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Corps of Engineers Photo

Northwestern Division commander William Rapp receives his general's star at a frocking ceremony held July 7 at the Gus Solomon Federal Courthouse in Portland. His stars are pinned by his wife, Debbie, and his father, Col. (Ret.) Edward Rapp, while his mother, Trudy, and Rapp's three children look on. "Sharing this moment with my family was very special," Rapp said. "I was very proud to have my father, a former St. Paul District commander, help Debbie pin on the new stars." Rapp assumed command of Northwestern Division on May 30, 2008



The way forward...

Building a professional Team that:

*“Delivers Superior Performance;
Sets the standard for our
profession; Makes a positive
impact on the Nation and other
nations; Is built to last as
evidenced by our strong “bench”
at all levels educated, trained,
competent, experienced, and
certified.”*

*Lt. Gen. Robert Van Antwerp
June 2008*

From my initial travels around the District, visiting numerous projects and summer picnic organization days, I can see and feel the pride of this great District Team. Many of you that I have met described your passion for the important work that we do and how much you enjoy working for the Corps. It is a great place to work but we can all do our part to make it even better to sustain our reputation.

As professionals, and team members, relationships with each other and with our stakeholders are the keys to our success or failure. Many of you describe your co-workers and colleagues as your extended family. This culture is unique to the Army Corps of Engineers and is rarely seen in the corporate world. This bond within the workforce really makes me proud to be your commander. Building a strong command climate of “esprit-de-corps” and treating each other with respect and dignity are top goals of mine for the Portland District. I want people to enjoy coming to work, working hard, and yet having fun. A sense of humor is one of the best ways to handle stress. We operate in a high stress environment due to the magnitude of our aging infrastructure, personnel demands, and complex environmental requirements. We have to keep things in perspective and take care of each other while remaining focused on the mission.

Personally, I value People, Professionalism, Competency, and Loyalty. These qualities



Col. Steven R. Miles, P.E.

in my opinion define the type of people that can accomplish the four mission areas I outlined in the beginning. My intent for our District Team is to be **ONE DISCIPLINED TEAM** - in thought, word and action - and to meet our commitments by “saying what we will do and doing what we say.”

Have a great summer, take care of each other, be safe, have fun.

Essayons - Army Strong

CORPS'PONDENT



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of Engineers -
Portland District

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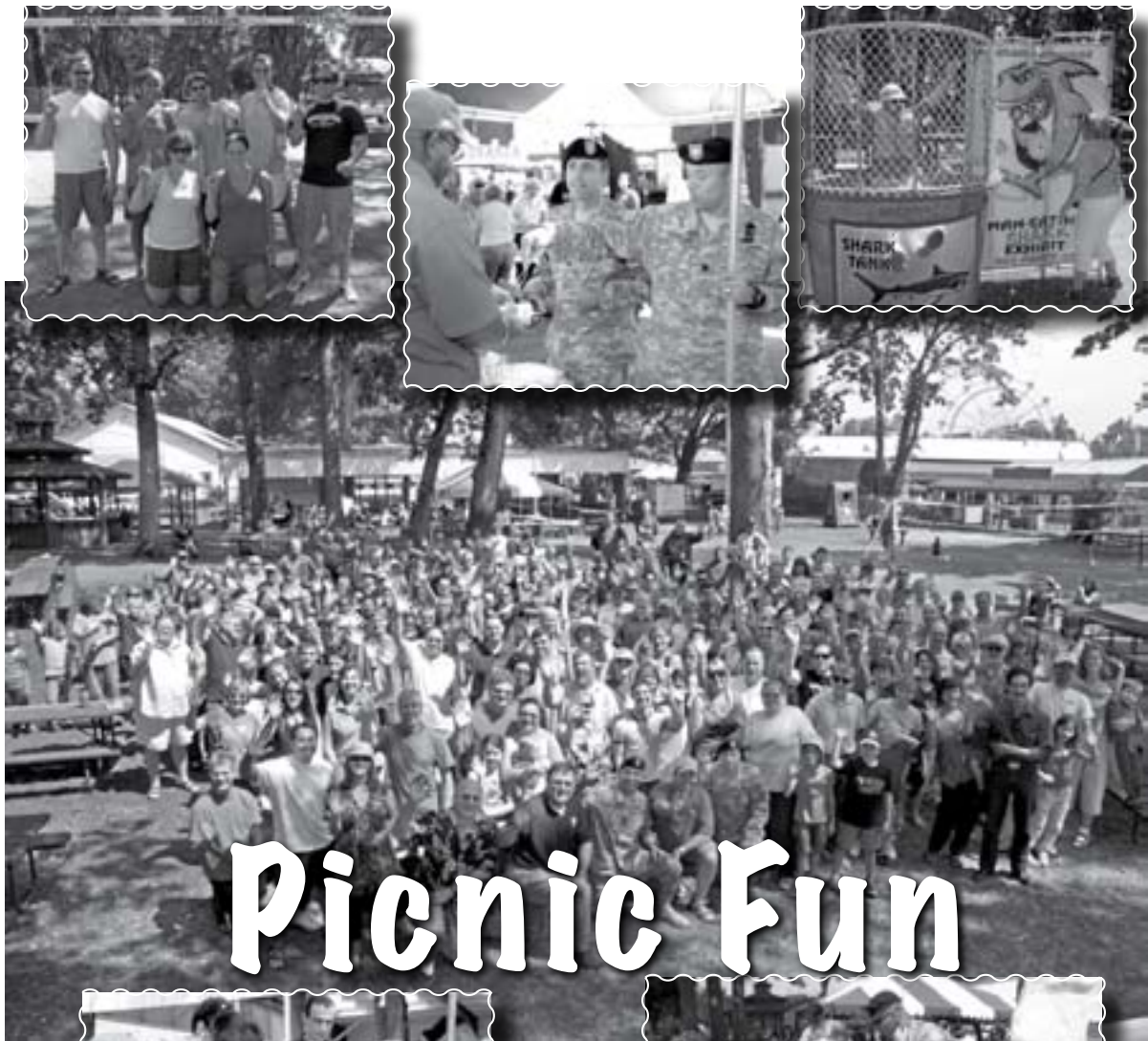
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Corps of Engineers Photos



