

THE NAVY'S ENERGY & ENVIRONMENTAL MAGAZINE

Currents

spring 2013

DoD PARC Program Sustains
MISSION READINESS
While Protecting
Amphibians & Reptiles

Program Promotes Species & Habitat
Management & Conservation

Navy's Environmental Restoration Program Boasts Successful Site Cleanup
Cattail Lake Restoration: From Freshwater Lake to Tidal Estuary
Navy Marks Significant Milestones in Energy & Environmental Management

2013
**NAVY
EARTH DAY
POSTER**
INSIDE



THE NAVY'S ENERGY & ENVIRONMENTAL MAGAZINE **Currents**

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cover

This lizard species (Oriente Knight Anole) was observed by Department of Defense Partners in Amphibian and Reptile Conservation (DoD PARC) program member Chris Petersen during a reptile survey at Guantanamo Bay, Cuba. Members of the program are working hard to balance the Department's national security mission with the preservation of this and other amphibian and reptile species and their habitats on nearly 29 million acres of military land.

Chris Petersen

DoD PARC Program Sustains Mission Readiness While Protecting Amphibians & Reptiles Program Promotes Species & Habitat Management and Conservation

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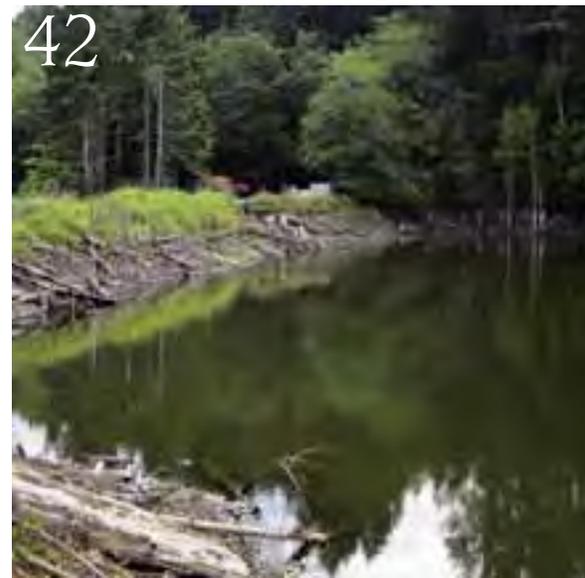
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Sequestration, the Continuing Resolution & You

Fiscal Challenges Demand Innovation & Careful Planning

WELCOME TO THE spring 2013 issue of *Currents*. I'll use this space to offer a few words about the fiscal challenges we're all facing right now and how they could impact the Navy's energy and environmental programs; mention related progress in areas that have been a priority for Navy leadership and my office; and wrap up with a "plug" for Earth Day.

Sequestration and defense appropriations are issues we've been tracking closely and are very concerned about. While the effects of sequestration will still be felt throughout the Navy, the good news is that we have a budget for the remainder of the fiscal year that will provide flexibility and continuity beyond what would be possible with a continuing resolution. Many fiscal challenges remain ahead, and our leadership (and all of us) will need to make tough choices to cut or scale back programs as we deal with lower than anticipated budget numbers. Our primary focus will be to support our forces that are overseas and forward deployed.

During this time of declining budgets, investments in the efficiency of our ships, airplanes, and systems becomes more important than ever. We need to hold true to our principles of looking at energy not from a "green" standpoint, but in terms of how to reduce consumption, increase capability, and in the case of alternative fuels, create flexibility and resilience to large market price fluctuations. Tactically, reducing consumption will enable us to fly farther on a gallon of fuel and operate for longer time periods between refueling at sea. Ashore, any megawatt hour or MBTU we save is one we don't have to buy.

One approach for decreasing consumption is to invest in systems and platforms to make them more efficient, which *Currents* readers know we've done extensively since 2009. Naval Air Systems Command (NAVAIR) and Naval Sea Systems Command (NAVSEA) are doing great work to find mature technologies we can transition to the Fleet in a reasonable amount of time with good payback. Likewise, the Office of Naval Research (ONR) has an eye to the future, looking for efficient and effective technologies to support the growing demands for power to support future

weapons systems/platforms.

Another approach is to change our culture to affect how we think and act regarding energy. These efforts have also been ongoing for several years and discussed in this column. The Air-ENCON (Energy Conservation)

program, which the Chief of Naval Air Forces (CNAF) and NAVAIR are presently beta testing with a Carrier Air Wing, is a culture change initiative "in progress." Working closely with the Fleet, Air-ENCON is looking at ways to modify how we train, handle, and fly aircraft to reduce fuel consumption without degrading our ability to operate. Hot refueling, where we refuel aircraft with engines running, is just one of the many things they are evaluating. While hot refueling can be necessary under operational scenarios, it is not very fuel-efficient. Changes to this process, if feasible during certain training scenarios, could achieve major fuel savings.

The Navy has smart people at all levels with good ideas for changing our energy culture, but the challenge has been getting those ideas to the right decision makers. As a small step to that end, I released a video on our Energy & Environment YouTube channel this past January encouraging Sailors and civilians to reach out via online form. We've received dozens of energy suggestions, and have been actively reviewing and routing them to the appropriate technical and policy folks. It's my hope that the best ideas can become new Fleet or shore installation practices and/or new standards for how we do business. To those who responded, thank you for sharing your thoughts and trying to make a difference. Keep the good ideas coming.

Underlying these energy technology and culture change initiatives are the Secretary of the Navy's energy goals. One of these goals is to sail the Great Green Fleet (GGF) in 2016. A milestone for the GGF occurred January 17, when Secretary Mabus signed out a charter establishing working groups to define and plan the GGF deployment.



Another concern the sequester and fiscal challenges create is based on the fact that, to maintain readiness, the Navy often has to meet mandated environmental requirements on a “just-in-time” basis. Permits for our Atlantic Fleet Training and Testing (AFTT) and Hawaii-Southern California Training and Testing (HSTT) areas are key examples. Our current permits expire in less than 12 months, and we don’t have much wiggle room in the AFTT and HSTT schedules. Therefore I’m concerned about the impacts sequestration may have on Navy environmental planning teams and the regulatory agencies we interface with to move these projects forward. On the environmental front, I can think of nothing more important from a “support to the Fleet” perspective.

To date, we continue to make significant progress toward obtaining those permits. The National Marine Fisheries Service (NMFS) published the proposed rules for AFTT and HSTT in the Federal Register on January 31, and accepted public comments through March 10. Some people and organizations used that period as an opportunity to claim “gloom and doom” for marine mammals due to our planned activities. It should come as no surprise that some of these statements were exaggerated, misleading, and

firm is cutting the ship into sections and removing pieces via a large floating crane. The Navy understands the importance of the Tubbatha Reef to the Philippines and the natural environment and we truly regret any damage this incident has caused to the reef. We will be assessing the extent of the damage once the ship is removed.

Spring is upon us, and many of us have been planning and participating in Earth Day events. Earth Day is April 22, but commands celebrate with activities throughout the month of April. This year’s theme is “Global Reach—Local Action,” reminding us that our worldwide presence creates both the ability and the responsibility to make a difference in our communities. Actions such as neighborhood or shoreline clean ups, recycling drives, or educational talks for students on environmental topics can be accomplished at little or no expense, so I am hopeful that Sailors, civilians, contractors, and families got involved for Earth Day this year. You’ll find an Earth Day poster in the center spread of this magazine, and can access free Earth Day planning materials at <http://greenfleet.dodlive.mil/earth-day>.



The bottom line is that the best available science—and our 60 plus-year track record of similar training and testing with minimal impacts—indicates that our proposed activities will have negligible effects on marine species populations.

often completely false. The bottom line is that the best available science—and our 60 plus-year track record of similar training and testing with minimal impacts—indicates that our proposed activities will have negligible effects on marine species populations. If you want the facts about AFTT and HSTT, technical experts at the Fleets and on my staff are your best resource.

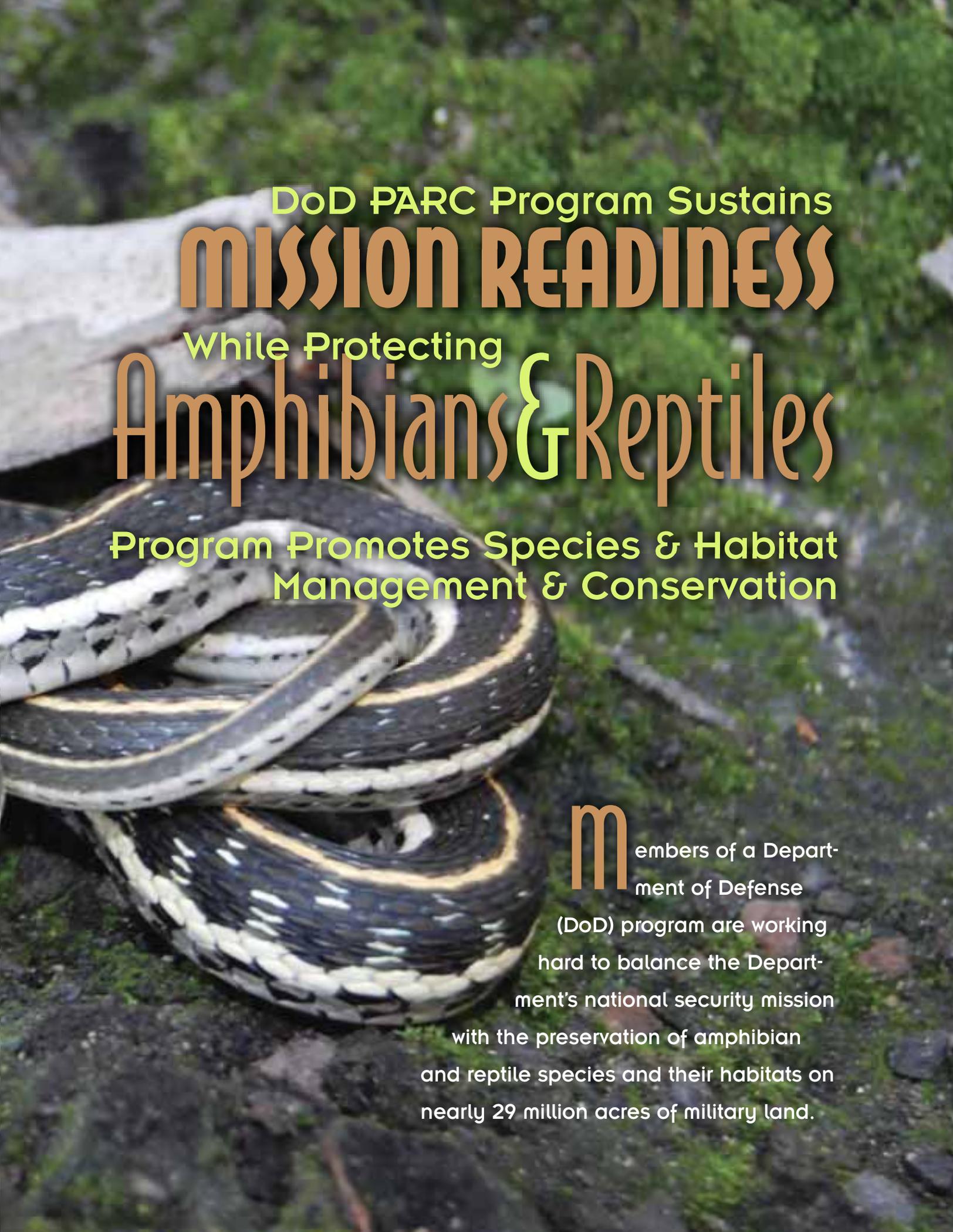
As you may have heard, the mine countermeasures ship USS Guardian (MCM 5) ran aground January 17 on the Tubbatha Reef, a World Heritage Site about 80 miles east-southeast of Palawan Island in the Philippines. No one was injured, but attempts to free the ship intact were unsuccessful. To avoid further reef damage and protect the surrounding area, Seventh Fleet (C7F) removed all fuel and other materials that could have potentially harmed the reef if released from the ship. As of this writing, a salvage

Finally, I’d like to mention the recent departure of my deputy director, John Quinn. After five years with N45 and a long history of stellar leadership with the Navy on an incredibly wide range of issues, John has accepted a new position as the Maritime Administration’s Associate Administrator for Environment and Compliance. From environmental compliance ashore and afloat, to marine mammals and sound, to policy for ocean discharges, to energy efficiency and compatibility, John’s contributions to N45 and the Navy-at-large would fill many pages, but suffice it to say that he will be sorely missed and his successes never forgotten. We wish him fair winds and following seas as he embarks on this new phase of his career. ⚓

Rear Admiral Kevin R. Slates
 Director, Chief of Naval Operations Energy and
 Environmental Readiness Division



Black-necked Garter Snakes, found in secure populations on military lands, are among the species being addressed by members of the DoD PARC program.
Robert Lovich

A photograph of a coiled striped snake, likely a garter snake, resting on a mossy, rocky ground. The snake has a dark body with prominent yellow and white stripes. The background is a lush, green, mossy environment.

DoD PARC Program Sustains
MISSION READINESS

While Protecting

Amphibians & Reptiles

Program Promotes Species & Habitat
Management & Conservation

members of a Department of Defense (DoD) program are working hard to balance the Department's national security mission with the preservation of amphibian and reptile species and their habitats on nearly 29 million acres of military land.



DoD PARC is dedicated to sustaining the nation's mission readiness while managing, conserving, & studying amphibians & reptiles & their habitats.

Now led by Robert Lovich and Chris Petersen of the Naval Facilities Engineering Command (NAVFAC), the Department of Defense Partners in Amphibian and Reptile Conservation (DoD PARC) program was originally formed in 2009 to provide leadership, guidance, and support for the conservation and management of amphibians and reptiles on military lands. An open-membership organization, DoD PARC is dedicated to sustaining the nation's mission readiness while managing, conserving, and studying amphibians and reptiles and their habitats, especially with respect to military operations and land management practices.

DOD PARC MISSION & PROGRAM GOALS

In support of military readiness, the DoD PARC strives to sustain amphibian and reptile populations and their habitats through proactive management, conservation, stewardship, outreach, and partnerships. To achieve this mission, the program has established the following goals:

1. Support the military mission by managing amphibians and reptiles.
2. Reduce population declines of common and at-risk species, thus avoiding or minimizing the need to Endangered Species Act-listed species and designate critical habitats that could impact military missions.
3. Provide strategies, tools, and information for amphibian and reptile protection, conservation, and consideration to be incorporated into existing natural resources and land management programs.
4. Provide sound, science-based management and conservation guidelines, priorities, and objectives for reptiles and amphibians residing on DoD installations.
5. Promote communication and coordination among national and local experts to achieve DoD mission and stewardship goals.
6. Provide outreach tools to the military community, the general public, natural resources managers, and non-governmental organization partners to promote collaborative efforts and increase understanding of mission and conservation compatibility.

This *Ensatina* Salamander was discovered under a fallen log at Naval Radio Station Jim Creek.

Paul Block



This Northwestern Garter Snake was observed during an amphibian and reptile species survey at Naval Radio Station Jim Creek.



Conserving and caring for these species helps ensure unrestricted access to essential military training and testing lands by avoiding species-protection related restrictions.

AMPHIBIANS & REPTILES

Amphibians (frogs, toads, salamanders, and caecilians) and reptiles (snakes, lizards, land and sea turtles, crocodilians, and tuataras) represent ancient groups of vertebrates that have existed for 400 million years. Although they are ancient and relatively poorly studied, amphibians and reptiles account for a considerable portion of the earth's biodiversity with approximately 17,000 species worldwide.

The nearly 29 million acres of DoD lands and waters provide significant habitat for numerous species and populations of amphibians and reptiles. For the DoD, these species represent many things—a rich legacy of America's natural and cultural heritage, fundamental components of robust ecosystems, and indicators of global ecological balance. Conserving and caring for these species helps ensure unrestricted access to essential military training and testing lands by avoiding species-protection related restrictions. Even as early as 1775, the United States military recognized the importance of reptiles when the First Continental Marines used the Gadsden Flag depicting a rattlesnake alongside "Don't Tread on Me" as their motto flag.

At present, amphibians and reptiles are experiencing unprecedented declines. Globally, approximately 20 percent of all amphibians and nearly 50 percent of all turtles are threatened with extinction. In fact, amphibians are declining at the fastest rate of any organisms since the extinction of the dinosaurs. At present, 30 of the 59 species of amphibians and reptiles listed as threatened or endangered by the United States Fish and Wildlife Service (USFWS), and 19 addi-

tional species considered as species-at-risk for listing can be found on DoD lands. The management of these listed reptiles and amphibians is already a significant part of the natural resource management on military lands. DoD expenditures from 1991–2011 included approximately \$15 million on the conservation and management of listed amphibian species and \$128 million on listed reptile species.

CONTINUED ON PAGE 14

DoD lands support the populations of many interesting species of amphibians and reptiles including the Reef Gecko at Guantanamo Bay, Cuba.

Chris Petersen



Gadsden Flag depicting a rattlesnake alongside "Don't Tread on Me."

A common species on many military installations in the eastern United States, the American Toad is relatively large and commonly encountered species in wildlands and along the urban-interface.

Robert Lovich

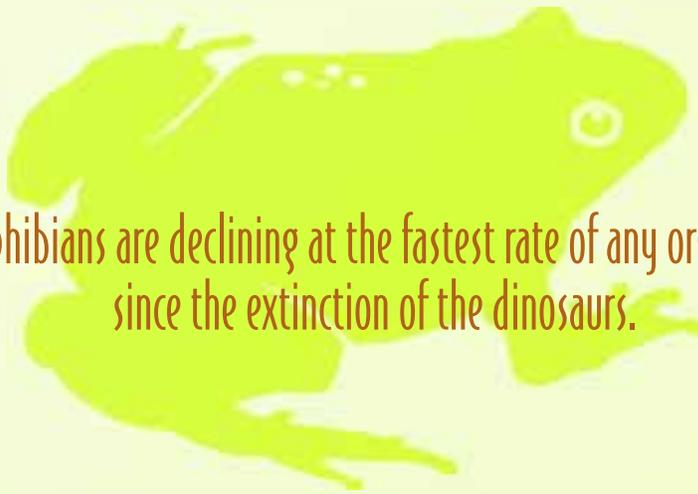






The military has contributed valuable support for the Texas Horned Lizard, resulting in new scientific discoveries about its movements and ecology.

