



US Army Corps  
of Engineers®

# Engineer Update

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## \$3.8 billion in FY 98 civil works budget



President Clinton's new budget includes \$3.8 billion for the Corps of Engineers' Civil Works budget. (Photo by F.T. Eyre, HQUSACE)

nance and construction, and ongoing construction and new investment."

In this budget, the FY98 construction new starts and other new construction work are fully funded, up-front, including those in the Continuing Authorities Program. This means the total federal funding needed to complete the new starts is included in the FY98 budget.

"This policy (full funding) provides our sponsors with a great predictability of funding to be expected in the out years," Ballard said. "It also gives us more flexibility in building our projects, allowing us to complete them early, saving time and money."

The new investment program includes 10 reconnaissance studies, seven new construction projects, two resumption projects, two new major rehabilitation projects, and one dam safety assurance project.

The budget also includes funds for 10 new reconnaissance studies. The total cost of this new investment program is \$547,233,000, of which \$180,983,000 would be paid by non-federal sponsors. The program includes studies in Connecticut, Hawaii, Missouri, Kansas, New Mexico, Ohio, Oregon, South Carolina and Virginia. The Corps will begin building seven new projects in Virginia, Maryland, the District of

Columbia, Florida, North Carolina, California, Texas, and New Mexico. The Corps will also begin major rehabilitation at Lock and Dam No. 3 in Minnesota and Buford Powerhouse in Georgia.

To further the transition to full funding, advance appropriations are requested for FY99-02 for \$277,391,000, \$177,372,000, \$88,517,000, and \$32,410,000, respectively, to finance 65 ongoing projects that are scheduled to be completed by the end of FY02.

As in the past, incremental funding for programs and for continuing projects scheduled for completion later than FY02 has been included in this annual budget.

The budget will permit the Corps to follow through, with few exceptions, on planning and construction projects for which appropriations were made available in previous years.

The budget includes \$50 million for ongoing and fully-funded new construction activities under the Continuing Authorities Program. Also provided is \$127 million to continue the Columbia River Fish Mitigation Project in the Pacific Northwest.

The Civil Works program continues to support restoration of the South Florida ecosystem with \$46 million requested for continuing

work, along with the \$75 million requested for full funding of the newly authorized Everglades and South Florida Ecosystem Restoration project.

"During the past few years, we have seen an increasing proportion of the budget request devoted to the environment," Ballard said. "The portion of this year's budget dedicated to environmental work, \$637 million, is about a 20 percent increase over the amount requested last year. These kinds of programs are important to our nation's future, since it is a mission the Corps is especially proud of."

A \$15 million five-year research and development program for Innovative Design and Construction Techniques for Navigation Projects Research Program will enable the Corps to build and modernize navigation projects more rapidly, potentially saving \$1.4 billion.

A breakdown of the budget accounts follows:

**General Investigations** — \$150 million. Funds studies, design, coordination, data collection and research and development.

**Construction General** — \$1.393 billion. Funds project construction and major rehabilitation.

**Operations and Maintenance** — \$1.618 billion. Funds the running and upkeep of existing projects which include hydropower facilities, locks and dams, recreation areas, navigable waterways.

**Regulatory Program** — \$112 million. Funds the Corps permit program for dredge and fill material in the waters of the U.S.

**Flood Control, Mississippi River and Tributaries** — \$266 million. Funds the study, design, construction, operation and maintenance for water resources projects in the alluvial valley of the Mississippi River.

**General Expenses** — \$148 million. Funds the executive direction and management of Corps headquarters and major subordinate commands such as divisions.

**Flood Control and Coastal Emergencies** — \$14 million. Funds the basic requirement for natural disaster response and recovery. Additional funds would be available from the President's proposed disaster contingency fund if required.

# Win-win partnership builds new runway

By Edward C. Voigt  
Philadelphia District

For win-win partnerships, the new runway project at the Philadelphia International Airport is hard to beat.

This partnership began in a real estate coordination meeting between representatives of Philadelphia and Philadelphia District. In reviewing the city's permit application for the Runway 8-26 Development Project, the district team (Charles Myers, Tony DePasquale and Russ Peffer) saw a chance to benefit both parties. The city would pay for part of the district's maintenance dredging, which in turn would give the city an economical source of construction fill.

The resulting plan called for the city to perform advance maintenance dredging in the Delaware River federal channel to obtain two million cubic yards of embankment fill for the runway project. This saved \$8 million for the district in dredging that would have to be done anyway, and \$7 million for the city compared to conventional upland borrow sources.

As an added benefit, the plan

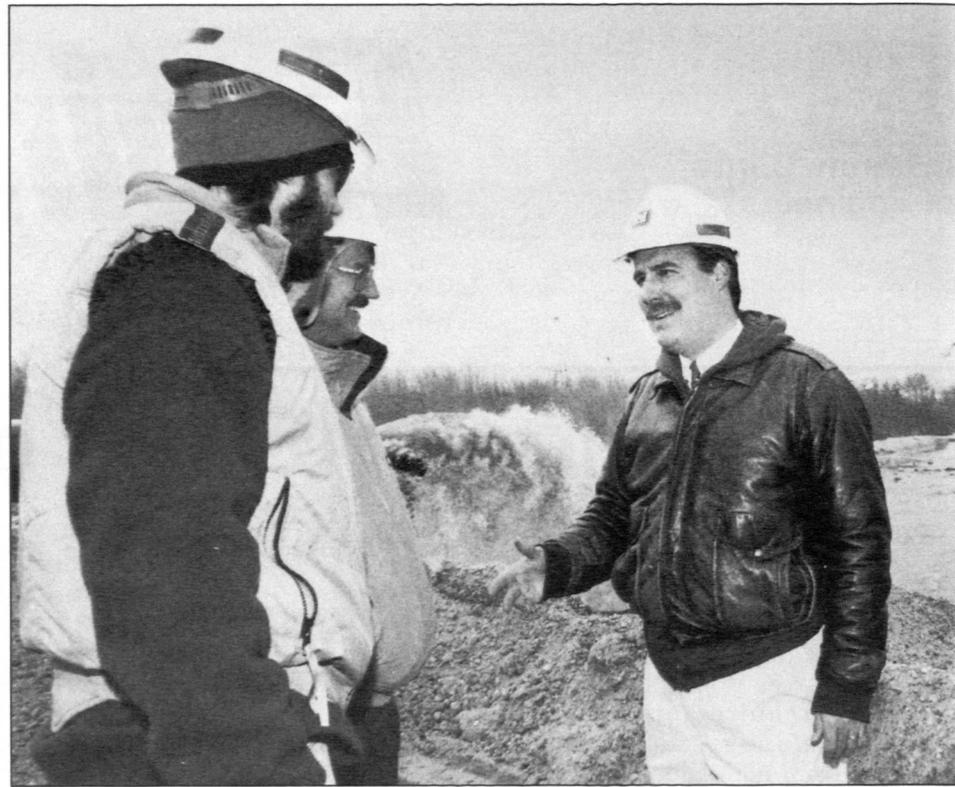
avoided the adverse environmental impact and public inconvenience of transporting the fill across state roadways.

After extensive Corps review, technical assistance and interagency coordination, the dredging option was included in the city's contract advertisement and was accepted by the successful low bidder, Buckley Construction.

Dredging and filling began Dec. 5, with the new runway embankment slated for completion this summer. By the end of January, more than 300,000 cubic yards had been pumped out to the disposal area by dredging subcontractor Weeks Marine, Inc.

"Work is proceeding well and Philadelphia is very happy with the quality of the sand and gravel material they are getting," said Charles Myers, the district's project manager for this joint venture.

"We'd like to extend our appreciation for your personal attention and assistance on all the aspects of the permit processing required for the Philadelphia International Airport's new commuter runway project," said



Charles Myers (left) project manager, shows the dredging outflow to representatives from Philadelphia. (Photo courtesy of Philadelphia District)

Jay Beratan, Chief Engineer for Design and Construction. "The new runway will relieve congestion on the airport's main commercial runways, significantly reduce costly operating delays, and provide greater safety for small aircraft. The project will create more than 2,600 new jobs in the Delaware Valley and is expected to

add more than \$230 million to the regional economy. Your recent authorization to use dredged materials from the federal navigation channel has enhanced the project and resulted in a federal/local partnership that not only will save money on both sides but also will result in environmental benefits."

## Engineer Board celebrates 60 years of service

By Reba Page and  
Wesley C. Jockisch  
HQUSACE

Part of ensuring a successful mission is the Army's ability to resolve contractor problems effectively and efficiently. The Corps of Engineers' Board of Contract Appeals has been doing that for 60 years.

On March 7, 1937, to ensure that the Army always had the necessary resources, Secretary of War Harry H. Woodring delegated broad authority to make "...all decisions and take all action in the performance of contracts in connection with the civil activities under the jurisdiction of the Engineer Department."

This delegation led to creating the Corps' Board of Contract Appeals (the Engineer Board), which had its 60th anniversary on March 4.

The Engineer Board supports the Corps by judging contractor appeals that arise from claims about civil works contracts. The Board also resolves all disputes arising from the lease of both civil and military property under a special delegation from



The members of the Engineer Board are (left to right) Bob Peacock, Steve Reed, Reba Page, Wesley Jockisch, Don Fenzer, Maryellen Simpson, Ed Ketchen, and Hal Petrowitz. (Photo by F.T. Eyre, HQUSACE)

the Secretary of the Army.

The advantages to the Corps having this board include the agency's in-house ability to judge contract disputes quickly and fairly. The judges are expert in government

contract law, are specifically experienced in the types of contracts used by the agency, and regard resolution of the Corps' disputes as their only priority.

A board of contract appeals is not

unique to the Corps of Engineers. In the past, other agencies have established their own boards to handle urgent national demands such as natural disasters.

The first board of contract appeals was established by the War Department in 1918 to meet the needs of soldiers in World War I. Other boards were later established; the Engineer Board's charter came after disastrous floods struck the northeastern and middle U.S. in 1936.

Congress reinforced the value of the boards by passing the Contract Disputes Act of 1978 (CDA) which governs all federal contracts. The act recognizes and reinforces the role of agency boards of contract appeals to provide "inexpensive and expeditious justice" for both the government and contractors.

Although they are part of a given federal agency, each board maintains its integrity through independent decision-making. The boards' stature is such that contractors and the government alike can appeal an unfavorable decision by the board

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# Toxic waste burns at Superfund site

Article by Doug Garman  
Photo by W.E. Linn  
Baltimore District

Baltimore District engineers will soon complete final testing of the largest transportable hazardous waste incinerator facility in the country at the Drake Chemical Superfund site in Lock Haven, Pa.

Designed and built by OHM Incorporated of Findlay, Ohio, the multi-million dollar incineration facility uses state-of-the-art technology to treat contaminated soils and sludges. The Environmental Protection Agency, Region III and Baltimore District will use the incinerator to clean up about 200,000 yards (20,000 dump truck loads) of contaminated soil and sludge at the former Drake Chemical Company manufacturing site.

During the incinerator's final test burn, engineers and scientists will closely monitor its performance to ensure it meets or surpasses federal and state hazardous waste incinerator and air quality regulations before beginning full operations later this year.

"We'll be checking everything, from how the soils are fed into the incinerator to the level of any emissions from the incinerator's stack," said Dave Modricker, lead project engineer. "The stack testing is to ensure that the incinerator will meet the performance requirements and protect public health and the environment."

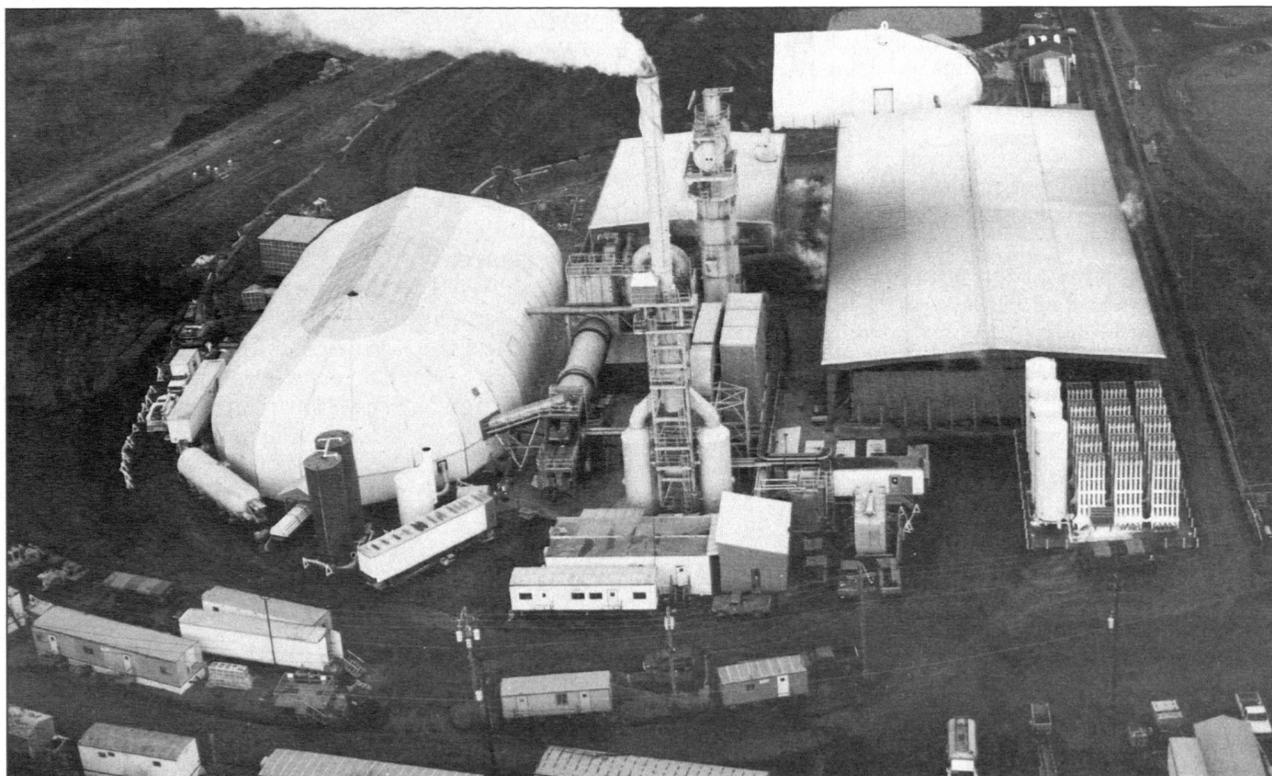
The incineration facility involves a series of treatment processes which begins when the contaminated soil is excavated and placed in a covered holding area. The soil is placed on a screener, which shakes it into small pieces. The pieces are then fed to a hopper. From the hopper, the soil is carried by a conveyor belt into the kiln.

In the kiln, the soil is stirred and heated to about 1,700 degrees. It then drops from the kiln into a breach area where it is placed on conveyor belts, sprayed with water, and placed in storage. If it meets treatment standards after testing, it will be used as backfill.

When the soil is heated in the kiln, it releases gases. The gases pass through the breach area into a cyclone where heavy particles are separated by spinning the gases at high speeds.

Remaining gases are burned at 1,800 degrees. After the second burning, gases enter an evaporative cooler that cools them to about 450 degrees with a spray of cold water and air.

The cooled gases enter a baghouse next. Simi-



The largest transportable hazardous waste incinerator in the U.S. undergoes final testing at the Drake Chemical Superfund site.

lar to a bag in a vacuum cleaner, small pieces of dust and ash are collected by large filters. The dust and ash are placed on a conveyor belt to a storage area. The ash is tested and, if it meets treatment standards, will be used as backfill.

A large draft fan moves the remaining gases into a scrubber system. In the scrubber, acid gases are converted to salts. The salts are dissolved by water in the scrubber and all that remains is ordinary steam released through a stack.

"Once the final trial burn is finished, we'll review the trial burn report," said Modricker. "EPA will prepare a risk assessment and give the public our test results. When the production burn begins, the incinerator will operate 24 hours a day, seven days a week."

Corps officials estimate the production burn will take about 18 months, after which OHM, Inc. will move the facility to another site.

EPA designated the Drake Chemical a Super-

fund site in 1982, after the company failed to rectify several violations of federal and state regulations. The company's failure launched an EPA emergency removal action at the site which resulted in removing surface storage tanks, fencing the site and beginning a Superfund Remedial Investigation/Feasibility Study in 1983.

Environmental studies concluded that contamination from organic compounds, carcinogenics, pesticides and heavy metals existed throughout the 9.63-acre site. The studies recommended that all soils and sludges be treated to a depth of 12 feet. Groundwater on site was also recommended for treatment.

In a 1988 Record of Decision, EPA officials recommended incineration as the only viable way to clean up the site.

The Drake Chemical Company used the site 1951-82 to manufacture chemicals used in dyes, cosmetics, textiles, pharmaceuticals, and pesticides.

## 60th anniversary

Continued from page 2

directly to the U.S. Court of Appeals for the Federal Circuit, and then on to the U.S. Supreme Court.

The Corps of Engineers' Board of Contract Appeals has five administrative judges. The CDA requires that each judge have a minimum of five years of specialized experience in government contract law; each judge has considerable experience trying cases as well.

Before an attorney can be considered for these positions, he or she must submit to rigorous examination by the Department of Defense and receive a "highly qualified rating."

Besides Corps civil works cases, the Engineer Board also decides, on a reimbursable basis, cases for other agencies that have close ties with

the Corps.

For example, the Board hears contract appeals from the Washington Metropolitan Area Transit Authority. WMATA employs two administrative judges appointed to the Engineer Board to handle these matters.

The Engineer Board also handles contract disputes for the Panama Canal Commission, until the canal is completely turned over to the Panamanians in 2000.

The Engineer Board gives contractors the opportunity of a hearing on the dispute. The proceedings closely resemble trials in a federal district court that are decided without a jury — witnesses are sworn, evidence is admitted, and a transcript is made. The Board can hear cases in Washington, D.C., or

will hold the trial in a location convenient for the parties.

If the underlying facts are generally undisputed and the parties so desire, the Engineer Board can waive a hearing and decide the matter based on legal briefs and relevant documents submitted for the record.

For smaller appeals (less than \$100,000), the Engineer Board has special accelerated and expedited procedures that will give the parties a decision in 120 days or less from the time it is received by the Board.

A single judge is assigned to each appeal, presides at a hearing and writes the decision, then a panel of three judges reviews all major decisions. This collegial process has added to the high quality of decisions, and assured consistency in legal precedent and policy.

The Engineer Board has a policy of including in each decision guidance on future contracting actions, essentially "lessons-learned" advice for both the agency and contractors.

The Engineer Board is also active in alternate dispute resolution (ADR). The Board advises the parties in each appeal of the availability of ADR procedures, and discusses their possible use in each appeal. The Board has been recognized by both the private and public sector for its innovative efforts in devising procedures to meet the needs of each appeal. To date, the Board has used ADR in more than 30 appeals.

(Reba Page and Wesley C. Jockisch are both judges with the Corps of Engineers Board of Contract Appeals.)

# Lab model shows river flow, saves millions

By Jennifer King  
Waterways Experiment Station

A trickle of water meanders down an almost-dry concrete channel, then quickly becomes a torrent, roaring down the channel at speeds of up to 25 miles per hour.

That's the Los Angeles River. Los Angeles District, with the help of models built by the Waterways Experiment Station (WES), is working to predict and control this urban river system.

Flooding has long been a problem in the Los Angeles area. The Los Angeles area flooded periodically throughout the 1800s and early 1900s. In 1938, the Corps of Engineers, with the Los Angeles County Department of Public Works (LACDPW), began confining the river in a concrete channel after a county-wide flood that left 49 people dead and caused \$40 million in damages.

After the river was channeled, Los Angeles experienced major flooding five times between 1941 and 1944, again in 1952, twice in 1969 and twice in 1978. Flooding killed six people in 1983 and six more in 1992. Heavy flooding occurred again in 1993 and 1995.

The potential danger and devastation from these floods grew with the urbanization of the Los Angeles River watershed. More and more urban areas are draining into the channel, and the runoff characteristics in the drainage area have changed dramatically since the Los Angeles River and the Rio Hondo were channeled.

These factors have resulted in threats of urban flooding. Los Angeles District conducted an initial feasibility study which indicated that 27 bridges needed to be raised to allow for the flood flows expected during a 100-year flood. These proposed changes led to a projected cost of more than \$500 million and a 10 year construction period.

"The 1992 feasibility study indicated that the flood plain for a 100-year flood covered 82 square miles," said Scott Stonestreet, a hydraulic engineer in Los Angeles District and lead engineer for the Los Angeles River project. "There are 142,000 structures in that area and 500,000 people. That totals a potential \$2.3 billion in damages if the river floods at a 100-year level."

The threat of flooding in urban areas near the Los Angeles River became apparent during the 1980 flood.

"We estimated the 1980 flood to be a 40-year event," Stonestreet said. "The river almost topped the levee. Fortunately, it dropped before we had a serious problem."

These conclusions led Los Angeles District to seek assistance from the Coastal and Hydraulics Laboratory at WES. The Los Angeles County Drainage Area (LACDA) Model Study is being conducted at WES to find ways to improve the flood carrying capacity of the Rio Hondo Flood Control Channel and the Los Angeles River.

The model at WES include sections that extend from Whittier Narrows Dam on the Rio Hondo to

the mouth of the Los Angeles River at Long Beach Harbor. Five physical models revealed that modifications to the existing bridge piers will allow a flood to safely pass most of the problem bridges.

Current estimates place the project cost at about \$240 million during seven years of construction. Most of the \$260 million savings comes from the model studies. These savings represent a 7,000 percent return on the research investment. And there will be fewer traffic problems because most of the modifications recommended by WES can be done without stopping traffic.

"I'm fortunate to work with a great team," said Chuck Tate, WES project engineer for LACDA. "They all work hard collecting the data and making sure everything runs smoothly. The model studies have been ongoing for four years as we interact with Los Angeles District, local sponsors and their design efforts."

The total length of the five models is 2,100 feet ranging in individual length from 110 feet to 630 feet. A model of the Rio Hondo channel from the Whittier Boulevard Bridge to the Firestone Boulevard Bridge is the longest indoor flood-control model ever built at WES and represents roughly six miles of channel.

Initially, three models were constructed that included most of the problem bridges. Based on the success of these models, an additional model was built to determine alternatives near the junction of the Rio Hondo and the Los Angeles River.

Further questions about flow conditions downstream from Whittier Narrows Dam resulted in the fifth model, which includes the outlet from the dam and about 4,000 feet of the Rio Hondo, including one bridge.

"Our schedules for the original models were for studies that would last about two years," Stonestreet said. "A value engineering study indicated that we should also study the Los Angeles and Rio Hondo confluence. Economically, the model studies are worth the investment. We've changed the scope of the original model and have received quite a bit of data that we didn't anticipate."

WES engineers faced challenges in the LACDA model study. The Los Angeles River and Rio Hondo are high velocity channels with rapidly varying three-dimensional (3-D) flow characteristics. The physical models have been used to study the 3-D flow in the channels and around structures because there's no reliable numerical model capable of handling the task.

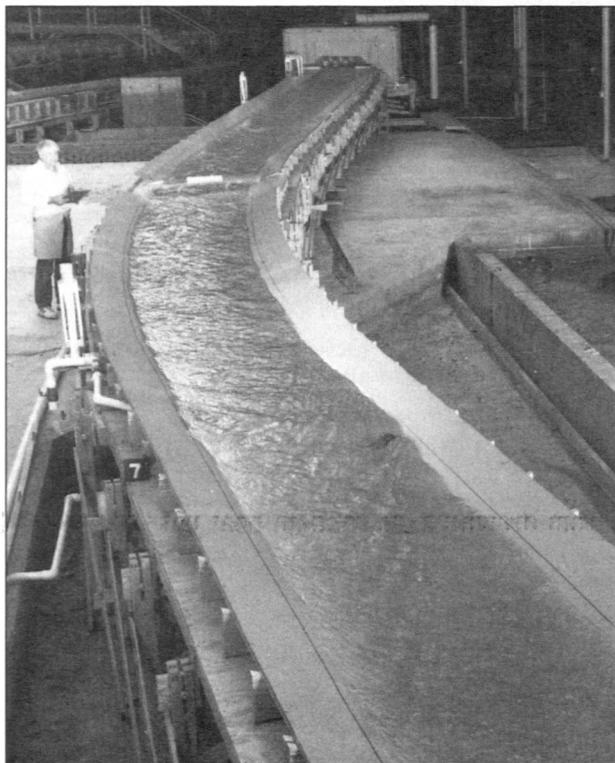
The physical models are built to scales of 1:50 and 1:55, which is necessary to replicate the hydrodynamic flow conditions.

WES was recently asked to investigate the hydraulic effects of modifications to the existing LARIO (Los Angeles River/Rio Hondo) Trail ramps proposed by local sponsors. The LARIO Trail is a recreational trail that runs along the top of the levee; however, instead of going over roads along the channel, the trail runs down into the channel and under the bridges via ramps.

"These ramp modifications on the LARIO Trail may have a significant impact on flow conditions near the bridges and have resulted in additional physical model experiments," Tate said. "If the ramps are modified, it may affect the data that we collected previously."

Los Angeles District has not decided about modifications near the confluence of the Rio Hondo and Los Angeles rivers. If modifications are necessary, research will develop modifications that do not require changing the channel cross-section for 1.5 miles, as the feasibility report recommended.

Los Angeles District has already begun implementing some of the earlier changes that WES recommended.



John Wesley looks down the length of the LACDA Model as it snakes through a WES hangar. (Photo courtesy of WES)



Van Stewart collects test data from the LACDA model at the Los Angeles River and Rio Hondo confluence. (Photo courtesy of WES)

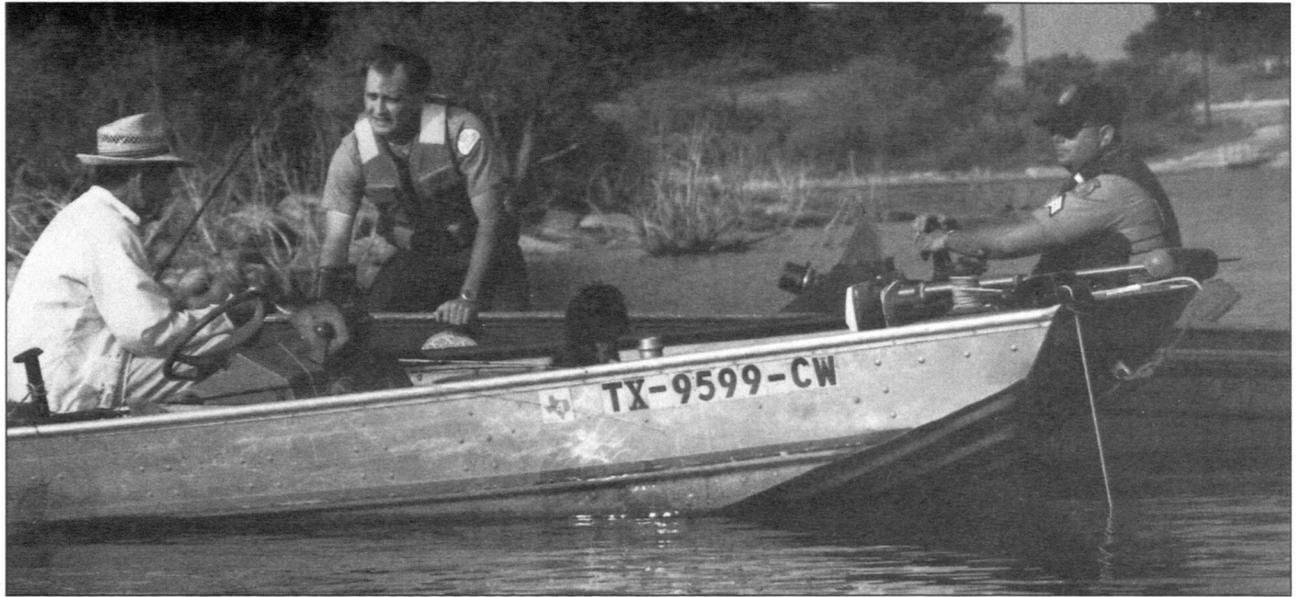
# Hords Creek Lake boasts remarkable water safety

Article by Tracy Smith  
Photo by Deedra Dedman  
Fort Worth District

The distance seemed short enough to swim rather than walk along the shore, or so one young man thought when he and a little girl attempted to swim across a cove at Hords Creek Lake on a sunny Saturday. The girl was wearing a life jacket but the young man was not. As they tried to cross, the man went back several times to help the girl swim faster. About 50 yards from the shore, the man tired.

Some distance away, a patrol boat carrying David Foster, a Corps park ranger, and Steve Vail, a game warden with Texas Parks and Wildlife, watched the two swim until the man started to tread water. As they approached to see if the man needed assistance, he started gasping for air. When they arrived, he was too weak to grab the boat, so Foster grabbed his arm. Foster and Vail pulled the man aboard before going back for the girl, who was safe with her life jacket.

Boat patrols are one of many reasons Hords Creek Lake can pride itself on water safety. The working relationship between the Corps and Vail has greatly aided the Corps' water safety mission. But what *really* separates Hords Creek from other Fort Worth District lakes is that it has had *no*



Park ranger David Foster and game warden Steve Vail talk to a fisherman at Hords Creek Lake during their regular boat patrol.

drownings in 19 years. What do Hords Creek personnel say is the reason why? No single answer suffices, but Lake Manager Tommy Halfmann views visitor water safety as a "top priority."

"During our patrols, the rangers go where the action is, to the greatest concentration of people," said Halfmann. He feels that if Foster and Vail hadn't followed that rule-of-thumb, they wouldn't have found the man and little girl.

Preventative programs are also high priority for the lake staff so that fewer accidents occur. Doing water safety programs for school groups, Boy Scouts, Girl Scouts, boat shows and civic organizations aid in getting the message across to all ages.

Still, these programs alone do not keep people from drowning, so random boat patrols are made daily between 8 a.m. and 5 p.m. During patrols, checks are made on as many boats as possible to ensure they have all their safety equipment.

Rangers on foot patrol also keep a close eye on swimmers to ensure they are swimming in a safe

place and check to make sure children are being supervised while in the water. People who violate water safety rules get oral or written warnings.

The water safety team members are Stacey Slater, the only Corps full-time ranger at the lake; Foster, a summer ranger for the last four years; and a co-op student. With so few rangers, they work hard to keep up.

"Our rangers probably put in the tightest eight hours in the district," said Halfmann. He speaks highly of his rangers and notes that Foster has been name-requested three years in a row. "He just completed his degree at Angelo State University. Anyone would be lucky to have him working for them full-time."

Hords Creek Lake is the smallest Fort Worth District lake with only 11 miles of shoreline. Less area to be covered by the park rangers means they can put more emphasis on water safety. "We don't have the number of encroachments that other lakes have," said Halfmann.

# Corps physicist builds African marimba

Article by Mike McDonnell  
Photo by Jane Brown  
Topographic Engineering Center

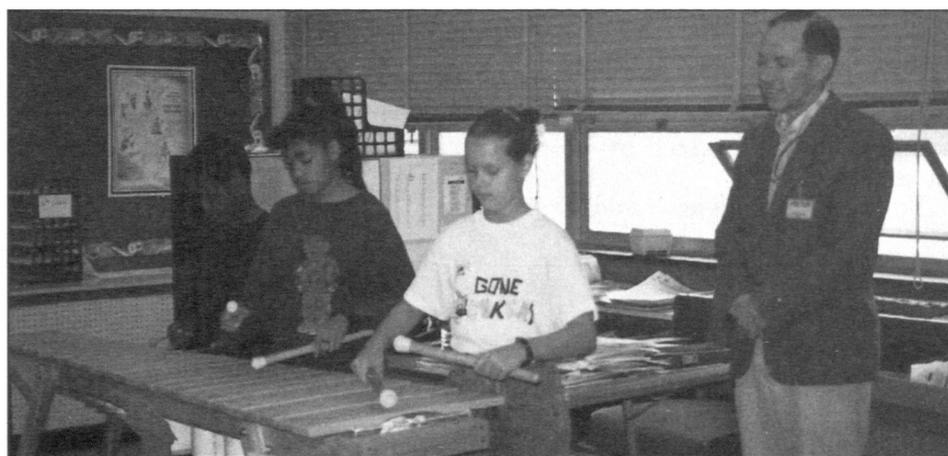
I enjoy woodworking, and use the wood shop in the Kawamura Arts and Crafts Center at Fort Belvoir, Va. One day the shop manager, Chuck Badger, told me I might be interested in a request they received.

The posted request said the PTA of Barden Elementary School at Fort Belvoir wanted someone with basic woodworking skills to build a marimba, an African musical instrument similar to a xylophone.

Chuck knew I had built a harpsichord for myself a few years back. Since I also have a chromatic tuner, needed to tune the keys, I was kind of fated to fulfill this request.

So I called Debra Hardison, the PTA representative. I learned that the Barden music teacher, Helen Rothfuss, had attended a course in the Orff Shulwerk method of teaching music. She bought plans for a marimba there, but nobody at the school or in the PTA knew enough about woodworking to make the instrument.

Mrs. Hardison was very nice and so grateful for my interest that I couldn't



Mike McDonnell watches music students play the marimba he built.

turn them down. We made a deal that they would pay for the materials and I would do the labor for free.

A marimba is made entirely of wood. Since wooden keys can't sound a very high note, marimbas cover the bass range and are pretty large. The one I built is about six feet long and has more than a three octave range.

It took about two months of intermittent work, more than basic woodworking skill, and a lot of help from the gang at the wood shop. It has a spruce frame made from knot-free

two-by-fours, and the keys are maple so they won't dent when hammered. Each key has a resonator made from plastic drain pipe to give the sound more richness. The materials were not fancy, but still cost about \$150.

I delivered the marimba to Mrs. Hardison, and I knew I'd like to see it in action. So I called Mrs. Rothfuss and arranged to see her sixth graders in their music class. My friend Jane Brown came along to take photos.

I couldn't believe the reception I

received at Barden Elementary. I shook every adult hand in the place. Jane and I were escorted to the music room and I met Mrs. Rothfuss in person for the first time. She put the kids through their paces and I got to hear my marimba along with the many xylophones in the class.

It sounded great. The marimba was in tune with the xylophones and added a sweet bass sound. It's a popular instrument with the kids, and they all get to play it in rotation, with a different set of three players each time the music class meets.

After they played a few tunes for us, Mrs. Rothfuss let the kids ask me questions about the instrument. They had some good questions about the construction and materials used.

After the class ended, a delegation surprised me with a bouquet of flowers and a thank you card. They made me feel like a king. They tell me they are preparing an article for the *Fairfax Journal* newspaper about the marimba. I walked out of there on air.

(Mike McDonnell is a physicist in the Topographic Engineering Center's Topographic Applications Laboratory.)

# New vision, clear direction

By Becki Dobyns  
HQUSACE

*(Author's note: Text taken directly from the Vision and other parts of the Strategic Plan have been set in bold or italics.)*

The Chief of Engineers, Lt. Gen. Joe N. Ballard, presented a new organizational vision and strategic plan for the Corps at a meeting on Feb. 12 with Corps senior leaders, followed by a video-teleconference with division commanders. The meeting and video-teleconference were the first in a series of steps to implement the vision.

In his briefing to senior leaders at HQUSACE, Ballard explained how he got advice and assistance from a variety of people as he developed the Corps vision and strategic plan. "My transition team — made up of Army staff, customers, district engineers, division commanders, some Corps headquarters staff and stakeholders — all contributed ideas," Ballard said. "Other input came from the Senior Leadership Conference and the District Engineer Conference. That material was pulled together and organized by my options team."

Ballard said the vision and strate-

gic plan are necessary to stay relevant in an atmosphere of change. "The Army is responding to the redefinition of many programs at the national level," he said. "As part of the Army, we too must change. And if we're going to have meaningful change, I think we need a consistency of purpose to guide our efforts. The vision and strategic plan represent my fundamental guidance to you."

## The Master Strategy: Corps Plus

*The Corps Plus strategy is designed to provide:*

- *better service to the Army and Nation in traditional Corps mission areas, and*
- *enhanced service through an expanded Corps role in strategically targeted Army military and civil mission areas.*

"I'm counting on you to assist me in turning these imperatives into reality," Ballard told the senior leaders.

## Corps Plus Goals

- *Revolutionize effectiveness,*
- *Seek growth opportunities, and*
- *Invest in people.*



## From the Chief of Engineers...

Here is the Vision and Strategic Plan as advertised. This is an important milestone for the Corps and I wanted to add a few personal comments.

The Corps' Vision and Strategic Plan are not academic or abstract; the Vision is what we will see when we look in the mirror in the future.

It is what we are — the world's premier engineering organization, a diverse force of military and civilian members who are problem solvers.

The Vision is a promise and a commitment to preserve and strengthen our traditional roles in military and civil works missions. More importantly, it will cultivate an approach to our business that welcomes change and seeks opportunities to serve the Army and the nation. We will serve whenever and wherever world class engineering and construction challenges arise.

You can count on hearing much more about the Vision and Strategic Plan. Working together, we will make the Vision a reality.

ESSAYONS!

Lt. Gen. Joe N. Ballard  
Commander  
U.S. Army Corps of  
Engineers

# The Vision Statement

***U.S. Army Corps of Engineers: The world's premier engineering organization. Trained and ready to provide support anytime, anyplace. A full spectrum Engineer Force of high quality, dedicated soldiers and civilians:***

- ***A vital part of the Army;***
- ***The Engineer team of choice -- responding to our Nation's needs in peace and war;***
- ***A values-based organization -- Respected, Responsive and Reliable.***

***Changing today to meet tomorrow's challenges!***

The chief explained that what he means by revolutionize effectiveness is a dramatic improvement in performance and customer satisfaction that will be achieved through the best business practices. "I'm talking about bold process reengineering and innovative use of technology. I'm talking about thinking outside our traditional box."

Seeking growth opportunities, he said, is focusing on growth that will be strategically targeted. "We will seek new opportunities for service consistent with Army and national priorities."

Investing in people focuses on enlightened leadership and developing, bringing in, and seeking out a talented, productive, diverse work force that enhances the value of the Corps to the Army and the nation.

These three goals have seven sub-strategies, Ballard said. He went on to explain how the strategies are grouped under the goals. However, he emphasized that they are all interconnected, with each making contributions to the others.

## Revolutionize effectiveness:

1. *Align for success*
2. *Satisfy the customer*
3. *Build team*

## Seek growth opportunities:

4. *Serve the Army*
5. *Enhance capabilities*

## Invest in people:

6. *Build strategic commitment*
7. *Reshape culture*

## Align for success

- *Continuously evaluate and realign, as necessary, existing missions, systems, resources and organizations to reinforce our strategies.*

"The expectation here is that the central role of each element of the Corps will be identified and enforced," Ballard said. "We will continually assess mission accomplishment and we'll measure performance in terms of our strategy. We're probably going to throw out the CMR and develop new goals and measurement standards that speak to the strategic plan."

"We will emphasize activities supportive of our core competencies," said Ballard. "That also means we'll eliminate some outmoded systems. If it isn't making a significant contribution to the strategy, then I think we have to question why we need it. At all levels, we will realign to get closer to our customers."

## Satisfy the customer

- *Significantly reengineer business processes and leverage leading edge technology to optimize effectiveness from our customers' perspective.*

"Look at problems from the customer's point of view and figure out how we can improve," said Ballard. "We must capitalize on technology to do that, along with using some sound business practices. We have to make an investment in the communications backbone. We have to be internetted vertically and horizontally to move information and not necessarily people."

## Build the Team

- *Leverage the total Corps organization through teamwork to provide seamless support to customers.*

Here Ballard talked about transforming the way we see ourselves: from a number of splintered sub-groups to a complete, unified team. "I'm talking about not only engineer soldiers and members of the Corps, but members of the installations' Directorates of Public Works as well as the total engineer family."

For the Corps' part of the total engineer family, Ballard said, "What I envision is the concept that we call 'one door to the Corps.' This is the Sears Roebuck of engineering. If you've ever had to purchase tools from Sears, you know where to find them. You look for the escalator, you go downstairs. I'm saying that if you want engineering service from the Corps, you look for the ... nearest engineer castle. I don't care where it is. You walk into any district or any division and you've now entered the Corps of Engineers."

## Serve the Army

- *Focus energy on concerns of the Army leadership and challenges to the Army to serve the Nation.*

"This is more for me and the senior leadership, but this is also for anyone else who is in contact with the public," Ballard said. "For me it means seeking expansion in engineering areas critical to the Army leadership. We will continue to participate actively in the Army's senior forums."

## Enhance capabilities

- *Market and capitalize on opportunities for mission growth.*

Ballard said that controversy arose about use of the word "market" during scoping sessions. "We're not about to come up with a slick advertising campaign," he told the senior leaders. "But we are a multi-disciplined engineering organization with strong capabilities and we need to broker them. I'm talking about nurturing a broad spectrum of constituencies and partnerships among the federal sector, the non-federal sector and international customers. I want to be able to say, 'We can help you.' But we will seek opportunities for growth only in those areas that sustain and enhance our core competencies and our value to the Army."

## Build Strategic Commitment

- *Develop marketing and strategic communications plans to create an understanding and commitment to the corporate strategy.*

"If you don't commit to doing this, we're going to have a tough time making this plan work," Ballard said. "I'm talking about senior leaders who are refocused to act and think strategically. Thinking strategically means embracing what's good for the organization, what's good for the nation, what's good for the Army. So that's why it's important that everyone understands the vision and the goals of the strategy. Everyone must understand where they fit into the strategy and the role they play in meeting the objectives."

## Reshape Culture

- *Shape a culture that reinforces corporateness, customer service, core values and the importance of investing in people.*

Ballard noted that the Corps, like other large traditional organizations, gets anxious when it hears the word "change." Then he said, "If we don't change, someone will impose change on us. And if we're going to have change, I'd prefer for us to be in charge of it."

The focus here, he said, is on "behavior, actions and decisions that are consistent with one core philosophy, quality customer service: embracing our institutional values, the values of integrity, professionalism, quality and caring; developing our folks and taking care of them; en-

couraging diverse attributes and talents. The way we shape that culture is to not be afraid of folks that do not look like us, talk like us, or act like us. I couldn't care less, as long as they are focused on what is best for this organization."

To wrap up, Ballard said, "I am absolutely committed to making sure the Corps is ready for whatever challenges await us. Together we can make it happen."

"This plan will not sit on the shelf," Ballard said. "This will be a living document. You'll live by it every day; you're going to work by it every day."

He described the next step: developing a campaign plan by March 14 to implement the strategy in headquarters. Ballard said he wants to see actions laid out on how the strategies are to be implemented. He wants them to be fully integrated and coordinated.

The headquarters campaign plan will serve as an example to divisions, which have until Apr. 14 to develop their campaign plans. Districts will have until May 14. The plans will then be discussed at the Senior Leaders Conference in August.

"The key to the implementation is to identify critical events and time-dependent milestones," said Ballard. "I'm not going to turn this into a paper drill, but I do intend to make the way we measure progress and achieve these strategies part of the way we measure our organization and individual performances."

He also told senior leaders that for the plan to be effective, it is necessary to put a one-year hold on division and district restructuring initiatives, except for those dictated by law. "I think we've had enough turmoil on the workforce as it is."

No more than two divisions with no more than four districts under them will pilot-test new structures, procedures and relationships for one year, he said. "We're going to stop shuffling the decks long enough for us to catch our breath and figure out where we're going."

Division and district changes will be implemented based on the strategic plans and results of the pilot test.

# Corps builds in Latin America

Article and Photos  
By Tim Dugan  
Mobile District

Although a tiny staff in a small country, the El Salvador Project Office has completed \$46 million in construction in the last decade. The district first opened its El Salvador office in 1985.

## Latin America

The Corps of Engineers has been involved in Latin America since Army engineers were called to finish the Panama Canal in 1904. Mobile District was tasked to support U.S. Southern Command in 1985 and has been working in the area ever since, said Walt Ennaco, Latin American Project Management Team Chief.

Most work in Panama is done to support the U.S. Southern Command (SOUTHCOM). Most work outside Panama is work for others like host nation governments and the Department of State.

Projects in Central and South America generally range from \$500,000 to \$2 million each. In the last five years, Mobile District has averaged \$15 to \$20 million in construction and \$20 million in design a year in Latin America. Funding comes from various sources — SOUTHCOM, the host nation government through the U.S. embassy or the military group, or even shared funding.

## El Salvador

Construction in El Salvador for fiscal year 1996 was about \$1.5 million. The staff provides engineer planning, design and construction services to customers in El Salvador. They also provide civil and environmental engineering support that meets Department of Defense and country team objectives for developing democracy and stable conditions in Honduras, El Salvador, Guatemala, Belize and Nicaragua.

Major projects in El Salvador include the CIFA renovation, the Compalapa Air Force Base renovation, and the CODEM library renovation.

## Engineer school

The \$173,000 building renovation at CIFA (the El Salvadoran Engineer School) was awarded in August 1995 and completed last summer.

The project progressed well, but some changes were required in foundation work. "It's going to be a training school for engineers," said project engineer Rene Gil. "This is the engineer brigade. They do all the engineering work for the Salvadoran military."

## Compalapa

The \$1.1 million renovation of the headquarters building and runway apron at Compalapa Air Force Base was awarded in 1994 and completed in 1995.

"We get a lot of support from the MILGROUP and that helps with our execution," said project engineer Jose Humberto Alas, El Salvador Project Office. "They're happy customers and it's been a good experience."

The \$50,000 T-20 Test Stand project at Compalapa AFB was completed in 1995 and allows repaired jet engines to be tested before replaced in aircraft. It includes a sophisticated mount and metal shield wall to absorb heat, flames and exhaust.

## CODEM library

The \$1.05 million CODEM Library Facility Renovation project was awarded in August 1995. The project office staff faced many challenges with the contractor.

"CODEM is similar to our West Point," Mann said. "Every military officer for years has gone through this school, so there's a lot of tradition to be maintained."

Work required renovating the main building, auditorium and electrical and air conditioning systems.

"Safety is the number one priority," said Roberto Cucalon, the contractor's quality control supervisor. "Why wear hardhats, our workers ask. Because a piece of lumber could fall on your toes or you could step on a nail. 'The safety glasses fog up.' Take them off and wipe them. It's not like local construction projects where if someone gets hurt they just fire 'em and get a replacement. Safety comes first here." The project, with no lost-time accidents, was completed last fall.

## Challenges

Working in El Salvador presents unique challenges.

The country is putting years of war behind it. Fred Mann of the Latin America Management Team recalls when life was more tense. "We used to have armored vehicles and had to carry a sidearm when we visited project sites," Mann said. They needed guards 24 hours a day, and project engineers used to visit projects by helicopter because it was unsafe to travel the roads. Things are not so tense today, but armed guards still stand in front of stores.

"The Corps rebuilt two bridges after they were blown out by guerrillas on the Lempa River," said former area commander Ed Kertis. "This is one of the most important things we have done in El Salvador."



The \$105 million CODEM Library Facility renovation was completed last fall.

The distances between projects take a toll on engineers' time. "Getting anywhere is a real hassle," Mann said. "Travel time plays on everything." Projects range from one end of the country to the other, often over mountainous, bumpy and crowded roads. Some projects in Latin America can only be reached by plane.

## Safety

Latin America also does not place the same emphasis on safety that the Corps does.

"Safety training for the contractor is a large part of what project engineers do," said Mann. "They spend a lot of time doing that. Some people say that's not our job, but if we don't teach them to follow the safety program they're not going to do it. We have to show them how."

## Teaching

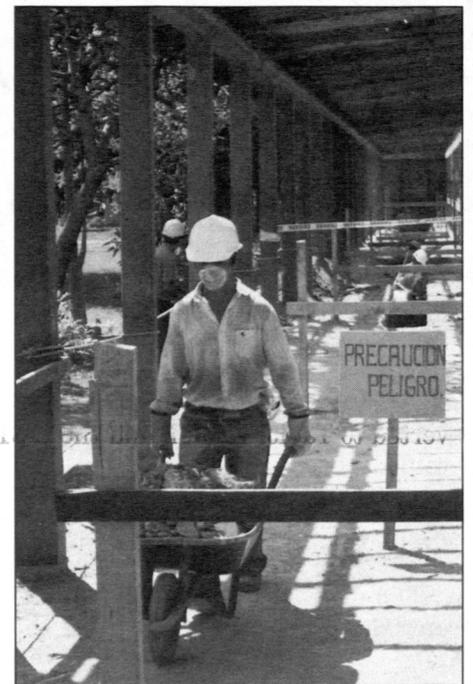
"The construction office in Latin America is more than a construction office," said Mann. "We are in a teaching mode here. It's an on-going teaching process, teaching construction methods."

For example, a local manufacturer was making tiles containing asbestos. When they learned the Corps could use the tiles if asbestos wasn't used to make them, they altered the production.

Working with contractors who have never worked with the Corps also involves a major learning curve that takes a lot of the project engineer's time. "We try to help contractors understand our contracting procedures and construction requirements," Mann said. Training seminars are held for contractors who seek Corps work.

## Cultural differences

Successful engineers working in Latin America need to develop a different mindset, Mann said. "You have to back off the rat-race pace. You have to get into the pace of the culture and take the time that's needed to do the work. You can't



Worker safety is a top priority.

pressure the locals to work faster. If you apply pressure, it may make things worse and the work's not going to get done."

In addition, the Corps uses local materials and construction procedures when possible. "It helps cut the cost," Mann said. "We try to work with them as far as the construction process."

## Other projects

Other projects in Latin America include the Ammo Bunkers Project for an artillery brigade outside of San Salvador; the Estado Mayor Renovation in San Salvador; the Navy School Renovation in San Miguel; and a number of smaller projects.

Larger projects include the \$4 million Unit Training Facilities at La Union in 1989; the \$3.4 million Cantonment Improvements at La Union in 1990; the \$3.3 million Improvements to Navy Base at La Union in 1987; the \$2.8 million Aircraft Dispersal Facility at NBTC in 1987; the \$2.9 million Syncrolift Construction at La Union in 1994; and the \$2.5 million Barracks Construction at San Francisco in 1990.

# Everglades restoration underway

Article by Greg Fuderer  
Photo by John Carnes  
Jacksonville District

Organizations with a history of differences and even confrontation joined on Jan. 10 to celebrate the start of the world's largest environmental restoration project.

They broke ground at a construction site at the edge of Everglades National Park near Homestead, Fla. The ceremony marked the start of construction on pump station S-332D and on water control structures S-355A and B. The two projects, begin the process of restoring natural water flow to Everglades National Park and the Florida Bay ecosystem.

Construction and operation of the Central and Southern Florida (C&SF) Project has brought substantial change to the Everglades. The new projects will restore more natural water conditions in Taylor Slough and in Shark River Slough.

## C-111 Project

The C-111 project provides increased water flow from Taylor Slough to Florida Bay. It improves sheetflow from lower C-111 canal into the panhandle of Everglades National Park and reduces the potential for damaging floods in Manatee Bay and Barnes Sound. The project provides flood control for agricultural land in south Dade County, discharging excess flood water into Barnes Sound and through Taylor Slough into Florida Bay.

Pump station S-332D will increase the water diverted to Taylor Slough and the L-31 West borrow canal. It will also be an additional means to discharge flood water from nearby agricultural areas to the east. The resulting increased water levels in lands near Taylor Slough will reduce seepage losses from the Everglades.

## Modified water delivery to Everglades National Park

Other than rainfall, nearly all water that flows into Everglades National Park comes through the C&SF Project. The Modified Water Deliveries project will provide more water control structures and culverts and remove a canal and levee. This will lead to a more natural distribution of water in areas near the Everglades.



A large backhoe goes to work as construction begins on the world's largest environmental restoration project.

Structures S-355A and B will release water from Water Conservation Area 3B into northeast Shark River Slough. With removal of the levee L-67 Extension, Modified Water Deliveries will re-establish the historical flow from Water Conservation Areas (WCA) 3A through 3B into northeast Shark River Slough in the East Everglades.

## Partnerships

"Progress Through Partnerships" was the theme of the ceremony. More than 200 people, from life-long South Florida residents to Clinton administration cabinet members, attended the groundbreaking.

Cooperation among agencies must continue for the restoration to be successful, said Lewis Hornung, C&SF project manager for more than seven years. "The progress made on both projects is the result of collaboration with many other federal, state and local agencies and tribes. Collaboration is what's needed in the future for all projects.

"Conventional wisdom says if the Everglades benefits, urban areas will lose; if we restore Taylor Slough, agriculture will suffer," Hornung said. "I

don't believe it. One of our goals is to protect other (C&SF) project purposes, like flood control and water supply. Through processes like the (South Florida Ecosystem Restoration) Working Group and the Southern Everglades Restoration Alliance, we'll look for opportunities to enhance these purposes."

In her remarks, Environmental Protection Agency Administrator Carol Browner, also a South Florida native, remembered her first briefing from the Corps. She recalled that the final slide in the presentation showed the Corps castle morphing into a tree, symbolizing a new Corps.

"The Corps has changed," Browner said. "Those in the Corps recognize that part of your responsibility is managing and restoring our environment."

Col. Terry L. Rice, Jacksonville District Engineer, called it "a momentous occasion, a watershed event." He emphasized the goals of the day's events and the partnerships necessary to continue the work. "Today's activities are not the final steps to move water to the Everglades, but they are the first steps and in the right direction. Working together, we can do it."

# Environmentalists honor Jacksonville

Article by Christina Plunkett  
Photo by John Carnes  
Jacksonville District

Words like "concern," "cooperation," and "consensus-builder" are being used more and more to describe the Corps of Engineers. With a steady evolution toward embracing environmental needs, even past critics now see the Corps as part of the solution rather than the problem.

This transformation in the perception of the Corps and its projects became evident when the Everglades Coalition honored Col. Terry L. Rice, Jacksonville District Engineer, with their James Webb Public Service Award. Rice received the award on the last day of the 12th annual Everglades Conference at Deerfield Beach, Fla.

"The fact that the coalition would

single out the Corps, when there are many organizations and activists to choose from, is a great honor and much deserved," said Ronald Tipton, Coalition Co-chair and South Florida/Everglades Director for the World Wildlife Fund. "Recognizing the Corps in this way signifies that the Corps is central to a continued, strong leadership for restoring the Everglades. This signals that the Corps' direction for the next century will be far different than it has been in the past, or has been perceived to be."

Nathaniel Reed, Governing Board Member, South Florida Water Management District, presented the award to Rice. Reed called the Corps an "impressive crew" that rallies around Rice's dedication to restoring and protecting the Everglades. Reed also said that Rice has challenged all levels of government "to think before we act."

"The district's embracing of the ecosystem and environment is now paying significant dividends," Rice said, emphasizing that this award is for all district employees' hard work.

This year, the Corps will embrace an even bigger role in Everglades restoration with the recent Congressional authorization of \$75 million in the Water Resources Development Act to accelerate preparing a comprehensive restoration plan.

Other recent significant events include Congressional approval of \$200 million in the Farm bill for Everglades restoration, and approval by Florida voters of a constitutional amendment requiring the costs of Everglades pollution abatement be paid by the polluter instead of taxpayers.

The Everglades Coalition is a group of more than 40 national and Florida conservation organizations.



Col. Terry Rice, Jacksonville District Engineer, and other district staff observe a hydrological demonstration in the Everglades.

# Have a ball!

## Corps attorney raises thousands for charity

By Becki Dobyns  
HQUSACE

It's amazing what a person can do with determination, luck, and lots of caffeine. Thirty-three days before the presidential inauguration, Capt. Robert Nichols, an honors program attorney in the Chief Council's Office at headquarters, decided to throw an inaugural ball.

That's right — a swanky inaugural ball in the nation's capital, with tuxedos and jewels, dignitaries, fancy decorations, a fountain, ice sculpture and a band. In so doing, he raised more than \$20,000 for Children's Hospital.

Nichols says the idea came to him one Sunday morning while reading a newspaper article about inaugural events. He read some things he didn't like. First, he learned that basically only the politically well-connected attend inaugural celebrations. Nichols felt that an inauguration, so reflective of democracy in action and fundamentally non-partisan, should be for the people.

"I also looked at the list of events and I noticed that each one benefited only the small group hosting it," he said. He thought a better idea would be to have a great party that also benefitted a worthy charity.

Once the idea seized his imagination, it wouldn't let go. He knew he had to do it.

"So I went to the White House that night and talked to some friends of mine," he said. Besides finishing a Master's of Law degree at night, and being an honors program attorney (which means he was a top law school graduate and is now fulfilling a four-year Army reserve obligation with the Corps), Nichols is a White House Social Aide. As such, he and other military officers facilitate official White House events like receptions, conferences and state dinners.

Nichols looked to his social aide friends to help get the "ball" rolling. He especially targeted Rod Berk, an Air Force financial management officer who Nichols knew to be a good organizer.

Together, they sought sanctioning from the Presidential Inaugural Committee. They had to address several issues, like having dignitaries attend and selling official inaugural merchandise on the premises. The ball, however, was approved in just three hours.

Nichols and Berk put up all the necessary money, about \$12,000 each. Most of the volunteers were also White House social aides who, like Nichols, put the rest of their lives on hold while working on the ball.

"In 33 days, we booked the hotel,



Capt. Robert Nichols (center, eyes closed), poses with friends at the inaugural ball he organized in only 33 days. (Photo courtesy of Paul Nichols)

got a band, did all the advertising, made direct faxes to about 10,000 people, issued invitations to members of Congress and all the foreign ambassadors in Washington, and got a ticket agent who sold the tickets for us through an 800 number and mailed them out," said Nichols.

Nichols started working on the ball in the evenings and on weekends, but it soon became obvious that he would need to take some leave. He took the two weeks off leading up to the ball, but it was hardly a vacation.

"As we got closer to the event, people were at my house until 3 or 4 in the morning," Nichols said. "We were all putting in about 20-hour days. Some people were taking naps while others were feeding in fax numbers. I put in extra phone lines at my house. People brought over their computers, so at one point we had five computers going in my

bedroom. It was amazing how it all came together."

As an example, Nichols mentions the red, white and blue ballroom decorations which drew lots of admiration. They were made by an Army helicopter pilot, himself colorfully-decorated in the Gulf War.

The officer took leave from his job with the Joint Chiefs of Staff and, with his roommate, spent long nights laboring. The decorations featured wooden children in various poses designed like paper dolls, some on the floor and some suspended in the air with clear wire.

Nichols said he kept feeling that fate was on his side. Two weeks before the event, he happened to meet a public relations professional who volunteered to help put together a PR team to issue press releases and fact sheets, and to write questions to every conceivable question the media could ask.

Four local and two national television stations covered the ball. "I'm still getting people saying, 'I saw you on television,'" said John W. M. Thomas, Children's Hospital Vice President for Development.

Proceeds from the ball helped raise funds for the hospital's Clown Care Unit, Thomas said. "Funds raised will be used to support bringing clowns into the hospital three days a week, 50 weeks a year, to help children deal with their anxieties and fears about hospitalization."

How did Nichols do all this? "This is a guy who gives more than 100 percent all the time," said Rupert Jennings, Nichols' supervisor. "He's intelligent, works very hard, and is also nice — what I call the consummate triple threat."

In the 33 days between Dec. 15 and Jan. 17, Nichols made a lot of contacts and marshaled about 30 volunteers. But back at work, almost no one knew about the project taking over his life while he was away on leave. He told only the barest facts to his two immediate supervisors.

After the ball, Nichols expected to simply come back to work and reimmerse himself in the labyrinth of fiscal and international law.

But all sorts of people have been stopping by his office to pat him on the back, and he's received kudos from the Chief Counsel, the Chief of Engineers, and Deputy Chief of Engineers. Nichols has been somewhat uncomfortable with all the attention he's received since the word on his pet project got around headquarters.

"To me, charity work is basically a private thing," Nichols said.

But people ignore his humility, congratulate him, and go on pondering just how much one person can do with determination, and luck, and lots of caffeine.

## Teamwork repairs Lock and Dam 5

By Jennifer Patrick  
Little Rock District

If you operate a 445-mile waterway 24 hours a day, year-round for 25 years, some things are bound to go wrong, usually at the least convenient time. That's Murphy's law.

That is what happened at Lock and Dam 5 when the hoisting system on tainter gate 11 broke on a recent Saturday. But through the efforts of the Pine Bluff Marine Terminal crew, lock personnel and a private sector contractor, the gate was back in operation in 72 hours.

Tainter gates on navigation dams are raised or lowered to maintain a safe navigation pool upstream of the

dam and to regulate flows on the river.

Each gate is moved by a system of cables and gears attached to both sides of the gate. One side has a motor, a primary gear box, a brake and a secondary gear box. The other side has just a secondary gear box. The secondary gear boxes are connected by a line shaft assembly.

"The brake shaft of the primary gear box on gate 11 broke," said Bill Gray of Maintenance Engineering Section. "This allowed the gate to fall nine feet to the sill. The falling gate caused the line shaft to turn rapidly. The centrifugal force caused the rotating shaft to self-destruct."

Maintenance crews from the Pine

Bluff Marine Terminal arrived at the lock on Sunday, inspected the damage and replaced the primary gear box on the gate with a spare.

"The crews did what they could at the time," Gray said. "The line shaft had to be replaced, and we had to determine the quickest and most efficient way to do it. By the crew replacing the primary gear box, we were just that much ahead of schedule when the line shaft replacement work started."

To add to the urgency, the Arkansas River drainage basin had recently received a large amount of rainfall. River flows were increas-

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# Louisville divers risk lives in line of duty

By Todd J. Hornback  
Louisville District

How does it feel, as an adult, to be enclosed in water, dependent on an umbilical cord, and enveloped in darkness? For 16 members of Louisville District, this is a world where measurements are made by the length of a hand and light cannot pierce the murk. It is the world of industrial diving, and they enter it with caution.

Sixteen district members serve as divers to repair and inspect the locks and dams. They take time from their regular work as equipment operators, deckhands, repairmen, and lock operators to serve as divers.

Four of them work on the Louisville Repair Station crew. In early December, they replaced screens on the intake valves at McAlpine Locks and Dam. This mission was typical of the danger the dive team experiences, and showed the precautions they take.

"In school we were told this is the most dangerous job the Corps does," said Steve Beatty. The Corps' dive training is taught by Florida Community College in Key West. Because of the danger, training includes the open water course for scuba divers, a one-month course for hard-hat divers, and a two-week refresher course every four years.

On the McAlpine work, divers plunged into 39-degree water, with the air temperature in the mid-40s. That's cold, but on other dives the team has cut holes in ice, so the divers are trained to assess signs of hypothermia. One diver joked, "When your teeth start chattering, you know it's time to get out."

The McAlpine work included a 50-foot dive near the bullpen, the area where water is drawn in to fill the lock chamber during lockages. At that depth, divers could stay under water for up to 100 minutes safely, but the dive supervisor, Kevin Vessels, limited dives to about 60 minutes. Time is always important for divers since nitrogen builds up in the bloodstream during dives and can cause cramping, dizziness, blackouts, or paralysis if not properly monitored.

During his dive, Ramsey removed corroded bars from the old intake screens which keep debris from entering the lock chamber. Since the work is done in dark water, jobs are done by feel. Each diver has memorized the length of his fingers, hands, arms, and legs to aid in making measure-



A diver enters the dark, freezing water at McAlpine Lock and Dam. (Photo courtesy of Louisville District)

ments in pitch dark.

And underwater lights are useless because of the silt floating in the water. "Using lights would be like using a car's high beams in the fog," Vessels said.

According to Bill Bockelman, a diver with six years experience, "You go by feel. Occasionally, in the summer, you can see for a couple of feet, but most of the time you do what you have to do to get the job done."

While the diver is underwater, his team-mates work topside monitoring the dive for safety. After the dive tenders help the diver put on the diving helmet and gloves, they feed the umbilical cord into the water as he descends. This cord carries oxygen, safety, and communication lines. The tenders assure that the cord remains taut. If too

much slack is given, a diver can be entangled in the line or snagged on trees or debris.

Keith Browning and Ike Oakley serve as dive tenders. Browning emphasized the importance of their position when he called the umbilical "the lifeline."

Another team member is the standby diver. This diver is suited up and ready to go except for the helmet, and will assist if an emergency occurs with a diver in the water. In less than a minute, the standby diver can have the diving helmet on and be in the water.

Vessels served as dive supervisor for the McAlpine work. He monitored the divers for safety as they worked and exchanged information. Because divers were working near the intake valves, he ensured the lock crew stopped lockages if divers were in the water. Between dives, traffic resumed.

The crane operator is another team member who watches out for the divers. When divers removed the corroded screen rods, a crane lifted them out of the water and stacked them on the repair barge. John Davie, crane operator, said, "I have to be careful of the diver and not drop something on him."

In the water, corrosion had damaged the rods to the point that they would break as divers removed them. Richard Hayes, lock and dam repairman, has been diving for four years and said, "A lot of jagged objects can come spearing down on you. That's why the helmet is like a hard-hat."

Part of the crew's work includes sealing leaks at the bottom of bulkheads. The tools of the trade include air impact wrenches, hydraulic drills, oxygen arc cutting equipment, and caulk. They also use "possums" (rags rolled to form a bar) to seal leaks. If a leak is large enough, the divers can find it by listening.

"It sounds like a train," Hayes said. "You know where the leak is before you get to it. You hold the possum in front of you and the suction pulls it to the leak." Hayes added that they had to be careful doing that, though. If the leak is large enough, as in a sill on a bulkhead, the suction could pull the diver through.

Since industrial diving is inherently dangerous, the Corps maintains strict safety precautions and provides training for those who do the job. So why would anyone plunge into darkness and live underwater for an hour at a time to repair Corps projects? According to Ramsey, "I love it. It's fun."

## Teamwork

Continued from page 10

ing and a small craft advisory was already in effect.

On Monday morning, Chester Shaw, acting resident engineer at the Pine Bluff Project Office; Jeff Stiles of Engineering Division's Mechanical-Electrical Section; and Gray met at Lock and Dam 5 to look at options.

"We knew with the rising flows that we had to get the gate open," Gray said. "The forecast was that the dam was to go to 'open river' to accommodate the increasing flows and, if the damaged gate was still down, the releases from the open gates could cause damage to the dam's scour protection system."

The operators at Lock and Dam 5 coordinated with Hydraulics Branch to position the remaining gates to decrease the water's power and the chance of scouring, while still allow-

ing maximum water to be released.

Then the marine terminal crew began working with Pine Bluff Iron Works, a local welding operation, to fabricate a new line shaft assembly, pillow blocks and couplings.

"We didn't know if they would get it all done by the end of the day, so we began looking at other options to raise the gate, like taking parts from another gate, or straightening the damaged line shaft until the new parts were finished," Gray said. "Pine Bluff Iron Works put a rush on the job and got it done."

Installation of the new assembly was completed at 7:45 p.m. on Monday, and the gates were raised to the open river position immediately because of the high flows.

"The river was high, the weather was cold and rainy and conditions were against us," Gray said. "But we worked together and got the job

done in a relatively short time. That was due in part to the quick turn-around we got from Pine Bluff Iron Works on fabricating the new line shaft assembly."

But with the gate back in operation, only half the work was done. Gray and Stiles did an after-action inspection on Tuesday.

"We noticed a wobble in the new line shaft when we moved the gate," Gray said. "We inspected it and found the output shaft on one secondary gear box and the input shaft on the second unit were bent as a result of the line shaft failure."

When the river stages returned to normal so the gates could be closed, both secondary gear boxes were replaced.

"We don't really know what caused the brake shaft to fail," Stiles said. "It could have been bending fatigue, torsional fatigue or

metal imperfections. This is the first failure of this type that we know of in the Corps."

The break occurred in a high stress area on the shaft, where the thickness decreases. The broken shaft will be tested at a materials analysis laboratory to find the cause.

If the accident was caused by bending fatigue or metal imperfections, it's probably a limited occurrence. If it was torsional fatigue, it may be a problem that could affect dams Corps wide.

"This is original equipment put on these dams when they were built 25 years ago," Stiles said. "They are inspected and lubricated regularly, but not replaced unless a problem is found. If we find this isn't an isolated incident and rehabilitation has to be done, it could be pretty time-consuming."

## Chief of Staff honored

By Bernard W. Tate  
HQUSACE

Col. Otis Williams, Chief of Staff at headquarters, has been selected as the Black Engineer of the Year for Career Achievement in Government.

"It's an honor to be selected for this prestigious award, particularly given that a number of my mentors and role models were previously honored in the same category," Williams said.

Williams' award was one of 31 given in 20 categories by Career Communications Group (CCG), publishers of *US Black Engineer Magazine*, and the engineering deans of Historically Black Colleges and Universities.

"We give these awards to provide role models for blacks in colleges and in the engineering industry," said Matt Montague, Director of Communications for CCG. "We want to show there are black people in the engineering industry who are successful."

According to Montague, the Career Achievement in Government Award is given to federal engineers who have had exceptional success during their careers.



Col. Otis Williams

Williams has been an engineer officer throughout his 27 years in the Army. Seven years have been in jobs with the Corps, including Waterways Experiment Station 1978-80, commanding Tulsa District 1992-95, followed by being executive officer of Directorate of Military Programs at headquarters, and Chief of Staff since Oct. 7.

In 1994, with Williams in charge, Tulsa District won the Army Community of Excellence Award in the Special Category for Army communities which are not on a military base.

"I can honestly say that commanding a district was the best job I ever had in the Army," said Williams. "I went into it with some reservations because my first choice was to command troops.

"But I found that both the responsibility I had and the caliber of people I worked with far exceeded my expectations and left a very favorable impression about the Corps and its employees," said Williams. "The challenges I faced and resolved with the help of a great staff, coupled with the work ethic and professionalism of the people, contributed immensely to my positive feelings about serving as a district engineer."

Williams takes a less formal approach to being a role model.

"Being a role model or a mentor is not something I deliberately set out to do each day but, at the same time, I take every opportunity to help and guide people. I counsel young officers who ask my advice, and I've talked to ROTC students in Historically Black Colleges and Universities.

"I think the whole thing of being a role model means carrying yourself so that others will want to emulate what you do," Williams said. "You need to be alert to the opportunities that come your way, and care enough about people to help and guide them when you get the chance."

# 'Blackhawk' shows kids that the sky's the limit

Article by Bob Anderson  
Photo by Mike Mems  
Memphis District

Berland Boyd is teaching "at risk" inner city children a new way of looking at life — from several thousand feet in the air.

Boyd, a river forecaster, is a charter member of the Memphis Blackhawks. The Blackhawks are a national organization of black pilots that traces its heritage to the Tuskegee Airmen, the all-black 99th Fighter Squadron of World War II. The 99th gained fame for never losing a bomber that they escorted.

Carrying on that heritage of pioneering service, Boyd and his fellow Blackhawks use flying lessons to show kids a way to escape from poverty and crime.

"Most of these kids have never been in an airplane, so when they get a chance to actually pilot a plane, they really get excited," Boyd said. "It's like the unlimited sky gives them new hope and greater expectations for their futures."

Boyd is modifying the "at risk" flying program by including teenagers who have already gotten in trouble with the law — kids he comes in contact with every day as a Shelby County, Tenn., juvenile probation officer. Boyd likes to see the glass as half-full when it comes to juvenile offenders' futures.

"If you take a troubled kid flying, and treat him like he could be a good kid, it's a lot more likely he'll become a good kid," Boyd said.

One of the most rewarding experiences Boyd remembers was with a homeless 13-year-old in trouble for selling drugs to feed his mother and two sisters. On his first attempt at drug-dealing (urged by older teens), he tried to sell a bag of marijuana to two undercover cops.

The cops liked the kid, so they introduced him to Boyd, who was assigned as his probation officer. Familiar with numerous community programs, Boyd found work for the boy's mother and a safe place for the family to live.

Boyd proudly reports that today, the young man knows how to fly and is planning on a career as a commercial pilot when he finishes school.

Another success story Boyd likes to tell is about a female police cadet. Her goal was to be the first black pilot for the Memphis Police Department. With the guidance and training of the Blackhawks, she has achieved her goal.

Why does Boyd devote so much time to guiding young black people? "My mother taught me that you have to give back to your people," Boyd said. "Even if it's just a little, give back whatever you can. I know I'm only one man. But still, I am one. I know I can't do everything, but I can do



Berland Boyd uses his Beechcraft Bonanza S-35 to help "at risk" youths soar beyond crime and poverty.

something. And just because I can't do everything, I'm still going to try to do what I can."

Although his love for community service stems from his mother's influence, Boyd said his love for airplanes and flying developed on his own at an early age.

"When I was in grade school, I'd beg to go to the airport so I could watch planes take off and land," Boyd said. "I could have done that for hours and hours if my family would have let me. Airplanes have always held a special beauty for me. So when I learned to fly, it was a lifelong dream come true."

After getting his pilot license, Boyd received his certification to be a Blackhawk at the annual Tuskegee Airmen's conference in Tuskegee. He still flies his Beechcraft Bonanza S-35 to the conference every year. "But not for much longer," Boyd said. "I'm planning on trading in my little six-seat, single-engine Bonanza for a twin-engine Beechcraft Baron later this year."

In his Corps career, Boyd has a reputation for dead-accurate predictions as a Mississippi River forecaster. Whenever the river is up, Boyd's phone rings constantly for updated forecasts. Boyd seldom misses a prediction and, when he does, it's by inches, not feet.

When he's not forecasting the river, flying, or working with troubled kids, Boyd is a deacon for St. Luke Baptist Church, is active with the Memphis City School Board, and devotes time to his wife and two sons.