



U.S. Army Corps  
of Engineers

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# Tulsa District Project Update

## Tulsa District dealing with the worst drought in 50 years

Tulsa District hydrologists have watched reservoir levels change – sometimes dramatically – as lakes sapped by drought benefited from spring rains. According to Russell Holeman, chief of Hydrology and Hydraulics Branch, a number of district lakes had been at record low conditions but, by early May, water was in some flood pools. “It’s a dynamic business,” he said. “It changes hourly sometimes.”

Just as it can be feast or famine in the water control arena, a drought can present problems as well as provide opportunities for Corps natural resources staffs. Low lake levels mean boating hazards, limited ramp access, boat docks sitting on dry ground, the need for marina operators to move their facilities to deeper water, exposed archeological sites that are tempting to looters, and exposed shoreline and mudflats that are attractive to off-road vehicle drivers.

The low levels also present the opportunity to clean up shorelines, mark water hazards, create fish shelters, and repair boat ramps.

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**Condo living -- when the water level rises, the fish will discover new pallet condos ready for occupancy. Many shelters were made from wooden pallets donated by local lumber yards and freight depots. These were anchored down and tied together in a variety of configurations.**



**Col. Miroslav Kurka  
Commander, Tulsa District**

Tulsa District faces challenges that are complicated and not easily defined; it is part of living in the 21st Century super-connected, complex and ambiguous world while fighting a Global War on Terror. These challenges will force changes across the district and will require our workforce to be adaptive, flexible, and creative. Ultimately, these challenges will result in a stronger district that delivers even better service to our military bases and the great American public.

One of my primary objectives over the past few months has been the focus on relationships and communications. At the core of this theme has been "Listening Sessions" at Lake Eufaula on February 28, 2006 and at Lake Texoma on April 11, 2006. These meetings exceeded my expectations and were very valuable to me in understanding the views and needs of the public. Additional listening sessions are being planned for the Bartlesville area and the southeastern Oklahoma and southeastern Kansas areas in the fall. Additionally, we will continue semi-annual environmental partnership meetings with the Oklahoma Secretary

of Environment, Legislative tours, Congressional Briefings and other initiatives to improve communication and build relationships.

The district leadership is working closely with Southwestern Division and our sister districts, especially Little Rock, to adjust to the numerous challenges facing the Corps of Engineers, including: military construction (MILCON) transformation - delivering military construction and services faster and at lower cost, limited General Investigation (GI) budgets and the concentration of studies and investigations on a small number of projects on the Gulf Coast, increased demand to tie clearly defined performance metrics to the Corps' operations and maintenance (O&M) program, and increased demand for development at Corps projects. With these many challenges, a focus on EXECUTION – that is on getting things done – as opposed to a focus on processes is key to our future success.

We are putting a major emphasis on meeting the

Army's and Air Force's demanding execution metrics for military construction, especially those concerning timely construction and cost control. Our standard is to meet these metrics without excuse. We are also working with our sister districts and Southwestern Division to implement major changes in how we deliver facilities and services to the Army. At Tulsa, thanks to the foresight of several key leaders, we've been executing many of the principles of MILCON transformation for years. As a result, we are very well positioned to help Southwestern Division lead the Corps in making the changes needed to deliver military facilities better, faster, cheaper, greener, and safer.

With regard to the General Investigations program, we initiated a formal planning partnership with Little Rock last year. It is very apparent that the Little Rock and Tulsa Planning and Environmental organizations are a very good fit from a capability perspective. We have ongoing independent technical review efforts between our districts, and are also evaluating opportunities to work together in outreach and other

efforts, including opportunities to work in support of the Gulf Coast efforts. We are now working to expand the Tulsa - Little Rock partnership to the other districts in Southwestern Division. The end result of these efforts will be a regional planning team that works nationally.

We are also working closely with Little Rock and Fort Worth Districts on better management of our O&M program. We will redefine our O&M business processes to fully define the roles and responsibilities of the Operations Project Managers (OPMs). These roles will be very similar to the roles of project managers on our study, design and construction projects. OPMs now have the lead role in the development of 5-year management plans and annual budget development. OPMs lead multi-disciplinary project delivery teams that will ensure that all project needs are addressed in management plans and budgets. Eventually, we will integrate the district plan with Little Rock and Fort Worth Districts into Arkansas River basin and Red River Basin management plans. In fact, a combined 5-year management plan is currently being devel-

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**U.S. Army Corps  
of Engineers**

oped by Little Rock and Tulsa Districts for the McClellan-Kerr Arkansas River Navigation System.

In the face of limited budgets and significant pressure for development around our numerous projects, Tulsa District has attempted several innovative approaches including consolidation of leases and public-private partnerships. We will continue to find ways to consolidate our 4,008 leases and outgrants into a more manageable number, and to streamline our real estate processes. We will also continue to pursue public-private partnerships such as the Skiatook Lake Demonstration Project. These public-private partnerships provide the general American public with new recreation opportunities/facilities without burdening the federal tax dollar.

Finally, we continue to support the Global War on Terrorism and Disaster relief with the deployment of trained

individuals and teams. After observing first hand our folks in action supporting the hurricane relief missions in Louisiana, I am more convinced than ever that our **RELEVANCE, READINESS, RESPONSIVENESS** and **RELIABILITY** are the product of our expert, hard-working, and dedicated workforce. The U.S. Army Corps of Engineers ethos of effort, dedication and devotion to the public service takes decades to build. We must sustain it for the future – we cannot contract for it in private industry. This dedicated, expert workforce makes me very optimistic about the future. We are efficient, effective, and flexible, and have well thought out plans. If we continue to focus on getting things done – **EXECUTION**, we will continue to provide great benefits to the American people, despite a complex and ambiguous environment and limited resources.

**I am more convinced than ever that our RELEVANCE, READINESS, RESPONSIVENESS and RELIABILITY are the product of our expert, hard-working, and dedicated workforce.**

**Colonel Miroslav Kurka  
District Commander**

## Corps of Engineers Missions

**T**he mission of the United States Army Corps of Engineers, the world's preeminent public engineering agency, is to provide quality, responsive engineering services to the nation and its armed forces. The Corps plans, designs, builds and operates water resources projects; designs and manages military facility construction for the Army and Air Force at home and abroad; provides design and construction management support for other Defense and federal agencies; cleans hazardous areas across the nation through the Formerly Used Defense Sites program and the Formerly Utilized Sites Remedial Action Program; and conducts state of the art engineering research and design at its Engineer Research and Development Center.

**O**ver its 230 year history, the Corps of Engineers mission has evolved. What began as a military engineering mission for the nation in the 18th Century adapted into a major peacetime mission in the 19th Century. The Corps helped develop a vast water resource infrastructure, initiated development of the first national parks, and linked navigable waterways together to move commerce across states.

**I**n the 20th Century, the Corps' civil mission changed again with the adoption of more water resources development and management duties, including flood control, hydropower, recreation, water supply, shore protection, and disaster relief. More recently, environmental protection and restoration missions were entrusted to the Corps.

**A**s society's requirements and values have changed, the Corps programs have changed to reflect new national priorities.

## Tulsa District dealing with the worst drought in 50 years ...

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Aimee Jordan, park ranger, reports, "Eufaula Lake fell below its normal lake level in May 2005, and nearly a year later, we still find ourselves affected by persisting drought conditions. Concerned citizens are exploring the creation of an Advisory Committee to ensure their voices are heard regarding the management of Eufaula Lake. Realtors wonder how they'll sell lake front property when the lake is yards from its normal shoreline. Many rural and municipal water companies have had to extend their intake structures to continue to provide service to their customers and to act in anticipation of future drought conditions."

Jordan also notes some good news, "Over the past year, much of the exposed lake bed has become vegetated which will provide good cover and nutrient sources for aquatic life. The Eufaula Lake Office and the city of Eufaula have also taken advantage of the low lake level to extend, repair, and clean many of the boat launching ramps."

Greg Bersche, park ranger at Skiatook and Birch Lakes says the impacts there have been minimal so far, but if the current conditions continue into the recreation season, there will be boater safety issues and impacts to swim beach and buoy maintenance.

David Stewart, lead park ranger, Pine Creek and Broken Bow Lakes, was happy to see the mid-March rains. Both lakes had experienced historical lows. He said some timber stands were severely stressed and that there were trespass issues as creeks dried up and cattle walked under the water gap fencing barriers in search

of water. He pointed out that the statewide burn ban could lead to fire hazards this summer.

Stewart said the impacts to native wildlife appear to have been beneficial. He noted that good numbers of turkey and deer are being seen. These populations normally endure a great deal of stress to their young during a cold and wet winter season.

Josh Wingfield, park ranger at Hugo Lake, said the main problem there was boating. "It was tough on the boaters due to sandbars, stumps, and other underwater hazards," he reported. "Most of our boat ramps could not be utilized due to the low water levels." He also noted problems with off-road vehicles and archeological looters.

The lake staff at Tenkiller Lake faced the same situations as their peers at the other lakes. Larry Casey, lake manager, reported, "Low pool elevations caused us to close some boat ramps and to issue caution warnings for use of others. During the time the lake was at low levels, we were able to make some much needed repairs to many boat ramps around the lake. This was a very unique opportunity, and we were able to repair and rehabilitate these ramps at greatly reduced costs and with much less effort than would have been required if the lake level had not been low."