Robert Lovich



Amphibians are declining at the fastest rate of any organisms since the extinction of the dinosaurs.

CONTINUED FROM PAGE 10

DOD PARC BENEFITS TO THE MILITARY MISSION

The DoD PARC program enhances military readiness by promoting healthy landscapes to support long-term military testing and training requirements. In addition, the program increases the effectiveness of resource management on DoD lands by developing proactive, science-based conservation and management strategies and tools. Additional benefits to the military mission include supporting ecosystem-based management, and increasing communication, information, and partnerships within and outside the DoD.

The program has made significant progress on many fronts, including growing the program's membership to more than 150 members. These members have helped DoD PARC achieve the following goals within the program's draft action plan.

Updating Species Lists

DoD PARC members have been updating amphibian and reptile species lists for the approximately 80 Navy installations that have Integrated Natural Resource Management Plans (INRMP). To date, Navy installations within the NAVFAC Field Engineering Command Washington, Mid-Atlantic, Mid-West, and Northwest areas of responsibility have been updated. Once all the updated species lists are completed, they will be entered into a database that will be stored on the Navy Environmental Portal (at <https://eprportal.cniv.navy.mil/zepwebnet/logon.aspx>). The database will serve to fill numerous needs in the community. Many of our bases lack an accurate and up-to-date list

of amphibian and reptile species found therein. With data calls, INRMP updates, and other relevant planning documents needed to support our projects and missions, it is essential that we have the most accurate species occurrence data on which to base our natural resource management decisions.

Developing a Web Resource

DoD PARC members are also developing what has become a very popular website (at <http://dodparcphotolibrary.shutterfly.com>).

RIGHT: Chris Petersen has been helping the Toledo Zoo conduct a study of the habitat use and movement patterns of the Cuban Boa (*Epicrates angulifer*) at Naval Station Guantanamo Bay.

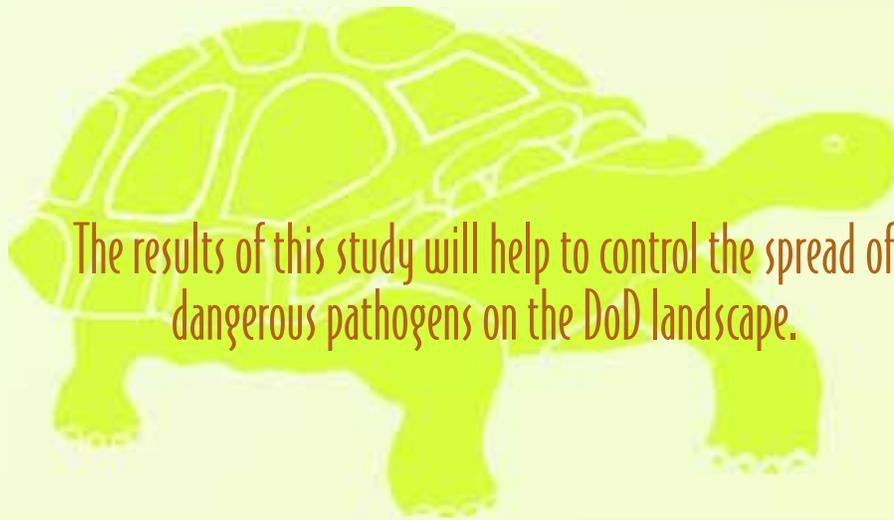
BELOW: Robert Lovich holds a Texas Horned Lizard (*Phrynosoma cornutum*) while instructing a field course in herpetology near Animas, New Mexico.



Military lands in southern Arizona protect many mountain species including the Rock Rattlesnake.

Robert Lovich





The results of this study will help to control the spread of dangerous pathogens on the DoD landscape.

The website's purpose is to promote the free exchange of amphibian and reptile images, literature, reports, and publications with DoD biologists, environmental planners, outreach publishers, and others. The website contains links to other informative amphibian and reptile sites, an events calendar, and discussion forums for members to use in communicating across the conservation community. With nearly 600 images of 50 species from 40 DoD facilities, the website has become a "one-stop-shop" for high quality amphibian and reptile imagery. Visit the website to request membership.

Initiating a Web-based Lecture Series

The DoD PARC program initiated a monthly Web-based lecture series in early 2013 that members are able to join by using Defense Connect Online (DCO). Lectures are conducted by DoD and contractor biologists and herpetologists. The goal is to help members stay connected and keep up with the most recent scientific herpetological studies and news. (See <http://dodparcphotolibrary.shutterstock.com> for lecture topics and dates.)

Conducting Disease Surveys

The DoD PARC program conducted amphibian disease surveys at 30 military installations in 2009 and 2011 to gather baseline data on the general health of amphibians on military lands, and provide insight into their vulnerabilities from disease. Notably, the surveys documented the occurrence of the *chytrid fungus* *Batrachochytrium dendrobatidis* (Bd) on resident amphibians, which can have

a lethal effect on individuals, populations, and even species of amphibians. (The final report can be downloaded at www.denix.osd.mil/nr/upload/Final_Route_66_Bd_Report-with-appendix.pdf.)

The effort will expand in 2013 when the DoD PARC program will conduct amphibian disease sampling across the DoD landscape, including bases in other countries, using a 'citizen science' approach. The 2013 effort will include providing installation natural resource staff the field and laboratory materials



Field surveys conducted by DoD PARC members reveal secretive species such as the Slimy Salamander on Naval Support Activity Indian Head.

Seth Berry



Amphibian disease surveys conducted by DoD PARC members in 2009 and 2011 help to keep the Spring Peeper common on Navy installations.

Joe Mitchell



One goal of the DoD PARC program is to maintain the health of common species such as the Eastern Snapping Turtle.

Seth Berry

necessary. Funded by the DoD Legacy Program, the cost of all materials and sample analyses will be paid for by the DoD PARC program.

This study will be one of the single largest sampling events for amphibian disease (Bd) in a single season ever accomplished. The results of this study will help to control the spread of dangerous pathogens on the DoD landscape, and help to preserve amphibians as vital members of military installation ecosystems.

The DoD PARC program has already been recognized for its accomplishments. In March 2011, the National Military Fish and Wildlife Association awarded DoD PARC members the Natural Resource Conservation Research Award for their 2009 amphibian disease project.



DoD PARC members receive the Natural Resource Conservation Research Award. Left to right: Dave McNaughton, Chris Petersen, Rob Lovich, Priya Nanjappa, Mike Lannoo.

LOOKING TO THE FUTURE

The DoD PARC program looks forward to a future of partnerships that will serve both the military mission and its ever-evolving environmental challenges. In this time of dwindling resources, habitats, and species, DoD has an opportunity to lead the way in amphibian and reptile species and landscape conservation, defending the nation's natural wealth for current and future generations.

Please contact Chris Petersen if you are interested in becoming involved or visit www.dodnaturalresources.net/DoD-PARC.html for more information. 

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Treating Dredged Sediments for Beneficial Use

Pilot Project Investigates the Feasibility of Using Dredged Material as Soil Product

A PILOT PROJECT was undertaken to investigate the feasibility of using dredged material as a soil product.

Dredging of harbors, ports, and waterways is required to maintain navigable depths, for construction, and for site restoration. These projects typically result in large volumes of dredged material (sediment) requiring disposal. Most

options. An option currently being explored is the use of dredged material as a construction material or soil product. Such alternative applications are called beneficial uses.

Some dredged materials can be placed directly into beneficial use applications if they do not contain contaminants at concentrations which would pose a risk for the

The “problem” dredged materials, therefore, tend to be those which have a significant percentage of fines (silts/clays) and/or organic materials, and have failed chemical and/or toxicity testing. Depending on the type and concentration of contaminants and the intended beneficial use, such sediments may require treatment prior to beneficial use. If treatment is required, it must

Some dredged materials can be placed directly into beneficial use applications if they do not contain contaminants at concentrations which would pose a risk for the intended use.

dredged material is disposed of in the open ocean in designated disposal areas. However, some dredged material is not suitable for disposal in the open ocean due to the presence of contaminant chemicals and/or failed toxicity testing. Such unsuitable material must be disposed of in a controlled facility, such as a confined aquatic disposal cell or upland landfill (confined disposal facility (CDF)). These options are not only costly, but are becoming increasingly limited due to the lack of available space at many port loca-

intended use. For instance, sediments composed primarily of sand may be used to replenish beaches; sand is a relatively inert substance and contaminants do not adsorb to it strongly. The sand fraction can be separated from smaller dredged material particles using simple separation methods, and often used directly with no further treatment. Finer particles however, including silts and clays, can adsorb contaminants strongly. Dredged material with a high organic content can also adsorb contaminants strongly.

be cost effective due to the large volumes typically involved. This suggests “low-tech” treatment approaches. The sediment should also contain relatively low levels of contaminants which are either biodegradable and/or can be immobilized (bound to another material which limits their mobility and bioavailability) to be a candidate for this type of treatment. Fortunately, many dredged sediments fall into this category—particularly sediments which are regularly dredged to maintain navigable depths. These



The base landscaper inspected the soil and stated it appeared to be among the highest quality soil available on the island.

sediments typically receive contaminant loads from storm water runoff, which carries with it particulates from erosion in upland locations, eventually flowing into nearshore waters—including ports. One Navy location where such deposition is a significant sediment contamination mechanism is Pearl Harbor.

Pearl Harbor, like many Navy ports, requires regular maintenance dredging, but available space and regulatory constraints have made the disposal of dredged sediments increasingly challenging. To prevent interruption to the Navy mission, long-range planning for the management of sediments is necessary, and a variety of alternatives for sediment disposal, treatment, and beneficial use will comprise the overall solution.

A pilot project was undertaken by personnel from the Naval Facilities Engineering and Expeditionary

The Basics About the NESDI Program

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 6.4 Research, Development, Test and Evaluation program. 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. The program is the Navy's complement to the Department of Defense's Environmental Security Technology Certification Program which conducts demonstration and validation of technologies important to the tri-Services, U.S. Environmental Protection Agency and Department of Energy.

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.





Treatment cell after one year of plant growth.

The base landscaper inspected the soil and stated it appeared to be among the highest quality soil available on the island.

Warfare Center (NAVFAC EXWC)—formerly the Naval Facilities Engineering Service Center—to investigate the feasibility of using dredged material as a soil product. Funded by the Environmental Security Technology Certification Program and the Navy Environmental Sustainability Development to Integration (NESDI) program, the approach makes use of dredged material by blending it with a compost amendment, followed by bioremediation and phytoremediation. The compost not only improves the physical properties of the clay-like dredged material by increasing permeability, it also provides organic substrates to support diverse and dense microbial populations to degrade contaminants and/or decrease their bioavailability. Plant growth also contributes to the process by aiding microbial growth via trans-

port of oxygen to the subsurface and release of beneficial plant root exudates. Plants also condition the soil by root penetration and addition of humic compounds into the soil, which decreases the bioavailability of non-degradable contaminants such as metals and difficult-to-degrade (refractile) organics.

The pilot project was preceded by laboratory testing and a greenhouse feasibility study carried out at NAVFAC EXWC in Port Hueneme, California from 2006 to 2008, which indicated that contaminants in dredged material from Pearl Harbor could be treated using a compost amendment in a phytoremediation cell. This feasibility testing was followed by the pilot study described below.

The pilot study, carried out at the Navy's Biosolids Treatment Facility

(Kalaeloa) at the former Barbers Point Naval Air Station beginning in 2008, used dewatered dredged material excavated from the Pearl Harbor Naval Complex (PHNC) Waipio Peninsula CDF. Approximately 1,000 cubic yards of dredged material was excavated, screened for munitions of explosive concern, and transported to the Kalaeloa facility, where the Navy operates a biosolids composting operation using biosolids from wastewater treatment and green waste from landscaping activities. There the dredged material was mixed with compost at 40 percent compost by total weight. The amended dredged material was placed into a treatment cell which had been prepared by installation of a liner and a leachate collection system.

The compost-amended dredged material was flooded with fresh water

to flush out residual salinity. The water was collected by the leachate collection system and pumped to a retention/evaporation pond. After the amended dredged material was desalinated by flushing with three volumes of water, seedling wetland plants were planted. Moisture content was maintained with regular watering (and occasional rainfall). The plants grew quickly in most areas, though high spots (due to uneven placement of the dredged material) did not support plant growth as well. This uneven growth was attributed to increased evaporation of soil moisture in the high areas, leading to stunting of plant growth.

The sediment/compost mixture and plant stems/roots were sampled and analyzed on a regular basis. Total petroleum hydrocarbons (both middle distillate and residual range) degraded rapidly during the first 60 days and were reduced to Hawaii Department of Health Tier I action levels, which were used as cleanup goals. Polycyclic aromatic hydrocarbons were also degraded to acceptable levels during the first year. Metals (copper, lead and zinc were the metals of concern), also fell by 30 to 40 percent during the first 60 days to below cleanup goals, but then gradually rebounded the following year. The reason for this rebound is not entirely understood, but one explanation is that degradation of the organics in the compost over time resulted in an effective increase in concentration of residual metals. This idea is supported by the observed volume decrease in the sediment/compost mixture in the cell over time (taking into account the decrease attributable to compaction). Though the pilot test is still ongoing for experimental purposes, the intent of the treatment process is to treat the material for a year or less.

In addition to reduction of contaminants, the greatest benefit of treatment using this approach is the improved physical properties of the resulting soil, which resemble a high quality garden loam. The base landscaper inspected the soil and stated it appeared to be among the highest quality soil available on the island. The chemical testing of



**A sediment/compost mixture after 13 months in treatment cell.
Distribution of soil particle sizes and organic content is indicative of a loam soil.**

the soil showed that it is generally of high quality, but does retain a fairly high concentration of calcium (calcium is abundant in seawater). Perhaps the most indicative sign of the quality of the soil is that plants grew vigorously, including a stand of volunteer cherry tomato seedlings that produced a bumper crop (the fruit did not contain levels of contaminants of concern beyond control plants).

The material will soon be excavated from the treatment cell and used in a landscape application on base. The success of this project is encouraging for the development of a full scale process for the beneficial use of dredged material, not only at Pearl Harbor, but at other Navy ports where alternatives to disposal are needed to prevent interruptions to dredging operations and the Navy mission.

Steve Christiansen, Dennis Chang and Lonnie Felise from NAVFAC Hawaii's environmental office were critical to the success of this pilot project. [📍](#)

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Shoreline Restoration Complete at NSF Indian Head

Five-Year Project Prevents Erosion, Protects Critical Infrastructure

WITH A FINAL tree-planting event in October 2012, volunteers and conservation professionals completed the restoration of the Potomac River shoreline at Naval Support Facility (NSF) Indian Head and the base's Stump Neck Annex. NSF Indian Head, located in Charles County, Maryland, has approximately 17 miles of shoreline on the Potomac River, Mattawoman Creek, and Chicamuxen Creek.

The event marked the successful end of the five-year, \$20 million project that protects both the environmental

the installation received \$5.2 million from Hurricane Isabel Relief funding in Fiscal Year 2004. The funding was used to prepare a Shoreline Development Plan, to fund the design, and for permitting and construction of the first phase of the project. Additional phases were planned contingent on funding in out-years. The solution prescribed by the management



In the 1990s, shoreline erosion collapsed a road and threatened mission-critical infrastructure just 20 feet from the edge of a cliff bank.

health of regional waters and \$54 million worth of government property. Prior to the project's inception, the facility was experiencing an average annual erosion rate of 1.5 feet, causing approximately 12,000 cubic yards of sediment per year to enter the surrounding waterways. In the 1990s, shoreline erosion collapsed a road and threatened mission-critical infrastructure just 20 feet from the edge of a cliff bank. Wave action from human and storm activity, stormwater runoff, soil characteristics, and groundwater seepage all contributed to the high erosion rate.

In 2003, Hurricane Isabel took its toll on the shoreline at NSF Indian Head and Stump Neck Annex. As a result,

plan—a living shoreline of breakwaters, sills and native vegetation—has set the standard in the Chesapeake Bay region for environmental stewardship.

A cooperative agreement was developed with the Southern Maryland Resource Conservation and Development Board and the Charles Soil Conservation District. Federal, state and Navy permitting for the project began in October 2004; but it became clear that this would not be an easy process due to the number of issues that needed to be addressed, including essential fish habitat, submerged aquatic vegetation, infrastructure protection, cultural resources, endangered species restrictions, tidal wetlands, and explosive site approval.

In 2006, an Environmental Assessment (EA) was performed that resulted in a Finding of No Significant Impact. This gave the green light for the first phase, the initial repair of 4,800 feet of shoreline, which began in November 2007. Another EA was prepared in 2009—with the same permitting issues as before—for the remaining three phases, totaling approximately 12,300 feet along both the Potomac River and Mattawoman Creek.

Altogether, the project has constructed a series of sills and breakwaters along approximately 17,000 feet of shoreline along the Potomac River and Mattawoman Creek, along with 1,230 feet of cobblestone beach. A total area of approximately 18 acres has been filled behind the sills and breakwaters as intertidal wetland, shrub, and riparian floodplain habitats.

While the Navy provided funding for the construction of the living shoreline, volunteers from several organizations—led by the National Aquarium Conservation Team—played a key role in planting native vegetation that not only protects threatened land, but also provides habitat for river life. Over 500 volunteers through the course of the shoreline project contributed more than 5,700 hours to plant 89,000 trees and shrubs, plus wetland grasses.

“This is the largest and longest project the team has taken on,” said Charmaine Dahlenberg, project manager for the National Aquarium’s Conservation Team. Since construction began in 2007, volunteers from a diverse group of conservation-minded organizations, such as AmeriCorps and the Maryland Conservation Corps, partnered with the Navy and the National Aquarium

Conservation Team to turn the vision of a living shoreline into a reality.

Dahlenberg praised the efforts of her organization and the volunteers who supported her. “The Conservation Department at the Aquarium is a team of five women and we do everything when it comes to logistically planning these events,” she said. “When it comes to the hard physical work, we would never get it done unless we had our volunteers... and it is extremely physical work.”

Volunteers worked through many challenges, not least of which were

planting and tending to native vegetation during the hot summer months. While the gratification is not quite instant, the project’s large scale and multiyear timeline allowed the conservation professionals and volunteers to witness the fruits of their labor.

“The grasses have taken off and they look awesome,” said Dahlenberg. “To see them grow so significantly in so short of time is amazing. When the tide comes in, we see the amount of wildlife, like fish swimming in the grasses. That is something that was not here before. “

Overview of the shoreline at NSF Indian Head showing the project’s phases.





Sediment fill is added behind the newly built stone sill structure.
Seth Berry

Creating a Living Shoreline

THE CHESAPEAKE BAY Trust defines a living shoreline as “shoreline stabilization techniques that use natural habitat elements to protect shorelines from erosion while also providing critical habitat for Bay wildlife.”

To create the living shoreline, NSF Indian Head combined stone stabilization structures with natural elements. The stabilization structures—sills and breakwaters—were built parallel to the shoreline to dissipate wave energy. In areas where sills and breakwaters were not feasible, revetments were built. Revetments are shoreline armoring systems that protect the base of eroding upland banks and usually are built across a graded slope.

Behind the stone structures, a total area of approximately 18 acres was filled, turning the area into intertidal wetland, shrub, and riparian floodplain habitats.

A series of openings in and between the stabilization structures allow for free movement of water and aquatic species between the river and the living shoreline.

In addition, some of the shoreline banks were graded to reduce the steepness of slope. This stabilizes the shore, greatly reducing the likelihood of shoreline slumping and future sediment erosion from wave activity.

The shoreline banks will now be able to reach equilibrium and naturally revegetate as they are protected from the continuous high-energy wave activity on the Potomac River.

“Seeing the wildlife utilize [the living shoreline] reassures us that this is needed and that we’re doing something really good for the environment and helping the base out as well,” emphasizes Dahlenberg.

Some of the volunteers who worked on the last day of planting were new to the project; for others, it was the last of several trips they made to Indian Head and Stump Neck throughout the project. Everyone that offered comment appreciated the opportunity to contribute to the region’s environmental health, and especially, to simply enjoy being a part of nature.

“It’s really cool to come back each year to see how the grasses and trees have progressed,” said Laura Cattell Noll, a conservation technician at the National Aquarium. Cattell Noll first came to NSF Indian Head as a volunteer; later, she was hired on to the aquarium’s Conservation Team.

The shoreline restoration helped Cattell Noll increase her knowledge about conservation. “The fertilizer stakes, the tree tubes, ordering the trees, having them delivered to multiple access points along the water and mixing the species, making sure [native vegetation is]

Laura Cattell Noll, conservation technician for the National Aquarium Conservation Team, checks trees during the final planting of native vegetation in October 2012.

Andrew Revelos

spread out and not clustered—there is a lot of finesse and planning and I’ve learned a lot,” she commented.

While Cattell Noll used the work at Indian Head and Stump Neck to turn her passion into a career, most volunteers simply wanted to serve the greater good.

Fire Controlman 1st Class Justin Turner already gives back to the community through his military service, but the Aegis Training and Readiness Center-assigned Sailor’s love of the outdoors guided him to the beach for the last day of planting.

“I like the environment,” he said. “When I was a little kid, I was outside playing in the mud. This was another opportunity to be outside.” Turner hoped to return to Stump Neck in the coming months to check up on his handiwork. “I put some big rocks beside the trees I planted, so I can come back later and see how they’re doing,” he said.



Trees, shrubs and grasses planted along the Potomac River shoreline are providing a biologically diverse habitat for wildlife.

Gary Wagner

The Basics About Naval Support Activity South Potomac

NAVAL SUPPORT ACTIVITY South Potomac (NSASP) was established on 3 November 2005 as a component of Naval District Washington. NSASP is one of five regional commands within the district charged with providing shore installation management services for more than 20 separate locations within the National Capitol area.

NSASP has oversight of two geographically separate major Navy shore installations—Naval Support Facility Dahlgren, Virginia and Naval Support Facility Indian Head, Maryland. Altogether, NSASP serves as host to nearly two dozen Department of Defense, Joint and Navy supported commands and activities located on board NSASP installations.

The mission of the command is to provide effective and efficient shore installation management and support to military organizations resident on NSASP installations and, as a result, enable supported commands to sustain combat readiness. Shore installation management functions under NSASP authority encompass all land, buildings and support services. Shore installation support services managed by NSASP encompass the following functions:

- Personnel Support: Quality of Life: Morale, Welfare and Recreation, and Child Care
- Facility Support: Public Works

- Public Safety: Physical Security, Law Enforcement, Fire Department
- Environmental Protection and Waste Management
- Supply: Materials management, property disposal, and warehousing
- Public Affairs



John Sweet, a Department of Defense employee and Sierra Club volunteer, volunteered alongside his wife Meredith. As planting concluded, the Sweets enjoyed a picnic lunch on a scenic bluff overlooking the river. “I love what they’re doing here,” he said. “I’d love it if we could get more programs like this and include farmers. One of the Chesapeake Bay’s biggest problems today is stormwater runoff.”

Of all the volunteers who gave so many hours protecting Navy property

and the environment, Mary Sidlowski may have contributed the most. Respected by the conservation professionals and volunteers alike, she volunteered for the duration of the shoreline restoration.

Sidlowski’s perspective reflected the sense of the satisfaction volunteers enjoyed while restoring the shoreline. “It’s an absolutely wonderful feeling,” she said. “You can give money, but you never really see where it goes.”

Sidlowski also summarized the can-do attitude of the volunteers who

contributed so much. “Wherever the next project is, I’ll go.”

For more information about this project, visit www.cnicy.navy.mil/SPotomac. [↕](#)

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NAVSEA Improves Shipboard Plastic Waste Management

Enhanced Onboard Equipment Is 50 Percent More Reliable

ON AN AVERAGE day during deployment, a U.S. Navy nuclear-powered aircraft carrier generates up to 1,500 pounds of plastic waste. Smaller surface ships produce almost 80 pounds each day. Take into account the average 32-gallon recycling container used at home holds about six (6) pounds of plastic and you begin to understand how important it is for U.S. Navy ships to effectively process plastic waste—for storage until it is either offloaded to a support vessel during underway replenishments every three to four weeks or to a shore-side disposal facility when the ship is in port. The Chief of Naval Operations' Environ-

The National Defense Authorization Act for Fiscal Year 1994 directed the U.S. Navy to install Plastic Waste Processors (PWP) on surface ships larger than FFG 7 Class by the end of 1998. The PWP is a piece of equipment that melts and compresses plastic waste into circular discs so they can be efficiently and safely stored aboard ship, while enabling ships to conduct their mission unrestricted throughout the world. Development of the legacy PWP (Mod 0) technology began in 1993 at the Naval Surface Warfare Center—Carderock Division (NSWCCD) in the Environmental Quality (EQ) Division (Code 63). The Mod 0 PWP reduces

within NSWCCD Code 635 states, “After getting significant feedback from the Fleet, we assessed the legacy system’s complexity, corrosion patterns, and component failure rates.” As a result, in Fiscal Year (FY) 2000, the Afloat EQ Program Office within the Naval Sea Systems Command directed NSWCCD’s EQ Division to improve the Mod 0 PWP design, with the primary objectives to reduce equipment operational and maintenance man-hours without modifying the shipboard interfaces. This was a collaborative effort between NSWCCD Code 634 (West Bethesda, MD) and Code 635 (Philadelphia, PA).

On an average day during deployment, a U.S. Navy nuclear-powered aircraft carrier generates up to 1,500 pounds of plastic waste.

mental Readiness Program Manual (OPNAVINST 5090.1 series) prohibits the overboard discharge of plastic garbage worldwide, making the management of the shipboard generated plastic waste stream critical.

the volume of plastic waste by a 30:1 ratio. Between 1995 and 1998, more than 600 Mod 0 PWPs were installed throughout the U.S. Navy Fleet.

Paul Schwegler, who is the Solid Waste Equipment Technical Expert

Mr. Schwegler continued, “Parts with high failure rates were removed or replaced in the re-design. We also improved the materials used to reduce corrosion and maintenance, and revamped the electrical and drive systems to enhance reliability

All of the improvements made were internal to the equipment, so no changes were required for existing foundations or electrical, air and water interfaces.

and increase processing rates. The lower frame of the unit was redesigned to simplify cleaning. All these changes improved reliability and streamlined operational and maintenance processes.”

Replacement components were designed, fabricated, and tested for performance, reliability and suitability

in the laboratory. Pre-production units were tested in the laboratory for hardware and software functionality and failure modes, safety, reliability, maintainability, and availability, as well as operability and performance. Subsequent shipboard underway operational evaluations were conducted on CVN 68, LHA 1 and DDG 51 Class ships. All of the improvements made were internal to the equipment, so no changes were required for existing foundations or electrical, air and water interfaces.

Overall, NSWCCD’s new design (Mod I PWP) in comparison to the Mod 0 PWP has one-third fewer components, nearly twice the processing rate, half the maintenance time and a 50 percent increase in reliability. The requirement to overhaul the Mod 0 PWP every 2,000 cycles was also eliminated. The Mod I PWP prototypes installed in 2003 onboard USS Harry S. Truman (CVN 75) had more than 15,000 cycles when they were replaced with Mod I PWP production units in 2011. Furthermore, changing to the Mod I PWP provided a direct cost savings since the increased processing rate allowed the Navy to



LEFT: Mod I PWP onboard USS Laboon following completion of MACHALT 600 installation in FY05.

Paul Schwegler



USS Laboon (DDG 58).

Paul Farley



ABOVE: Mod I PWP (left) and legacy (Mod 0) PWP (right) onboard USS Milius.

Paul Schwegler

reduce the number of PWPs required on ships. For example, the amphibious assault ship USS Makin Island (LHD 8) went from six (6) Mod 0 PWPs to four (4) Mod I PWPs, a cost savings of more than \$100,000. This also results in reduced footprint requirements to house the new Mod I PWPs.

Installation of Mod I PWPs to the in-service Fleet began in FY05. To date, NSWCCD has completed the back-fit of Mod I PWPs on 130 U.S. Navy ships, and the remaining



USS Milius (DDG 69).
Senior Chief MC Joe Kane

The amphibious assault ship USS Makin Island (LHD 8) went from six Mod 0 PWPs to four Mod IPWPs, a cost savings of more than \$100,000.

two installations are scheduled to begin on the USS Carl Vinson (CVN 70) in San Diego, CA and USS McCampbell (DDG 85) in Yokosuka, Japan during the first and second quarters of FY13, respectively. New construction ships requiring plastic processing technology will receive the Mod I PWPs during construction.

The installation of Mod I PWPs provides significant benefit to the U.S. Navy in operation and workload savings, ship cleanliness, while preserving the ship's ability to meet Navy environmental discharge requirements. ⚓

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LMR Program's First Needs Collection Yields Six Priority Needs

Navywide Evaluation & Ranking Effort Helps to Focus Future Program Investments

THE LIVING MARINE Resources (LMR) program's Fiscal Year (FY) 2013–14 needs collection and evaluation process is now complete and yielded a total of 65 submittals from across the Navy. After a thorough review, evaluation and consolidation of the submitted needs, six were forwarded to the program's resource sponsor, the Chief of Naval Operations Energy and Environmental Readiness Division (CNO N45), by the LMR Program Manager on behalf of the Living Marine Resources Advisory Committee (LMRAC). Successful proposals that address those priority needs will be initiated in FY13 and FY14 as available funds allow.

All LMR program decisions and investments are based on environmental needs which meet the following conditions:

- Identifies an existing gap in knowledge, technology, and/or capability
- Is associated with an environmental constraint or regulatory driver
- Can be categorized under one of the program's investment areas

Submitted needs were evaluated by the LMRAC. Each statement of need was assigned to an appropriate LMRAC member, typically within their claimant command (e.g. needs from Naval Facilities Engineering Command (NAVFAC) personnel would be assigned to the NAVFAC representative(s) on the LMRAC). The assigned LMRAC member was responsible for coordinating priorities among the needs submitted within their command, and was responsible for providing a liaison for questions and requests for clarification from the LMRAC to the need submitter. Once

the LMRAC had down-selected to a number of priority needs appropriate to the anticipated available funds, the LMR Program Manager conveyed the final selections to CNO N45 for approval and concurrence. Once concurrence from CNO N45 is obtained, the LMR Program Manager will draft a Broad Agency Announcement (BAA) that translates the needs into guidance for submission of proposals to meet those needs.

The LMR program will post a BAA in Federal Business Opportunities (FedBizOpps) at www.fbo.gov some-



For more insights into the LMR program, visit www.lmr.navy.mil.

time in the spring of 2013. (Specific evaluation criteria, due dates and other specifics will be included in this posting.)

Pre-proposals will be submitted via the LMR website at www.lmr.navy.mil. Non-Federal agencies such as academic institutions, businesses and other qualified public and private sector applicants interested in responding will be encouraged to submit a pre-proposal using the web-based standardized pre-proposal template. This Microsoft Word™ template is available by visiting the LMR website (www.lmr.navy.mil) then by clicking on the “Pre-proposals” menu button then the “template” link in the “How to Submit a Pre-proposal” section. A reference guide for submitting and evaluating pre-proposals is also available via the LMR website at www.lmr.navy.mil, then click on the “Pre-proposals” menu on the left, then click on the “Submitting and Evaluating Pre-proposals” link.

The initial pre-proposal phase saves submitters and reviewers the effort of preparing and evaluating a full proposal until we know how many of the pre-proposals adequately address the needs, are of sufficient overall quality to be competitive and are likely to be funded, given the available resources each year. Pre-proposals should adhere to the following guidance:

1. Be approximately three to four pages in length.
2. Clearly identify the applicable statement of need being addressed. (If more than one need is identified, one need should be identified as the primary need that is targeted by the pre-proposal.)
3. Focus on the problem to be addressed.



The Basics About the LMR Program

THE LMR PROGRAM seeks to develop, demonstrate, and assess data and technology solutions to protect living marine resources by minimizing the environmental risks of Navy at-sea training and testing activities while preserving core Navy readiness capabilities. This mission is accomplished through the following five primary focus areas:

1. Providing science-based information to support Navy environmental effects assessments for at-sea training and testing.
2. Improving knowledge of the ecology and population dynamics of marine species of concern.
3. Developing the scientific basis for the criteria and thresholds to measure the biological effects of Navy-generated sound.
4. Improving understanding of underwater sound and sound field characterization unique to assessing the biological consequences of underwater sound (as opposed to tactical applications of underwater sound or propagation loss modeling for military communications or tactical applications).
5. Developing technologies and methods to mitigate and monitor environmental consequences to living marine resources resulting from naval activities on at-sea training and testing ranges.

For more information about the LMR program, visit www.lmr.navy.mil.

LMR Program's FY 2013–14 Priority Needs

THE FOLLOWING LIST contains a description of the six priority needs that resulted from the LMR program's FY 2013–14 needs collection and evaluation process:

Need N-0006-13: Demonstration of Passive Acoustic Monitoring (PAM) Technology

The Navy needs persistent automated monitoring of test and evaluation sites of interest, such as those covered by the National Environmental Policy Act Phase II process. PAM is a proven means of detecting, classifying, and localizing vocally active marine mammals, as well as a number of fish species. Sensors can be moored, drifting, vessel towed, or mounted on unmanned mobile platforms. The pros and cons of alternatives will be a priority consideration in the selection of proposals. Top priority will be given to reviews of existing systems and their performance metrics; the next level of priority will be given to comparative performance analysis of two or more systems operated simultaneously in the same location; proposals for the development of new systems will be given lowest priority.

Need N-0011-13: Behavioral Responses of Marine Mammals to Navy Sound Sources

Potential behavioral effects from Navy activities on marine life, in particular marine mammals, make up the largest and most poorly defined category of environmental risk to marine life from Navy activities. Much of the available historical data comes from non-Navy sound sources, for species and locations of relatively low Navy concern. Data are needed to strengthen the quantitative, statistical foundations of current risk thresholds developed jointly by Navy and the regulatory agencies, the National Marine Fisheries Service, Office of Protected Resources, and the U.S. Fish and

Wildlife Service. Priority species, locations, sound sources and data products will be identified in the "Suggested Solutions" section of the BAA.3.

Need N-0012-13: Hearing and Auditory System Information for Hearing-Based Risk Criteria

Three kinds of information generation have been or are currently in use. They are listed in approximate order of statistical and scientific impact, and cost (in both funds and time).

1. Behavioral psychophysical testing of trained captive animals

Methodologies and facilities requirements are well documented. Preference will be given to studies most relevant to Navy sound sources, species of high interest, and integration with existing data and theories.

2. Auditory Evoked Potentials (AEP) obtained by direct measurement of electrical activity by the auditory nerve and auditory brainstem as obtained by surface or subcutaneous electrodes

Such quick, direct measures enable testing of wild animals under minimal restraint or while stranded. Emphasis should be placed on well-demonstrated methods and tools, as opposed to creation of new technologies with unproven performance characteristics.

3. Anatomical models

This methodology relies on obtaining direct anatomical measurements of physiological structures and their properties by direct observation, CT (computed x-ray tomography), electron microscopy, atomic force microscopy and other methods,

4. Clearly explain the project objectives and approach.
5. Quantify and qualify the technical criteria for a successful project.
6. Identify the environmental issue to be addressed.
7. Include the basic strategy for successfully integrating the proposed solution into the Navy user community.
8. Identify the main or primary users targeted by the proposed effort.
9. Include a short one-paragraph to one-page biography of the Principal Investigator (PI).
10. Include a short annual budget estimate indicating the likely cost of salaries (personnel effort), major equipment, major subcontracts, and a total anticipated award amount for each year of the proposed project.

Supplemental supporting materials are optional and should be limited to no more than four pages

The pre-proposals will be reviewed by the program's Technical Review Committee (TRC) and the LMRAC. The TRC consists of subject matter experts drawn from the Navy and non-Navy expert community. The TRC members will provide independent, confidential technical peer review of the pre-proposals for technical merit, appropriateness and

as appropriate. Results should be incorporated into state-of-the-art and well-developed models of mechanical properties (e.g. Finite Element or Finite Difference models) or existing human/mammalian electro-mechanical models of auditory structures like the cochlea and auditory nervous system. The BAA will contain more details on priority species and data needs.

Need N-0020-13: Demonstration and Evaluation of Platform-Independent Improvements to Automated Signal Processing of PAM Data

As PAM sensors continue to deliver more and more data for both baseline surveys and mitigation monitoring, the cost in time and funds to process the data remains inconsistent and slow, making it difficult to evaluate competing data processing systems relative to what might be potentially available via the scientific literature or open resources. A process is needed by which new and emerging signal processing systems are evaluated against common, shared benchmarks. In particular, there is a need to develop, test, and evaluate existing or new PAM signal processing systems designed for users with relatively little or no subject matter expertise. Signal processing remains the greatest technical challenge to non-expert wide scale application of PAM technology as a survey and mitigation monitoring tool. Benchmarking of current systems, identification of system shortcomings and efforts to improve and standardize system signal processing is an ideal LMR role and will compliment the considerable investment by the Office of Naval Research and other Navy activities to improve the available tools for automated PAM signal processing.

Need N-0029-13: Capability Development for Hearing Measurements

This statement of need focuses on technology and methodology developments to expand the sample size and range of species that can be tested, along with reducing cost and time to obtain data. Existing alternatives to behavioral testing of trained animals include evoked potential audiometry and modeling from anatomy. Other solutions may exist or deserve further exploration. For AEP, several aspects of AEP methods need validation and/or improvement. Measurements of in-air and underwater behavioral hearing thresholds need to be compared to in-air and underwater AEP thresholds obtained from the same individual in a variety of species. Innovations in electrode placement (i.e. subcutaneous or otherwise embedded) may be required to record evoked responses in some species (i.e. baleen whales). To achieve wide scale application, test equipment and training in equipment use must be developed, must be economically feasible, and must be robust under challenging field conditions.

Need N-0001-13: Assessing and Mitigating the Effects of Construction Noise on Living Marine Resources

Better methods to assess the potential effects of underwater sound in inland waterways and cost-effective methods to mitigate the impacts of underwater sound during in-water construction, maintenance, operation and training operations in inland waters are needed to support cost-effective planning and execution of projects. Potential projects might include modification of standard transmission loss models to better fit shallow nearshore environments, collection of data to verify or modify existing models of transmission loss, and the demonstration (but not development) of sound attenuating technologies, including the evaluation of cost, applicability and effectiveness of sound attenuating technologies such as coffer dams, bubble curtains or other technologies.

feasibility of the methodological approach, likelihood of success in achieving the stated goals of the pre-proposal, and goodness of fit between proposed effort and budget. Each pre-proposal will receive at least two independent TRC reviews.

The TRC will present their assessments of the pre-proposals to the LMR program manager who will in turn, with the LMRAC, review and down-select the pre-proposals based on the TRC assessments of technical merit as well as programmatic relevance, likely impact on Navy compliance and readiness goals, feasibility of transition, and other overall program goals.

Once a pre-proposal has been approved, the PI will be invited to develop and submit a full technical proposal. A standard template will be provided on the LMR website (the preferred submission route). The full proposal should include the following components:

1. Reference to the appropriate need (if more than one need is addressed a primary need should be identified from among the multiple needs)
2. Proposed solution(s)
3. Technical approach and objectives

The LMRAC

LMRAC MEMBERS CAN be reached at the phone numbers and email addresses below:

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4. Success criteria (including quantifiable performance metrics)
5. End user endorsement of the project
6. Stakeholder endorsement of the project
7. Potential benefits to Navy
8. Scheduled tasks and milestones
9. Go/No Go decision points
10. Anticipated products
11. A transition strategy
12. A proposed budget

The full proposal will define quantifiable performance metrics to evaluate the ultimate success of the project and present baseline data on the performance of the pre-existing conditions for later comparison to post-integration conditions. The pre-proposal process ensures that proposals address high priority Navy needs. Further down-selection of candidate proposals will be performed by the TRC, LMRAC, and CNO N45 following a protocol similar to that used to select pre-proposals. In addition to the Federal Acquisition Regulation criteria

requirements, considerations will include overall LMR investment portfolio balance, likelihood of successful, timely completion of project objectives, relative impact to Navy (including cost savings and reduction of regulatory risk), and likelihood of successful transition to operational use.

Full proposals will be assigned to appropriately qualified TRC member(s) for technical review. The LMR Program Manager and LMRAC will then review those full proposals, taking into consideration the TRC's input. Once a project is approved, the submitter will work directly with the Navy's contracting office to get a contract in place so that work may begin.

For more information about the LMR program and its pre- and full proposal solicitation and evaluation processes, visit the LMR website at www.lmr.navy.mil or contact Bob Gisiner, the LMR program manager. 

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SOME OF MY Best Shots



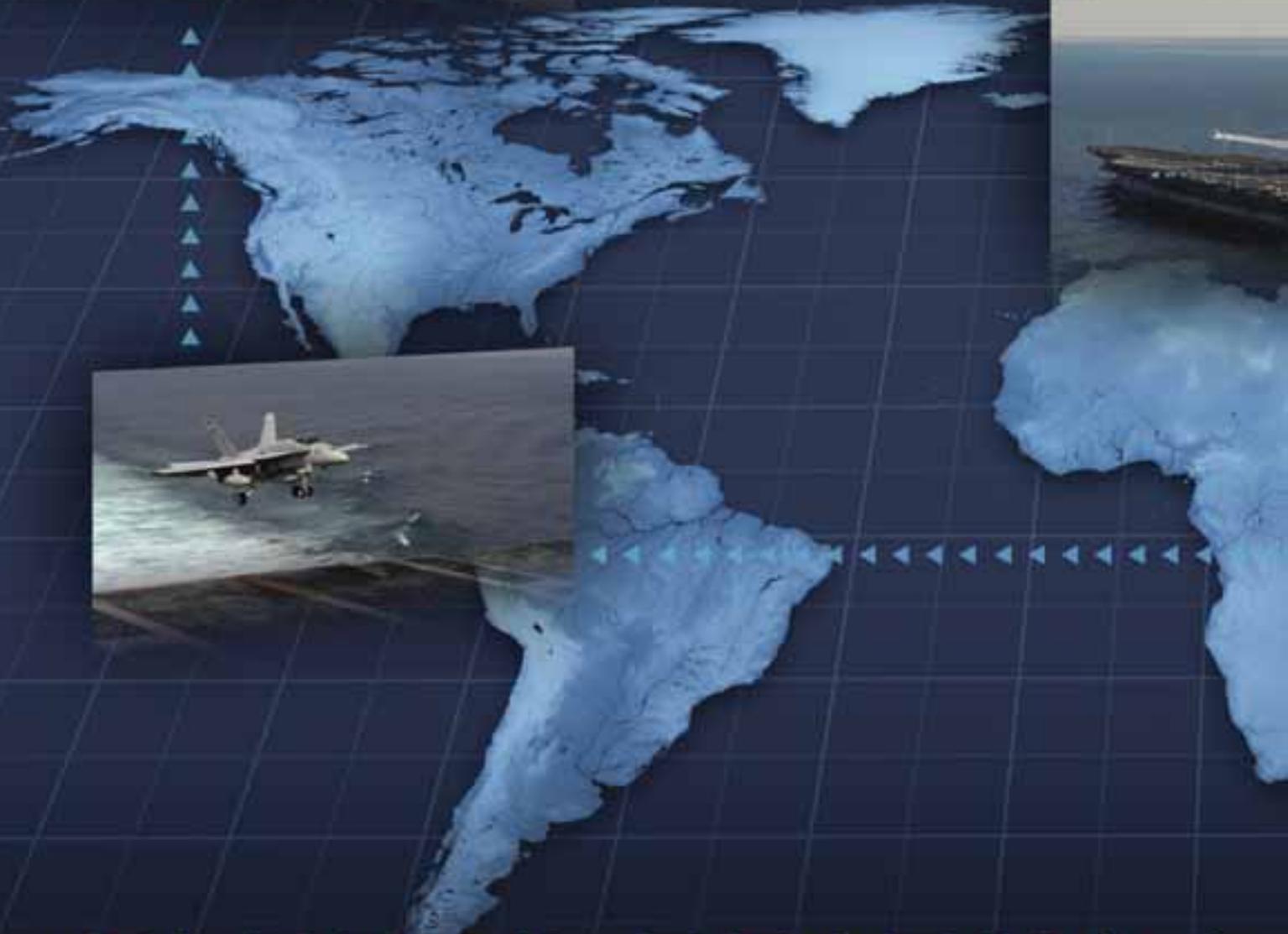
I took these pictures of the sun, the beach, the ocean, sea oats, and various birds along with the Jacksonville Beach Pier on Super Bowl Sunday, 3 February 2013.

All photos were taken with a Nikon D5000 camera with a 35 mm lens at various settings.

Paul Kenny ● Fleet Readiness Center Southeast ● paul.kenny@navy.mil

Submit your own Best Shot to Bruce McCaffrey ● *Currents'* Managing Editor ● brucemccaffrey@sbcglobal.net

NAVY EARTH



GLOBAL REACH ▶▶

GREEN DAY 2013



▶▶▶ LOCAL ACTION

GREENFLEET.DODLIVE.MIL

A Look at a Long-Term Energy Strategy in the Pacific Northwest

A Strong Tradition of Success in Resource Efficiency Management

THE PACIFIC NORTHWEST enjoys some of the lowest energy rates in the nation and relatively mild weather. Both of these factors work against energy efficiency project economics, yet over time Navy installations in the Northwest have

the Secretary of the Navy. Smaller commands outside the installation fence lines, including Naval Hospital Bremerton and Naval Magazine Indian Island, also participate in the Northwest Energy Program, and have also received awards and recognition.

lighting systems (such as light-emitting diode parking lot lights and high output fluorescent fixtures in industrial high bays), and even base-wide steam decentralization at the Keyport location, which reduced their total energy consumption by more than 30

The savings were so dramatic that the water utility company called to see what was going on.

excelled in energy and water conservation performance.

The installations, all located in Washington State, are:

1. Naval Base Kitsap, which has several sites including Bremerton (which includes Puget Sound Naval Shipyard), Bangor, Naval Undersea Warfare Center Division at Keyport, and Manchester Fuel Depot
2. Naval Air Station Whidbey Island
3. Naval Station Everett

Each installation has received multiple energy awards and recognition from

Naval Facilities Engineering Command Northwest is tasked with planning and executing the Region's energy program, and shares some of their strategies for success.

Efficiency Projects

Energy and water efficiency projects are absolutely essential to reducing consumption. Navy installations in the Pacific Northwest have a long history of executing efficiency projects using every funding source that is available. The projects have included a full range of energy technologies such as sophisticated controls, state-of-the-art

percent. The key is to develop and execute a considerable volume of new projects each and every year.

Additionally, Pacific Northwest installations constantly look out for low-cost, locally-fundable improvement projects which over time add up to substantial results. The projects incorporate simple technologies such as lighting controls (occupancy sensors, photocells, adding switches), leak detection and repair (steam, compressed air and water lines), insulation, heating and air conditioning system tune-ups and weather-stripping. Much of the total water

savings achieved over the past nine years came from installing low-cost temperature-activated freeze protection valves on pier-side water distribution lines. The savings were so dramatic that the water utility company called to see what was going on.

Structured for Success

Core members of the Navy’s Energy Team in the Pacific Northwest are the regional energy program manager and support staff, the installation energy managers and the resource efficiency managers, who provide support to the regional energy program manager and installation energy managers. Additionally, team members reach out to other departments, such as asset management and capital improvements, through cross-functional team meetings focused on integrating energy improvements into all aspects of facility management. Team members also work with the building managers, who are tasked by a regional instruction to monitor energy performance in their buildings. Installation energy managers and resource efficiency managers provide training and support to ensure that building managers can spot problems and initiate corrections.



The Department of the Navy’s energy mascot, “BRITE,” was developed in the Pacific Northwest, and still makes regular appearances to generate interest in energy issues.

Energy Culture & Behavior

The Navy’s Energy Team in the Pacific Northwest helps keep energy top-of-mind for Sailors and civilians throughout the Region by its weekly energy and water

Major Energy Projects Awarded

THE FOLLOWING TABLE shows that Navy installations in the Pacific Northwest have awarded a steady stream of major energy and water efficiency projects over a nine-year period.

Year Project Awarded	Project Cost	Annual Cost Avoidance	Annual Energy MBTU* Savings	Annual Water KGAL* Savings
FY04	\$15,864,225	\$2,702,646	356,629	0
FY05	\$13,013,469	\$1,976,696	286,781	0
FY06	\$8,935,574	\$1,540,738	169,834	0
FY07	\$6,699,803	\$679,577	70,091	2,928
FY08	\$10,632,530	\$1,109,931	97,458	0
FY09	\$13,899,743	\$1,303,092	112,993	48,666
FY10	\$27,274,367	\$3,889,869	263,243	9,203
FY11	\$14,958,804	\$1,695,044	129,881	4,557
FY12	\$6,337,064	\$822,705	37,207	8,532
TOTAL	\$117,615,579	\$15,720,297	1,524,117	73,886

*MBTU = million British thermal units, KGAL = thousand gallons

Low Cost Activity Fund Projects

THE FOLLOWING TABLE shows that smaller (less than \$100,000), locally-funded projects can add up to significant savings over time.

Year Project Awarded	Project Cost Totals	Annual Cost Avoidance	Annual MBTU Savings	Annual KGAL Savings
FY04-12	\$14,553,915	\$6,651,102	641,229	571,891

conservation newspaper column, the “Energy Edge,” and by sending weekly energy tips for inclusion in installation plans-of-the-week. Additionally, energy tips with eye-catching graphics are sent to building managers across the Region to post and distribute every two to four weeks. Each energy tip sheet includes local energy team contact information and a local hotline number so that all-hands know how to report energy waste. The Department of the Navy’s energy mascot, “BRITE,” a brightly-colored compact fluorescent lamp costume, was developed in the Pacific Northwest, and still makes regular appearances throughout the Region to generate interest in energy issues.

The Naval Station (NAVSTA) Everett Energy Team has provided considerable training in new technologies to operations and maintenance personnel, and as a result they often install a more efficient technology rather than a one-for-one replacement when equipment fails. Naval Station Everett is also a leader in using alternative transportation fuels and sustainable building practices. They have eleven Energy Star certified buildings.

Energy experts talk of the benefits of commissioning building systems—making sure they are operating as designed—but few facility managers actually budget for the

A key component of the Northwest’s Energy Program is the team of resource efficiency managers.

Incorporating New & Underused Technologies

Pacific Northwest installations participate in the Navy’s Technology Validation Program using successful technologies such as oil-free magnetic-drive chiller compressors and aerosol duct sealing technology, in select facilities. (For more information, see our sidebar entitled, “The Basics About the Technology Validation Program.”) Pacific Northwest installations already make significant use of newly-developed light-emitting diode lighting technology, and incorporate commercially viable technologies rarely seen on government property, such as high speed roll-up doors that open and close automatically when forklifts approach and pull away from the door.

process. Commissioning of existing facilities has been identified as the technology that could cost-effectively save the most energy Navy-wide, based on energy audits performed in accordance with the Energy Independence and Security Act of 2007. The Pacific Northwest’s Bremerton naval complex, which accounts for approximately half of the Region’s shore energy use, has a Certified Commissioning



These cars are among NAVSTA Everett’s fleet of 49 electric vehicles.

The Basics About the Technology Validation Program

THE TECHNOLOGY VALIDATION Program demonstrates commercially available technologies that are reported to save energy, but are not currently in widespread use in the Navy. Over the years, the Technology Validation Program has validated the performance of a number of emerging technologies. Navy and Marine Corps personnel can contact Team Lead Paul Kistler to discuss specific technologies at paul.kistler@navy.mil or 805-982-1387. For more information about the Technology Validation Program, visit <https://portal.navfac.navy.mil/portal/page/portal/centers/nfesc/energy/tab5894331>. This web site is on the Naval Facilities Engineering Command portal, and requires a Department of Defense Common Access Card plus a Naval Facilities Engineering Command portal account for access.

Professional assigned to continuously monitor energy systems and facilitate corrections as needed.

Resource Efficiency Managers

A key component of the Pacific Northwest's Energy Program is the team of resource efficiency managers. These contracted energy specialists survey facilities and facilitate outside surveys, develop energy and water efficiency projects, manage energy and water data and prepare metric reports, support data calls, suggest operation and maintenance improvements, assist with project measurement and verification and assist to foster a culture of energy and water conservation in support of the Region and installation energy management goals. The Navy's first resource efficiency manager was deployed at the Pacific Northwest's Naval Undersea Warfare Center Division Keyport in 1999, and the program has been so successful that it has expanded and been adopted Navy-wide.

What's Next

Moving forward, the Pacific Northwest Energy Team will continue to use these proven strategies for success. Expanding commissioning efforts throughout the Region



Energy efficient cooling towers are part of upgrades being done at Naval Undersea Warfare Center Division, Keyport.

Pat Hardesty

and incorporating even more sophisticated controls will be top priorities. An industrial control system aimed at integrating systems and securing networks provides the ability to correlate energy-related data in ways that have not been possible before. A project scheduled for award this year will add a number of facilities to the industrial control system, further integrating systems, securing networks, and revealing energy saving opportunities. ⚓

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Cattail Lake Restoration: From Freshwater Lake to Tidal Estuary

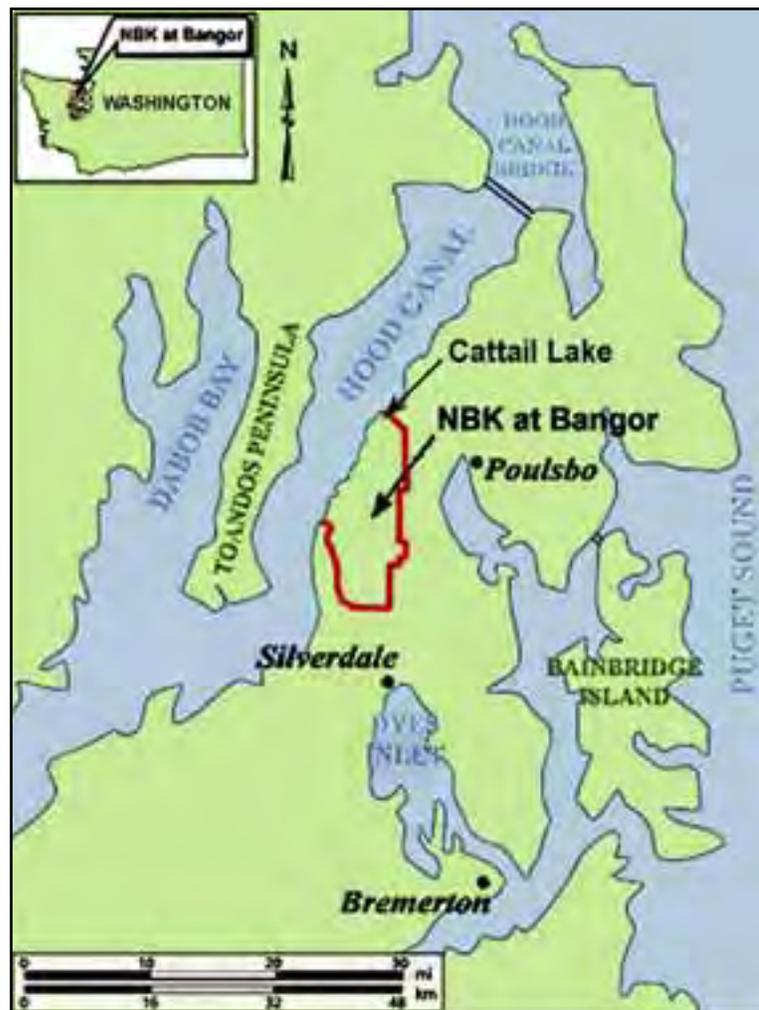
Naval Base Kitsap-Bangor Takes Action to Enhance Salmon Habitat

FOR OVER 60 years, Cattail Lake has been a part of Naval Base Kitsap-Bangor in Washington State. But the 8-acre freshwater lake was actually created shortly before the Navy came to the area. Prior to the early 1950s, a road was built across the mouth of Cattail Creek estuary along the Hood Canal, thereby eliminating the estuary and preventing salmon from migrating up the creek to spawn.

Many Navy families have enjoyed Cattail Lake over the years. Fishing platforms and hiking trails were built, and bird watchers were attracted to the numerous freshwater and saltwater bird populations in the area, including osprey, great blue heron and bald eagles.

The idea of turning Cattail Lake back to its original state was devised as a mitigation measure. A construction project elsewhere on base resulted in the loss of wetland habitat. To offset this loss, the plan to restore tidal influence to the former estuary was hatched.

The restoration plan consists of converting eight acres of freshwater lake habitat to two acres of intertidal saltwater estuary and six acres of upland freshwater forest/shrub, riparian forest, and upland habitats. It also includes restoring another five upstream acres to wetland and upland riparian forests.



Naval Base Kitsap-Bangor is a U.S. Navy base located on the Kitsap Peninsula. The mission of Naval Base Kitsap-Bangor is to serve as the host command for the Navy's fleet throughout West Puget Sound and to provide base operating services, including support for both surface ships and submarines homeported at Bremerton and Bangor.



Cattail Lake before restoration work began in 2011. The lake looking north towards Cattail Creek (left) and the north end berm of Cattail Lake (right). Just beyond lie the tidal flats and waters of the Hood Canal in Puget Sound.

David Grant

Progress to Date

The road and culverts across the mouth of the lake have been removed and a new 150-foot free-span bridge has been constructed to restore the flow of water between Cattail Creek and Hood Canal. A temporary sheet pile and silt retaining wall was installed to hold back stream flow and allow for the bridge and causeway construction. The

lake has been drained and the planting of native trees and shrubs has been completed.

Construction was scheduled to be completed and the temporary retaining wall removed in the autumn of this year, but workers found a Native American shell midden (mound of shell refuse) in the construction site. An archaeological investigation of the site is underway and the project



Ongoing restoration of Cattail Creek estuary from the de-watered Cattail Lake bed looking north towards the Hood Canal.

David Grant



Cattail estuary in July 2012 after re-vegetation (left) and new bridge construction (right) with the silt fence and sheet pile wall that will be removed once the archeological investigations are complete.

Allison Walters

The Original Inhabitants of Cattail Lake

THE CATTAIL LAKE site is located in the traditional territory of the Twana linguistic and cultural group, although the vicinity was seasonally utilized by members of the neighboring tribes. The Twana people are also often referred to as the Skokomish, the “river people” (sqoq?bci in the Coast Salish Lushootseed dialect) as they were the largest of nine Twana-speaking groups.

The Twana language group is one of the two major Coast Salish languages in the Puget Sound area, and is one of the major unifying characteristics of the Hood Canal peoples. Rather than a political unit, the bands formed units based on territory and language. No permanent settlements are known to have been located in the direct vicinity of the Cattail Lake site; however, the Hood Canal’s northeastern shoreline reportedly contained numerous tribal camping areas in the summer, particularly during late clam season in August.

will be completed once the investigation has finished.

The site will be monitored for ten years to ensure the native vegetation survives. It is estimated it will take up to ten years for the mitigation site to reach the state of a stable, tidal estuary.

Although opportunities for recreation have decreased slightly due to restoration work, Navy personnel who have access to that part of the base will still be able to hike and enjoy the scenery.

The restoration project was coordinated with the U.S. Army Corps of Engineers, Washington Department of Ecology, and Native American tribes who have Usual and Accustomed fishing grounds in the vicinity.

“The Navy appreciates the collaboration and support from our regulatory partners and the tribes to help us undertake this project that contributes to restoring the health of the beautiful Hood Canal,” said Greg Leicht, the Environmental Director for Naval Base Kitsap-Bangor.

By restoring the tidal estuary, mudflats and tidal wetlands, salmon, shellfish and other species will seek a “new” habitat. The estuary will provide safe refuge and serve as a rearing area for juvenile salmon as they migrate to the sea. The opening of the estuary will also open the creek and the two square miles of watershed to these same salmon who may return to spawn. Tribal biologists estimate the creek may support spawning for up to 300 salmon, which are listed under the Endangered Species Act. Gradually, the mudflat of the former lake will populate with tidal plants, grasses, bushes, willows and native shrubs, augmenting the project plants. The restoration of Cattail Creek and the tidal estuary will benefit both Hood Canal and Puget Sound for years to come. ⚓

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Exercise Your MENTAL MUSCLE

Take the *Currents* Quiz

Is more exercise one of your resolutions for 2013? Let us help you exercise your brain with the *Currents* quiz. Not only do quizzes help you remember things that you have read but they also help to keep your brain in shape. So flex that mental muscle and take the *Currents* quiz.

Shortly after each issue of *Currents* magazine arrives in your mailbox and is available online, we post a link to the quiz on the Navy *Currents* Facebook page (facebook.com/navycurrents) and tweet it too (twitter.com/navycurrents).

Follow the quiz link and give it a go. Challenge a co-worker to a quiz-off; make it an office event; add it to your trivia repertoire. Have some fun with it and learn more about what the Navy is doing to save energy and protect the environment.



NESDI Program Releases FY12 Year in Review Report

Annual Report & Second Stormwater Meeting Close Out Another Successful Year

THE NAVY ENVIRONMENTAL Sustainability Development to Integration (NESDI) program has released its annual report, entitled “NESDI FY12 Year in Review Report: It Ends With Integration.” As the name implies, the NESDI program is committed to promoting its

ment programs. From finding a method to distinguish background from anthropogenic sources of perchlorate to determining the effects of military expendable materials in the marine environment, the report provides insights into some of the most successful NESDI projects.

The technologies, studies, and models highlighted in this report support the Fleet through efficient and effective execution of environmental programs.

The NESDI program relies on all Navy personnel to identify environmental



The NESDI program relies on all Navy personnel to identify environmental concerns and support the implementation of resultant solutions.

successful projects and, more importantly, integrating the technologies, enhanced industrial processes, and other the results of its projects to the Navy end user community. And the Year in Review Report is one such method for doing so.

The report contains a financial review of program expenditures as well as insights into projects that were particularly successful in demonstrating the use of an innovative technology, or collecting critical information to enhance the efficiency of environmental manage-



NESDI FY12 Case Studies

THE FOLLOWING TEN projects are presented in case study form in the FY12 Year in Review report:

PROJECT	DESCRIPTION
1. Sea Floor Cable Removal (#347)	This project is focused on providing the Navy and the regulatory community with pertinent information with which to make scientifically based decisions on the disposition of out-of-service seafloor cables, as well as to the siting and installation of new seafloor cable projects.
2. Implementation of Forensic Approaches to Address Background Perchlorate Source Identification & Characterization at Navy Facilities and Ranges (#437)	The results of this project will aid end-users in determining whether perchlorate at or near their facility is of natural or synthetic origin. Identifying the source of perchlorate will guide environmental stewardship programs, and in some cases, will help to avoid unnecessary remediation.
3. Demonstration of Lime Application at Navy Open Detonation Sites (#445)	This project demonstrated the application of hydrated lime to Navy venting areas as a Best Management Practice to destroy any explosive residue that may potentially reside in surface soils.
4. Environmental Effects of Military Expendable Material (MEM) (#462)	This project is in the process of quantifying and analyzing three categories of MEM commonly found on training ranges, and determining what, if any, threats these materials pose to the environment.
5. Nanocrystalline Cobalt Phosphorous Electroplating as a Hard Chrome Alternative (#348)	This project team is testing an electrolytic hard chrome plating process for aircraft components that does not utilize hexavalent chromium, a known carcinogen.
6. Automated Assessment of Coral Reefs (#425)	This project validated an innovative suite of equipment to monitor and assess the impacts of Navy activities on nearby coral communities. The equipment provides real-time data, eliminating the need for divers to collect this information.
7. Evaluation of Re-suspension Associated with Dredging, Extreme Storm Events and Propeller Wash (#448)	This project provided information on how bottom sediment may be disturbed and resuspended by propeller wash (the motion of water produced by a ship's propeller) and how potentially contaminated sediments resuspended by propeller wash are transported in Navy harbors.
8. Modeling Tool for Navy Facilities to Quantify Sources, Loads, and Mitigation Actions of Metals in Stormwater Discharges (#455)	This project demonstrated and validated the WinSLAMM stormwater management model to help Navy installation managers identify potential sources of metals—particularly copper and zinc—in stormwater runoff.
9. Demonstration and Validation of Sediment Ecotoxicity Assessment Ring Technology for Improved Assessment of Ecological Exposure and Effects (#459)	The technology demonstrated in this project is expected to provide an improved ability to discern actual ecological risk at sediment remediation sites. The technology also shows promise in surface water applications such as realistic assessment of adverse effects from time-varying stressors.
10. Tertiary Treatment and Recycling of Waste Water (#464)	In an effort to reduce potable water consumption, this project team constructed a man-made, enhanced wetland to demonstrate and validate on-site reclamation and beneficial reuse of wastewater.

The NESDI program is the Navy's environmental research and development demonstration and validation program.

concerns and support the implementation of resultant solutions. There are many ways to participate in the NESDI program, including:

- Submitting and validating environmental needs
- Reviewing technologies already under development
- Supporting transition efforts in your organization or at your installation
- Acting as a Principal Investigator on a NESDI project
- Providing demonstration sites for various NESDI projects
- Staying up-to-date by regularly visiting the program's web site
- Hosting one of our In-Progress Reviews (IPR) or field visits to aid in our technology integration efforts

Second NESDI Stormwater In-Progress Review Connects Puget End Users with Program Personnel & Investigators

IN AN EFFORT to address the ongoing challenges of effectively managing stormwater at Navy facilities, the NESDI program convened a meeting of stormwater end users, researchers and policymakers in Silverdale, Washington on 28–29 November 2012.

In addition to personnel from the program's resource sponsor organization (CNO N45), end users from across the Puget Sound's Navy community joined NESDI personnel in person and over the phone to ensure existing projects and future investments are properly focused, efficiently executed, and successfully integrated.

Nearly four dozen participants attended or dialed in to hear briefings about ongoing projects and to provide valuable feedback to Principal Investigators. One of the projects discussed included a new effort to identify sources of copper and zinc in stormwater runoff through the use of a Graphical Information System infrastructure combined with a pollutant transport tool. Another project is applying the marine Biotic Ligand Model for copper—a method that has already been developed and validated for protection of sensitive saltwater organisms—for use with salmonids and forage fish.

Attendees also toured the Puget Sound Naval Shipyard (PSNS) to see firsthand

the environment in which many NESDI projects must operate. The group met with the environmental manager and staff at the shipyard, and most notably, toured the shipbreaking operations in one of the shipyard's drydocks to better understand the challenges associated with opacity (particulate matter emissions) and other issues. Several NESDI projects have been funded to address this issue. The first—an Initiation Decision Report (IDR)—identified the best available alternatives to oxy-fuel cutting to bring daily opacity levels below air quality limits. The IDR recommended the use of MagneGas™ in place of propane for hot cutting, and a follow-on project was initiated to demonstrate this technology. Another technology identified by the IDR was cold cutting—a process that eliminates opacity and the basis for another follow-on project. Another NESDI project being conducted aboard PSNS is experimenting with ways to increase the efficiency and lower the operating cost of one of the shipyard's Oily Water Treatment System.

The NESDI program's other IPRs will be held this year during the weeks of 6–10 May in Port Hueneme, California and 10–14 June in Jacksonville, Florida. For more information, contact Cindy Webber at cynthia.webber@navy.mil and 760-939-2060.

The NESDI program is the Navy's environmental research and development demonstration and validation program, sponsored by the Chief of Naval Operations Energy and Environmental Readiness Division (CNO N45) and managed by the Naval Facilities Engineering Command. The mission of the program is 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.

For a hardcopy of the NESDI program's FY12 and other Year in Review reports, please contact Lorraine Wass at 207-384-5249 or ljwass@surfbest.net. An electronic (pdf) version of the report can also be downloaded from the program's web site at www.nesdi.navy.mil. 

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2012 Navy Community Service Environmental Stewardship Flagship Award Winners Announced

Awards Recognize Navy Commands That Engage in Exemplary Voluntary Community Service

THE NAVY ANNOUNCED the winners and honorable mentions of the 2012 Navy Community Service Environmental Stewardship Flagship Awards. Vice Admiral Philip H. Cullom, Deputy Chief of Naval Operations for Fleet Readiness and Logistics (N4), released a naval message listing the awardees.

The awards recognize Navy commands that engage in exemplary voluntary community service activities that promote good stewardship of environmental resources. The Environmental Stewardship Flagship, which is sponsored by N4, is one of five flagships in the Navy Community Service program. The other four flagships include Personal Excellence Partnership, Project Good Neighbor, Campaign Drug Free, and Health, Safety and Fitness.

In the naval message, Cullom saluted the awardees.

“Your dedicated service has made a positive difference, strengthened community ties, and enhanced our environment,” said Cullom. “Please accept my personal Bravo Zulu and thanks for your continued commitment and support of our Navy’s community service program.”

The 2012 winners in the shore command category are:

- Small (under 200 personnel): Naval Magazine Indian Island, Port Hadlock, Wash.
- Medium (200 to 499 personnel): Precommissioning Unit Arlington (LPD 24), Norfolk, Va.
- Large (500 or more personnel): Naval Air Station Whidbey Island, Oak Harbor, Wash.

Winners in the sea command category are:

- Medium: USS Antietam (CG 54)

- Large: USS Harry S. Truman (CVN 75)

Winners in the overseas command category are:

- Small: Navy Munitions Command, East Asia Division, Unit Guam
- Large: USS Frank Cable (AS 40)

Commands receiving honorable mentions include:

- Small shore command: Navy Manpower Analysis Center, Millington, Tenn.
- Medium shore command: Naval Support Activity Panama City, Fla.
- Large shore command: Naval Air Station Pensacola, Fla.

Examples of winning initiatives include organizing educational community outreach events, recycling, and participating in environmental conservation and enhancement projects, such as environmental clean-ups, shoreline restoration, tree and shrub plantings, and invasive species removal.

Award winners will receive commemorative plaques, and honorable mentions will receive signed certificates from N4.

For additional information about the Navy’s energy, environment, and climate change initiatives, visit <http://greenfleet.dodlive.mil/home>. 

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USS Antietam (CG 54).
 MC2 Chris Krucke

Fiscal Year 2012 CNO Environmental Award Winners Announced

Annual Awards Recognize Outstanding Environmental Stewardship

VICE ADMIRAL PHILIP Cullom, deputy chief of naval operations for fleet readiness and logistics (N4), announced the winners of the fiscal year (FY) 2012 Chief of Naval Operations (CNO) Environmental Awards competition on 21 February 2013.

The annual CNO Environmental Awards program recognizes Navy ships, installations, and people for outstanding achievement in Navy environmental programs.

Environmental subject matter experts reviewed nominations from commands around the world and selected 30 winners in 11 award categories. The winners, listed alphabetically within each category, are provided below.

1. **Natural Resources Conservation, Large Installation:**
 - Naval Air Station Fallon, Nevada
 - Naval Base Coronado, California
 - Naval Base Ventura County, California
2. **Cultural Resources Management, Installation:**
 - Commander, Fleet Activities Yokosuka, Japan
 - Naval Air Station Fallon, Nevada
3. **Cultural Resources Management, Individual or Team:**
 - Former Naval Weapons Station Concord Cultural Resources Management Team, California

- Mr. Lon Bulgrin of Naval Base Guam, Marianas
- Naval Support Activity Monterey Cultural Resources Management Team, California



4. Environmental Quality, Industrial Installation:

- Fleet Logistics Center Puget Sound Manchester Fuel Department, Washington
- Naval Weapons Station Seal Beach, California
- U.S. Naval Ship Repair Facility and Japan Regional Maintenance Center, Yokosuka, Japan

Your dedication to environmental stewardship is commendable and your actions exemplify the Navy's commitment to protecting and preserving the environment.

—Vice Admiral Philip Cullom

5. Environmental Quality, Overseas Installation:

- Commander, Fleet Activities Sasebo, Japan
- Navy Region Center Singapore
- U.S. Naval Support Activity Naples, Italy

6. Environmental Quality, Small Ship:

- USS Florida (SSGN 728)
- USS Ford (FFG 54)
- USS Momsen (DDG 92)

7. Sustainability, Non-Industrial Installation:

- Naval Base San Diego, California
- Naval Station Great Lakes, Illinois
- Naval Support Activity Monterey, California

8. Sustainability, Individual or Team:

- Mr. Matthew J. Schreck of Fleet Readiness Center Southwest, California
- Navy Region Center Singapore Environmental Sustainment Team



USS Ford (FFG 54).
MC1 Jason Swink

- PMA-231 Environment, Safety, and Occupational Health Team, Maryland
9. Environmental Restoration, Installation:
- Naval Base Point Loma, California
 - Portsmouth Naval Shipyard, Maine
 - St. Juliens Creek Annex, Virginia
10. Environmental Excellence in Weapon System Acquisition, Small Program, Individual or Team:
- NAVAIR 1.6 Programmatic Environment, Safety, and Occupational Health Evaluation Document Authoring Tool Team, Maryland
11. Environmental Planning, Team:
- Atlantic Fleet Training and Testing Environmental Planning Team, Virginia
 - Northwest Training Range Complex Environmental Impact Statement Team, Washington

- Silver Strand Training Complex Environmental Impact Statement Project Team, California

In the naval message announcing the winners, Cullom commended the winners. “Congratulations to all award winners and nominees,” Cullom said. “Your dedication to environmental stewardship is commendable and your actions exemplify the Navy’s commitment to protecting and preserving the environment. Well done.”

All CNO winners advance to the Secretary of the Navy level of competition. 

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Be Part of the Navy’s Best Magazine • Submit Your Article by 19 July

Have some good news about your environmental or energy program? Want to share it with others? *Currents* is the place to do it. *Currents*, the Navy’s official energy and environmental magazine, has won first place in the Navy’s Chief of Information Merit awards competition—not once, not twice, but three times! And it’s people like you that make *Currents* the best magazine in the Navy.

Your experiences take on new meaning when you share them with the *Currents* readership and on Facebook.

So if you have a success story that you’d like us to promote in our fall 2013 issue, you’ll need to submit your text and images by Friday, 19 July 2013. Any submissions received after this date will be considered for our winter 2014 issue.

You can get a copy of the *Currents* article template by sending an email to Bruce McCaffrey, our Managing Editor, at brucemccaffrey@sbcglobal.net. This template has proven to be a tremendous asset in helping us edit and track your article submissions. And your chances of being published in *Currents* are dramatically increased if you use this template and submit all of your images as separate documents. And don’t worry. If writing isn’t your cup of tea, we’ll handle all of the editing necessary to get your submission into publishable form.

Bruce is also available at 773-376-6200 if you have any questions or would like to discuss your story ideas.

As a reminder, your Public Affairs Officer must approve your article before we can consider it for inclusion in the magazine.

Don’t forget to “like” us on Facebook at www.facebook.com/navycurrents. *Currents*’ Facebook page helps expand the reach of the magazine and spread the news about all the great work you’re doing as the Navy’s energy and environmental stewards. And your experiences take on new meaning when you share them with the *Currents* readership and on Facebook.

Currents Deadlines

Fall 2013 Issue: Friday, 19 July 2013
Winter 2014 Issue: Friday, 18 October 2013
Spring 2014 Issue: Friday, 17 January 2014
Summer 2013 Issue: Friday, 19 April 2013

You can also refer to your *Currents* calendar for reminders about these deadlines.

Navy's Environmental Restoration Program Boasts Successful Site Cleanups

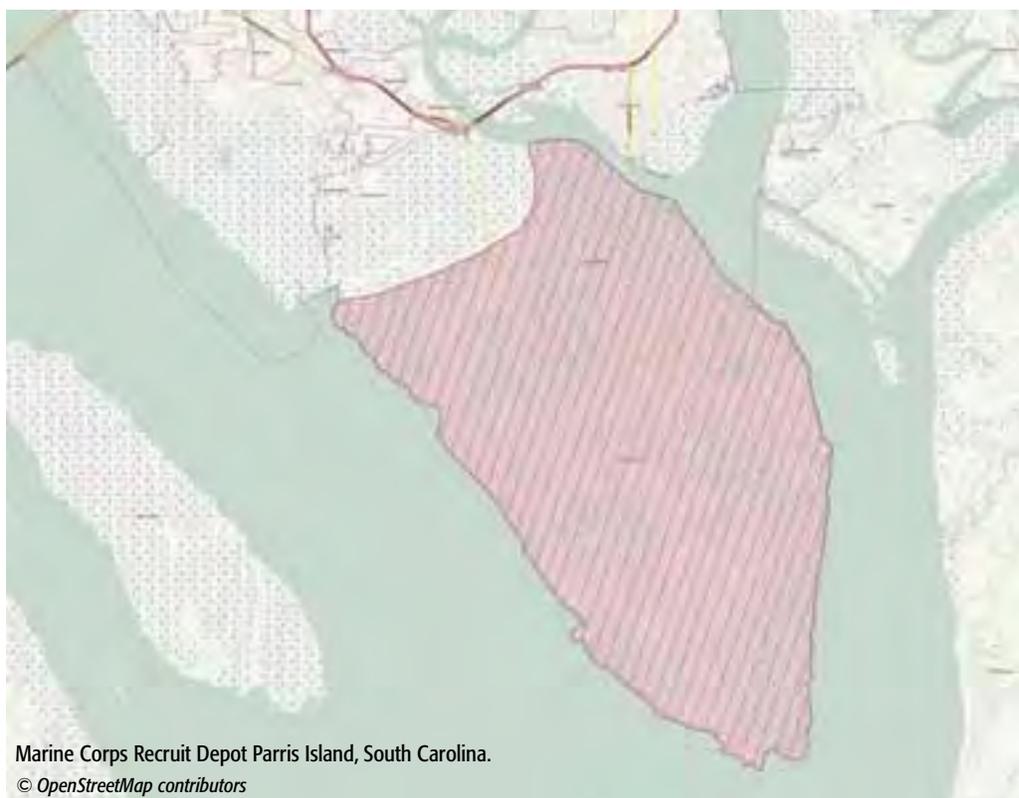
Program Applies Innovative Approaches to Complex Problems

TO CARRY OUT the Department of the Navy's (DON) mission, the Navy manages extensive facilities and lands throughout the country that provide services for everything from housing and training troops to maintaining ships, aircraft, weapons and vehicles. Over the years, various operations have occasionally resulted in the release of contaminants to soil, sediment, and groundwater at these sites. In many cases, the releases occurred decades ago—before the environmental hazards were recognized and before adequate control mechanisms were in place. However, the DON is committed to cleaning up these releases in a timely manner that protects human health and restores and preserves environmental quality for future generations. DON seeks to be a leader in the development of responsive, budget-conscious, and sustainable remediation solutions.

The DON's Environmental Restoration (ER) program was initiated in the early 1980s in response to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (also known as Superfund). In the early years, the program addressed only the cleanup

of chemical contamination. This part of the program is referred to as the Installation Restoration Program (IRP) and currently includes more than 3,900 sites. Significant progress toward cleanup of these sites has been made, and many of the IRP sites are in the final stages of cleanup.

As the IRP progressed, the DON also recognized the need for cleanup of sites having munitions and explosives of concern (MEC) and/or munitions constituents (MC). Thus, in 2001, a second phase of the ER program was initiated to address munitions-related contaminants. This program is referred



Marine Corps Recruit Depot Parris Island, South Carolina.

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to as the Munitions Response Program (MRP) and includes only sites that are no longer active, such as former practice ranges or former storage areas. The MRP has grown to more than 360 sites, most of which are in still the investigative stages of cleanup.

The DON ER program follows the CERCLA response action process for most IRP and MRP sites. This process provides a comprehensive cleanup approach from site identification and investigation through cleanup and closeout.

The following case studies illustrate some of the innovative approaches that have been implemented to solve complex remediation situations at DON sites throughout the country, ranging from vapor intrusion (VI) to time-critical asbestos removal to improving a remediation effort.

Evaluating Vapor Intrusion with Radon as a Tracer

Vapor intrusion is a form of indoor air pollution caused by the migration of chemical vapors from contaminated soil and groundwater into buildings. A 2010 survey identified 116 Navy sites (each site includes anywhere from one to 50 buildings) needing VI assessments. One of these sites, known as Site 45, contains former and current dry cleaning facilities at Marine Corps Recruit Depot (MCRD) Parris Island in South Carolina.

A CERCLA Remedial Investigation/Feasibility Study at the site concluded that remedial action was needed and a VI assessment was ordered due to the presence of chlorinated solvent contamination in shallow soil and groundwater near the site of the present dry

cleaning building (the contamination is presumed to have migrated from the former dry cleaning facility). The VI assessment included sub-slab soil gas and indoor air sampling and also used radon as a natural tracer to determine whether subsurface contamination was causing indoor air impacts above levels of regulatory concern.

The tracer study results were used to develop a building-specific attenuation factor. (The attenuation factor represents the reduction in vapor concentrations between the subsurface source and indoor air.) The assessment demonstrated that the likely source of tetrachloroethene (PCE) in indoor air could be tied to ongoing use of the building as a storage and transfer station for dry-cleaned clothes.

The VI investigation was performed in part under an Environmental Security Technology Certification Program (ESTCP) project to evaluate new VI investigation technologies, including the use of radon as a natural tracer to estimate building-specific attenuation factors.

Radon has been recognized as an effective tracer for evaluating VI because it is naturally occurring and ubiquitous in soil gas, and there are no sources of radon in indoor air to act as a confounding factor. Therefore, radon has been used in VI practice to compare the attenuation and transfer of other volatile chemicals across building slabs. The attenuation factor represents the ratio of the indoor air concentration within a



Site 45 contains former and current dry cleaning facilities at MCRD Parris Island.

About the CERCLA Process

ANY SITE THAT has been identified to the U.S. Environmental Protection Agency (EPA) as the site of potential contamination goes through a specific set of steps known as the CERCLA or Superfund cleanup process. The process is as follows:



Preliminary Assessment/Site Visit. Site conditions are evaluated. If signs of contamination are in evidence, inspectors determine whether the situation requires an immediate response.

National Priorities List (NPL). If investigators determine that a sizeable hazard exists (based on a predetermined set of criteria), the site is entered on the NPL. This is a list of national priorities among the known or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories.

Remedial Investigation/Feasibility Study (RI/FS). This process includes data collection and planning; site characterization, which includes field sampling and laboratory analyses to determine the risk to human health; development and screening of alternative remedies; treatability investigations to reduce uncertainties involved with chosen remedies; and a thorough analysis of the alternative remedies based on nine criteria delineated by the EPA.

building to the vapor-phase concentration in subsurface media underlying or adjacent to a building. Lower attenuation factors represent greater attenuation or dilution across the slab of a building. Since the use of radon is a relatively new investigative tool, the Navy and EPA agreed to collect additional supporting data, including subslab and soil gas data, to validate the radon findings and to reduce uncertainty in the remedial design phase.

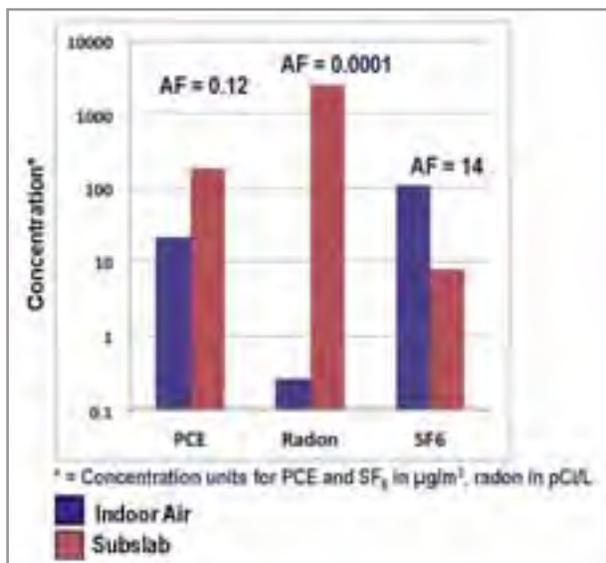
Applying the average building-specific attenuation factor of 0.0001 based on the radon data to the maximum PCE subslab concentration yielded a projected indoor air concentration that was below the EPA screening level for PCE in residential air. This building-specific attenuation factor and the fact that laundered garments (likely containing trace amounts of PCE) were brought into the building as a dry cleaning transfer station strongly suggest that the concentrations of PCE measured in indoor air came from the dry-cleaned clothes.

By estimating building-specific attenuation factors and considering other building factors, such as the storage of treated garments in the facility, the frequency of fresh air exchange in the building, and the low occupancy rate for staff in the part of the building nearest the groundwater

plume, the Navy and EPA moved forward to remedy selection without a further VI evaluation.

A proposed plan is currently being developed by the Navy and Marine Corps, and the remedy will likely include a combination of the following:

- Excavation and off-site treatment of contaminated soil



Record of Decision (ROD). A decision is made regarding which remediation method to use based on the RI/FS. All information collected during the investigation is included in this public document.



Remedial Design and Remedial Action. Under this phase, the chosen remediation effort is designed and implemented.

Construction Completion. This phase indicates that needed construction related to a remediation effort is either complete or deemed unnecessary. This is regardless of whether or not the cleanup process is complete.

Post-Construction Completion. The goal of these activities is to ensure that CERCLA response actions provide for the long-term protection of human health and the environment. These activities also involve optimizing remedies to increase effectiveness and/or reduce cost without sacrificing long-term protection of human health and the environment.

Deletion from the NPL. This is an indication that no further action is required.

Site Reuse. Deletion from the NPL indicates that the site is safe for reuse or redevelopment.

- Treatment of contaminated groundwater through a combination of in situ enhanced bioremediation and chemical oxidation
- Monitored natural attenuation of the groundwater
- Land use controls to prevent exposure to subsurface contamination while the soil and groundwater remedy is being implemented.

In addition, long-term monitoring and land-use controls will likely be implemented to prevent exposure to contaminated groundwater entering the storm sewer system while the in situ groundwater remedy is being implemented.

Through this innovative approach to evaluating VI at Site 45, the need for building mitigation and delays associated with additional VI sampling and analysis were avoided enabling the soil and groundwater plume remedy selection efforts to proceed.

Time-Critical Asbestos Removal

Training activities at the Silver Strand Training Complex (SSTC) South stopped abruptly in 2009 after the discovery of asbestos contamination at this Southern California location. The Navy was able to resume training within





Map of affected area. Concrete pads are outlined in red. Asbestos floor tiles were observed throughout yellow areas.

CDM

15 months by conducting one investigation, implementing a Time Critical Removal Action (TCRA), and conducting activity-based sampling (ABS). This approach set a precedent that can be applied at similar asbestos sites at other Navy installations.

The SSTC South is located on the Silver Strand, which bridges Coronado

Island and Imperial Beach in southwestern San Diego County. SSTC South, encompassing about 450 acres, is bordered to the west by the Pacific Ocean and to the east by San Diego Bay. A small radio compass station was established at SSTC South in 1920 by the Navy, and operations continued under the Navy and Army through 1970, when virtually all build-

ings associated with a portion of the site called Fort Emory were demolished. Although these buildings were demolished, concrete pads (some with intact remnant linoleum floor tiles) remained throughout the site. The combined terrain of concrete pads and vegetation made SSTC South a preferred location for urban combat training.

During training exercises in 2009, Navy personnel came in contact with linoleum tiles, which were still attached to the concrete pads. Red dust from these tiles adhered to the trainees' clothing. The red dust triggered an investigation into the composition of the linoleum tiles, which were determined to be asbestos-containing material (ACM). As a result, training exercises were immediately halted and relocated while the Navy researched options for remediating the site. At this point, the site was entered into the Navy IRP and a TCRA was begun at IR Site 11.

The National Contingency Plan, which guides all CERCLA responses, classifies removals as either time-critical or non-time-critical depending on the extent and type of contamination. To prevent asbestos release into the environment, the linoleum tiles, mastic (used to adhere the tiles to the concrete pads), and surface soil adjacent to the concrete pads (containing fragments of linoleum tile) were removed. Engineering controls for dust suppression and best management practices were used to ensure that no asbestos was released into the environment during the removal, loading, and transportation of the ACM, soils, and vegetation. Perimeter air monitoring was also used to verify that asbestos was not released into the environment.



Some of the asbestos floor tile found at SSTC.

CDM

To ensure protection of human health, confirmation sampling was required to verify that the TCRA removed asbestos from the site.

Analysis of asbestos in soil samples is not sensitive enough to reliably quantify asbestos below one percent. Also, there is no agreed-upon concentration of asbestos in soil that can be considered protective of human health because the relationship between asbestos levels in soil and the concentration in inhaled air seems to be highly variable. Based on these limitations, the EPA recommends an approach in which risk from asbestos in soil is evaluated on measurements of asbestos in air rather than soil. This approach uses ABS, in which air samples are collected from the breathing zone of personnel engaging in realistic and representative activities that could release asbestos fibers from soil, as the confirmation sampling method. This framework has been applied at other asbestos-contaminated sites such as Libby, Montana, and El Dorado Hills, California.

After the post-TCRA confirmation sampling, a technical memorandum was written with a human health risk assessment of Navy trainee and instructor ABS scenarios and an evaluation of Occupational Safety and Health Administration occupational exposure. It was determined based upon the ABS results that the TCRA was protective of human health. The Naval Medical Center in San Diego concurred with the findings and approved resumption of training exercises in April 2011 at IR Site 11.

By prioritizing the use of IR Site 11 for Navy training exercises and not unrestricted use, SSTC South was able to resume training Navy personnel as soon as possible. The approach used at SSTC South (minimal pre-removal investigation, TCRA, and confirmation sampling through ABS) was successful, and confirmed that the removal action was protective of human health.

The months (or potentially years) saved by initiating this time-critical action allowed crucial training to continue in a reasonable amount of time, allowing the Navy to help fulfill its mission to maintain, train, and equip combat-ready Naval forces.

Remediating the Remedy

The Navy and Department of Defense (DOD) policies require continual optimization of environmental remedies in every phase from remedy selection through site closeout. In August 2009, the DOD issued policy for



Asbestos samples were double bagged to prevent release of asbestos dust into the air.

CDM



Contaminated soil was removed from the area.

CDM



Workers polished concrete pads after tile removal.

CDM

“Consideration of Green and Sustainable Remediation Practices in the Defense Environmental Restoration Program.” This policy, along with current Navy policy and guidance, requires that sustainability be considered throughout all phases of remedia-



tion at DOD and Navy facilities. NAVFAC issued policy for “Optimizing Remedial and Removal Actions at all Department of Navy (DON) Environmental Restoration Program Sites” in April 2012 and the “DON Guidance on Green and Sustainable Remediation” in June 2011.

A sustainability evaluation at Marine Corps Logistics Base (MCLB) Albany, Georgia, found that optimizing the soil and groundwater remedy there significantly reduced total life-cycle greenhouse gas (GHG) emissions as well as costs.

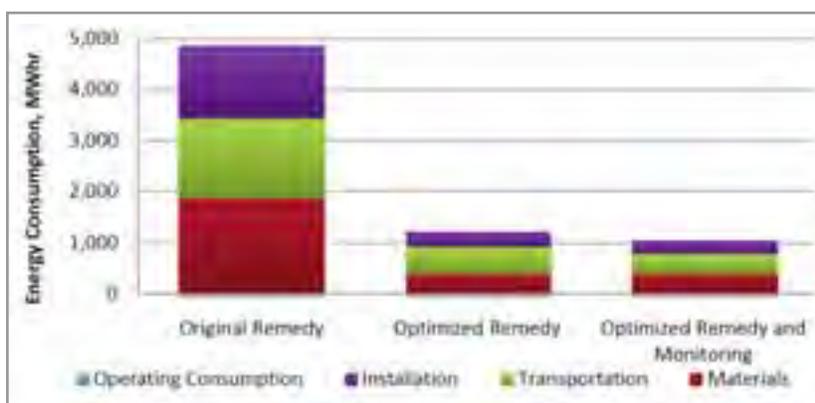
MCLB Albany is a 3,579-acre supply and logistics facility for the U.S. Marine Corps. Approximately 600 active-duty personnel and 3,870 civilians work on the base. Remedial activities have been ongoing for several years at a variety of locations on base. Contaminants of concern (COC) in groundwater throughout the site (referred to as Operable Unit (OU) 6) include PCE and trichloroethene (TCE), and the chemicals that result from degradation of these substances (daughter products), benzene, methylene chloride, antimony, thallium, cadmium and arsenic.

Under CERCLA, a Record of Decision (ROD) was issued for OU 6 in 2004. The ROD and subsequent Explanation of Significant Differences specified several remedies designed to remediate the site. Source control (soil) remedies included construction of an evapotranspiration cap in one area, maintaining pavement as a cap in another area, and a soil cover in a third area. Remedies for groundwater included injection of sodium permanganate or zero-valent iron at 190 locations. Monitored natural attenuation (MNA) was specified as a follow-on remedy for the entire site.

In accordance with Navy optimization policy, late in 2004, Naval Facilities Engineering Command Southeast (NAVFAC SE) optimized the remedial design, resulting in a more focused treatment, concentrating the chemical injections at 39 locations in only the high concentration zones. This design remained compliant with the ROD.

NAVFAC SE also performed an optimization of the groundwater long-term monitoring (LTM) program in 2010. The LTM optimization used a three-tiered approach including a qualitative, statistical and spatial analysis of the existing LTM program used to evaluate MNA. The monitoring optimization resulted in significant reductions in the number of monitoring locations, reductions in the analytical program to include only COCs identified in the ROD, and a reduction in the sampling frequency from semi-annual to annual at most wells.

In 2010, NAVFAC SE performed a sustainability evaluation to assess

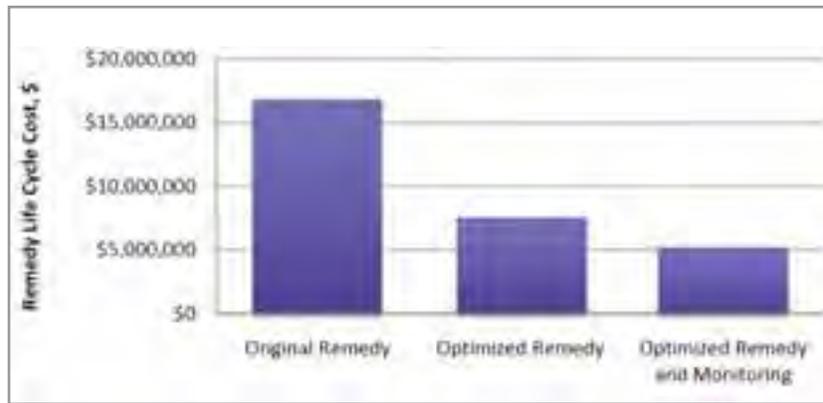


Energy consumption at MCLB Albany.
Tetra Tech NUS

the impact of previous remedy and LTM optimization efforts on the lifecycle environmental footprint of the OU 6 ROD remedies. Sustainability metrics evaluated included GHG emissions, energy consumption, criteria pollutant emissions and water usage.

The sustainability evaluation determined that the remedy optimization resulted in a lifecycle net energy reduction of approximately 3,700 megawatt-hours, and the LTM optimization further reduced energy consumption by approximately 130 megawatt-hours.

The evaluation determined that optimizing the remedy reduced lifecycle total GHG emissions by approximately 1,475 tonnes (75 percent), and optimizing the LTM program further reduced the total GHG emissions by 57 tonnes. (Note: Tonne is a metric unit equaling 2,204.6 pounds.) The total GHG emissions include carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). These were normalized to CO₂ equivalents (CO₂e) which is a cumulative method of weighing GHG emissions relative to global warming potential. The following chart shows the reductions in CO₂e emissions.



Remedy lifecycle costs.
Tetra Tech NUS

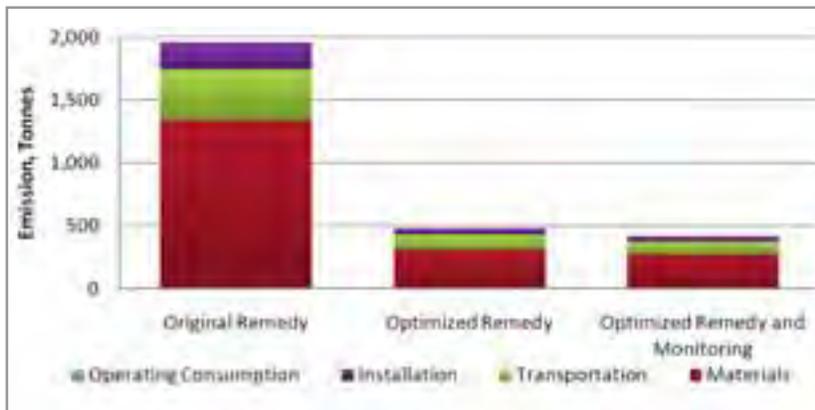
The remedy optimization also decreased lifecycle water usage by approximately 1.1 million gallons. Optimizing the LTM further reduced water usage by approximately 90,000 gallons.

Lifecycle emissions of nitrogen oxide, sulfur oxide, and particulate matter less than 10 micrometers in diameter (PM₁₀) were also significantly reduced throughout the optimization process by decreasing material, transportation and installation demands.

The chart above displays the remedy lifecycle costs associated with the original remedy, the optimized remedy and the optimized remedy

and monitoring activities. It illustrates a continued reduction of estimated lifecycle costs with each phase of optimization. The optimization measures undertaken have been estimated to yield a cost avoidance of \$10 million over the lifecycle of the remedy, including the LTM program.

NAVFAC SE has included optimization as standard practice for more than 15 years. Recently, sustainability has been included in this standard. The sustainability evaluation at MCLB Albany provided insight into the elements of the remedy that have the greatest impact on the environmental footprint. It demonstrated that optimization reviews and sustainability evaluations at each phase can continually improve remedy effectiveness, control lifecycle costs, and reduce the overall environmental footprint, including GHG emissions, energy usage and other resource consumption. The most significant improvements are possible from reviews during remedy selection and design, although periodic reviews during the Remedial Action Operation/Long-Term Monitoring phase will continue to reduce the overall lifecycle environmental footprint.



CO₂e emission reductions.
Tetra Tech NUS



Current site conditions showing pipe storage at NSF IHD.

NAVFAC's 2012 policy requiring optimization reviews and sustainability evaluations during the feasibility study phase of every project, and 2011 sustainable remediation guidance—which incorporates sustainability evaluations as part of the traditional optimization review process—further facilitate remedies that take green and sustainable approaches into consideration.



Naval Support Facility Indian Head Division.
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Disposing of Potentially Explosive Material

A fairly standard cleanup of a Navy scrap yard in Maryland became more complicated after suspected explosives, or Materials Potentially Presenting an Explosive Hazard (MPPEH), were found. To address the issue, a labor-intensive screening operation along with a Contained Detonation Chamber (CDC) were used.

Naval Support Facility Indian Head Division (NSF IHD) is located in northwestern Charles County, Maryland, approximately 25 miles southwest of Washington, D.C. The facility's scrap yard, located along Mattawoman Creek, was originally a coal storage facility starting around 1900. It later became a storage area for materials such as metal scrap, transformers containing polychlorinated biphenyls (PCB), and lead-acid batteries from the 1960s until 1988. Items were placed in the scrap yard with the intention that they were inert, but a lack of archival information required that all ordnance items be treated as potentially live. Throughout the 1990s, investigations at the site identified PCBs, Polycyclic Aromatic Hydrocarbons (PAH), and metals in the soil as COC. A human health risk assessment found unacceptable risk for receptors exposed to soil.

A Proposed Plan and Action Memorandum were completed that identified soil removal as the preferred alternative. Consequently, scrap removal began in 2002, utilizing a water jet cutter. The purpose of that effort was to clear the site of all materials down to the concrete pad and gain access to PCB-contaminated soils. At this point however, large munitions and explosives of concern were discovered, which required a specialized Explosive Safety Submission (ESS). Suspect items included a 220-pound frag bomb, an eight-inch projectile, and submunitions. (Note: Submunitions include bomblets, grenades, and mines filled with explosives or chemical agents.) Approval of the ESS was needed prior to commencement of the last phase of soil and munitions removal.

The last removal phase (May 2010 through May 2011) included the identification, certification, demilitarization, and disposal of MEC and MPPEH, and use of a CDC for items with less than 13 pounds of trinitrotoluene. In a CDC, the energetic or toxic item to be disposed of is imploded using a specifically designed explosive donor charge. The donor charge fragments the item and initiates the energetic content, while the resulting fireball decomposes the toxic agent, if any.

To accomplish this work, Unexploded Ordnance (UXO) technicians performed a visual and hand inspection to identify MPPEH and suspect MEC. All items that were found needed to be classified as either scrap metal, 5X, or safe to move. (5X is a designation for munitions items in which all cavities and surfaces can be seen and inspected.) Items were moved to a designated ordnance processing area or to the CDC for proper demolition.

Soil piles contained thousands of small cartridge actuated devices/propellant actuated devices (CAD/PAD) that required a two-phase screening process. UXO technicians monitored screening operations from a distance of 14 feet behind a protective two-inch thick Plexiglas plate. CADs/PADs as well as other MPPEH items were screened out and staged at a processing area.

Eventually, all munitions items were demilitarized and removed from the site. Quality control checks of screened soil were completed to confirm that munitions items would not be sent off-site with the waste. Once complete, the removal action eliminated risks and returned the site to a beneficial use area for the installation.

There were a number of challenges at the scrap yard site. First, MEC items were present with large Explosive Safety Quantity-Distance (ESQD) arcs, or standoff distances, that required a waiver from the Chief of Naval Operations Supply, Ordnance, and Logistics Operations (CNO N41) to conduct removal operations. The ESQD arcs would have required evacuation and shutdown of nearby buildings and facilities. Without the waiver, installation activities could have been severely impacted. Secondly, a Memo-



Typical UXO items.

randum of Agreement (MOA) was required which required numerous signatures and concurrence between NAVFAC Washington, Naval Support Activity South Potomac, and Naval Surface Warfare Center (NSWC) Indian Head Division (a tenant of NSF IHD). Finalization of the MOA required much coordination and time. Another challenge was the high visibility of the scrap yard cleanup. The site was adjacent to an office building and next to the Mattawoman Creek, which is popular with boaters and anglers. Entry control points needed constant monitoring. The last challenge was time-of-year work restrictions based on the bald eagle nesting season. A portion of the site was near an eagle's nest and slightly delayed the project start.

Despite these challenges, an ESS was approved, outlining a cost-effective approach for addressing the situation. Supporting documentation such as the CNO waiver and MOA were processed in a timely fashion, allowing work to proceed with minimal impacts to the base's mission. In all, over a ton of miscellaneous CADs/PADs were recovered by

screening and transferred to NSWC Indian Head Division for treatment. Over 2,400 munitions items were demilitarized, including 87 MEC items treated in the CDC. In addition, 4,900 tons of contaminated soil was removed from the site, and 164 tons of non-munitions scrap metal was sent offsite for recycling.

The site was returned to the installation for their use and is currently being utilized for pipe storage to support a military construction project. [↴](#)

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Currents Honors Energy & Environmental Award Winners in
2013–14 Calendar

*18-Month Calendar Provides Lots of Space to Highlight
Innovation & Commitment*

Eighteen months and 18 awards. *Currents* magazine's 2013–2014 calendar highlights some of the standout actions by the winners in the top 18 Secretary of the Navy (SECNAV) Environmental and Energy and Water Management award categories from 2012.

Your new calendar begins in July 2013 with USS Ronald Reagan (CVN 76), winner of the SECNAV Environmental Quality, Large Ship award. We will carry you through the remainder of 2013 and all the way through 2014, with a different award category each month. It all wraps up in December 2014 with the Environmental Quality, Individual or Team award won by Naval Supply Systems Command Fleet Logistics Center, Pearl Harbor, Hawaii. Some of the other award categories include:

October 2013: SECNAV Energy and Water Management award, Navy Large Shore category won by Joint Base Pearl Harbor-Hickam, Hawaii.

March 2014: Two winners of the SECNAV Environmental award, Environmental Restoration, Individual or Team—Mare Island Investigation Area H1 Restoration Team and Marine Corps Air Station Cherry Point, North Carolina

September 2014: Two winners in the Environmental Quality, Non-Industrial Installation category—Fleet Activities Yokosuka, Japan and Marine Corps Air Station Yuma, Arizona

As the Navy's official energy and environmental magazine, *Currents* has the privilege to share the many ways the Navy's energy and environmental personnel and Sailors work to find and implement the best techniques to achieve their goals.

Do you subscribe to *Currents*? If so, you should be receiving your 2013–14 calendar shortly. If not, please contact Lorraine Wass, our distribution manager, at ljwass@surfbest.net or 207-384-5249 to receive your own copy of the calendar, request additional copies and sign up for *Currents*.

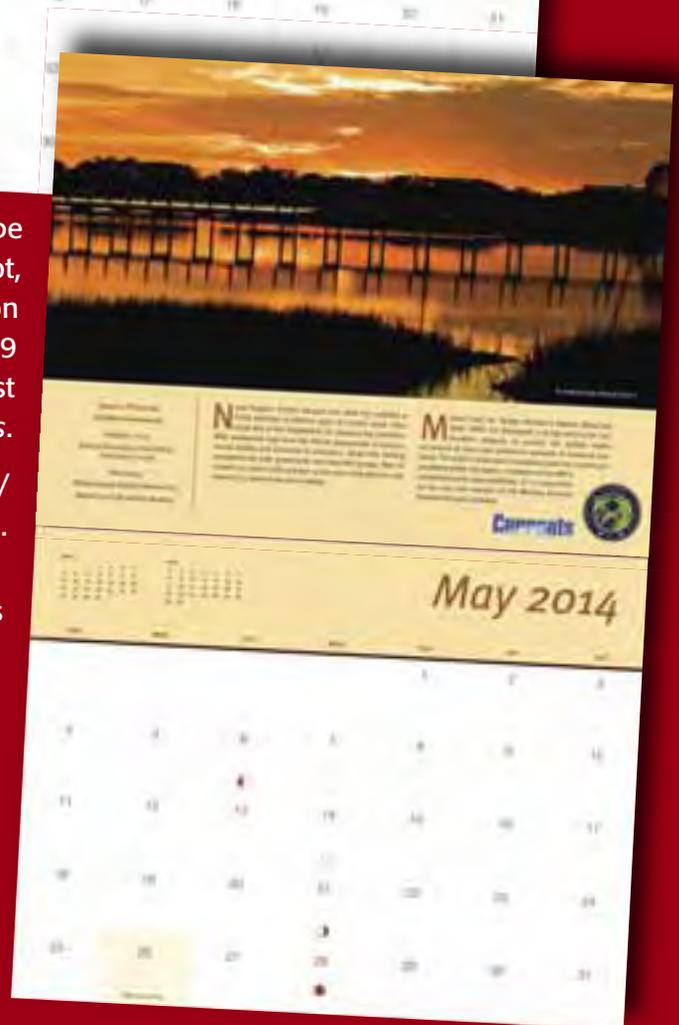
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Thanks for all of your great work and we look forward to seeing more from you in the pages of *Currents* magazine and the *Currents* calendar!



Meeting the Navy Mission & Protecting the Environment in 2012

Highlights of Environmental Accomplishments

EACH YEAR IN April, Earth Day reminds us of the importance of protecting the environment for current and future generations. While Earth Day is a great opportunity to participate in base and community recycling drives, neighborhood cleanups, environmental fairs, and other “green” activities, the Navy’s focus on environmental stewardship is a year-round endeavor that helps enable our primary mission of national defense.

some of these major efforts and accomplishments.

Environmental Planning for At-Sea Training & Testing

The Navy continued working in 2012 to complete Phase II environmental planning and permitting. Phase II consolidates areas from 13 environmental impact statements (EIS) from Phase I into five comprehensive EISs. This reduces the paperwork burden

to fully consider the potential impacts of proposed training and testing activities on the environment, including marine mammals. For this purpose, the Navy used a mathematical modeling tool known as the Navy Acoustics Effects Model (NAEMO) that takes into account such factors as the quantity and types of activities planned, underwater geography, typical ocean conditions, and the species and quantity of marine mammals expected to be in a given

In total, these changes across AFTT and HSTT resulted in decreased estimates of potential marine mammal injuries and mortalities.

The year 2012 was very productive for the Navy’s environmental professionals, with significant progress made in areas such as site restoration, clean water and air policy, compatibility and range sustainment, and environmental planning. The Navy continued building relationships with local communities, closing out munitions response sites, and incorporating energy and environmental considerations into the acquisitions process. This article highlights

for the Navy and the National Marine Fisheries Service (NMFS) and allows interested stakeholders to get a more holistic understanding of the proposed activities. For training and testing to continue uninterrupted, Phase II permits from NMFS must be completed before Phase I permits begin expiring in January of 2014.

To move toward obtaining these permits, the Navy worked with NMFS

training or testing area. Once modeling was completed for each training and testing area, experts applied scientific post-modeling analysis to refine estimates of the number of marine mammals that may be affected.

In May of 2012, the Navy released the draft Atlantic Fleet Training and Testing (AFTT) and the Hawaii-Southern California (HSTT)

EIS/Overseas EIS (OEIS) documents—the first documents released under Phase II—for public comment. The Navy has since revised the original draft EIS estimates of potential marine mammal effects to reflect evolving training and testing requirements and/or new science.

In total, these changes across AFTT and HSTT resulted in decreased estimates of potential marine mammal injuries and mortalities. Estimates of non-injurious behavioral effects (e.g., turning head, changing swim direction) increased for AFTT but decreased for HSTT. These revisions were reflected in the NMFS AFTT and HSTT proposed rules, which were published in the Federal Register on 25 January 2013. NMFS will accept public comments on these rules through 11 March. NMFS will consider public comments in the final rules, which will likely be published later in 2013. After the final AFTT and HSTT EISs are released, the Navy plans to issue records of decision for both areas.

Energy & Environmental Considerations in the Acquisition Process

In 2012, the Navy reviewed acquisition programs across their lifecycles and during all phases of the Joint Capabilities Integration Development System (JCIDS) and Navy Gate Review processes to effectively integrate environmental and operational energy considerations. The Navy Acquisition Environmental Readiness Integrated Product Team (ACQ-ER IPT) and the Navy Operational Energy in Acquisition Team (EN-ACQT) facilitated discussion, development, and review of appropriate language to integrate environmental and operational energy considerations into a full range of planning and force development activities. The teams' review will be finalized in the development of two, individual OPNAV N45 environmental and operational energy in acquisition guidebooks during 2013.

OPNAV N45 worked directly with Program Offices and representative SYSCOMs to review energy metrics including the JCIDS' Energy Key Performance Parameter, program trade space analyses, and Fully Burdened Cost of Energy. This ensured the acquisition program adhered to



The Navy's "Current Buster" deployed off of the USCG Cutter Sycamore during Arctic Shield-Oil Spill Response Exercise two miles off of Point Barrow, Alaska in the Arctic Ocean.

MC3 Eric A. Pastor

Secretary of the Navy (SECNAV) and Chief of Naval Operations goals of energy efficient acquisition and that acceptable operational energy considerations were developed.

In response to a 7 February 2012 action memo from Vice Admiral Burke (then serving as Deputy Chief of Naval Operations for Fleet Readiness and Logistics (OPNAV N4)), OPNAV N45 hosted the inaugural Navy Requirement

Environmental Planning & Readiness Sustainment Symposium

ON SEPTEMBER 18–19, 2012, the Chief of Naval Operations Energy and Environmental Readiness Division (OPNAV N45) held a training symposium on natural resources; environmental planning; compatibility and readiness sustainment; and marine mammal protection. More than 300 Navy and Department of Defense (DoD) representatives attended the symposium in Norfolk, Virginia. The Honorable Roger Natsuhara, Principle Deputy Assistant Secretary of the Navy for Energy, Installations, and Environment was a keynote speaker during the event. Additional speakers included Rear Admiral Slates, Director of OPNAV N45; Peter Boice, Deputy Director of Natural Resources for the Office of the Secretary of Defense; Judy Conlow, Senior Counsel, Navy Office of General Counsel, and other senior policymakers and technical personnel from the Fleets, NAVFAC, the systems commands (SYSCOM), the regions, Chief of Naval Installations Command (CNIC), and several bases.

Officer (RO) Training Course that covered various topics including energy and environmental considerations in requirements. The intent of the course was to meet gaps in current training with the goal of better preparing Navy ROs to meet challenges of managing their programs. OPNAV N45 continues to present at the monthly RO Training Courses.

Compatible Development & Protecting the Navy Mission

The Navy continued working closely with communities to reach agreements about land use development near naval installations. Notably, in April and October of 2012, the Navy signed memorandums of agreement (MOA) with wind developers to prevent any potential impacts of wind farms on radar systems at Naval Air Station (NAS) Corpus Christi and NAS Kingsville. The MOAs include limits on turbine height and stipulations to temporarily shut off turbines if they interfere with Navy radar.

NAS Kingsville and Corpus Christi train nearly 300 naval pilots yearly, which amounts to about half of all naval pilots. Pilots rely on radar systems for safe landings and aerial navigation. Wind turbines may interfere with Navy radar, making it difficult for flight controllers to safely



The Navy is working to finalize its Phase II environmental planning and permitting to ensure vital training and testing can continue. The Navy must be able to train as it fights and realistically test new equipment, but maintains a firm commitment to protecting the environment.

MC2 Kenneth Abbate

guide pilots. Realistic training conditions are critical for pilots in the field. The Navy recognizes the importance of renewable energy but it must ensure that it does not interfere with its training mission. Navy pilots rely on radar systems for safe navigation and wind turbines may clutter radars, making it difficult to detect dangers.

Moving Forward with Installation Restoration & Munitions Response

The Navy's Environmental Restoration Program (ER, N) is comprised of the Installation Restoration Program (IRP) and Munitions Response Program (MRP). The IRP manages sites with legacy hazardous materials and the MRP cleans up unexploded ordnance and military munitions on closed

range sites. In Fiscal Year 2012 (FY12), there were a total of 4,356 ER,N sites; this number includes 86 sites that have been added since FY11.

The ER,N program has specific goals for closing out sites. These goals state the following:

1. By the end of FY18, 90 percent of all sites will be Response Complete (RC).
2. By the end of FY21, 95 percent of all sites will receive RC.

In FY12, 260 sites at 58 installations achieved RC, which puts the Navy at 71 percent of both goals. The Navy also has goals for IRP and MRP. The IRP goal states that by the end of FY14, 100 percent of IRP sites are to achieve Remedy in Place (RIP)/RC. In FY12, 91 percent of sites met this goal. By

Energy Goals

ONE OF SECNAV Ray Mabus's energy goals is to incorporate energy into the acquisitions process. To help meet this goal, the EN-ACQT was established in 2011 to consider energy-related factors during all phases of system development and acquisition.

the end of FY20, 100 percent of MRP sites are to achieve RIP/RC. In FY12, 39 percent of sites achieved this goal.

In 2012, the Navy completed the divestiture, or sale, of Naval Weapons Industrial Reserve Plant (NWIRP) Dallas. NWIRP Dallas was transferred to a non-federal entity at the culmination of years of environmental assessments at the industrial facility. This is the largest Navy divestiture (other than Base Realignment and Closure), resulting in a \$27 million cost avoidance for the ER,N program.

Implementing Environmental Management Systems

To protect the environment and reduce pollution, Navy installations integrate environmental considerations into day-to-day activities across all levels and functions of the Navy enterprise by implementing Environmental Management Systems (EMS). The Navy performs audits of its installations, on a three-year cycle, to validate conformance with the International Organization for Standardization (ISO) Environmental

Management Specifications 14001 and to assess environmental compliance. Installations develop and implement Plans of Actions and Milestones (POA&M) to rapidly resolve audit findings and identify their root causes. Audit teams track the POA&M to completion.

In FY12, the Naval Facilities Engineering Command's (NAVFAC) Facilities Engineering Command auditors completed audits of 23 installations using procedures developed by NAVFAC's EMS Media Field Team (MFT). The MFT also implemented standardized training through the Environmental Compliance Assessment, Training, and Tracking System (ECATTS). In addition, the MFT designed and implemented a Navy-wide computer system, EMSWeb, to establish a single repository for EMS documentation and audit data while preventing loss of information and allowing transparent communication of information.

Preventing Oil Spills

The Navy is part of the National Response Team (NRT) established

under the Oil Pollution Act of 1990. As part of the NRT, Navy assets are used to respond to any major oil spill. The Navy routinely trains with other federal agencies to ensure the nation's preparedness to respond to oil spills. In 2012, the Navy spent \$22M in developing plans, training, and buying equipment to respond to oil spills.

In July of 2012, the U.S. Navy's Supervisor of Salvage and Diving (SUPSALV) participated in Arctic Shield, a joint exercise involving equipment and personnel from the U.S. Northern Command, SUPSALV, the U.S. Coast Guard (USCG), and multiple commercial companies. One of the purposes of Arctic Shield was to demonstrate USCG and SUPSALV readiness for deploying spill response capabilities in the arctic region of Alaska. For that purpose, exercise participants deployed equipment in the Arctic Ocean near Point Barrow, Alaska. Due to offshore drilling beginning in this region, it is increasingly vital that Oil Spill Response Organizations demonstrate their ability to respond in the event of a spill in the harsh conditions of the Arctic.

Environmental Management Systems audits to validate conformance with the ISO Environmental Management Specifications 14001 and to assess environmental compliance.

MC3 Shawn J. Stewart



The Navy recognizes the importance of renewable energy but it must ensure that it does not interfere with its training mission.

Clean Water Act Services Steering Committee

The DoD Clean Water Act Services Steering Committee (CWA SSC) leads DoD in cost-effectively implementing CWA statutes and regulations, including those related to stormwater. The Navy manages stormwater on its installations to minimize pollution associated with runoff from impervious surfaces, like streets and parking lots. In 2012, OPNAV N45, NAVFAC, and CNIC worked closely with the committee, to develop and issue a policy on stormwater service charges, or

Clean Water Act Reasonable Service Charges

THE CWA AMENDMENT states that Federal installations must pay any “reasonable service charges” for stormwater pollution providing the charge was:

1. Based on some fair approximation of the proportionate contribution of the property or facility to stormwater pollution.
2. Used to pay or reimburse the costs associated with any stormwater management program (whether associated with a separate storm sewer system or a system that manages a combination of stormwater and sanitary waste). This second provision includes the full range of costs attributable to collecting stormwater, reducing pollutants in stormwater, and reducing the volume and rate of stormwater discharge.

“fees.” The policy was developed in response to a 2011 amendment to the Clean Water Act (CWA).

Navy’s policy requires a highly fact-specific analysis of stormwater charges, to be conducted on a case-by-case basis using seven criteria. To be payable by a Navy facility, a stormwater service charge:

1. Must relate to the control and abatement of water pollution
2. Must be reasonable
3. Must be nondiscriminatory
4. Must be based on some fair approximation of the proportionate contribution of the property or facility to stormwater pollution
5. Must be measured in terms of quantities of pollutants, or volume or rate of stormwater discharge or runoff from the property or facility
6. Must be used to pay or reimburse the costs associated with any stormwater management program (whether associated with a separate storm sewer system or a sewer system that manages a combination of stormwater and sanitary waste)
7. May include the full range of programmatic and structural costs attributable to collecting stormwater, reducing pollutants in stormwater, and reducing the volume and rate of stormwater discharge

The policy also provides examples of frequently asked questions and

answers to aid installations and regions in their analysis, and ensures consistency across the Navy. To learn more about the CWA SSC or for a copy of Navy’s stormwater fee policy, visit: https://www.denix.osd.mil/denix_secure/cwassc/index.cfm.

Marine Mammal Research

In an effort to gain insights into the program’s current research portfolio, the Navy’s Living Marine Resources (LMR) program manager convened an In-Progress Review (IPR) of researchers and its management team, the Living Marine Resources Advisory Committee (LMRAC), in Port Hueneme, California in October 2012. Researchers from across the globe discussed what they are doing to help the Navy develop, demonstrate, and assess new solutions to protect living marine resources while preserving core Navy readiness capabilities.

Opening remarks were provided by Mr. Don Schregardus, Deputy Assistant Secretary of the Navy for Environment. Representatives from OPNAV N45 as well as members of the management team from LMR’s sister research program, the Navy Environmental Sustainability Development to Integration (NESDI) program, joined LMR personnel to evaluate current LMR projects and plan future investments to keep the program properly focused. LMR researchers, the LMRAC, and staff joined together in honoring Dr. Frank Stone for his vision and leadership since the founding of the program more than 15 years ago through the transition of

the LMR program to NAVFAC management in 2012.

In addition to standing up a website for the program (at www.lmr.navy.mil) as well as documenting its business processes in a Standard Operating Procedure, the LMR program also completed its FY 2013–14 needs collection and evaluation process which yielded a total of 65 submittals from across the Navy. After a thorough review, evaluation, and consolidation of the submitted needs, the LMR Program Manager (on behalf of the LMRAC) forwarded six needs to OPNAV N45, the program's resource sponsor. Proposals to address those priority needs will be considered and projects initiated in FY13 and FY14 as available funds allow.

An article entitled "LMR Program Holds In-First

Progress Review" in the winter 2013 issue of *Currents* contained more insights into the LMR program. (To subscribe to the magazine or browse the *Currents* archives, visit the Department of the Navy's Energy, Environment and Climate Change web site at <http://greenfleet.dodlive.mil/currents-magazine>.)

Clean Air Act & Ozone Depleting Substances

Similar to the CWA SSC, the Clean Air Act (CAA) SSC ensures compliance of the CAA throughout DoD. In 2012, the CAA SSC updated the Engine and Fuel Standards Desk Reference guide, which was first published in May



Navy and Marine Corps installations across the world participated in beach cleanups, recycling drives, and other community events in celebration of Earth Day 2012.

MC3 Eric A. Pastor

2010. The committee developed and issued a coordination process through its Highway/Nonroad Engines Subcommittee to ensure that, whenever a Service requests a national security exemption, the CAA SSC is informed and participates in the review. The committee coordinated with Deputy Assistant Secretary of the Navy (Environment) (DASN(E)) and Deputy Under Secretary of the Defense (Installations & Environment) (ADUSD(I&E)) for ADUSD(I&E) to sign out the DoD Air Emission Rights Policy in July of 2012. The CAA SSC also submitted comments on behalf of DoD and the Services for consideration by the U.S. Environmental

Protection Agency on eight proposed rule amendments, reconsiderations, and guidance documents.

In 2012, the Navy realigned the Ozone Depleting Substances (ODS) SSC as a subcommittee of the CAA SSC to increase efficiency, reduce administrative burdens, and improve coordination between the two committees. Both committees were chaired by OPNAV N45 and reported to DASN(E). Under the realignment, the ODS SSC will now interact more with the CAA SSC Global Climate Change Subcommittee, which should have benefits due to the ODS SSC's increased focus on the climate change issues of ODS alternatives.



The NESDI program is using a robust predictive model to develop quantitative categories for Essential Fish Habitats that support Fleet readiness. Among the species targeted in this effort is the Kelp Bass (*Paralabrax clathratus*).

Researching Navy Environmental Sustainability

The NESDI program ended FY12 with the release of its annual report, entitled “NESDI FY12 Year in Review Report: It Ends with Integration.” The report contains a financial review of program expenditures as well as insights into projects that were particularly successful in demonstrating the use of an innovative technology or collecting critical information to enhance the efficiency of environmental management programs. From finding a method to distinguish background from anthropogenic sources of perchlorate to determining the effects of military expendable materials in the marine environment, the report provides insights into some of the most successful NESDI projects.

In an effort to address the ongoing challenges of effectively managing stormwater at Navy facilities, the NESDI program convened IPRs of stormwater end users, researchers, and policymakers in San Diego, California in January 2012 and then again in Silverdale, Washington in November 2012. These and other IPRs ensure that existing NESDI projects and future investments are properly focused, efficiently executed, and successfully integrated. For more

information about the NESDI program, visit the program’s web site at www.nesdi.navy.mil.

Community Outreach—An Online and In-Person Presence

The Navy continues to share information about environmental successes with local communities and interested stakeholders at air shows, conferences, community events, and online. In 2012, more than 60 Navy and Marine Corps installations participated in and/or hosted more than 150 Earth Day events and activities worldwide. Events included environmental fairs, base and beach cleanups, recycling contests and electronic waste collections, art contests, dumpster dives, and tree plantings.

U.S. Fleet Forces Command (USFF) continued to expand its environmental outreach program in 2012, visiting 49 schools and speaking with nearly 30,000 students. This is a 150 percent increase in students reached compared to last year. In addition to schools, USFF participated in 26 public events, such as festivals and air shows, reaching out to more than 36,000 people.

The Navy continued to grow its online presence on social media

outlets like Facebook and Twitter. On Facebook, the Task Force Energy and Navy *Currents* pages expanded their repertoire of interactions to be more interactive with questions, quizzes, and links to video and graphics, such as the 2012 Earth Day infographic highlighting Navy Earth Day events worldwide.

Task Force Energy Twitter (@NavalEnergy) followers increased and Navy *Currents* Twitter (@NavyCurrents) followers both increased by 35 percent in 2012. Task Force Energy Facebook page likes increased 32 percent and Facebook Navy *Currents* page likes increased 46 percent. The NavyEnergyEnviro YouTube channel posted numerous videos on various topics ranging from Navy sonar to the MOA signing at NAS Kingsville. Total NavyEnergyEnviro viewership for 2012 was 4,658.

With 2013 well underway, the Navy continues to comply with environmental regulations and make significant progress in achieving environmental goals. Despite significant fiscal constraints, the Navy remains committed to minimizing environmental impacts, keeping Sailors, Navy families, nearby communities, and the natural environment safe as we carry out our primary national defense mission. 

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1.

The crew of the aircraft carrier USS Nimitz (CVN 68) and the rest of Carrier Strike Group 11 participated in Rim of the Pacific 2012 exercise including a successful demonstration of the Great Green Fleet.

2.

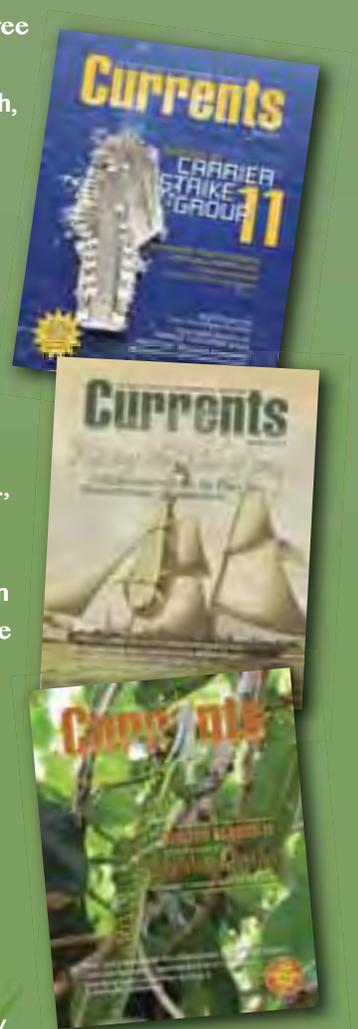
U.S. Navy underwater archaeologists are preparing to unearth a gunboat scuttled nearly 200 years ago in the Patuxent River—probably the USS Scorpion—a wreck that might hold answers about the Navy's role in the ultimately unsuccessful defense of Washington, D.C., during the War of 1812.

3.

Members of the Department of Defense Partners in Amphibian and Reptile Conservation program are working hard to balance the Department's national security mission with the preservation of various amphibian and reptile species and their habitats on nearly 29 million acres of military land.

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