Warding off the Enemy

(millions of them)

By Amy Echols, Public Affairs Office

Resource experts, volunteer crews and scientists are busier than ever battling tiny, formidable enemies: millions of seeds, eggs and larvae from invasive and exotic land and water creatures.

When the *Corps'pondent* first covered the critical issue of invasive species in September 2005, the Corps of Engineers was building a program to ward off the financial and environmental threat of invasions by several aquatic species of mussels and by aggressive non-native plants overrunning native habitat in the Columbia River Basin.

In just three years, the invasive zebra mussel has landed in California's Central Valley, while quagga mussels have been found in San Diego county lakes; they also have made their way to Lake Mead in Arizona. Although aquatic nuisance species have not yet found a home in our local rivers, zebra mussels are already traveling overland on boat hulls through the Pacific Northwest.

With 23 states and two Canadian provinces racking up more than \$7 billion in damage to dams, irrigation, water supply systems and other infrastructure, the West Coast could be in for a long battle.

"Portland District is more dedicated than ever to improving our invasive species control practices," said Tim Darland, Portland District's aquatic invasive species coordinator.

Dredging activities in the Columbia, Cowlitz and Willamette rivers, and along the West Coast, complicates controlling invasive species. With contracted dredges moving around the country, the



Photo by U.S. Fish and Wildlife Service

Mussel-encrusted bait bucket at Lake Oologah, Okla.

risk of aquatic invaders hitching a ride on one of these vessels is increasing.

Dredges and other ships take on ballast water to improve their stability; typically they take in water at one place and release it in a different location. Scientists know the eggs and larvae of invasive quagga and zebra mussels may be present in the ballast water, where they can hitch a ride from one location to the next. "Where the ship is when the plug is pulled, and what is washed out with the ballast water could spell catastrophe for our waterways, environment and infrastructure," Darland said.

Once contamination has occurred, keeping them out of waterways becomes nearly impossible, Darland added. "Consider that for some of the exotic and invasive mussel species, just one female can lay one million eggs and the term 'invasion' takes on new meaning. Not only are these species prolific, adults can live up to five years."

Boaters can help prevent the spread of invasive species:

Remove any visible mud, plants, fish or animals

- Before leaving an area, drain water from your boat, trailer, tackle and gear. Clean and dry anything that came in contact with water (boats, trailers, equipment)
- Never put plants, fish or animals into a body of water unless they came out of that body of water
- Consider more aggressive cleaning of your boat if it has been at a lake with known nuisance species

Decontaminating practices for each dredge, including the hull, ballast water and all equipment that makes contact with the water, are now specific line item requirements in Corps contracts for dredging services.

“All dredge staff and the seven contract inspectors are required to participate in periodic training,” said Karen Garmire, Portland Resident Office. “So that everyone understands the consequences, they all have to watch ‘Don’t Move a Mussel,’ a video produced by the Pacific States Marine Fisheries Commission.”

As hard as the Corps and its partners work to keep these invaders out, the likelihood of finding them increases daily, Darland said. “The Corps participates in the Columbia River Basin Rapid Response Plan for zebra mussels and other related species, in the case that these prevention efforts fail.” Federal and state agencies, Native American tribes, educational and researcher organizations have developed a plan to respond rapidly and effectively should invasive species be found. The plan follows the time-proven response principles designed for oil spills, forest fires and other environmental emergencies: effective interagency response depends on effective contingency planning.

Darland talks to Corps employees, visitors to Bonneville Lock and Dam and anyone he can about

how recreational boaters are one of the biggest threats to the march of the mussels into the waterways of the Northwest.

“The awareness of boaters can help prevent the spread of invasives and, if it comes to this, can help with early detection,” states Darland. “Following several simple steps can make a huge difference in maintaining the ecological balance of entire bodies of water.”

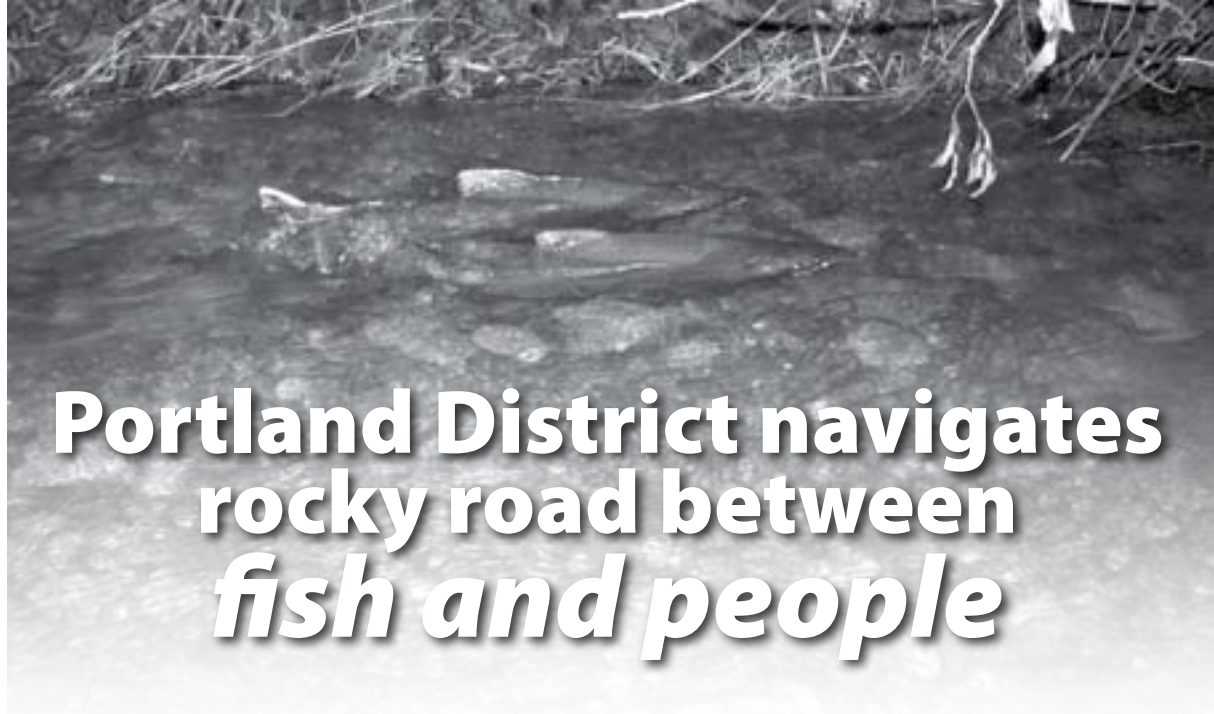
Keeping the enemy from West Coast lakes and rivers will always be a challenge, but it is one Corps park rangers and other environmental specialists know must be fought everyday. The Corps’ dedicated staff, keen-eyed and educated, will need to keep guard. Darland and Garmire work with many others to fortify the Corps against these enemies, knowing each victory is only a temporary respite. “No one believes we can keep them out indefinitely, but we will keep them out as long as possible.” When those first quagga or zebra mussels do find their way in, they will face the determined ranks of state, federal, tribal and non-governmental agencies, standing together to make the going tough for invaders. “We’ll hit that ‘when’ head on,” says Darland. “It’s our responsibility.” **PH**

Editor’s note: This article addressed aquatic invasive species; a future article will explore the challenges of monitoring and removing land-based invasive species.



Photo by U.S. Geological Survey





Portland District navigates rocky road between fish and people

By Scott Clemans, Public Affairs Office

Photo by Teresa Huntsinger

Can gravel mining and salmon coexist?

That's a question being asked across Oregon. The Portland District's Regulatory Branch is leading a team from state and federal agencies and the gravel mining industry to try to find the answer.

Gravel is essential to the life cycles of all five species of salmon important to the coastal economy. Salmon need it to spawn, and it also supports the salmon's key food source – small aquatic invertebrates that eat algae that grows on rocks in gravel bars.

Salmon also require a steady flow of clean, cool water. According to the National Marine Fisheries Services, bar scalping is the most common method of removing material. The process increases a stream's width while decreasing its depth, exposing more water to the sun and raising the river's temperature. The decreased depth also can block salmon migration paths.

Gravel mining, if not done properly, can also release large amounts of silt into the water, burying algae-covered rocks. Not only does the silt make it difficult for the salmon to see their prey, but the lack of algae can kill the invertebrates that feed on it.