He said the ever-changing pool levels created safety concerns for boaters. "We made efforts to educate boaters to the problem as well as marking some of the more significant problem areas. We took advantage of the low elevation



**These fish shelters, called "spiders," are made from concrete blocks with flexible pipe concreted in place. The Tenkiller Lake staff placed four different types of shelters during the low lake levels.**

and took GPS coordinates of these hazards which are usually underwater so that we would have them for future reference."

Tenkiller personnel, along with the Oklahoma Department of Wildlife Conservation, also built about 150 fish shelters. Dean Roberts, park ranger, said, "We were able to build the shelters in the dry which was very handy. We usually have to install them off our work barge."

By the end of March, rainfall had resulted in good news for some Tulsa District lakes, particularly in the Red River basin. Hugo Lake in southeastern Oklahoma had received enough runoff to return its conservation pool to just a bit

above normal. Broken Bow Lake had risen to 86 percent of its conservation pool, just five feet below normal conservation pool elevation.

Officials say it will take several more inches of rain for northeastern and central Oklahoma reservoirs to return to normal. According to Tulsa District hydrologists, the ground is now hydrated which will allow some of the new rainfall to flow into lakes and reservoirs rather than soak into the ground.

Corps officials say that in spite of the current drought being more severe than those of the 1930s and 1950s, no one went without water as they did before the reservoirs were built.



**This Tenkiller Lake boat dock was left high, dry, and damaged as the water level receded during the drought.**

# Military Program

The first half of fiscal year 2006 has seen many accomplishments in the district's Military Program.

During March, Tulsa District awarded six of the nine scheduled fiscal year 2006 military construction projects at four military installations. A seventh project was awarded in June. The remaining two projects are scheduled to be awarded in the fourth quarter. The projects awarded are:

- Fort Sill Railroad Equipment Facility
- McAlester AAP Strategic Loading Facility
- Sheppard AFB T6A COMBS Warehouse
- Sheppard AFB Student Dormitory
- Tinker AFB 31st Combat Communications Squadron Operations
- Tinker AFB Upgrade Building 3001 Infrastructure, Phase II
- Fort Sill Family Housing Replacement

The remaining two projects are scheduled for award as follows:

- Fort Sill Airfield Fire Station (Congressional Add) (Scheduled for 31 August award)
- Vance AFB Enhance Force Protection (Congressional Add) (Scheduled for 31 August award)

Of our fiscal year 2007 president's budget military construction (MILCON) projects, we are on track to have all three ready to advertise by September 30, 2006:

- Fort Sill Family Housing Repair
- Fort Sill Restationing of the Air Defense Artillery School (from Fort Bliss) BRAC
- McAlester AAP Fabrication Facility

## Fort Sill Base Realignment and Closure (BRAC)

The BRAC project at Fort Sill promises to be a model of regional teamwork. We will be using the "product line" contracts from Little Rock District (dining halls) and Fort Worth District (barracks). Tulsa will provide the non-standard facilities through design/build contracts as well as the vehicle maintenance shops through Tulsa's "product line" contract. The product line contracts will be awarded in late summer of 2006 and the first work issued on them will be for Fort Bliss with work at Fort Sill following closely behind. The BRAC work will incorporate the first stages of Army MILCON Transformation, and will attempt to adopt industry standards and gain cost efficiencies through repetition of multiple identical buildings.

## Installation O&M

In addition to the \$70 million in MILCON contracts awarded so far in fiscal year 2006, we are working on another \$30 million in O&M contracts for the installations. This reimbursable work is critical to the installations and helps our district maintain a critical mass of professionals, both in the district office and in our resident offices, to be able to continue to provide quality services.

Challenges we continue to work aggressively include improving the timeliness of project completion. Construction cost escalation will create a challenge for us to develop awardable projects. But, with the spirit of partnership that currently exists, we will continue to strive to meet the goal of "quality facilities delivered in less time at lower cost."

Quality facilities which have been delivered to the military installations in fiscal year 2006 include:

- Alter Civil Engineering Reserve Facility at Tinker Air Force Base, October 18, 2005
- Phase I, Building 3001 Revitalization at Tinker Air Force Base, December 1, 2005
- 300 Person Student Dormitory at Sheppard Air Force Base, December 20, 2005
- Urban Assault Course at Fort Sill, January 31, 2006
- Consolidated Logistics Facility at Vance Air Force Base, February 6, 2006
- First block of Army Family Housing (duplexes) at Fort Sill, March 22, 2006
- Phase I of the Base Civil Engineering Complex at Altus Air Force Base, March 29, 2006



Air traffic control tower at Sheppard Air Force Base which is scheduled for construction completion in June 2006.

# District Commander Holds Listening Sessions at Lakes

Lt. Gen. Carl Strock, U.S. Army Corps of Engineers commander, in his 2005 testimony before the House Subcommittee on Energy and Water Development Appropriations, said “I have issued communication principles to ensure open, effective, and timely two-way communication with the entire community of water resources interests. We know well that we must continue to listen and communicate effectively in order to remain an effective organization.”

Following that lead, “Listening Sessions” were planned throughout Tulsa District, with Col. Miroslav Kurka, commander, conducting the initial ones.

The first was held Feb. 28 at Eufaula Lake where competing interests were magnified by declining lake levels. The area was experiencing its worst drought in more than 50 years, and there was a great deal of interest in the lake’s low level and how it was being operated.

The meeting lasted more than three hours, and about 100 people attended, including representatives from congressional offices, Southwestern Power Administration, Save Our Water Lake Eufaula, and lake area marina owners and businesses.

In his welcome, Col. Kurka invited attendees to express their views and share their concerns.

During the session, he provided solutions where possible and enumerated the many fac-

tors that impact Lake Eufaula’s level. Most of the comments heard during the meeting centered on drawing down the lake to provide hydropower to the detriment of other lake uses.

Col. Kurka explained that — although the benefits of recreation have been officially recognized — the current federal budget process prioritizes navigation, hydropower, and flood control over recreation and environmental stewardship.

Col. Kurka emphasized the recognition that conditions have changed in the 40 years since the Eufaula Lake project was authorized and that water allocations need to be reviewed.

The Lake Eufaula meeting wound up on a positive note. A new lake advisory committee is being given legislative consideration for establishment, and there are expectations for improved communications and development of a conservation pool management plan.

On April 11, a listening session was held at Lake Texoma, again hosted by Col. Kurka, with about 200 people in attendance. They included marina owners and other stakeholders, special interest organizations, private citizens, and representatives of U.S. Fish and Wildlife Service, Texas Parks

and Wildlife Department, and Oklahoma Department of Wildlife and Conservation. Several elected officials were represented, including representatives of Senator Inhofe and Congressman Boren from Oklahoma and Texas State Representative Phillips.

Shoreline management was a large topic of discussion. Many people want additional development around the lake for more recreational opportunities and economic potential while others seek to preserve the natural environment, water quality, and fisheries. This highlighted the need for a revised Shoreline Management Plan with a complete Environmental Impact Statement, both of which require appropriation of funds.

There were comments about the Red River Chloride Control Project. Col. Kurka informed the audience that the Corps is not for, or against, this project. Rather, that we are

part of the executive branch of the federal government and are obligated to carry out what the legislative branch directs. Current chloride control activities, as funded by Congress, are the design of the remaining features in the Wichita River Basin and a reevaluation study, including an Environmental Impact Statement, for Area VI, near Altus, Okla.

Other discussions were on issues such as “No Wake Buoys” and leasing and subleasing of slips for private fishing. A side discussion between fishermen and marina operators successfully resolved a long-standing issue of security versus fishing in marina areas.

Other listening sessions will be held at various areas throughout the district, including the Bartlesville area, southeastern Kansas, and southeastern Oklahoma, and lake managers will maintain an open door policy to address other lake management issues.



**We know well that we must continue to listen and communicate effectively in order to remain an effective organization.**

**Lt. Gen. Carl Strock  
Commander  
U.S. Army Corps of Engineers**

## Tulsa District's

# Environmental Program

Fiscal year 2006 is a year of change for the Tulsa District environmental program. Challenges included disaster response activities, continued maturation of environmental restoration programs, impacts of emphasis shifts to the Military Munitions Range Program (MMRP), and the growing importance of nation-wide environmental compliance support.

Tulsa District's Hazardous, Toxic, and Radiological (HTRW) Design Center awarded \$11 million in task orders on behalf of Environmental Protection Agency Region VI for A-E services supporting environmental disaster recovery efforts. The successful implementation of performance-based contracts and associated client service has allowed the district to emerge as the primary environmental restoration service agent for Air Education and Training Command (AETC). In fiscal year 2006 AETC added Columbus and Tyndall

AFBs to those installations already being executed by Tulsa District.

Support to environmental compliance programs continues to grow and now includes a large list of customers such as HQ Installation Management Agency (IMA), IMA SWRO, a number of individual U.S. Army installations, National Guard Bureau, various state Guard and Reserve entities, and some USAF installations.

Because Tulsa District is not authorized to perform direct technical execution of MMRP projects (as either a MMRP removal or design district) we partner with other Corps of Engineers districts to meet the demand for services. This has required establishment of new multi-district teams in accordance with the Corps project management business practice. Concerted effort to manage somewhat more complex teaming and acquisition arrangements is

being applied as needed to meet customer requirements.

Customer expectations relative to speed, efficiency, and effectiveness of provided services continue to rise. Policy and market conditions have increased the need for ever more creative acquisition techniques and partnering arrangements. Shared acquisition planning and management is proving to be a very valuable tool. We anticipate expanding existing acquisition partnerships (Sacramento, Louisville, and Omaha Districts; Air Combat Command, National Guard Bureau, etc.) to include mutually beneficial arrangements with AFCEE and other agency partners.

We look forward to another successful year in fiscal year 2007.

## Tulsa District's

# Operations & Maintenance

Tulsa District operates and maintains lakes in the three state area encompassing southern Kansas, all of Oklahoma, and the northern portion of Texas including the panhandle. The district operates and maintains navigation on the McClellan-Kerr Arkansas River Navigation System in Oklahoma, and operates and maintains the chloride control project in Texas.

The district operates and maintains more lakes and has more water supply

contracts than any other Corps district. In addition to flood control and water supply, lakes operated and maintained by the Corps provide tremendous recreational opportunities for citizens along with economic development opportunities.

Operation and maintenance funding for fiscal year projects in the Tulsa District portion of the state of Kansas was \$7.9 million. For the state of Oklahoma, \$44.9 million was provided. Projects in Texas

maintained by the district received \$7.2 million.

Due to restricted funding in fiscal year 2006, major maintenance contracts were limited to one contract at W.D. Mayo for weir repair.

# Hydropower's Success - America's Success

Tulsa District operates and maintains eight hydropower plants in two states. The Denison Power Plant is in Texas and Broken Bow, Robert S. Kerr, Webbers Falls, Fort Gibson, Eufaula, Tenkiller, and Keystone Power Plants are in Oklahoma. Through the Jonesboro Agreement the district is provided "Customer Funding" to perform critical major maintenance at its hydropower plants. This has been very successful due to the relationship between the district and the Department of Energy's Southwest Power Administration (SWPA).

Integrated work plans are developed regionally by the Tulsa, Little Rock, Fort Worth, Kansas City, Vicksburg and St. Louis Districts. These five-year plans are updated annually and are coordinated among the districts and SWPA. Since the establishment of the customer funding program in 2000, in excess of \$22 million have been funded to make major repairs and replacement of equipment at district power plants.

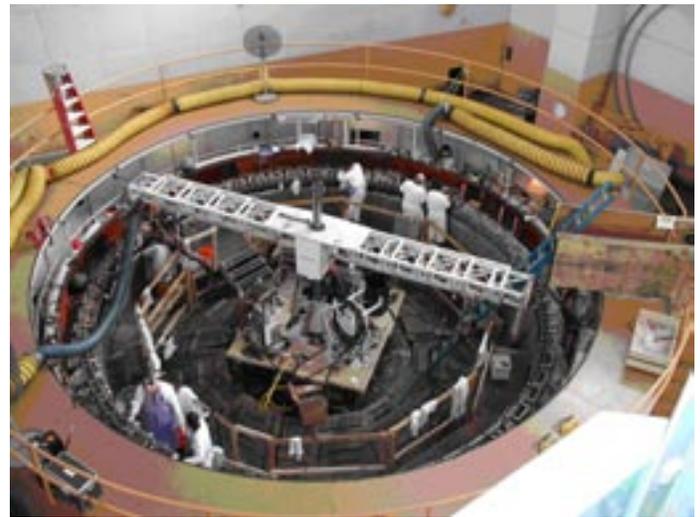
One of the larger jobs currently underway is the Denison Power Plant Rewind where both powerhouse units are being rewind. This is the first time the generators at Denison have been rewind and they are 64 years old! That is a compliment to the quality of the original construction, design and routine maintenance by the hydropower crew.

Denison is the oldest plant in the district where construction was completed in 1943. Webbers Falls is the newest plant with construction completed in 1973.

There are a multitude of electrical and mechanical components required to operate a hydropower facility. It is remarkable how well this equipment has performed over the years – serving well beyond the design life.

However, with age comes concerns for availability. As units age, needs for major maintenance increases as does the likelihood that hydropower units will not be available when needed.

The Corps' limited budget to operate and maintain hydropower plants has a direct impact on the performance and service to customers. Without regional and interagency efforts, these impacts would be much more severe, resulting in higher outage rates and lower availability rates.



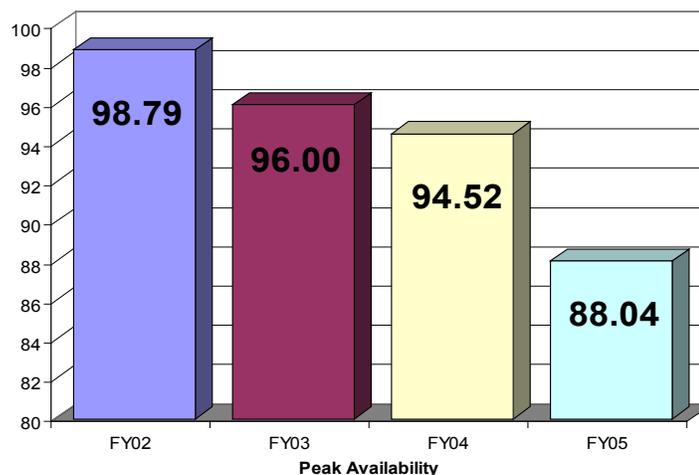
**Denison Rewind – Rotor removed from Unit #2. Rewind in progress. April 2006**

Our hydropower mission statement is: "Provide reliable hydroelectric power services at the lowest possible cost, consistent with sound business principles, in partnership with other federal hydropower generators, the Power Marketing Administrations, and Preference Customers to benefit the nation."

We will continue to work with our partners and policy makers and to meet the local and regional needs for hydropower.

**A strong America comes with a strong foundation of energy.**

**Tulsa District is proud to provide electricity which fuels the health, safety, and economic wellbeing of our nation.**



Hydropower forced outage rates have been increasing over the past few years, causing interruptions in service to customers. This graph depicts the trend in peak availability.

# Area VI, Chloride Control Project Reevaluation Study Funded in Fiscal Year 2006

Cotton farming in the Altus, Okla., area is very big business. What makes it that way is the availability of irrigation water. But that availability is in jeopardy.

On November 14 and 15 of 2005, the Tulsa District Corps of Engineers participated in a legislative staff briefing and tour to show the critical needs for additional clean water supplies. The event was sponsored by Miles Tolbert, the Oklahoma Secretary of Environment.

Duane Smith of the Oklahoma Water Resources Board made a presentation emphasizing the water needs for southwestern Oklahoma, as seen by the state.

According to farmers in southwestern Oklahoma, their biggest concerns are water quality and quantity. They need water that can be used to raise crops without expensive treatment. That supply, which is already limited, is projected to decrease in the near future. The primary source of water for irrigation is the Lugert-Altus Reservoir, constructed by the Bureau of Reclamation in the 1940s. Through the natural process of sedimentation, the reservoir has steadily been losing storage. By the year 2040, there won't be enough storage to meet the irrigation district's commitments for water.

Naturally occurring chlorides, salt from a prehistoric sea that covered what is now the Texas panhandle and western Oklahoma, makes all other local sources of water unusable for irrigation. The nearest stream, the Elm Fork (a tributary of the North Fork of the Red River) carries more than 500 tons per day of chlorides in its flow.

Efforts to reduce the amount of chlorides from the Red River can be traced back to 1959 when Congress passed legislation to have the U.S. Army Corps of Engineers study the problem. The Red River Chloride Control Project was authorized by the Flood Control Act of 1966 for the purpose of making the waters of the Red River usable for municipal, industrial, and agricultural uses. The project includes a number chloride control features at nine major source areas in Texas and one in Oklahoma. That Oklahoma site is Area VI located on the Elm Fork.

Tom Buchanan, manager of the Lugert-Altus Irrigation District, has been a strong supporter of the Area VI project for many years. In his presentation, Buchanan said, "There is no additional suitable water source available to allow any growth of either the cotton industry, or for that matter, the municipal and industrial growth in this area. In fact, the existing infrastructure is about to go away. We must find a suitable supply of clean, unpolluted water."



Tulsa District participated with members of the Oklahoma Water Resources Board and the Lugert-Altus Water District as options and needs for water were discussed.

**"The existing infrastructure is about to go away. We must find a suitable supply of clean, unpolluted water."**

**Tom Buchanan, manager of the Lugert-Altus Irrigation District**



Tom Buchanan of the Lugert-Altus Irrigation District explained the growing cycle of cotton and the area water supply issues.

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Buchanan also said if water was available, another 100,000 to 120,000 acres of land could be put into cotton production that could generate another 60 to 75 million dollars for the local economy.

Richard Bilinski, project manager for the U.S. Army Corps of Engineers, said the Corps has completed several parts of the project in Texas. However, in 1994, the overall project was delayed by the Corps in an effort to respond to concerns expressed by the U.S. Fish and Wildlife Service, the Oklahoma Department of Wildlife Conservation, and the Texas Parks and Wildlife Department.

One of their main concerns was the striped bass fishery in Lake Texoma where they feared any reduction in the amount of chloride would reduce sport fish numbers and negatively impact the lake fishery and recreation.

From 1998 through 2003, the Corps of Engineers conducted additional studies related to a reevaluation of chloride control that focused solely on the Wichita River Basin in Texas. These studies, including those related to impacts to Lake Texoma, were recommended by resource agencies to address their concerns. The results indicate no significant risks for social, economic, or environmental impacts to the Red River or Lake Texoma.

In December of 2004, Oklahoma Governor Brad Henry wrote the Corps of Engineers saying the state had reviewed the proposed Elm Fork Area VI plans and asked the agency to “move forward with a focused evaluation of the Elm Fork Area VI portion of the project...”

The request from the governor and congressional funding have allowed the Corps to resume evaluation and reexamination of the feasibility, economic viability, and environmental sustainability of the Area VI feature of the Red River Chloride Control Project.

The briefing and tour was attended by representatives of Senators Inhofe and Coburn as well as Congressmen Boren, Cole, Lucas and Thornberry. In all, about 40 people attended.



**Altus Lake provides all of the water for the irrigation district, but sediment is reducing the available storage.**



**Cotton crops and the economies that depend on them thrive with irrigation**



**Area VI releases about 510 tons per day of chlorides into the Elm Fork of the North Fork of the Red River.**

# Division and district garner high survey scores

The results of the fiscal year 2005 Military Customer Care Survey are in, and Southwestern Division earned its reputation as the Pacesetter Division, ranking number one in the aggregate Corps-wide survey. Tulsa District was once again extremely highly ranked, earning the number two spot (out of 22 military districts) being edged out only slightly by Savannah District.

Col. Miroslav Kurka, district commander, said, "Congratulations to each and every member of the project delivery teams that deliver goods and services to the various military installations. These ratings further demonstrate to me the outstanding customer care attitude of Tulsa District."

You have done an outstanding job in fiscal year 2005 and are continuing to provide the same, or better, level of service in fiscal year 2006."

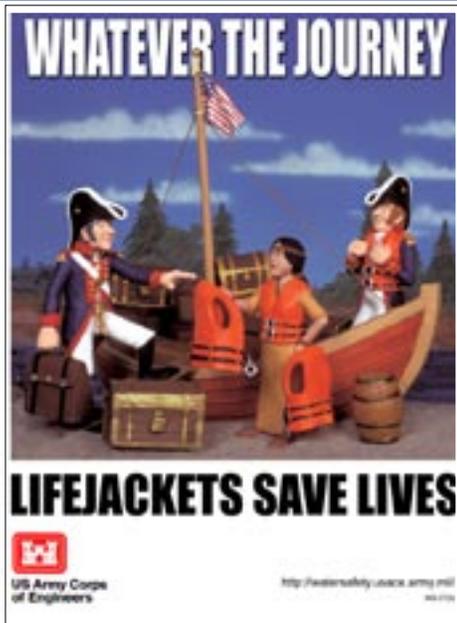
**These ratings further demonstrate to me the outstanding customer care attitude of Tulsa District.**

**Colonel Miroslav Kurka  
District Commander**

Tulsa District ranked first in 11 survey areas of performance:

- Seeks your Requirements
- Treats You as a Team Member
- Resolves Your Concerns
- Provides Timely Services
- Flexible in Responding to Your Needs
- Overall Satisfaction
- Environmental Studies and Surveys
- Timely Completion of Construction
- Maintainability of Construction
- Installation Support Checkbook Services
- Value of S&A Services

## Water Safety Program



**This past Memorial Day weekend four deaths occurred on our lakes. Sadly, each could have been prevented.**

**The tragedy of the loss is compounded when we learn that three of the four deaths were people doing simple things - wading and swimming. None of the victims wore a life jacket.**

Water safety is about saving lives. Since 1976, the district has steadily reduced the number of drowning deaths. We have a water safety program which takes the message of water safety to thousands of kids and their families every year. Our park rangers and maintenance staff watch for unsafe activities as they perform their duties. Unfortunately, despite all of our efforts, we have not eliminated drowning.

All visitors should wear properly fitting life jackets when near the water. Young kids are the most vulnerable because they are too young to understand the danger.

In response to the need for visitors to use life jackets, the district is working with the Oklahoma Lake Patrol and the Oklahoma Safe Kids Coalition to make loaner jackets available at most lakes.

Jackets are available at many swim beaches, boat launching ramps, and some marinas. Visitors should contact the lake office or gate attendant and ask if jackets are available.

We appreciate support for the loaner program, and if you would like to donate a life jacket you may leave it with a lake gate attendant or drop it off at the lake project office.

- Oologah Lake - 27 year old male died while swimming from the beach to a buoy about 50 feet from shore. He was found in 14 feet of water.
- Eufaula Lake - 5 year old girl drowned while wading at the swim beach and was found in 4 1/2 feet of water. She could not swim.
- Skiatook Lake - 31 year old man died from multiple injuries as he was swinging from the bluffs, hit the rocks and disappeared into 10 feet of water.
- Oologah Lake - 21 year old man swimming from the beach drowned in 8 feet of water 40 feet from shore..



# Emergency Response

## Hurricanes

As the new 2006 hurricane season gets underway, the Tulsa District and the U.S. Army Corps of Engineers in general continues execution of recovery-related efforts due to the widespread impacts from the 2005 hurricane season, as well as completing preparations for improved response and recovery efforts the 2006 hurricane season.

The debris removal operations continue in Louisiana resulting from the 2005 season. The Tulsa District has been providing oversight for work in the southwest section of Louisiana impacted by Hurricane Rita while other districts within Mississippi Valley Division continue oversight of efforts in and around the New Orleans area impacted by Hurricane Katrina.

The physical work of debris removal in Texas was completed in March 2006 and in Mississippi was completed in May 2006. Work in Louisiana is projected to continue for several more months. To date, approximately 22 million cubic yards of debris have been removed from this region of the United States. Work related to debris removal from along public rights of way and public property has been completed. The remaining work is related to debris removal from private property and demolition of structurally unsafe homes and structures on private property.

The Tulsa District has deployed nearly 200 of its 650 employees to support these hurricane response and recovery needs. Many of its employees have been deployed for in excess of 30-days and some have been deployed closer to 180-days. There is a deep desire by our employees to see this work completed so the impacted regions can begin the long road to recovery in addition to a deep pride in the work that is being accomplished.

In the all too short time period from the end of the 2005 hurricane season on November 30, 2005, until the beginning of the this year's hurricane season on June 1, 2006, a variety of meetings, activities, and exercises that have included the U.S. Army Corps of Engineers and the Department of Homeland Security - Federal Emergency Management Agency have been occurring to improve the federal response efforts, including those of the Corps of Engineers, in support of the National Response Plan.

The Tulsa District has assisted Galveston District and FEMA efforts to ensure the 350+ generator units stored in the FEMA Fort Worth Logistics Center and used in 2005 are "Fully Mission Capable" and ready for use in 2006. Our emergency power planning and response team participated in a joint exercise at Fort

Belvoir with the U.S. Army's 249th Engineer Battalion (a.k.a. "Prime Power"), our Advance Contracting Initiative Contractor (IAP Worldwide Services), and the city of Norfolk, Virginia, to test improved communication methods allowing shortened response time for installation of FEMA generators at critical public facilities without power following a hurricane or other disaster events. Results of this exercise are now being implemented in FEMA's emergency power provision process.

## Oklahoma Emergencies

And Mother Nature has not been resting since the hurricane season of 2005 ended. District lakes have been used as emergency water supply locations for aerial firefighters supporting firefighting efforts since November/December of 2005. Also, tornadoes that impacted the Delaware County area of Oklahoma in April 2006 have required the Tulsa District to support the State of Oklahoma and FEMA by providing the installation of mobile homes to impacted residents in that region of Oklahoma.

**Emergency operations and our capability to react in an emergency is important for this nation. It ties very nicely with the Corps identified mission to support national economic development and security.**

# Arkansas River Basin

This section offers a brief look at some of the ongoing and upcoming projects of the Tulsa District.

## Arkansas City Aquatic Ecosystem Restoration

Section 206, Water Resources Development Act of 1996, as amended

### Feasibility Study

The city of Arkansas City is located at the confluence of the Arkansas and Walnut Rivers in southeast Kansas in Cowley County, approximately 122 miles northwest of Tulsa, Oklahoma.

The proposed restoration site is located within the historic floodplain of the Walnut River. The recommended plan would improve various types of wildlife habitat over a total of 122 acres. Borrow pits would be modified to be productive fish habitat. Constructed wetlands would provide habitat to numerous types of wildlife as well as improve water quality. Species diversity and carrying capacity would be restored to bottomland hardwood stands and prairie grasslands in the project area.

Fiscal year 2006 efforts are focused on completion of feasibility study efforts that will detail the most cost effective plan to restore this historic floodplain.

## Arkansas City Local Protection Project

Water Resources Development Act of 1986

### Under Construction

Located in Arkansas City, Kansas, the project provides local flood protection at the confluence of the Arkansas and Walnut rivers in southern Kansas.

The project consists of raising and extending the existing levee and modifying the lower end of the Walnut River Channel.

It includes approximately 4.5 miles of levee along the Arkansas River, approximately 4 miles along the Walnut River, and the rechannelization of approximately 2 miles of the Walnut River, as well as all associated drainage structures.

The Walnut River levee ties into the Kansas Highway 77 Bypass project embankment. This embankment was constructed to include all the necessary flood control features which allow it to be incorporated into the federal levee system.

The Arkansas City Local Flood Protection Project will be completed in three phases. Phase I and Phase II are complete.

The construction contract for Phase III was awarded in February 2003. The project is scheduled for completion in fiscal year 2006.

## Arkansas River Corridor

Section 22, Water Resources Development Act of 1974, Public Law 93-251 (Planning Assistance to States Program).

### Study

The Arkansas River is a valuable water resource that provides opportunities for redevelopment to promote economic development, ecosystem restoration, and other initiatives that would improve the quality of life for many citizens living in the Tulsa Metropolitan area as well as visitors to the region. In 2005, we completed a comprehensive Master Plan that seeks to integrate economic development with ecosystem restoration. This plan identifies specific features and locations based on extensive public outreach efforts and technical analysis of the feasibility of the community's vision.

In 2006, Tulsa County is the cost share sponsor providing non-Federal funding and coordinating with stakeholders as we move through Phase III. In this phase we will formulate ecosystem restoration features, model potential weir designs, and conduct comprehensive natural and cultural resources investigations. One primary product of this phase will be a draft 404 permit for the low water dams. Two low water dams have been identified as major components of the comprehensive ecosystem restoration plan. They are necessary as hydro-power production at Keystone dam has negatively impacted

this riverine ecosystem. Tulsa District will work with the Tennessee Valley Authority to model impacts of various dam designs on the aquatic ecosystem and public safety.

This project has generated great excitement within Tulsa County as well as the region. Other municipalities are closely watching the successes of our partnerships with both public and private stakeholders. Tulsa District is committed to providing support to the Tulsa Community as they seek to integrate economic development with ecosystem restoration.

## Augusta Levee Local Flood Protection Project

Section 205 of the Flood Control Act of 1948, as amended (Continuing Authority -- Flood Control).

### Pre Construction Engineering & Design

Augusta is about 19 miles east of Wichita, Kansas. The Whitewater River runs through Augusta, Kansas, to its confluence with the Walnut River.

The original levee was constructed in the 1920s and '30s through private and public sponsorship and was incorporated into the Federal Levee Inspection Program in the 1940s.

The November 1998 flood damages were caused primarily by the Whitewater River breaching of the city's levee system at several locations along

the west side of Augusta. The recommended plan would be to raise and extend the existing levee to provide a 500-year level of flood protection.

Fiscal year 2006 efforts are focused on completion of construction plans and specifications, monitoring real estate acquisition activities by the sponsor.

## Bartlesville Water Supply

Section 22, Water Resources Development Act of 1974

### Study

On May 15, Mayor Julie Daniels and Colonel Kurka signed the cost share agreement for this study. It is a 50% federally funded study that will analyze the cost of storage and conveyance from Kaw Lake and the impacts for reallocating from the flood pool on Hulah and/or Copan Lakes. Cost estimates will be an integral part of this study. The study will also investigate the future needs of the region.

Primary stakeholders in this study are the city of Bartlesville, the Oklahoma Water Resources Board, the Nature Conservancy, and rural water districts.

Another closely related project is the Hulah/Copan Reallocation Study. This study was signed by the Tulsa District Commander on April 26 and has been sent to Corps Headquarters for review/approval. Water supply contracts totaling just over 12 million gallons per day will accompany the report to headquarters.

## Big Lake Habitat Restoration, Oklahoma

Section 1135(b) of the Water Resources Development Act of 1986, as amended (Continuing Authority - - Habitat Restoration)

### Feasibility Study

Big Lake is a locally-owned lake located along the Verdigris River in Rogers County, Oklahoma, about 10 miles northeast of Tulsa and approximately 15 miles downstream of Oologah Lake and dam. Due to the Robert S. Kerr Navigation channel and impoundment of Oologah Lake, over 700 acres of forested wetlands are no longer subject to annual flooding.

The recommended plan would improve various types of wildlife habitat for 700 acres of bottomland hardwood forest, restore 100 acres of bottomland hardwood wetlands and an oxbow lake, and simulate natural flooding to the area.

Fiscal year 2006 efforts are focused on completion of the feasibility study/planning design analysis document which will detail the most cost-effective

plan of improvement for implementation. In June 2006, environmental compliance efforts were completed for the study effort and the final report is expected to be complete in September 2006.

## Blackwell Lake Clearing and Snagging

Section 208 of the 1954 Flood Control Act, as amended by the 1974 Water Resources Development Act.

### Project Design Analysis Underway

Blackwell Lake is located in Kay County, Oklahoma, near Braman, and is a primary recreational feature in this part of Oklahoma.

Due to the ice storm of 2001, a heavy load of logs and other debris have accumulated upstream of the Lake Blackwell Dam and spillway. The log jam is blocking access to the gate controls of the dam structure and has completely overwhelmed the normal maintenance capacity of the Lake Blackwell Trust Authority. The log jam has also significantly increased the flooding

risks of the residential community immediately upstream (approximately 200 homes).

The recommended plan of improvement would be to remove the logjam and properly dispose of the accumulated material.

Fiscal year 2006 activities are focused on completion of the project design report.

## Candy Lake Land Sale

Water Resources Development Act of 1999

### Land Sale

Candy Lake was deauthorized by publication in the Federal Register in December 1996. Water Resources Development Act (WRDA) 1999 authorized the Corps to sell the Candy Lake project lands at fair market value to the previous landowners or their descendants. The Corps contracted with General Services Administration (GSA) to conduct a land appraisal and identify former landowners or their descendants and complete the Environmental Assessment. In 2005, we completed the Environmental Assessment and initial coordination with the State Historic Preservation Officer. Offers to purchase were sent to appropriate parties.

Title transfers for the first 11 Candy Lake tracts were signed by the Assistant Secretary of Army for Civil Works (ASACW) and sent back to the district in June. Deeds were filed in Osage County on June 14 to complete these sales. Funding from these initial sales will be used to complete the cultural resource investigation. Title transfers for those tracts only will occur later.



The Candy Lake area of Okla.

Parcels for which bids were not received from former owners or their descendants will be offered to the Osage Tribe as they have first right of refusal. Any tracts not accepted by the Osage will be submitted to the General Services Administration for disposal as surplus property.

## **Canton Lake, Oklahoma (Dam Safety)**

Flood Control Act approved June 28, 1938 (Public Law 761); Flood Control Act approved July 24, 1946 (Public Law 526) (irrigation storage); Flood Control Act approved June 30, 1948 (Public Law 858); and the Water Resources Development Act of 1990 (Public Law 101-640) (water supply storage).

### **Under Construction**

This is a multi-phase Dam Safety project with the first phase consisting of a Spillway Stabilization Construction Project in which 64 anchors will be installed into the spillway to correct stability deficiencies. The first phase contract was awarded to Nicholson Construction Company for \$4,525,000 on November 17, 2005. The next phase of the project consists of performing a summary update evaluation to the existing dam safety evaluation report to determine design solutions to all remaining dam safety issues (hydrologic deficiency, seismic and seepage) and the development of plans and specifications for continued construction in fiscal year 2007.



**Canton Lake, Okla. Dam Safety Project**

## **Cowskin Creek, Local Flood Protection Project, Wichita, Kansas**

Section 205 of the Flood Control Act of 1948, as amended (Continuing Authority -- Flood Control).

### **Pre Construction Engineering & Design**

The Cowskin Creek Basin is located in the western part of Wichita, Kansas. This basin has sustained significant recurring flooding problems directly impacting residential areas. The November 1998 flood resulted in significant damage to about 200 homes and many businesses, some of which were damaged beyond 50 percent of their value.

This project is currently in the final stages of development of the construction contract plans and specifications phase. The recommended plan of improvement would include channelization of a portion of Cowskin Creek with construction of an over-bank area to convey the high flows during a flood event.

Subject to the availability of funding and relief from the moratorium on execution of Project Cooperation Agreements, we could initiate construction activities on this project this fiscal year.

## **Crow Creek Aquatic Ecosystem Restoration**

Section 206 of WRDA 1996, as amended (Continuing Authority -- Aquatic Ecosystem Restoration).

### **Feasibility Study, Planning**

Crow Creek is located in a mixed residential and commercial area of central Tulsa, Oklahoma. This ecosystem restoration project will focus on riparian corridor habitat restoration and wetland creation along Crow Creek in Tulsa, Oklahoma.

Project features could include outdoor classrooms and multi-purpose maintenance trails that will also provide public access for nature related recreation.

Fiscal year 2006 efforts are focused upon completion of the preliminary assessment activities. Subject to the

availability of funds, completion of the feasibility study efforts could be completed.

## **East Tulsa County, Haikey Creek Watershed, Oklahoma**

Section 205 of the Flood Control Act of 1948, as amended (Continuing Authority -- Flood Control)

### **Feasibility Study Phase**

The Haikey Creek watershed is approximately 9 miles long and a maximum of 8 miles wide, originating in Broken Arrow, Oklahoma, flowing generally southward within east Tulsa County through portions of the cities of Tulsa and Bixby. The drainage area contains approximately 37 square miles and is largely urbanized in nature.

The city of Bixby requested assistance to reduce flooding and improve riparian habitat in the lower reach of Haikey Creek.

Potential improvements could consist of channelization of Haikey Creek and/or construction of a levee approximately 2-5 feet high.

Fiscal year 2006 efforts are focused on completion of feasibility study efforts which will recommend the most cost-effective plan of improvement.

## **Eufaula Reallocation Study**

WRDA 1986

### **Study**

If appropriated, fiscal year 2007 federal funds of \$1,000,000 would be used to begin a reallocation study. The coordination

process and action required by NEPA would begin, a socio/economic baseline would be established, water supply demand and benefits studied, hydraulics and hydrology analysis will also begin. There is pending WRDA language that would direct the Tulsa District to identify a preferred alternative concerning the best value, while minimizing ecological damages, for current and future use of the Eufaula Lake storage for the authorized project purposes of flood control, water supply, hydroelectric power, navigation, fish and wildlife, and recreation. This language would also establish a Eufaula Lake Advisory Committee to provide input on a reallocation study and other issues. In accordance with policy, the reallocation study would be funded at full federal expense with O&M funds.

## **Grand (Neosho) River Wetlands and Bottomland Hardwoods Ecosystem Restoration, Oklahoma**

Section 206 of WRDA 1996, as amended (Continuing Authority -- Aquatic Ecosystem Restoration).

### **Planning**

This ecosystem restoration project will focus on wetland bottomland hardwood habitat restoration and would extend along the Neosho River upstream of Miami, Oklahoma. Project features could include outdoor classrooms and multi-purpose maintenance trails that will also provide public access for nature related recreation.

Fiscal year 2006 activities are

focused on completion of the Preliminary Restoration Plan report. If the PRP report concludes that the project is in the public interest, cost effective, and improves the quality of the environment, feasibility study efforts would be initiated.

## **Grand Lake Comprehensive Study**

Section 449 of the Water Resources Development Act of 2000

### **Study**

Grand Lake became operational in 1941 and its purposes include hydroelectric power (operated by the Grand River Dam Authority) and flood control (directed by the Corps). Grand Lake is located in the Grand (Neosho) River basin (a sub-basin of the Arkansas River basin) and is an integral component of a system flood control operation consisting of 11 principal reservoir projects in the Arkansas River basin. The system operation of the 11 principal reservoirs also affects the McClellan-Kerr Arkansas River Navigation System.

Grand Lake was designed and constructed by the GRDA, an agency of the State of Oklahoma, and initially had a single purpose of hydro-power production. In order to include Grand Lake as part of a comprehensive multi-purpose plan for the Arkansas River, the Flood Control Act of 1941 authorized the Corps to manage the flood control features. The flood control pool limits were established from elevation 745.0 to 755.0. Flood flowage easements were acquired up to elevation 750.0 by the State of Oklahoma. Other federal agencies acquired flood flowage easements

from elevation 750.0 to 760.0. The flowage easements are now held by the Corps.

In response to public concerns, Congress established Section 560 of the Water Resources Development Act of 1996 which authorized the Corps to conduct a study that considered the combined operating purposes of flood control and hydropower. The September 1998 Grand Lake, Oklahoma, Real Estate Adequacy Study report documents that areas were found around the lake where, using current criteria and based on current lake operations, additional flowage easements would be recommended if Grand Lake was a "new" Corps project.

The most recent legislation, Section 449 of the WRDA of 2000, directed the Corps to further evaluate the backwater effects specifically due to flood control operations on land around Grand Lake. Activities in fiscal year 2005 included development of a working draft Project Management Plan for potential near-term activities and coordination with Ottawa County Commissioners, Grand River Dam Authority, and Congressional interests. Fiscal year 2006 funds were used to complete a letter report in May 2006. Following a review by Southwestern Division and Headquarters Offices the report will be reviewed by the Secretary of the Army for Civil Works. If the ASA(CW) determines the Corps operation is a significant cause of the flooding, feasibility study activities would be initiated at full federal expense in accordance with Section 449 language. Potential future feasibility phase activities would be dependent on annual Congressional funding. The purpose of the feasibility study would be to identify a cost-effective solution to the

flooding problems consistent with current federal policies. Categories of alternatives to consider include structural measures (such as levees), non-structural measures (such as flood proofing and buyouts of flood prone structures), changes in the system operation, and combinations of measures.

In addition, proactive flood control pool evacuation releases and even pre-flood control pool releases, in accordance with the Tulsa District Water Control Manual, are emphasized in order to minimize potential backwater effects on the Neosho River while maintaining the other purposes of the overall system operation. While there is only limited and preliminary data at this time to confirm the effectiveness, it is likely that this approach reduces flooding related to the more frequent (minor/moderate) flood events. It is important to note, however, that large flood events, like those frequent in the late 1980s and 1990s, overwhelm available flood storages, significantly limit the ability to transfer flood waters to downstream lakes quickly, and cause significant flooding with or without operational modifications.

## **Grand/Neosho Ecosystem Restoration Study**

Section 208, Flood Control Act of 1956

### **Study**

Six multi-purpose reservoirs which provide flood control and other benefits have been constructed in the basin. The 1,800 square miles of uncontrolled drainage areas, along with flooding around Grand Lake and sedimentation problems in John Redmond

Reservoir, have increased the need for a basin-wide study. The study addresses flooding and floodplain management problems and opportunities and ecosystem restoration associated with in-channel aquatic habitats, wetlands, and watershed corridors.

Several municipalities as well as the Kansas Water Office have expressed interest in moving into the feasibility phase with this study.

Fiscal year 2006 funding will be used to execute feasibility cost share agreements with multiple sponsors. The district is meeting with the Kansas Water Office in June to identify key team members.

## Hulah/Copan Reallocation Study

### Study

The Hulah/Copan Reallocation report was signed by the district Commander and sent to Corps Headquarters on April 26. This report and its accompanying contracts identify an additional 6 million gallons per day (mgd) for the City of Bartlesville. One mgd will be contracted from existing storage but this study identified an additional 5 mgd to be reallocated to water supply from water quality.

Severe drought conditions in 2001-2002 caused Hulah Lake to lose a considerable portion -- over 80 percent -- of its conservation pool. Bartlesville ceased using Hulah Lake for water supply on April 18, 2002 and, on an emergency, temporary basis, began withdrawing water from Caney River made available from Copan Lake water quality storage releases.

The study examined several alternatives to maintain

consistent water supply for Bartlesville and surrounding communities through 2035. The report recommends reallocating water from water quality storage to water supply storage. Implementation of this action will cause no adverse impacts to biological or cultural resources. The hydrology analysis indicates that there would be no affect on downstream flooding. Because this is less than 15 percent of the total usable storage, the reallocation may be done by the Chief of Engineers.

## Joe Creek Ecosystem Restoration Project, Tulsa, Oklahoma

Section 1135, WRDA of 1986 (Continuing Authority -- Habitat Restoration)

### Feasibility Study

Joe Creek is a tributary to the Arkansas River at Tulsa, Oklahoma. The Joe Creek Local Protection Project was constructed under the authority of Section 205 of the 1948 Flood Control Act. A majority of the improved channel is concrete lined.



**Dredging the McClellan-Kerr Arkansas River Navigation System channel, Okla.**

The proposed project will focus on improvements to the riparian stream corridor habitat that was impaired when the original flood control project was constructed.

Fiscal year 2006 activities are focused on development of an initial Project Management Plan and Feasibility Milestone Report to determine a Federal interest with potential implementation of ecosystem restoration measures.

## Lawton Wastewater Infrastructure

Section 219(f)(40), Water Resources Development Act of 1992 as amended.

### Pre Construction Engineering & Design

The city of Lawton is located approximately 100 miles southwest of Oklahoma City in Comanche County, Oklahoma. The project consists of constructing wastewater infrastructure for the city of Lawton, Oklahoma.

The city is conducting a 20-year, three-phase \$63,000,000 sewer rehabilitation program

in response to a consent order from the Oklahoma Department of Environmental Quality. The program involves total replacement of sewer pipelines and upgrading of other components. The services provided by the city's infrastructure includes off base housing for the Army at Fort Sill. The Corps participation in the overall project is limited to \$5,000,000.

The city will provide the construction plans and specifications and the Corps will conduct all contracting and construction administration services.

Ongoing activities include initiation of the Project Cooperation Agreement and finalization of the NEPA approvals. Construction is scheduled to begin in fiscal year 2008 and continue for approximately one year.

## McClellan-Kerr Arkansas River Navigation System (MKARNS), AR & OK, 12-Foot Navigation Channel

Section 136, E&WDAA, fiscal year 2004 (P.L. 108-137) (Construction 12 foot channel)

### Under Construction

This project has a projected cost estimate of \$165.5 million to deepen the McClellan-Kerr Arkansas River Navigation System from a 9-foot to a 12-foot depth. This is a joint project managed by both Little Rock and Tulsa Districts. To date \$7.0 million was provided through an fiscal year 2005 congressional add to complete the Feasibility Study and the Environmental Impact Statement as well as to start

dredging activities and construction of dikes and jetties.

The McClellan-Kerr Arkansas River Navigation System is approximately 445 miles in length and has 18 locks and dams. In 2005, the system carried 12.9 million tons of various material to include petroleum products, wheat, chemicals, and steel to name a few.

The system begins at the confluence of the White and Mississippi Rivers and proceeds up the White River to approximately navigation mile (NM) 10. At that point, the system enters the Arkansas Post Canal and continues through the canal until it reaches the Arkansas River at approximately NM 19. The system continues on the Arkansas River until it reaches the Verdigris River at Muskogee, Okla., NM 395 and continues on the Verdigris River for 50 miles to the head of navigation at Catoosa, Okla.

## Oologah Lake Watershed Feasibility Study, Oklahoma and Kansas

Section 206, Flood Control Act 1958; Resolution adopted on May 25, 1960 by the House Committee on Public Works.

### Study

The Verdigris River basin drainage area is approximately 4,300 square miles and is located in southeastern Kansas and northeastern Oklahoma. This basin is impounded to form Oologah Lake.

The study will address impacts of upstream development on aquatic and terrestrial habitat within the

basin. Upstream development has also adversely affected the water quality at Oologah Lake which is a water supply source for the City of Tulsa.

In July 2006, we will conduct a feasibility scoping meeting with Corps Headquarters. In early June the district distributed the extensive "read ahead" package for the HQ team. The Kansas Water Office has expressed an interest in the study and the district is meeting with them in June to further discuss the option of KWO becoming a cost share sponsor.

## Sand Creek Ecosystem Restoration Project, Newton, Kansas

Section 1135 of WRDA 1986, as amended (Continuing Authority - Habitat Restoration)

### Pre Construction Engineering & Design

The Sand Creek Ecosystem Restoration Project focuses improvements along Sand Creek within the city limits of Newton, Kansas. The Sand Creek local flood protection project was completed by the Corps of Engineers in April 1967.

The proposed project will focus on improvements to the riparian stream corridor habitat that was impaired when the original flood control project was constructed.

Fiscal year 2006 efforts are focused on completion of contract plans and specifications and initiation of the bank stabilization construction efforts.

## Spavinaw Lake Watershed Feasibility Study

Section 208, Flood Control Act of 1965 (Public Law 89-298).

### Study

Spavinaw Creek and its downstream impoundments, Eucha and Spavinaw Lakes, are severely impacted by nutrient loading and excessive algae growth as a result of agricultural practices in Arkansas and Oklahoma. Degradation of water quality has led to taste and odor problems, increased treatment costs, and the lakes' decreased recreational and aesthetic value. Together, Spavinaw and Eucha Lakes provide 47 percent of the water supply for the Tulsa metropolitan area. The Tulsa Metropolitan Utility Authority entered into the feasibility cost share agreement in June 2004.

Because of extensive ecosystem restoration work being done by the poultry industry in the watershed, this study is focused on in-lake solutions.

In fiscal year 2005, we completed alternative formulation and began analysis.

In August 2006 the team will conduct a feasibility scoping meeting with Corps Headquarters. Alternative analysis will also be a major effort in 2006.

## Tenkiller Lake Dam Safety Project

Flood Control Act of 1938.

### Under Construction

Tenkiller dam is located on the Illinois River 7 miles northeast

of Gore, Oklahoma, and 22 miles southeast of Muskogee, Oklahoma. Construction of the Tenkiller Lake was completed in May 1952.

Recent evaluations, which used current information and analysis techniques, determined that the spillway is inadequate to pass the probable maximum flood (PMF) and if that flood level occurred, the embankment would be over-topped for a duration of 30 hours and a peak elevation of approximately 683.5 feet. The existing spillway would pass about 85 percent of the PMF. Such over-topping would cause dam failure, and severe economic damage would be incurred downstream. The town of Gore is located about 7 miles downstream from the dam; however, the risk of loss of life would not be high as the town would be inundated by flood releases prior to dam failure because of the small downstream channel capacity.

Phase 1 of this two-phased project was completed in fiscal year 2003. Phase 2 began in fiscal year 2004 and is scheduled to complete in fiscal year 2006.

The proposed dam safety project consists of an auxiliary spillway with five 50-foot wide by 35-foot high tainter gates to be constructed near the right abutment of the embankment. The spillway structure will be similar to the existing spillway.

In addition, a new Highway 100 bridge will be built to carry traffic across the upstream approach channel for the new spillway.

## U.S. Highway 83 Bridge, Erosion Control Project, Garden City, Kansas

Section 14 of the 1946 Flood Control Act, as amended. (Continuing Authority - Emergency Streambank Protection).

### Pre Construction Engineering & Design

The U.S. Highway 83 Bridge Erosion Control Project is located in Garden City in western Kansas. Bank erosion associated with lateral migration of the Arkansas River is encroaching on the U.S. Highway 83 embankment and approaches to the bridge.

The value of the infrastructure at risk is approximately \$5,000,000. The sponsor for this effort is the Kansas Department of Transportation.

Planning, engineering and design efforts were completed in 2005 and construction efforts are anticipated to begin in fiscal year 2006.

## Walnut River Basin Feasibility Study

Flood Control Act of 1965, approved October 27, 1965; Public Law 89-295, HD 232, 89th Congress, 1st Session.

### Study

The Walnut River Basin covers about 2,000 square miles in southeastern Kansas. The Walnut River combines with the Arkansas River at Arkansas City, which flows across the Kansas-Oklahoma state line within about 10 miles of Arkansas City. The city of Wichita is located immediately west of the basin. The US Fish and Wildlife Service (USFWS) estimate that Kansas has lost almost 50 percent of its wetlands since the 1980s, with the vast majority of the losses since 1950. The loss of these wetlands means urban and rural runoff previously "filtered naturally" before entering a watercourse now enters the stream directly. The result of past and continuing losses is both a reduction in area and ecological system viability due to fragmentation. Some of the measurable losses include wildlife density, reductions in animal and plant

species, and significant reductions in water quality. At the request of the local sponsors, the feasibility effort is focused on a 230 square mile watershed impounded by El Dorado Lake. The sponsors are the Kansas Water Office, Kansas Water Authority, and the city of El Dorado. Study efforts include addressing opportunities to reduce sedimentation in El Dorado Lake and meet the watershed total daily maximum load (TMDL) issues of sediment and eutrophication for the purpose of preserving existing water supply storage; and to restore riparian and aquatic habitat and ecosystem function in the lake and upstream watershed. About a dozen state and Federal Environmental Agencies are participating as team members in the feasibility study. The feasibility study is identifying ecosystem resources, evaluating the system qualities, determining past losses and current needs, and evaluating potential restoration and preservation measures. Justified collections of measures found to be warranted and acceptable to the sponsor and the Federal government will be recommended for implementation. In part this plan will allow

monitoring of implemented restoration measures, which will provide opportunities to revise and improve the application of standard best management practices for this basin application. The Feasibility Cost Sharing Agreement was executed in November 2001.

## Webbers Falls Powerhouse Major Rehabilitation, Oklahoma

River & Harbor Act, approved July 24, 1946; Project Document HD 758, 79th Congress, 2d Session

### O&M

The run-of-river power plant contains three 23,000 kilowatt (kW) inclined-axis Kaplan-type generating units with a total rated generating capacity of 60,000 kW. These turbines are the first tube turbines of this magnitude ever built and placed in operation. As a result, the design did not consider all of the factors that would be specific to the operation of slant-axis turbines, consequently the project has been plagued with mechanical reliability problems during its operation. Currently one turbine is non-operational; the two remaining units will continue to fail regularly until they can no longer generate power. The major rehab project cost estimate is \$65.2 million and will replace all three turbines resulting in \$1.32 million of net benefits per month to the nation. In addition to rehabbing the turbines, the generators will be rewound and turbine governors will be upgraded which will increase the capacity of the plant by 8.5%.

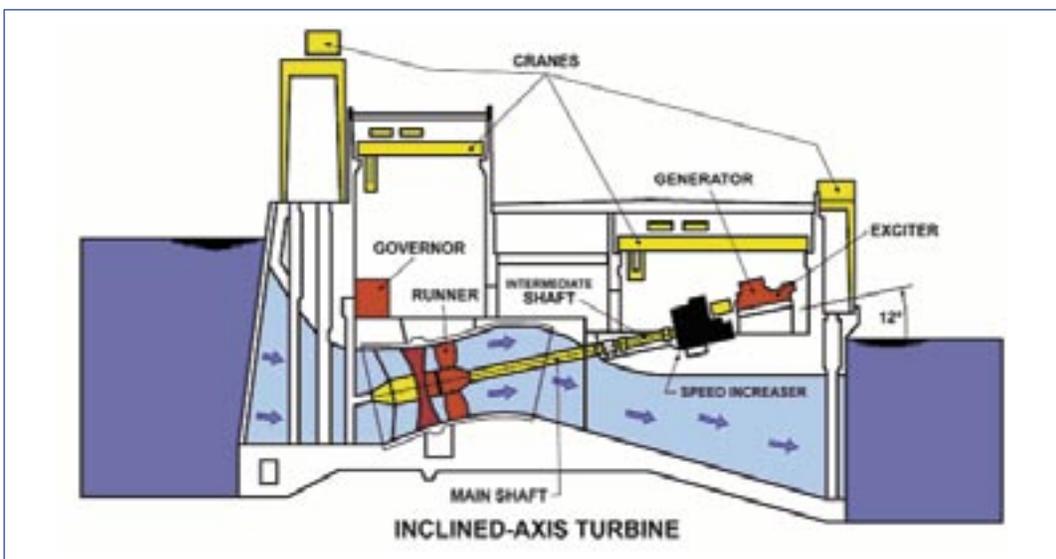


Diagram of the inclined-axis generators at the Webbers Falls Powerhouse Major Rehabilitation Project, Okla.

## Wister Lake Watershed Study

Resolution adopted January 28, 1955 by the Senate Committee on Public Works.

### Study

Wister Lake is an important water supply resource and pro-

vides important aquatic and terrestrial habitat for wildlife as well as recreational opportunities for citizens of Oklahoma and Arkansas. However, excessive sedimentation, turbidity and nutrient loading are impacting the aquatic ecosystem and water supply at Wister Lake. Wind and wave action combined with shoreline erosion and nutrient

inputs contribute to habitat loss and degradation in the lake.

In August 2006, we will conduct a feasibility scoping meeting with Corps Headquarters. Another major effort is alternative analysis. The alternatives are focused on in-lake implementation. The cost share sponsor for this study is

the Oklahoma Water Resources Board in partnership with the Poteau Valley Improvement Authority. This project is strongly supported by the state congressional leadership. The schedule developed for this study is abbreviated in order to take quick restorative actions.

# Red River Basin

## Area VI, Red River Basin Chloride Control Project

The Area VI portion was authorized as part of a larger chloride control project by the Flood Control Act of 1966, approved November 7, 1966, Public Law 89-789, SD 110; as modified by the Flood Control Act approved December 31, 1970, Public Law 91-611; as amended by the Water Resources Development Acts of 1974 (Public Law 93-251) and 1976 (Public Law 94-587). Section 1107 of the Water Resources Development Act of 1986 amended the above authorization to separate the overall project into the Arkansas River Basin and the Red River Basin and authorized the Red River Basin for construction subject to a favorable report by a review panel on the performance of Area VIII. The review panel submitted a favorable report to the Public Works Committee of the House and Senate in August 1988 indicating that Area VIII was performing as designed. The portion of the authorized project on the Elm Fork of the North Fork of the Red River in southwestern Oklahoma consists of Area VI.

The authorized plan consisted of collection of brines emitted from three box canyons flowing to the Elm Fork of the North Fork of the Red River and transport of these brines via pipeline to a brine storage surface impoundment.

### Study, Under Construction

The Area VI feature was authorized as part of a larger chloride control project to reduce naturally occurring brine emissions into the Red Rivers and allow economical use of these waters for municipal, industrial, and agricultural purposes. Area VI is located on the Elm Fork of the North Fork of the Red River in Harmon County, Oklahoma.

The total estimated natural chloride load in the Red River Basin is 4,400 tons per day. That chloride load passes through Lake Texoma, the only reservoir on the main stem of the Red River. The impact to water use in Oklahoma, Texas, Arkansas, and Louisiana is significant. The contribution by Area VI is about 510 tons per day, or just over 11 percent of the total chloride load.

Chlorides make up only about one-third of the total dissolved solids in the Red River. Chloride

control also removes large loads of sulfates and other dissolved solids found in the natural brine springs that impact water use.

In June 2006, the Corps filed a notice of intent to prepare a supplement to the final environmental statement for the Area VI portion of the Red River Chloride Control Project. The purpose of the SFES is to address alternatives and modifications to the authorized plan for chloride control at Area VI on the Elm Fork of the North Fork of the Red River, Oklahoma. That notification initiates the NEPA process for the Corps' reevaluation of Area VI. Reasonable alternatives to be considered include various combinations of plans for deep well injection, collection facilities, size and locations of brine storage surface impoundment(s), pipeline sizes and routes, and no action.

Significant issues to be addressed in the SFES include: (1) hydrological, biological, and water quality issues concerning fish, aquatic invertebrates, algae, aquatic macrophytes, wetland / riparian ecosystem of the Elm Fork of the North Fork and North Fork of the Red River, and Red River above Lake Texoma to the conflu-

ence of the North Fork of the Red River; (2) a Lake Texoma component including chloride / turbidity relationships, chloride / fish reproduction issues, chloride / plankton community issues, chloride / nutrient dynamic issues, and associated impacts on lake sport fishes and recreation; (3) a selenium (Se) component addressing Se concentrations and impacts on biota; (4) cumulative effects related to portions of the RRCCP already constructed and those approved for construction in the Wichita River Basin of Texas; (5) habitat mitigation issues; (6) Section 401 water quality issues; (7) impacts on the commercial bait fishery of the upper Red River; (8) Federally-listed threatened and endangered species; (9) cultural resources; and (10) unquantifiable / undefined impacts.

Scoping meetings for the project are anticipated to be conducted in late summer, 2006. News releases informing the public and local, state, and Federal agencies of the proposed action will be published in local newspapers. Comments received as a result of this notice and the news releases will be used to assist the Tulsa District in identifying potential impacts to the qual-

ity of the human or natural environment. Affected Federal, state, or local agencies, affected Indian tribes, and other interested private organizations and parties may participate in the scoping process by forwarding written comments to the above noted address or attending the scoping meetings.

## Bowie County Levee

Energy and Water Development Appropriation Act (EWDAA) of 2001 and 2002.

### Pre Construction Engineering & Design

The Bowie County Levee is located near Texarkana, Texas, in Bowie County, Texas. The existing levee is 8.8 miles long and was built in 1913. The locally preferred plan, known as Alternative B, is the plan which will be constructed. This plan consists of restoring 6.0 miles of existing levee, constructing 4.0 miles of new levee, and constructing 2.4 miles of channel to divert Barkman Creek flows to the Red River.

Ongoing activities include resolution of significant archaeological issues and updating of existing project design documents. Activities which will begin during the current year include initiation of plans and specifications as well as the Project Cooperation Agreement.

The schedule, which still contains many variables, shows construction scheduled to begin as early as fiscal year 2008 and end an estimated two years later.

## Kemp Lake Reallocation Study

Water Resources Development Act (WRDA) of 1986

### Study

Lake Kemp is located on the Wichita River at river mile 126.7 in Baylor County, Texas. Lake Kemp was originally constructed in 1924 by the Wichita County Water Improvement District #1. The lake was constructed for the primary purposes of irrigation, water supply, and related uses.

The project is operated and maintained by the Wichita County Water Improvement District #2 and the city of Wichita Falls, Texas. During the design and reconstruction of Lake Kemp, sedimentation was a key consideration. Design Memorandum No. 1 recommended raising the conservation pool after 40 years of operation to recover conservation storage lost to sedimentation. The latest sedimentation survey performed at Lake Kemp was in 1973, and it indicated an expected high level of sedimentation. In recent years, during drought conditions, the upper portions of Lake Kemp appear severely impacted by sedimentation.

If funding is received in 2007, it would be used to begin the coordination process and action required by NEPA. Economic studies would begin, as well as a water supply demand and benefits study, and hydraulics and hydrology analysis. For the most appropriate reallocation, a sedimentation survey will need to be completed.

## Lake Texoma Land Sale

Water Resources Development Act of 1999

### Completed

This sale of U.S. government property was completed in March 2006 to the Oklahoma Commissioners of the Land Office. The Commissioners are currently in negotiations with a resort developer.

The Water Resources Development Act of 1999 authorized the Corps to sell 1,580 acres of Lake Texoma land in Marshall County, Oklahoma, at fair market value. It further specified that the transfer will occur at no cost to the federal government. The State of Oklahoma Commissioners of the Land Office provided funds to administer the sale in August 2004. The Oklahoma Department of Tourism and Recreation owns and leases lands adjacent to the tract that was sold and was an active part of our project delivery team. The deed and the finding of suitability to transfer were sent forward to our headquarters and the Assistant Secretary of the Army for Civil Works in November 2005 and signed in March. After the deed was signed and returned to the district, it was filed in Marshall County thus completing the sale.

## Mangum Geotechnical Study

Section 22 of the 1974 Water Resources Development Act

### Study

Phase VI of the Manguma Lake Geotechnical study will focus primarily on cost esti-

mates for the preferred dam alignment. We will also drill one bore hole and develop a piezometer at the site. A draft cost share agreement has been sent to the Oklahoma Water Resources Board with a target of July for the signing.

The recently completed Phase V Study was comprised of a geotechnical investigation and stream loss study of the proposed dam site near Mangum, Oklahoma. The Oklahoma Water Resource Board was the cost share partner. Foundations conditions at the proposed Mangum dam site, 2 miles southwest of Mangum on the Salt Fork of the Red River, appear to be favorable. Complex geology and karstic conditions impose limits on elevation, size and capacity of Mangum Reservoir. While the proposed dam site was proven feasible, the elevation would be 1550 feet (MSL) rather than the preferred 1560 feet. The difference in elevation reduces the acre feet of storage by half.

Further study could be focused on additional characterization of foundation conditions, hydrogeology and water loss.

## Southeast Oklahoma Water Resource Study

1983 Supplemental Appropriation Act (PL 98-63).

### Study

Although we received 2006 funding for this project, it is not active from the federal side. The Oklahoma Water Resource Board is the sponsor and they have requested an opportunity to rescope the study. The district hope to have a new scope by August 2006.

The cumulative effects of land

use changes in the Kiamichi River Basin and other tributaries of the Red River have resulted in a loss of habitat for a number of aquatic species that are critical to the functioning of the riverine ecosystem. The Corps of Engineers was authorized to investigate water resource related problems in the study area which encompasses 29 counties in southeast Oklahoma, including the Kiamichi River Basin and other tributaries of the Red River.

The reconnaissance study found a federal interest in ecosystem restoration in the Kiamichi River Basin. That study recommended proceeding to a cost-shared feasibility study with the Oklahoma Water Resources Board as the local sponsor.

The reconnaissance report was certified in January 2001. The feasibility cost sharing agreement was signed with the local sponsor, the Oklahoma Water Resources Board, on July 10, 2001.

This is a complex 11-year feasibility study that will be conducted in 5 phases. Phase 1, is scheduled for completion in fiscal year 2002, and involves rough estimates of the water available in the Kiamichi River and Little River Basins for environmental restoration after other water needs have been met.

The Phase II study will consist of a detailed water availability model.

## Texoma Reallocation Study

Water Resources Development Act (WRDA) of 1986

### Study

The Water Resources Development Act of 1986 authorized the Secretary to reallocate 300,000 acre feet of storage from hydropower to water supply storage at Lake Texoma. The law specified that 150,000 acre feet of storage would go to Texas and Oklahoma with 50,000 acre feet of the Texas total going to the Greater Texoma Utility Authority. The North Texas Municipal Water District (NTMWD) has expressed an interest in the remaining Texas storage.

The final public review of the Environmental Assessment (EA) on the Reallocation Report ended in January 2006. