate—Presidential Memo (10-June-10)

<http://edocket.access.gpo.gov/2010/2010-14616.htm>

Guidance for Federal Land Management in the Chesapeake Bay (17-May-10)

<http://edocket.access.gpo.gov/2010/2010-11693.htm>

Chesapeake Bay Protection and Restoration Executive Order 13508 Final Coordinated Implementation Strategy (12-May-10)

<http://executiveorder.chesapeakebay.net/file.axd?file=2010%2f5%2fChesapeake+EO+Strategy%20.pdf>
<http://edocket.access.gpo.gov/2010/2010-11143.htm>

The Naval Facilities Engineering Service Center provides a free Weekly Federal Regulatory Summary that DoD personnel or contractors supporting DoD may receive by e-mail. To subscribe or unsubscribe, contact NFESCRegulatorySupportDesk@navy.mil or 805-982-2640. 

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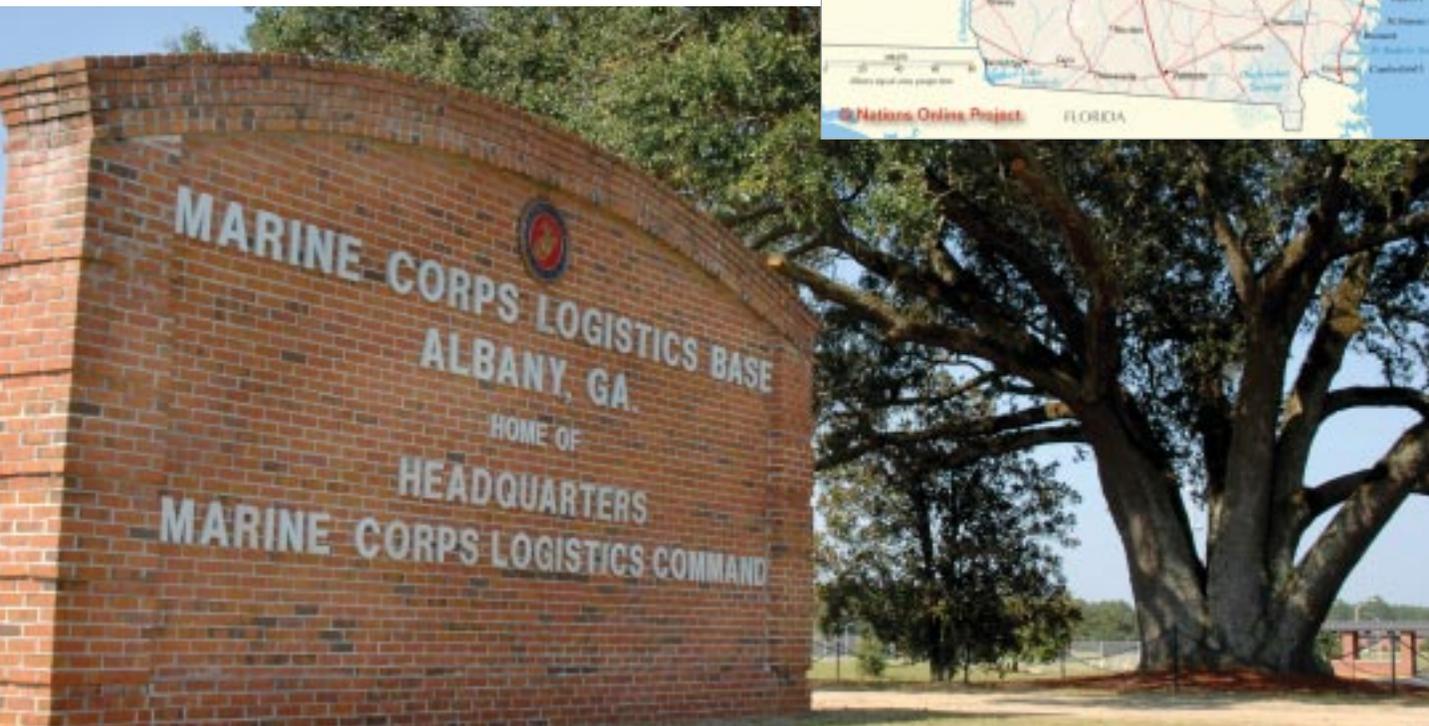
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Converting Trash to Gas

Pioneering Energy Project Takes Shape at Marine Corps Logistics Base Albany

“**THE COUNTRY THAT** harnesses the power of clean, renewable energy will lead the 21st century.” These words, spoken by President Obama, are part of a 2009 speech regarding the United States’ new, responsible energy policy—a policy that he says “leverages American ingenuity to put people back to work, fight global warming, increase our energy independence, and keep us safe.”

This new energy awareness was addressed by the Commandant of the Marine Corps, General James T. Conway, at an energy summit in Washington, D.C. in August 2009. He believes energy efficiency is achievable and wants U.S. Marines to take the lead.





This garbage will one day become energy at MCLB Albany.

The base's efforts are the first gas-to-energy project in the Marine Corps.

Reacting to this challenge, the Marine Corps Logistics Base (MCLB) in Albany, Georgia, has embarked on an aggressive program to recover methane gas from nearby Dougherty County landfill to provide fuel for cogeneration of heat and electrical power. The program also positions the base for future steam generation efforts. The base's efforts are the first gas-to-energy project in the Marine Corps.

Methane as a Renewable Energy Source

Methane is emitted from a variety of both human-related and natural sources. Roughly 60 percent of global methane emissions are related to

human-related activities, including fossil fuel production, enteric fermentation in livestock and manure management, rice cultivation, biomass burning and waste management. Methane gas is a renewable energy source that is plentiful, relatively low in cost, and involves proven technology.

In the United States, landfills are the largest human-generated source of methane, accounting for 34 percent of all methane emissions. Today, methane generation at U.S. landfills is estimated to equal about five percent of domestic natural gas consumption, or one percent of domestic total energy needs.

Assistant Administrator for Dougherty County, Mike McCoy, commenting on

landfill gas stated, "Naturally occurring gas that results from the decomposition of garbage is a reliable and renewable energy source that mainly goes untapped."

In the past, as in most landfills, methane was burned off—a complete waste of a useable resource. The county was unable to efficiently use the methane gas due to the distance involved in the transport. Because of the base's proximity to the landfill, MCLB was considered the only viable source for potential use.

The Albany Plan

MCLB Albany's plan is to utilize landfill gas to offset a percentage of electricity received from the electrical



Landfill wellhead.

power grid at the base. A formal partnership agreement with Chevron Energy Solutions and Dougherty County was signed in early December 2009, establishing a 20-year gas-to-energy partnership. The recovered landfill gas will be used to operate a 1.9 megawatt heat and power generator.

“Presidential and Congressional mandates require that we reduce our greenhouse gas emissions, increase our use of alternative energy sources and reduce our energy consumption. This project will dramatically reduce our intensity and increase our use of renewable energy,” said Colonel Terry V. Williams, Commanding Officer, MCLB Albany. “Once approved and

operating, this project will bring us to 22 percent renewable energy of our total utilities use. The Congressional mandate is about seven percent.”

The program will also help the base with energy security and reliability. The landfill gas generator will be run along with the base’s utilities, which will allow for continued generation of power in the event of a local public utilities power grid failure.

Making It Happen

The county was willing to fund the extraction equipment at the landfill but the cost of piping to transfer the gas and power generation equipment had to be borne by the Marine base. The infrastructure alone would

amount to millions of dollars that MCLB did not have. As a solution, MCLB engaged Chevron in a Department of Defense (DoD) program called the Energy Savings Performance Contract (ESPC). ESPCs are widely used across DoD, enabling federal agencies to improve energy efficiency and reduce costs through private investments.

What Chevron brought to the table was the knowledge to construct the infrastructure and the expertise to successfully negotiate with Dougherty County. Chevron, in turn, would reap a percentage of the savings.

After two rounds of negotiations among MCLB, the Department of Energy, the Naval Facilities Engineering

Command (NAVFAC)—East, Headquarters Marine Corps, Dougherty County, and the Chevron corporation, NAVFAC awarded an \$18.8 million ESPC to the Chevron Energy Solutions Company of San Francisco. The contract will provide an annual cost savings of nearly \$1.8 million, and an energy savings of 66,984 million British Thermal Units (MBTU).

This joint action promotes environmentally sound disposal methods, maximizes the reuse of recoverable resources and fosters resource conservation. Solid waste facilities, such as the Dougherty landfill, are looking for new and innovative ways to exploit their closed landfill sites. Benefits from legacy site exploitation include revenue, lower maintenance costs, improved site sustainability and demonstrated environmental stewardship.

Landfill Gas Quality

Landfill gas is 50 percent methane, 49 percent carbon dioxide and one percent trace gases. A major concern for utilization of landfill gas for energy and merchant carbon dioxide is reliable, economic removal of contaminants from the raw gas. Landfill gas is similar to low-quality natural gas: expressed in heating value, natural gas will have a BTU of 1,000 and the equivalent biomethane will have a BTU of 500.

According to McCoy, the county's responsibility is to collect the gas and the base will be responsible for processing the gas. "Because this is a take or pay agreement, the county is responsible for providing a baseline quantity of 153,640 million BTUs per year. Any quantity in excess of the baseline is paid for by MCLB," he said.

and can be processed to high-purity (food grade) liquid CO₂.

Frederick Broome, director, Installation and Environment Division, MCLB Albany, said, "This is a huge day for our local community and our base. Our two agencies were finally able to enter into an agreement for the base to purchase the county's landfill gas to generate 'green' electricity."

Today there are more than 400 landfill gas plants operating in the U.S., generating more than 10 billion kilowatt hours per year in electricity. In addition to the electricity generated, the plants remove 95,000 metric tons of carbon dioxide from the environment while saving the equivalent of 220,000 barrels of oil. That equates to taking 21,000 cars off the roads.

General Conway eventually wants Marine Corps installations to

Once approved and operating, this project will bring us to 22 percent renewable energy of our total utilities use.

—Colonel Terry V. Williams

According to Richard Crowdis, Dougherty County administrator, the first phase of the project, which commenced with a groundbreaking on 20 May 2010, requires an initial investment of \$1.3 million to install more equipment, ground wells to extract more gas, more system engineering, and pipes at the landfill. "In 2019, there will be another cost of \$1.1 million to add more wells because the lifespan of our landfill is estimated at 43 years," he states. "Our projected annual operating expenses will be about \$21,207 over the life of the project term, which is 20 years, with one five-year renewal."

A Promising Future

Despite its drawbacks, landfill gas—unlike natural gas—is a renewable energy resource. For the Marine Corps, this is a step to gain energy independence.

In the future, landfill gas could be converted to compressed natural gas and liquefied natural gas for use as an alternative vehicle fuel. The methane can also be converted to methanol and ethanol. The other components of landfill gas also represent a potential source of revenue. Carbon dioxide (CO₂) for example, is utilized in the oil and coal industries, wastewater treatment facilities, chemical industries,

produce as much energy as they use—a concept called "net zero." Achieving this will necessitate tapping into renewable sources like landfill gas.

"We will be more energy efficient," General Conway concluded, "We have to be." 

Photos by Art Powell

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NAVFAC ESC's Biological Detoxification System for Treating Oily Sludge Now Available

Leasing Allows Naval Activities to Easily Implement Technology While Avoiding Capital Costs

THE BIOLOGICAL DETOXIFICATION (BioDetox) System, developed by the Naval Facilities Engineering Service Center (NAVFAC ESC) under the Navy Environmental

environmentally friendly alternative to disposal of oily sludges. Once available only as a capital-cost unit, NAVFAC ESC and the licensee—Waste Resources Inc. (WRI)—have devel-

ties with annual oily sludge disposal costs exceeding \$75,000 can now significantly reduce their oily sludge disposal costs without the responsibility for the initial capital costs.

Activities with annual oily sludge disposal costs exceeding \$75,000 can now significantly reduce their oily sludge disposal costs without the responsibility for the initial capital costs.

Sustainability Development to Integration (NESDI) program and the Environmental Security Technology Certification Program (ESTCP), is an

oped a leasing option to improve the system's availability to activities within the Navy and throughout the Department of Defense (DoD). Activi-

The Technology

Thousands of tons of oily sludges are generated by the DoD every year at its industrial wastewater treatment facilities, shipyards, fuel depots, and other maintenance and servicing facilities. Sources include oil sumps, load equalization tanks, wash racks, drum cleaning, and fuel tank bottoms. Most of this sludge cannot be recycled or burned, and is therefore drummed and shipped offsite for disposal. This incurs a cumulative annual disposal cost of \$6.8 million for the Navy alone.

NAVFAC ESC has demonstrated that oily sludges can be aerobically



A P-3C Orion taxis through a wash rack. Wash racks are one of the sources of oily sludge generated by the DoD.

Photographer's Mate 3rd Class Shannon R. Smith



The BioDetox System at SCAAP in Scranton, PA.

degraded to harmless byproducts—carbon dioxide, water, and biomass—by processing through a Sequencing Batch Reactor (SBR). The BioDetox System, a Navy patented and licensed system, consists of a bioreactor tank, receiving tank, pH controller, an ultra-filtration, and a Volatile Organic Compound filter. This system can be available through a lease agreement, thereby allowing activities to avoid high capital cost expenditures.

During the BioDetox process, oily sludges are typically blended for treatment within the bioreactor tank with fresh or oily wastewater to a mixture containing 2,000 to 20,000 parts per million (ppm) of hydrocarbon. To treat the mixture, air and nutrients (i.e., fertilizer) are added and the pH is controlled to optimize the growth and propagation of hydrocarbon degrading bacteria already present in the oily sludge. It typically takes three to four days for the oily sludge to degrade to a mixture of biomass solids, carbon dioxide, and clean water, which can be either recycled or discharged to the sewer. Laboratory analysis typically yields less than 50 ppm of hydrocarbons in the treated water.

Bio-Reactor Installations at Pearl Harbor, HI & Scranton, PA

BioDetox Systems are currently installed and in operation at two locations—a pilot-scale unit at the Public Works Center in Pearl Harbor, HI and a full-scale unit at the Scranton Army Ammunition Plant (SCAAP) in Scranton, PA.

Major Benefits of the BioDetox System

1. Reduces oily sludge disposal costs from an average of \$0.76 per pound to less than \$0.08 per pound.
2. Biodegrades oily sludge to non-toxic byproducts. Water can be discharged to sewers and biomass can be used as nutrients for composting or placed in a landfill.
3. Eliminates liabilities associated with long-term storage and disposal of oily wastes.

NAVFAC ESC has demonstrated that oily sludges can be aerobically degraded to harmless byproducts—carbon dioxide, water, and biomass—by processing through a Sequencing Batch Reactor.

The latter is owned and operated by General Dynamics Inc., Ordnance and Tactical Systems. Pearl Harbor's unit is a single batch reactor with capacity of 10,000 gallons. It is designed for treatment of a variety of oily sludges and wastes, including waste oil from Bilge and Oily Wastewater Treatment Systems and fuel tank bottoms. Scranton's unit is a system of two tanks connected in a series, each with capacity of 40,000 gallons. The system treats waste- quenching fluids from projectile forging plant operations at varying concentrations of water, solids and mineral oil.

Contractual Agreements

Using the leasing option, qualified activities within the Navy and Marine Corps can have the system installed at little or no initial cost. Following the installation and system start-up, participating activities will be billed a low monthly leasing fee, which can be covered by operations and maintenance funds for oily sludge transportation and disposal. The leasing option will have a lower monthly cost than their current disposal practice, and eliminates the need to justify and appropriate large capital funds for new equipment procurement and installation.

The Navy Cooperative Research and Development Agreement allows for the Navy's licensee, WRI, to partner with NAVFAC ESC to further implement the BioDetox System at more sites. WRI developed and operated the first targeted modularized system at Pearl Harbor in order to obtain data for a full-scale system operation. The data was used for advancement of the technology for installment at other activities within the government and among private sectors.

Currently, a full-scale BioDetox System has an estimated capital cost of \$200,000 to install. Under the pending leasing agreement, activities will not be liable for this cost. The provision for equipment, installation, and training will be included in the lease agreement.

About the Resource Sponsors

The NESDI program seeks to provide solutions by demonstrating, validating and integrating innovative technologies, processes, materials, and filling knowledge gaps to minimize operational environmental risks,

constraints and costs while ensuring Fleet readiness. The program accomplishes this mission through the evaluation of cost-effective technologies, processes, materials and knowledge that enhance environmental readiness of naval shore activities and ensure they can be integrated into weapons system acquisition programs.

The NESDI program is the Navy's environmental shoreside Research, Development, Test and Evaluation program and the Chief of Naval Operations Energy and Environmental Readiness Division and managed by the Naval Facilities Engineering Command.

For more information, visit the NESDI program web site at www.nesdi.navy.mil or contact Leslie Karr, the NESDI Program Manager at 805-982-1618, DSN: 551-1618 or leslie.karr@navy.mil.



The NESDI program is the Navy's complement to ESTCP. The goal of ESTCP is to identify and demonstrate cost-effective technologies that address DoD's highest priority environmental requirements. Demonstrations are carried out at DoD facilities and sites to document improved efficiency, reduced liability, and direct cost savings. Innovative technologies are reducing the cost of environmental remediation and compliance, lowering lifecycle costs of weapons systems, and managing the impact of DoD's operations on the environment, while enhancing military readiness. For more information about ESTCP, visit the program's web site at www.estcp.org. [↕](#)



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Get **quizzical** with *Currents*

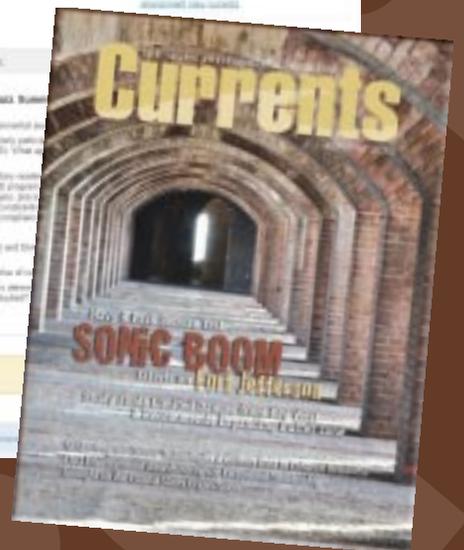
Take Our Online **quiz** to See How Smart You Are!

by now you should have received and read your copy of our summer 2010 issue. So it's time to see what you learned!

Following every issue of *Currents*, we will create a quiz to help you see how much you've learned about the Navy's environmental work—from Fleet Forces' work to assess the potential effects of sonic booms on historic Fort Jefferson and the Coastal States Organization's efforts to represent the interest of its members to the Navy's ongoing research to understand the potential impacts of sound on marine mammals.

So take a few minutes to take the *Currents* quiz. Visit the *Currents* Facebook page (at www.facebook.com/navycurrents) or follow this link www.proprofs.com/quiz-school/story.php?title=your-currents-quotient-quiz-summer-2010, enter the username of your choice and answer away. We know you'll do very well! You can even show off your score to your Facebook or Twitter friends. And if you haven't already, make sure you "like" *Currents* on Facebook and follow us on Twitter.

The screenshot shows the ProProfs website interface for a quiz titled "Your Currents Quotient Quiz Summer 2010". The page features a navigation bar with "Home", "Create a Quiz", "Take Quizzes", "Privacy & Plans", and "Help". Below the navigation bar, there is a search bar and a "Take Quiz" button. The main content area displays the quiz title and a description: "The Summer 2010 issue of Navy Currents requires you to read it to see how often you have about the Navy's efforts for the environment. Test to get to the summer before the deadline. Enjoy and see reference to page 20!". There is a "Take Quiz" button and a "Share & Embed" button. Below the buttons, there is a "Question Excerpt From Your Currents Quotient Quiz Summer 2010" section with a list of questions. A small image of the "Currents" magazine cover is visible in the bottom right corner of the screenshot.



NAS Brunswick Environmental Legacy Important Part of Closure Plan

Work to Clean Up Base Continues at Brisk Pace

WHEN NAVAL AIR Station (NAS) Brunswick closes in 2011, more than 3,200 acres of storied land will be available for redevelopment.

Located in environmentally diverse coastal Cumberland County, Maine, the station consists of the 3,157-acre main base and several noncontiguous sites totaling nearly 220 acres in nearby towns. NAS Brunswick was included in the Department of Defense's Base

Commanding Officer, Captain Will Fitzgerald. This focus on environmental stewardship is nothing new. With the identification of NAS Brunswick as a Superfund site in the early 1980s, the station has taken seriously its role in environmental remediation.

Superfund is the U.S. Environmental Protection Agency's (EPA) program to clean up the nation's uncontrolled

to this clean up, it is a process that has been better served with public participation. Transparency is always good; in the world of environmental clean up, transparency is essential. All stakeholders must trust each other that compliance and remediation will always be in accordance with applicable laws and regulations.

In addition to a dedicated Navy team, the collaborative effort includes active

There's nothing more important than ensuring that the land the Navy inherited in 1943 is left in an improved environmental condition for coming generations.

—Captain Will Fitzgerald, NAS Brunswick Commanding Officer

Realignment and Closure (BRAC) Commission's 2005 action with closure scheduled for May 2011.

For personnel working towards closure, a vital component of the base's legacy is environmental stewardship. "There's nothing more important than ensuring that the land the Navy inherited in 1943 is left in an improved environmental condition for coming generations," says

hazardous waste sites. Past practices at NAS Brunswick, while acceptable generations ago, resulted in contamination in the soil, groundwater, and sediment at certain areas of the base. In total, 26 sites and areas of concern have been, or are being, investigated and remediated.

The effort to clean up NAS Brunswick is a long and complex one. And while the Navy and the base are committed

participation by the NAS Brunswick Restoration Advisory Board (RAB) which was formed in the 1980s. The RAB includes representatives of the Navy, community, state and federal regulators, the local redevelopment authority and a local citizen's group. For the past several years, NAS Brunswick produced informative semi-annual newsletters and maintained a public web site to keep the public informed and aware of the

issues, challenges and progress of remediation efforts.

After years of working on environmental remediation, there's plenty to tell. With a dedicated team of professionals, clean up efforts have accelerated following the base closure announcement in 2005. These cleanup efforts are prioritized based on environmental concerns and post-closure redevelopment plans. In the past few months alone, NAS Brunswick has accomplished the following tasks:



The Navy Exchange Gas Service Station removal action included the former location of the fuel pumping island, three underground storage tanks, and an additional area downgradient from the tanks. Over 7,400 tons of soil were recycled at an asphalt batching facility.

NAS Brunswick

- Implemented an accelerated effort of investigation and remediation while using innovative technologies, which has resulted in immediate total cost savings of over \$775,000 and an estimated long-term cost savings of at least three million dollars.
- Moved rapidly from project development to completion in order to complete the remediation at the NAS Brunswick Navy Exchange Gas Station within a 6-month span at a cost savings of over \$530,000.
- Completed an extensive evaluation followed by the installation and operation of an advanced oxidation system to treat 1,4-dioxane and solvent-contaminated groundwater with 28 million gallons of treated water being recycled annually.
- Completed the major excavation and restoration of a former NAS Brunswick landfill site, resulting in the removal and disposal of over 42,000 tons of ash-contaminated soil and debris.
- Transitioned quickly from work plan development to fieldwork implementation at eight sites to complete

investigations and remediation before the end of a short Maine field season, saving \$85,000 in contract costs.

- Initiated a third five-year review, which studies current remedial efforts to ensure they remain protective to human health and the environment.

Additionally, other base environmental-related initiatives include the following:

- Working with state regulators to finalize a strategy for completing Resource Conservation and Recovery Act closure certification for 237 buildings by base closure in May 2011.
- Drafting a Finding of Suitability to Lease for two buildings on base as well as finalizing a license for the reuse of two other buildings
- Preparing for public hearings for an Environmental Impact Statement which will be completed this year, allowing for property transfer prior to base closure.
- Reviewing a draft Historical Radiological Assessment (HRA) which will be finalized prior to base closure.

This is the first time that the Navy will complete an HRA for a BRAC base prior to closure.

- Completing Spill Prevention, Control, and Countermeasure closures of dozens of aboveground storage tanks, and initiating the closure of the NAS Brunswick fuel farm (including two 880,000-gallon jet propellant fuel storage tanks) and several remaining underground storage tanks, bringing the base below the thresholds for a Facility Response Plan and eliminating environmental liabilities.
- Conducting several base “walkabouts” where Sailors canvassed remote parts of the base to remove debris, further enhancing the base’s environmental legacy for future redevelopment.

“As the Commanding Officer, I am proud of the commitment to environmental stewardship of the Sailors and civilian employees of the base,” states Captain Fitzgerald.” Their dedication and efforts are paying off—we’ve seen favorable data showing that our mitigation and communication strategies are working, and our aggressive environmental programs have helped to promote the turnover and redevelopment of the base.”



An EPA and Maine Department of Environmental Protection sampling team assists with water sampling to help define groundwater and surface water interface. The team was challenged by the marshy conditions and rain storms.
NAS Brunswick

because NAS Brunswick is closing, it does not mean we stop caring about the environment; quite the contrary.” He added that there is still plenty of work to be done before the base officially closes in May of 2011. “Our environmental legacy depends on our continued diligence and teamwork, and we are committed to it,” concludes Captain Fitzgerald.

Just because NAS Brunswick is closing,
it does not mean we stop caring about the environment.

—Captain Will Fitzgerald

Additionally, for the last three years NAS Brunswick has been recognized with a Chief of Naval Operations (CNO) Environmental Award, including the Restoration Award for the last two years. As the CNO, Admiral Gary Roughhead stated, “What happens in our environment cannot be dealt with at some later date, it must be addressed now and we must keep it on our minds constantly.”

“We at NAS Brunswick keep the CNO’s sentiment in mind each day; it is truly part of our ethos,” says Fitzgerald. “Just

To read more about the environmental restoration program at NAS Brunswick, visit <http://nasbrunswick.navy-env.com/index.htm>. 

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CNIC Releases Update to Environmental Compliance Guide for Commanding Officers

Latest Version Reflects Changes to Legislative, Regulatory & Policy Landscape

COMMANDER, NAVY INSTALLATIONS Command (CNIC) updated the *Environmental Compliance Guide for Commanding Officers of Navy Installations* which provides an executive level overview of the major environmental programs, regulatory framework, and issues affecting the

Navy's environmental readiness.

This guide, intended for base commanding officers (CO), public works officers, or other non-environmental staff includes legislative, regulatory, and policy changes that have occurred since the last update in 1995. In addition to the numerous pictures and graphics, the guide provides additional sources of environmental information, Navy shore environmental impacts, and a compilation of plans and permits that COs should be aware of at their installation.

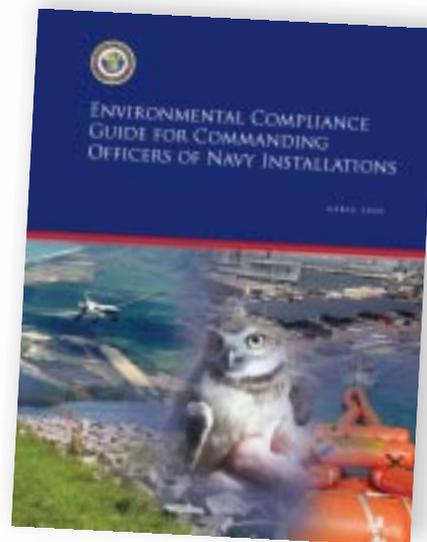
You may request a copy of the *Environmental Compliance Guide for Commanding Officers of Navy Installations* from Bill Page at william.p.page@navy.mil or download an electronic version from:

1. The Naval Facilities Engineering Command's Enterprise Document Library at https://portal.navfac.navy.mil/portal/page/portal/NAVFAC/NAVFAC_DOCS_PP or
2. The CNIC Gateway at <https://cnicgateway.cnic.navy.mil/HQ/N4/default.aspx> in the N4 Document Library. (CNIC Gateway access is limited.)

Copies will also be distributed via Shore Station Senior Leadership courses. 

CONTACT

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Key Programs Covered in the Environmental Compliance Guide for Commanding Officers of Navy Installations

Overarching Programs

- Funding and Budgeting
- Training
- Environmental Sustainability
- Environmental Management Systems
- Overseas Environmental Management
- Other Accrued Environmental Liabilities

Specific Programs

- Air Quality
- Water Quality
- Hazardous Materials and Substances
- Solid Waste Management and Recycling
- Hazardous Waste Management
- Medical Waste Management
- Oil and Hazardous Substance Spill Preparedness and Response
- Emergency Planning and Community Right-to-Know Act
- Storage Tanks
- Pest Management
- Noise
- Asbestos, Lead-Based Paint, Radon, and Polychlorinated Biphenyls
- Cleanup
- Conservation
- Environmental Planning
- Range Sustainment

SERDP & ESTCP Announce Plans for Annual Symposium and FY 2012 Solicitations

Symposium Offers Comprehensive Technical Program & Training Opportunities

THE PARTNERS IN Environmental Technology Technical Symposium and Workshop, sponsored by the Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP), will be held 30 November through 2 December 2010, at the Marriott Wardman Park Hotel in Washington, D.C.

Plenary Session

The symposium and workshop will commence with presentations by the following three distinguished plenary session speakers who will discuss emerging environmental challenges facing the Department of Defense (DoD) and solutions for a sustainable future.

1. Rear Admiral David Titley, Oceanographer and Navigator of the U.S. Navy
2. Dr. Paul Anastas, Assistant Administrator for the U.S. Environmental Protection Agency's (EPA) Office of Research and Development
3. Dr. Robert Costanza, Director of the Center for Sustainable Processes and Practices at Portland State University

The symposium will be held
30 November through 2 December
in Washington, D.C.

Also, as part of the plenary session, SERDP and ESTCP principal investigators who have helped DoD achieve its mission while improving its environmental performance will be honored as the SERDP and ESTCP Project-of-the-Year Awards are announced.

Technical Program

A comprehensive technical program consisting of concurrent technical sessions and short courses covering a variety of scientific and technical topics will follow the plenary session.



Technical Sessions

Fourteen technical sessions will highlight research and innovative technologies that improve DoD's environmental performance, reduce costs, and enhance mission capabilities. Following are this year's topics.

1. Sea Level Rise: Assessing Vulnerabilities and Impacts
2. Opening the Arctic: Science Challenges to Understanding the Impacts of Climate Change
3. National Environmental Monitoring and Indicator Systems: Implications for DoD
4. Military Installations as Test Beds for Innovative Energy Efficiency Technologies
5. Minimizing Hexavalent Chromium Use in DoD Operations
6. Aviation and the Environment: Deicing and Noise
7. Lead-Free Electronics
8. Passive Sampling Approaches for Contaminated Sediment Management
9. Remediation and Management of Persistent Chlorinated Solvent Contamination
10. Monitoring and Mitigation of Vapor Intrusion from Contaminated Groundwater Sites
11. Evaluating the Environmental Impacts of Energetic Materials
12. Maintaining Sustainability of Forward Operating Bases
13. Classification Methods for Military Munitions Response
14. Military Munitions in the Underwater Environment

To view the lineup of speakers and their topics for each technical session, visit www.symposium.serdp-estcp.org.

Short Courses

Short courses will offer unique training opportunities on emerging technologies and methods in environmental

restoration and munitions management. Professional development hours will be offered for participation in short courses. Attendance for these short courses will be limited, and advanced registration for each short course is required. Following are this year's short course topics.

1. Advances in Classification Methods for Military Munitions Response
2. Principles and Practices of In Situ Chemical Oxidation
3. Measurement and Use of Mass Discharge and Mass Flux at Contaminated Sites

Other Symposium Highlights

Attendees will have numerous opportunities to tour more than 450 posters and exhibit booths and network with approximately 1,000 environmental professionals. Technical exchange networking receptions will be held both Tuesday and Wednesday evening.

For additional information, visit www.symposium.serdp-estcp.org, e-mail partners@hgl.com, or call 703-736-4548.

Solicitations to Be Released Beginning in October

SERDP will be seeking proposals in response to its Fiscal Year (FY) 2012 solicitation which is scheduled to be released on or about 28 October 2010. Projects will be selected through a competitive process that is open to both federal and non-federal submissions. Upon release of the solicitation, detailed instructions and the Statements of Need will be available at www.serdp-estcp.org under "Funding Opportunities."

The FY 2012 ESTCP solicitation will be released on or about 6 January 2011. This solicitation will request proposals related to each of the ESTCP program areas (Energy and Water, Environmental Restoration, Munitions Response, Resource Conservation and Climate Change, and Weapons Systems and Platforms) as well as other topic areas to be announced. Technology demonstrations are open to both the federal and non-federal sectors, and projects will be selected through a competitive process. Information about the solicitation

process is available at www.serdp-estcp.org under "Funding Opportunities."

SERDP is DoD's environmental science and technology program, executed in partnership with the Department of Energy and EPA. SERDP invests in basic and applied research and advanced development. ESTCP is DoD's environmental technology demonstration and validation program. The program's goal is to identify and demonstrate cost-effective technologies that address DoD's highest priority environmental requirements. Both programs address DoD environmental needs in the Energy and Water, Environmental Restoration, Munitions Response, Resource Conservation and Climate Change, and Weapons Systems and Platforms program areas.

For More Information

For additional information about the symposium, please visit www.symposium.serdp-estcp.org, send an e-mail to partners@hgl.com, or call the contact line at 703-736-4548. For information about the SERDP or ESTCP solicitations, please visit www.serdp-estcp.org. 



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Navy Tests Fuel Cell Vehicles for Performance & Reliability

Two San Diego Area Admirals Take Test Drives

TWO ELECTRIC VEHICLES powered by fuel cell technology were delivered to the Navy Broadway Complex in downtown San Diego on 1 June 2010 for testing by two area admirals.

Rear Admiral Mark Heinrich, Commander, Fleet and Industrial Supply Centers (COMFISCS) and Rear Admiral William French, Commander, Navy Region Southwest received the fuel cell vehicles, on loan from Marine Corps Base Camp Pendleton, for use for four days. During the four days, the admirals tested the vehicles for performance, durability and reliability.

The Department of Defense is the nation's largest single energy consumer, accounting for two percent of U.S. energy consumption.

Last October, during Energy Awareness Month, Secretary of the Navy (SECNAV), the Honorable Ray Mabus reminded the Navy and Marine Corps that energy reform and energy conservation are more than ideas to think

about only one month out of the year. He set five ambitious energy targets by 2020:

1. By 2020, half of the Navy's total energy consumption, ashore and afloat, will come from alternative sources.
2. By 2020, the Navy will make half of its installations net-zero energy consumers, using solar, wind, ocean and geothermal power generated on base.
3. By 2016, the Navy will sail the Great Green Fleet, a carrier strike group composed of nuclear ships, hybrid electric ships running biofuel and aircraft flying on biofuel.
4. By 2015, the Department of the Navy will cut in half the amount of petroleum it uses in its commercial vehicle fleet through phased adoption of hybrid, electric and flex fuel vehicles.
5. Effective immediately, the Navy and Marine Corps will change the way contracts are awarded. Industry will be held contractually accountable for meeting energy efficiency targets.

"I really looked forward to testing the fuel cell vehicle," said Heinrich. "Being a 'fuelie' [one of the many degrees



Rear Admiral Mark Heinrich and Rear Admiral William French get ready for a test ride in an electric fuel cell vehicle on 2 June 2010. The admirals participated in a real-world demonstration of the fuel cell vehicles, on loan from Marine Corps Base Camp Pendleton, to test their performance, durability and reliability.



Rear Admiral Mark Heinrich and YN1 Edward Rencher take delivery of an electric fuel cell vehicle on 1 June 2010.

he holds is in petroleum management] with global energy consumption growing, I'm wholly on board with the Navy to support renewable energy."

This demonstration also supports the Naval Supply Systems Command (NAVSUP) strategic plan for energy, which Rear Admiral Mike Lyden, Commander, NAVSUP signed on 18 May 2010.

"Our civilian and military workforce has the ability to be an excellent source of ideas for reducing NAVSUP's energy consumption, increasing energy efficiency and reducing our carbon footprint," said Admiral Lyden.

The fuel cell vehicles that were tested by the admirals are twice as efficient as gasoline engines; they travel twice as far on the same amount of energy and water vapor is the only emission. A fuel cell vehicle is an electric vehicle (not a hybrid) and has better performance than most cars and is quick to fill up, about four to five minutes.

The fuel cell vehicles that were tested are twice as efficient as gasoline engines; they travel twice as far on the same amount of energy and water vapor is the only emission.

In the future, with proper fueling infrastructure, hydrogen fuel cells are a viable alternative to gasoline powered vehicles and coincides with target 4 of the SECNAV energy goals. ⚓

Photos by Kim Longstaff

The Basics About COMFISCS

COMFISCS PROVIDES AN array of integrated global logistics and contracting services to Navy and Joint operational units across all warfare enterprises.

COMFISCS is responsible for facilitating best business practices and efficiencies across the seven FISCs in the following locations:

1. San Diego, CA
2. Norfolk, VA
3. Jacksonville, FL
4. Yokosuka, Japan
5. Pearl Harbor, Hawaii
6. Bremerton (Puget Sound), WA
7. Sigonella, Italy

COMFISCS is also responsible for optimizing the performance of base supply functions and standardizing levels of service across 11 regions and 77 Navy installations.

Comprised of more than 7,000 military and civilian logistics professionals, COMFISCS operates as a single cohesive team providing global logistics services from 135 locations worldwide.

A component of NAVSUP and headquartered in Mechanicsburg, PA, COMFISCS is part of a worldwide logistics network of more than 22,500 military and civilian personnel providing combat capability through logistics.

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N45 Expands EPCRA Primer to Include Fuels Calculation Manual

CECOS Also Releases EPCRA Web Conference Schedule for the Fall

THE CHIEF OF Naval Operations Energy and Environmental Readiness Division (N45) has further expanded its Getting Started with the *Emergency Planning and Community Right-to-Know Act (EPCRA): A Primer for Navy Facilities (May 2009)* guidance with a new Calculation Manual on fuels.

'How to Consider Fuel Thresholds under EPCRA Section 313' provides detailed guidance on:

- Developing and maintaining a list of fuels and how they are used at the installation
- Obtaining the most correct Material Safety Data Sheets for the fuels
- Applying EPCRA Section 313 exemptions to the fuel uses
- Calculating thresholds
- Preparing and submitting EPCRA Section 313 reports for fuels

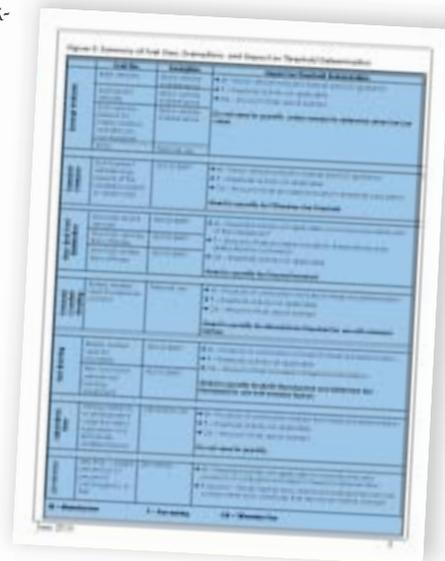
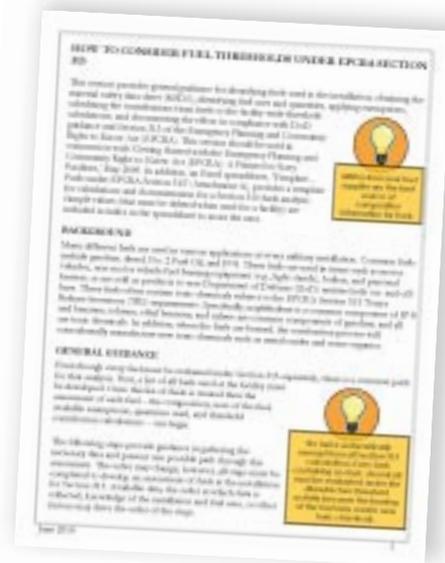
In addition, an Excel™ spreadsheet, 'Template—Fuels under EPCRA Section 313', included with the expanded guidance, provides a template for calculations and documentation for an EPCRA Section 313 fuels analysis. Sample values are included in the spreadsheet to assist the user.

You may request a copy of 'How to Consider Fuel Thresholds Under EPCRA Section 313' and the accompanying calculation spreadsheet by:

1. Contacting Anita Firestine at Anita_firestine@urscorp.com
2. Downloading an electronic version from the Toxic Release Inventory—Data Delivery System (TRI-DDS) web page at <https://dod-tridds.org/tri-web/> (login required) or
3. Downloading an electronic version from the Naval Civil Engineer Corps Officers School (CECOS) web site at <http://www.cecossweb.com/handouts/EPCRA>.

In addition, the document and spreadsheet files will be posted to the Naval Facilities Engineering Command's Enterprise Document Library at https://portal.navy.mil/portal/pageportal/NAVFAC/NAVFAC_DOCS_PP in the near future.

CECOS is again conducting Emergency Planning and Community Right-to-Know (EPCRA) no-cost, no-travel web conferences. The full EPCRA course will provide detailed instruction on all of the 2010 EPCRA reporting year requirements, including key topics such as covered chemicals, exemptions, sample calculations, sample reporting forms, and detailed workshops. This web conference is offered on scheduled dates starting in October 2010 through January 2011. The EPCRA Section 311/312 refresher courses will provide a review of the section-specific requirements. Course participants may submit facility-specific questions in advance of the training for discussion.



The full EPCRA course will provide detailed instruction on all of the 2010 EPCRA reporting year requirements.

Refresher courses for the EPCRA Section 312 reporting deadline of 1 March are offered in the January/February 2011 timeframe and refresher courses for the EPCRA Section 313 reporting deadline of 1 July are offered in the March/April 2011 timeframe. All upcoming EPCRA course offerings are listed on the CECOS web site at <https://www.netc.navy.mil/centers/csfe/cecoss/> or at <https://www.netc.navy.mil/centers/csfe/cecoss/CourseDetail.aspx?CID=23>.

The U.S. Environmental Protection Agency (EPA) is no longer accepting magnetic media for submissions and revisions. EPA will only accept Toxic Release Inventory—Made Easy (TRI-MEweb) or hard copy Form R submissions or revisions for reporting year 2009 and future years. EPA will not accept or process any submissions or revisions received via CD, floppy disk, or 3.5-inch disk.

In addition, EPA has developed two new tools designed to improve access to TRI data. My Right-to-Know (myRTK) is an application for mobile devices and is currently available in a beta version. This application allows users to:

1. Map nearby TRI facilities and large permit holders in the air, water, or hazardous waste programs
2. Compare TRI chemical releases among facilities, identify facility noncompliance
3. Obtain information on human health effects associated with TRI chemicals

Do You Have an Idea for a Calculation Manual?

- Is there something at your base that remains a challenge every reporting year?
- Do you have a scenario that you are not sure how to handle?
- Does your issue impact many Navy bases?

Send your ideas to the Navy EPCRA e-mail helpline at NavyEPCRA@urscorp.com.



A test cell operator at an Aircraft Intermediate Maintenance Department prepares to test a J-52 turbojet engine. Based on EPCRA Section 313, toxic chemicals used in and released from this activity must be included in threshold calculations.

Photographer's Mate 2nd Class Michael Watkins

The Toxics Release Inventory—Chemical Hazard Information Profiles (TRI-CHIP) is a searchable database system containing hazard information on TRI chemicals from multiple information sources. Both tools are available via the EPA's TRI home page at www.epa.gov/TRI or at the following sites: <http://www.epa.gov/tri/myrtk/index.htm> and <http://www.epa.gov/tri/tri-chip/index.html>.

Additional EPCRA resources include the Navy's EPCRA Helpline (NavyEPCRA@urscorp.com) which is staffed by CECOS Navy EPCRA training instructors. EPCRA questions may be emailed to the helpline at any time and a response or request for more information or discussion will be sent by the next business day. The Navy also maintains an EPCRA email list used by the Chief of Naval Operations to distribute EPCRA information such as announcements and reporting deadline reminders. To join, Navy personnel should send an email to NavyEPCRA@urscorp.com with 'Navy EPCRA e-mail list' in the subject line. 

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Joint Expeditionary Base Little Creek Fort Story Installs Oyster Reef

New Reef Brings Life to the Chesapeake Bay

PERSONNEL FROM THE environmental divisions at the Joint Expeditionary Base Little Creek Fort Story (JEBLCFS) and the Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic Environmental Core worked tirelessly over the past two years to install a man made oyster reef on the installation.

The project started as a way for JEBLCFS to contribute to the Navy's target of meeting the goals of the Chesapeake 2000 Agreement. As part of this agreement, parties strive to restore the native Eastern oyster, *Crassostrea virginica*, to the Chesapeake Bay. The Chesapeake Bay is the nation's largest estuary and provides shelter and spawning and foraging grounds to thousands of species. After overcoming several obstacles, the project finally came to light on 27 April 2010.

Approximately 4,000 bushels of oyster shells arrived at JEBLCFS. The empty shells were delivered to a training beach known as the "mudflats" where the installation's own Amphibious Construction Battalion 2 (ACB 2) was waiting with their equipment. The Seabees provided backhoes, dump trucks and causeway ferries, and spent the next two days providing vital training for themselves and a great service to the environmental department.

The shells were loaded onto dump trucks that were then driven onto the causeway ferries. The ferries carried the trucks full of shells to the location of the oyster reef—a restoration site for a former landfill. The shells were dropped into the water directly from the boat, while Sailors worked in the water and on the ships to help keep the oyster shells within the bounds of the reef. Several Sailors even volunteered to don their wetsuits, wade out into the cold water, and rake the shells into place. In the end, there were a total of 184 cubic yards of empty oyster



Trucks loaded with shells were driven directly onto the causeway ferries and then carried to the site of the oyster reef.



Oyster shells were simultaneously dumped directly from the trucks onto the causeway ferries to create the oyster reef.

shells laid onto the bottom of Little Creek Cove to provide habitat for future generations of oysters.

The site selected for the oyster reef was ideal because there was already some sporadic oyster growth in the area. Also, being adjacent to a restoration site, there is little to no risk of being disturbed by either training or construction activities.

The existing oysters were moved from the submerged bottom prior to construction of the oyster reef. Once all shells had been moved into place, natural resources staff members placed live oysters around and on top of the new oyster reef. This was a vital step in the reef construction, as oysters must attach themselves to hard surfaces. Adult oysters reproduce during the summer months when water temperatures are above 65 degrees Fahrenheit. The natural resources staff should be able to see resulting spat by late summer or early fall when these new oysters “set” to the empty shells, creating a thriving reef.

The natural resources staff should be able to see resulting spat by late summer or early fall when these new oysters “set” to the empty shells, creating a thriving reef.

It is important to note that the entire base was behind the oyster reef. Without the support of the installation commander, Captain Charles Stuppard, safety officials, port operations and especially ACB 2, who provided all of the equipment and manpower for the construction, the project might never have come to fruition.



The shells were dumped directly from the causeway ferries into the marked limits of the oyster reef.

This oyster reef is a significant feature for the installation for several reasons. Oysters are natural water filters, and the new reef will help contribute to cleaner water within Little Creek Cove. The oyster reef helps the Navy contribute to one of the goals of the Chesapeake 2000 Agreement to increase native oyster population within the Bay and its tributaries. Additionally, the reef was installed adjacent to a submerged aquatic vegetation bed, giving JEBLCFS two features that provide a unique and important marine environment in an area of the installation that is not open to development. No other naval installation in the Mid-Atlantic region has intentionally created these two marine habitats within their boundaries. By providing the oyster reef, the Navy is giving future generations of oysters a place to grow and flourish. This oyster reef will also provide valuable habitat and foraging grounds for many other estuarine species. ⚓

Photos by Jessica Barker

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CECOS Announces FY11 Environmental Training Classes

Providing a Full Spectrum of Environmental Training

THE NAVAL CIVIL Engineer Corps Officer School (CECOS) Environmental Division is pleased to announce the Fiscal Year 2011 (FY11) course schedule. CECOS provides world class environmental training to thousands of Department of Defense (DoD) military and civilian personnel in both classroom and web conference formats. In addition, CECOS also supports and promotes numerous Interservice Environmental Education Review Board (ISEERB) approved classes. "ISEERB approved" is an endorsement given to specific environmental education and training classes and have been reviewed by DoD subject matter experts and found to have a common content suitable for use by more than one service. The purpose of the ISEERB is to eliminate duplication in course

development by the services and to maximize the distribution of quality environmental training.

CECOS provides a wide range of environmental training courses including:

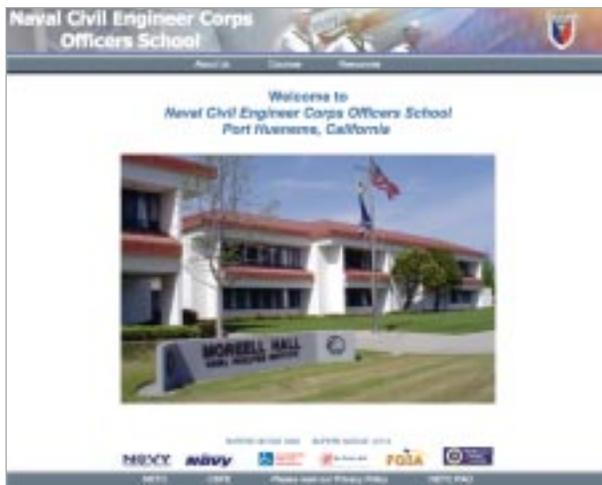
- Environmental Overview, Law, Management and Planning
- Pollution Prevention and Sustainability
- Ashore Compliance
- Restoration
- Conservation
- Hazardous Waste Operations and Management
- Supplemental and Internet/Computer Based Training

To view the most current and complete listing of all CECOS courses and to register for a course, visit the CECOS web site at <https://www.netc.navy.mil/centers/csfe/cecos>.

FIRST QUARTER FY11 CECOS TRAINING CLASSES

Course Name	Start Date	End Date	Location
Advancing an Effective EMS	4-Oct-10	7-Oct-10	Webinar—Europe (4 hours/day)
Advancing an Effective EMS	14-Dec-10	16-Dec-10	Webinar—CONUS (5 hours/day)
Basic Environmental Law	30-Nov-10	2-Dec-10	Port Hueneme, CA
Buying Green	2-Nov-10	3-Nov-10	Keyport, WA
Buying Green	8-Dec-10	9-Dec-10	Hawaii
Environmental Geographic Information Systems	25-Oct-10	28-Oct-10	Norfolk, VA
Environmental Background Analysis	19-Oct-10	20-Oct-10	Silverdale, WA
Environmental Quality Sampling	25-Oct-10	29-Oct-10	Indian Head, MD
Emergency Planning and Community Right-to-Know Act (EPCRA)/Toxics Release Inventory (TRI) (Web Conference)	25-Oct-10	28-Oct-10	Webinar—CONUS (6 hours/day)
EPCRA/TRI (Web Conference)	29-Nov-10	2-Dec-10	Webinar—CONUS (6 hours/day)
Hazardous Waste Operations and Emergency Response (Hazwoper) Refresher	1-Oct-10	30-Sep-11	Accessible 24/7 Online
Introduction to Hazardous Waste (HW) Generation & Handling	1-Nov-10	3-Nov-10	El Centro, CA
Introduction to HW Generation & Handling	15-Nov-10	17-Nov-10	Fallon, NV
Introduction to HW Generation & Handling	30-Nov-10	2-Dec-10	Barstow, CA
Introduction to HW Generation & Handling	6-Dec-10	8-Dec-10	San Diego, CA
Listbuilder—EMS			Recorded DCO Training (30 minutes)
Navy Environmental Restoration Program	7-Dec-10	9-Dec-10	Honolulu, HI
Pollution Prevention (Web Conference)	19-Oct-10	20-Oct-10	Webinar—CONUS (4 hours/day)
Resource Conservation and Recovery Act (RCRA) HW Review	4-Nov-10	4-Nov-10	El Centro, CA
RCRA HW Review	18-Nov-10	18-Nov-10	Fallon, NV
RCRA HW Review	3-Dec-10	3-Dec-10	Barstow, CA
RCRA HW Review	9-Dec-10	9-Dec-10	San Diego, CA
Solid Waste & Recycling Awareness	10-Nov-10	10-Nov-10	Webinar—CONUS (4 hours)
Sustainability in the Navy: Leadership in Energy and Environmental Design	21-Oct-10	21-Oct-10	Webinar—CONUS (4 hours)

Please note that web conference classes listed for CONUS have start times designed to accommodate multiple North American time zones, but are open to anyone in the world. It is very common to have students from the Far East join in on a class with a 0900 Pacific start time. Specific start and end times will be provided via email to each of the registrants as these times will vary. If your schedule permits, please feel free to register for and attend these training opportunities.



Those individuals engaged in Environmental Management System (EMS) functions, whether operationally or as an internal or external auditor, should ensure that they participate in one the Advancing an Effective EMS Web classes. This new class will not only help you take your existing programs to the next level, but also is a prerequisite for the Integrated EMS/Compliance course which will begin in the second quarter of FY11.

Should you have any questions regarding CECOS courses or content, you may

contact the course directors via a link on the individual course page on the CECOS web site. [↕](#)

CECOS uses Defense Connect Online (DCO) as its web conferencing platform. In addition to the live DCO offerings, the goal for FY11 is to provide recorded versions of various classes that can be accessed from most anywhere 24/7. The only requirement is that the user establishes an account with DCO. If you are unfamiliar with this training platform and/or need an account, please visit <https://www.dco.dod.mil>.

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N45 Unveils **NEW LOGO**

Updated Design Reflects Dual Focus on Energy & Environmental Priorities

The Chief of Naval Operations Energy and Environmental Readiness Division (N45) has released a new logo that integrates elements of all parts of its mission—energy, environmental stewardship, and warfighter readiness. The Latin phrase that runs along the outer rim of the

design—*tridens ab integro nascitur*—means “renewable seapower” and will be the Division’s new motto. This new seal blends N45’s former focus on environmental readiness with its new portfolio of energy security—all underpinned by the Division’s continued commitment to readiness.



SPAWAR Releases Review of Vapor Intrusion Best Practices

Guidance Improves Assessment of Indoor Exposure to Underground Vapors

PERSONNEL FROM THE Space and Naval Warfare Command (SPAWAR) have just released a resource for Navy site managers on current vapor intrusion assessment approaches.

Vapor intrusion refers to the movement of chemical vapors from contaminated soils or groundwater through the subsurface and into buildings (indoor air). This exposure pathway has been of interest to regulators and the public over the past

plumes originating from a single industrial location. The conditions of solvent concentrations in groundwater plumes, and the circumstances of the releases at that Colorado site are not unusual, and similar conditions are anticipated at hundreds

Vapor intrusion refers to the movement of chemical vapors from contaminated soils or groundwater through the subsurface and into buildings.

decade mainly as a result of a well-publicized case in Colorado in the late 1990's. In this case, solvent concentrations in indoor air within several dozen homes and apartments were found to have been at least partially derived from chlorinated solvents in groundwater

of additional sites in the U.S. The case in Colorado illuminated this pathway for potential contaminant exposure, and resulted in an increased drive for assessment of vapor intrusion, and other input pathways of vapors to indoor air. However, current approaches to

assess vapor intrusion to indoor air are onerous, lengthy and expensive.

In response to the need for research and development on reducing costs and uncertainties associated with vapor intrusion, the Navy tasked a



The report is a resource to Navy site managers and the public on current assessment approaches in these focus areas, supporting improved vapor intrusion assessment by following a methodology accepted by the regulatory and scientific communities.

group of subject matter experts to identify existing best practices, knowledge and data gaps, and future research in assessment strategies. This effort was funded by the Navy Environmental Sustainability Develop-

ment to Integration (NESDI) program, under a project titled Improved Assessment Strategies for Vapor Intrusion, and resulted in the publication of SPAWAR Systems Center Pacific's Technical Report 1982.

The report reflects the opinion of the subject matter experts, and offers suggestions for research directions in the following three focus areas identified by a group of Navy end-users:

Looking for Sites to Demonstrate Selected Vapor Intrusion Assessment Technologies

OUT OF THE three technologies selected for development, the NESDI program is funding an effort to demonstrate the use of pressure cycling and quantitative passive samplers. Additionally, support for the demonstration of portable analytical systems has been requested from the Environmental Security Technology Certification Program.

Satisfactory completion of these efforts requires sites suitable for the demonstration of the technologies. Investigators are looking for demonstration sites with the following characteristics:

- The site must have one or more buildings located above a groundwater plume of dissolved volatile organic chemicals (VOC), preferably with one or more chlorinated solvents, at concentrations above 100 micrograms per liter.
- The groundwater plume should represent the only likely source of VOCs in the test area.
- Data on vapor concentrations in indoor air is highly desirable.
- Information on the characteristics of the hydrogeology of the site is required including:
 - Stratigraphy (rock layers and layering)
 - Hydraulic conductivity
 - Depth to groundwater
 - Groundwater flow direction
 - Seasonal variability
 - Nature and extent of dissolved contaminants

A site characterization report should be available providing delineation information for the dissolved plume in the vicinity of the test area and soil boring logs or monitor well logs that document geologic conditions in the test area.

Access to the test building must be available for installation of several (three to six) test points through the building foundation. These test points will be less than one-inch in diameter and can be located in storage closets or other out-of-the way locations.

Creation of either positive or negative building pressure must be possible through manipulation of the building heating, ventilation and air conditioning system or through the use of a box fan in a window or door.

The building should be accessible for conducting a three-day testing program involving manipulation of building pressure and the collection of indoor air and sub-slab gas samples.

At least three areas of about ten square foot (i.e., the top of two bookcases, a table by a corner, the walls in a corner of the room) should be available inside the building for the positioning of quantitative passive samplers and summa canisters for a week.

Access to most areas within the building is required for demonstration of portable analytical systems. This effort should take about three days.

Contact Ignacio Rivera if you are interested in participating in this study.

- Sub-surface sampling that minimizes intrusive sub-slab sampling
- Indoor air sampling methods to improve vapor intrusion exposure estimates
- Methods to differentiate between indoor and vapor intrusion sources

and scientific communities. Nevertheless, there are challenges that will impose uncertainties and complications to vapor intrusion assessment, making it an expensive undertaking, particularly for responsible parties with large numbers of sites each with large numbers of buildings, such as the Navy. The ultimate goal is to develop a robust and streamlined screening and assessment

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The report is a resource to Navy site managers and the public on current assessment approaches in these focus areas, supporting improved vapor intrusion assessment by following a methodology accepted by the regulatory

strategy that will be applicable and efficient at most Navy sites.

The strategy delineated by the authors is to support the development of techniques for the differentiation between vapor intrusion and background sources in indoor air. With feedback from a team of Navy users, three critical technologies were identified, including:

1. The use of pressure cycling for differentiation between background and vapor intrusion
2. The use of quantitative passive samplers for measurement of long-term average indoor air concentrations more representative of health exposures
3. The use of portable analytical systems for the identification of indoor areas of greatest concern

Two of these technologies, passive samplers and pressure cycling, are being demonstrated as part of this NESDI-sponsored project.

Information from TR 1982 was used in a new Navy guidance document, titled "Guidance for Environmental Background Analysis Volume IV: Vapor Intrusion Pathway."

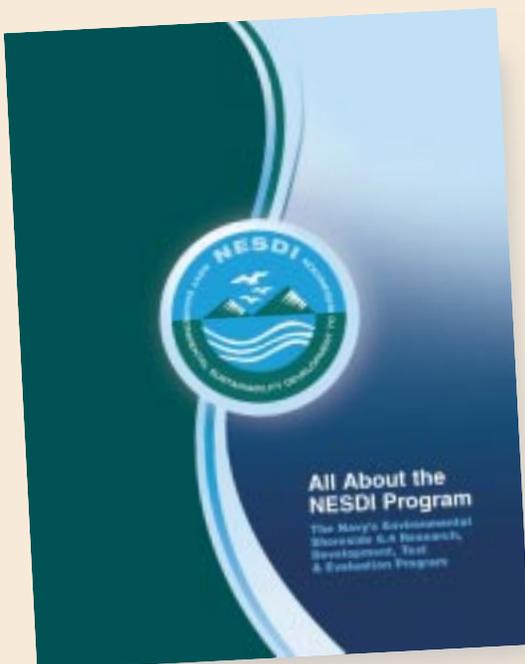
Technical Report 1982 is available to the public at www.spawar.navy.mil/sti/publications/pubs/tr/1982/tr1982cond.pdf.

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For More Information

TO LEARN MORE about the NESDI program, read the brochure entitled "All About the NESDI Program." This brochure is available for download via the NESDI web site at www.nesdi.navy.mil or by contacting Lorraine Wass at ljwass@surfbest.net or 207-384-5249.



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