"The Corps has long been interested in the impacts of gravel removal on Oregon's aquatic systems," said Lawrence Evans, chief of Portland District's Regulatory Branch.

The Corps and its federal and state partners have carefully evaluated the impacts of such proposed activities and attempted to mitigate those impacts

by imposing appropriate conditions on the gravel mining permits they approve, while denying those applications that would excessively impact the ecosystem, Evans added.

For example, the District recently denied eight permit applications to remove sand and gravel in or near the South Umpqua River near Roseburg, Ore. The conclusion was that the Umpqua River could not sustain the level of removal proposed by the applicants: more than 200,000 cubic yards per year, or about 1.2 million cubic yards over the five-year permit term.

The Corps recognizes that evaluating gravel permits on a case-by-case basis isn't going to answer the larger question of how much gravel mining is too much for any given river, Evans said. "Only by looking at this issue from a watershed perspective will we find the answers."

In April 2007, the Portland District and its partners started examining issues related to gravel removal from the Chetco River. They agreed to form a team and work collaboratively to develop an innovative, regional watershed approach to commercial gravel operations within the river system.

Oregon is only one of many states with commercial gravel operations, meaning other states will be interested in the agreed upon guidelines, Evans said. "Headquarters USACE will provide \$900,000 to fund the Chetco and Umpqua river system studies, recognizing the importance of this collaborative

effort. It is hoped that, in subsequent years, the state and gravel industry will also be able to provide future funds for additional river systems as they are identified,” he added.

The long-term study is investigating what level of mining can be supported in the Chetco River system without adversely impacting the aquatic environment.

“Right now we’re working with the U.S. Geological Survey on a sediment transport study for the Chetco,” said Judy Linton, Corps project manager for the Strategic Gravel Initiative. “We’re trying to determine how much gravel is being deposited onto the bars there, which will help us decide how much can be removed.”

The Chetco River evaluation will be used as the template to evaluate other river systems in Oregon, Linton added.

“We’re also starting to develop the first phase of a study of the Umpqua River system, which will be the next system we’ll study after the Chetco,” Linton said.

The ultimate goal of these studies is to develop regional general permits that establish parameters for gravel removal in each specific watershed. The Corps could then speed the authorization of projects that meet those parameters.

These permits help expedite authorization by bundling a Department of the Army permit with Endangered Species Act and Essential Fish Habitat consultations that have already been completed for specific conditions; state water quality certification and coastal zone management would follow the same principal of consistent condition approval.

The end result of this partnership between federal and

state agencies and the commercial industry will be that gravel mining companies will know how much can be mined each year in a particular watershed without causing significant impact to the ecosystem. Knowing that should help everyone balance the needs of the fish living in, and the people living alongside, Oregon’s rivers and streams. ■



Gravel bars on the Chetco River are an important source of building material for southern Oregon and northern California coastal communities. Gravel is essential to the life cycles of all five species of salmon important to the coastal economy. Photo from Oregon Wild.



Commercial and sport salmon fishing are vital to the economy of coastal communities like Brookings. Photo by Rodger Goolsby.





2008-2009 Leadership

New challenges and experience

By Erica Gann, Public Affairs Office

Fifteen employees were selected for this year's Portland District Leadership Development Program and will spend the next year together honing their public speaking abilities and examining their leadership abilities. They will plan and implement a capstone project designed to task the team's personnel management, teambuilding and project development skills. LDP participants also are encouraged to attend and participate in meetings with District leadership, where they will learn not only what the Corps does, but also how it all fits together. Mentoring is also encouraged for further professional development.

LEADERSHIP DEVELOPMENT

Meet this year's LDP Team!



Kim Adkins has been the District's deployment manager for emergency response operations and the Global War on Terrorism since 2006. She has deployed to Baton Rouge, La., in support of Hurricane Katrina and assisted with debris removal in California after last year's wildfires. When Adkins is not handling emergencies she can be found at home with her husband, Jason, and her dog, Sebastian.

Eric Bluhm works for the District's Planning, Programs and Project Management Division, serving as a planner and project manager.

Bluhm's proudest achievement, other than teaching his two-year-old son the difference between his left and right shoes, is when he served as the Gulf Region Division's military programs manager, where he witnessed firsthand how our troops handled themselves in action under severe duress.



Merina Christoffersen began her career with the Corps in 1999 at the Portland District's U.S. Government Moorings. She became a regulatory project manager in the Eugene Field Office in 2002. When asked with whom she'd most like to have a conversation, Christoffersen chose Rachel Carson. "She gave her life to her research and her ideals. She was smart and brave and ahead of her time, sharing her ideas to make our world a better place."



Donald Courson joined the Corps' Hydroelectric Design Center in 2006 as a mechanical engineer. He works on the

design, field testing and layout of mechanical equipment in hydroelectric powerhouses. Courson grew up in Myrtle Creek, Ore., so he didn't need to travel far to get his bachelor's degree in mechanical engineering from Oregon State University in 1999. (Go Beavers!) Besides baseball, Courson enjoys traveling to new and unique places, hiking, photography, rafting, camping and fishing – but there's always time for one more Beavers game!





Development Program

to prepare members for success

Gail Harris started her federal career with the Corps' Willamette Valley Project in January 1997 as an office clerk trainee. She worked her way up the ranks until she became the project's lead administrative assistant in 2001. When asked what type of animal she'd choose to be, Harris says she'd be an ant. "Ants are wise and prepared for whatever comes." This attribute works well for her at work and at home, she said.



Judi Hutchings serves as the Engineering and Construction Division's administrative officer. Hutchings brings more than 10 years of Corps experience to her job, all gained while living overseas in Germany. While learning about the construction business and the Corps' missions, she was able to experience European culture. Hutchings was born and raised on the Hawaiian island of Moloka'i. As the spouse of an Air Force master sergeant her family moved often. Now the Hutchings family is pleased to make Oregon their permanent home.

Karen Jordan works as a financial management analyst in the District's Resource Management Office. She joined the Corps in 1986. Jordan deployed in 2004 to the Gulf Region Division headquarters in Iraq, where she worked for six months as an administrative assistant. Travel is important to Jordan. When asked what type of animal she'd be, she said, "I'd like to be a tortoise. I've always liked the idea of being able to travel around and at the end of the day, no matter where you are, having a place to stay."



Bruce McCracken is a structural engineer with the Northwestern Division, where he serves as national program manager of the Earthquake Hazard Reduction Program and regional program manager of the Bridge Safety and Hydraulic Steel Structures Inspections and Evaluations program. McCracken has a sense of adventure and likes to travel. "One of my fondest memories was when some friends and I traveled around Europe in a Volkswagen bus until we ran out of money!"



Edward Miska is a senior electrical and controls engineer in HDC. He has helped the Corps and Bonneville Power Administration add numerous energy efficiency elements to powerhouse control systems and worked to improve control systems for fish passage. Energy efficiency has always been important to Miska, both at work and at home. In 1987, he applied those values and built his own "super good sense" home, where he still lives today with his family.





LEADERSHIP DEVELOPMENT



Laurie Rice started her career with the Corps in July 2002 as a student employee in the Portland District's hydraulic design section. One year later she entered the Engineer-In-Training program where she rotated through many sections in Operations Division, HDC, Portland Resident Office and at Fort Lewis. Rice has served as the District's primary regulator for the Rogue River Basin and Willow Creek projects and as backup for the Willamette Valley Project since 2005. She is a registered professional engineer in the state of Washington and a member of the Society of American Military Engineers.



Melissa Rinehart is a natural resource manager in the Operations Division. She works with park rangers and resource managers within the Portland District on recreation and environmental activities. She also works on the environmental stewardship annual budget and several other national programs. Rinehart was born in northern Virginia where her parents and sister still live. She is married and has "a handsome and above-average" two-year-old son, Will, and a 22-year-old step-daughter, Cailin. Her other children include Slipper the dog, Curiosity the cat, and Li'l Miss - the cat you never see.



Chad Stuart works as a natural resource specialist at the environmental stewardship branch at Willamette Valley Project's Fern Ridge office. He joined the Corps as a permanent park ranger in 2003, after holding down two student employment positions with rotations through the Rogue River Basin, the Eugene regulatory office, at Fern Ridge, Lookout Point, Cottage Grove and Bonneville dams. When asked what animal he'd be Stuart said, "I'd be a Loggerhead sea turtle so that I could explore the oceans for 200 years." Today, Stuart lives in Eugene, Ore., with his wife, dog and two independent cats.



Mike Turaski joined the Portland District's Regulatory Branch as a permitting project manager in 2006. Two years later, he was selected as Regulatory's jurisdictional specialist responsible for applying federal regulations to the permitting of projects that impact waters of the United States. When asked with whom he would want to spend time, Turaski said "I'd choose Mark Twain because he was intelligent, witty, and he knew something about navigation and civil works." Turaski's favorite activities include backpacking, skiing, whitewater boating and gardening.



David Wells has been with the Corps of Engineers since 2000. His tenure with the Portland District started in 2007 as a power plant electrician, after he transferred from Walla Walla District to the Dalles/John Day/Willow Creek Project. Wells is influenced by the late Marine Corps Lt. Gen. Lewis "Chesty" Puller. "He had a 'moving forward' attitude and many motivational quotes, including, "We're surrounded; that simplifies our problem!" Wells is the proud father of two girls and a boy and enjoys outdoor activities of all kinds, including fishing, hunting and snow skiing.

LaMar Williams has served as Portland District's Equal Employment Opportunity Office chief since 2000. Williams began his career with the Huntington District in 1992 as a student employee working in the human resources office. After serving in the Seattle District as a Department of Army intern, he joined EEO, where he provided employee counseling and was the Special Emphasis Program Manager. Williams considers himself a decent athlete and enjoys most sports. His favorite activity is golfing with his wife and watching his children "get along."



And now meet the LDP facilitators!



Mike Roll joined the Corps in 1974 after graduating from Seattle University with a bachelor's degree in civil engineering. He entered the District's EIT program, where he performed turbine tests at The Dalles/John Day/Willow Creek Project and Lost Creek Dam; he also inspected construction at Bonneville Lock and Dam's second powerhouse. Thirty years later, Roll is the deputy director of HDC. Roll is also known as the District's official and unofficial emcee for many employee events over the years. When away from work, golf, family and travel are his priorities.

Dwane Watsek joined the Portland District in 2006 as the chief of the Operations Division. Before that Watsek served in the military, retiring in 2004 from his last assignment at Garrison Grafenwoehr in Germany. When asked about whom he'd most like to speak to, Watsek replied "George Washington. I'd ask him how a man of such privilege could risk it all to be the father of our country." Watsek has been married for 23 years and has a daughter in college. Woodworking and traveling are favorite past times.





Portland District seeks to acquire new contracting strategies

By Diana Fredlund, Public Affairs Office

Every time employees with the Hydroelectric Design Center attended technical conferences, it seemed vendors wanted to give feedback about contracting issues, too. To respond to that interest, the Corps brought its contracting staff and five hydropower vendors together for the first joint forum to talk about those issues in January.

“They told us they are interested in doing business with the Corps, but that the Corps needs to make some changes,” said Brent Mahan, HDC’s director. “The commercial hydropower market has changed, but vendors feel the Corps is contracting like they did 20 years ago and it’s a model that isn’t as successful in today’s climate.”

“Until about the 1960s, government contracting was pretty straightforward: the government asked for something specific and the contractor provided it,” said Michael Roll, Hydroelectric Design Center deputy director. “Markets in general - and international hydropower markets in particular - have changed considerably since then. The United States government isn’t the only big fish in the pond anymore.”

The nature of those contracts has changed, too. “In the 1950s and 1960s, the Corps was building large projects like Detroit and John Day dams, located in Oregon,” Mahan said. “Today most contracts are for rehabilitation and equipment replacement, not construction. That changes the nature of the project.”

Construction is still occurring overseas, offering opportunities to companies that are global enough to compete. At the same time, the number of hydropower equipment-related vendors is decreasing, limiting potential suppliers. “While the Corps is the largest hydropower producer in the U.S. and the second largest in North America, we are still just one buyer in a global market place,” Mahan said. “No one buyer can set the terms if they don’t align with global market trends. If they try to, suppliers will just go to more attractive work.”

Changing trends include greater specialization by contractors, bonding and liability issues. According to Mahan, the federal government has a long tradition of conservatism in its acquisition strategies. “In the past we have tried to shift much of the risk to the contractors. We’re learning that we pay a premium for that risk transference that is not explicit



HDC representatives conduct site inspections of sub-contractors to assure quality products and processes. Here Corps staff visit a sub-contractor producing turbine components in South Korea.

in the contract price.” Reducing uncertainty in its solicitations wherever possible will help the Corps make informed decisions about risk, he said.

Liability and bonding issues are significant financial concerns in the contracting process, said Ralph Banse-Fay, Chief, Construction and Architect/Engineering Branch in the Portland District Contracting Division. “When a multiyear contract exceeds tens of millions of dollars, bonding locks up assets based on a percentage of the total contract, which can be very expensive to a contractor.” While bonding and liability clauses won’t go away, he added, contracting officers may be granted greater flexibility in these areas.

The forum was designed to foster questions; answers will take more time to come up with, Roll said. “We have seen a change in vendor behavior over the years and it’s important for us to learn why. There is some risk in starting a conversation even though we might not like what we hear, but it’s important to our future projects.”

During the forum, the vendors presented their issues or concerns to HDC and contracting personnel in individual sessions. Vendors met privately to allow proprietary and sensitive company information to be discussed candidly with Corps staff, Mahan said.

The level of candor and open dialog was exceptional, Roll said. “The forum enabled us to clearly define the issues facing the Corps when procuring large hydro equipment. It was a great opportunity to hear first-hand the thoughts and focus of industry.”

Commercial practices are fundamentally based on the marketplace and the bottom line, while government practices were based on safeguarding public funds and creating equal opportunity to supply services, said Banse-Fay. “The forum helped highlight the inherent differences. Now comes the hard part, when we ask ourselves, ‘what elements in a contract are at the discretion of the contracting officer?’”


The forum helped raise awareness of these issues at Corps’ Contracting offices and identify areas for further study. “We need to develop a plan based on market issues,” Banse-Fay said. “Part of it includes educating the contracting officers about industry

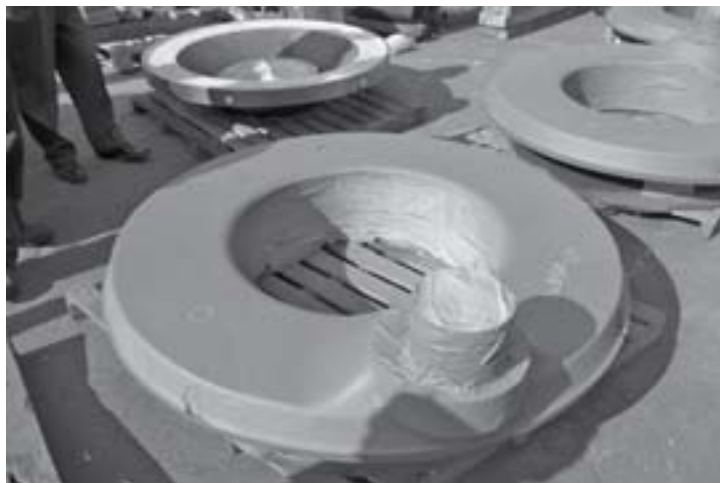


Corps representatives discuss production and acquisition procedures to ensure the contractors are able to fulfill contract terms on time and within the scope of the contract.

issues and perceptions about Corps’ acquisition management policies.”

More than 10 issues were identified during the forum; Corps employees will create action plans for each one in the coming months, with an eye toward finding possible solutions that fit the needs of the vendors and the Corps, Roll said.

Now when HDC employees attend technical conferences they may find vendors more interested in talking about how things work, instead of how to get that work. 



Inspecting components or service delivery is part of an ongoing relationship between the Corps and its contractors.





That Bloomin' Algae

A bloom in Lost Creek Reservoir in 2006 colored the water blue as if paint had been dumped in the water...

By Jennifer Sowell, Public Affairs Office

The heat of summer will drive many people to their favorite swimming holes; unfortunately a colorful scum may keep them out of the refreshing water. Lakes and reservoirs tend to have what are commonly known as blue-green algae blooms, and they typically occur during the prime summer months. But what are these blue-green algae blooms and why should people steer clear of the water they bloom in?

Algae are naturally occurring organisms found in every type of water all over the world. They are very important to marine and fresh-water ecosystems, supplying nutrients through the food chain. There are hundreds of thousands of species of algae in the world, most of which are not harmful.

There are also harmful types of algae, including several species of blue-green algae, or cyanobacteria. Despite the name, these organisms actually aren't algae at all. They resemble algae in almost every way, but the main difference is in their cellular makeup.

"Structurally, blue-green algae are bacteria," said Deanna Connors, public health toxicologist with the Oregon Department of Human Services. "Functionally, however, they behave like algae so it makes sense to treat them like algae."

When conditions are right, factors such as weather and the nutrient load of the water cause cyanobacteria multiply and accumulate rapidly, causing a bloom. Because cyanobacteria bloom and photosynthesize like algae, they are considered a harmful algae bloom, or HAB. HABs can clog bodies of water

and turn them a variety of colors, from blue-green to reddish-brown, diminishing the water quality and posing potential health risks due to the toxins some species produce. HABs have caused lake closures, death of wildlife and illness in humans.

These incidents appear to be increasing, according to the National Oceanic and Atmospheric Administration, and Portland District reservoirs are no exception. Although algae blooms have plagued reservoirs in the District for decades, they haven't always been harmful algae blooms. The District water quality section has been studying and monitoring HABs and other algae blooms much of that time; the operating projects have become increasingly concerned with HABs in the past two years.

In 2001, the U.S. Forest Service issued a strong warning, discouraging contact with the water at



Fishermen still after a catch in the midst of a harmful algae bloom in Lost Creek Reservoir.

Diamond Lake due to a large, persistent, harmful algae bloom. This action got the attention of park rangers near by at the Corps' Lost Creek Reservoir, motivating them to study the issue and take a closer look at the popular lake.

Scientists don't completely understand yet how HABs affect human health. Authorities and experts around the world are monitoring HABs and developing guidelines for HAB-related public health action.

While rangers closely studied the issue at the project, the need to develop a District-wide plan for handling HABs grew. That plan will be implemented as District policy this year, instructing team members on monitoring for, testing of and communicating about HABs.

When project personnel recognize a bloom by the colorful scum in the water, they take water samples near the recreation areas and send them to a lab to determine the species and cell count of the algae. If the results exceed state Department of Human Services Environmental Public Health guidelines for cell counts of toxigenic species, a health advisory is issued, cautioning the public to avoid contact with the water until the bloom subsides and the cell count decreases.

"Usually a harmful bloom is associated with a distinct blue-green color and cloudiness in the water," Connors said. "[Toxins the algae can produce] may be absorbed through the skin, or through ingestion of water, even as droplets or spray in the air."

Exposure to toxins can cause numbness, tingling and dizziness, which can lead to difficulty breathing or heart problems. Additional symptoms include skin irritation, weakness, diarrhea, nausea, cramps and fainting. Children and pets are more at risk because of their size and the fact that they are more likely to accidentally swallow water.

Eating fish caught in waters experiencing HABs can cause problems, but it's not a clear-cut issue. Catch-and-release fishing poses low risk, but the potential for contracting skin irritation still exists. If fishermen choose to eat fish they have caught, they should remove the skin and organs, where toxins tend to

accumulate. A phone call to ODHS is the best way to make informed decisions regarding each specific case.

The uncertainty of HABs makes them difficult to manage and even harder to prevent. No two blooms act alike. "[HABs] may develop and disappear within a matter of days, or they may continue for weeks or months," said Connors.

The biggest recreational impacts have been at Lost Creek Reservoir, which had large HABs during the Independence Day holiday in 2006 and 2007. The reservoir looked to be right on schedule for another bloom this Fourth of July, but the water didn't cloud up with the toxigenic plants and guests could enjoy the lake.

Willow Creek Reservoir struggled with multiple blooms last year, including some that lasted three months or more. Aerators were used in Willow Creek to improve oxygen levels in the reservoir, which HABs deplete; they also equalized the water temperature in the reservoir, which District scientists believe may stimulate blooms.

This year a pilot study began at the reservoir using solar-powered long distance circulators to attempt to clear the prevalent HABs. Unlike aerators, the long distance water circulators mix only the top portion of the reservoir, leaving the cooler, nutrient-rich

Continued on page 16



The solar-powered long distance circulator draws water from a specified depth and distributes it throughout the reservoir disrupting blue-green algal habitat.






waters below undisturbed. In addition to addressing the harmful algae bloom issue, the study results may help garner acceptance of the circulators by the scientific community as a sound HAB management method.

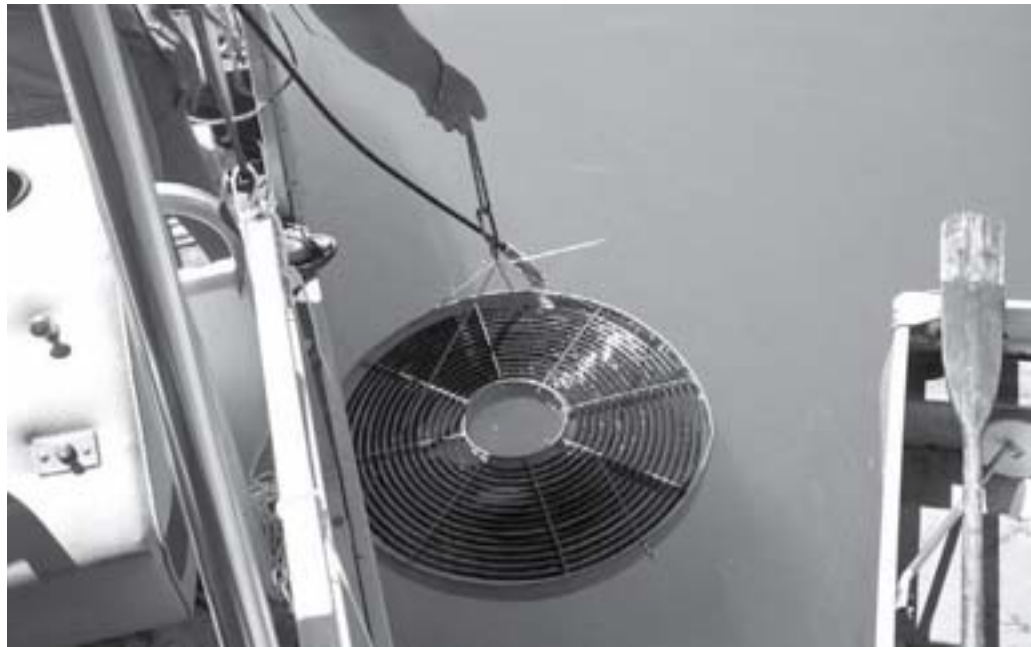
“There is really no silver bullet when it comes to preventing harmful algae blooms,” said Kathryn Tackley, water quality specialist with the Portland District. “Lake management has been studied forever and scientists are still dealing with chronic harmful algae blooms all over the world.”

Managing reservoirs with harmful algae blooms is no easy task, especially when the problem is still not fully understood. The impact to recreation in the District continually pushes team members to try various methods to eradicate HABs from Corps reservoirs. Trial and error and continual studies of the issue will serve to better understand and help work to solve the District’s HAB problem.

In the meantime, park rangers and water quality specialists will continue monitoring District lakes for HABs, working to make sure that refreshing water is still a great way to beat the summer heat. 



One of the two long distance circulators is backed down the ramp into Willow Creek Reservoir as part of a pilot study to manage harmful algae blooms.



Corps of Engineers Photos

An aerator disk being dropped into Willow Creek Reservoir. The disk is weighted so it sits on the bottom of the reservoir and mixes the water, equalizing the temperature. This method resulted in improved oxygen levels, but created conditions that stimulated the harmful algae blooms.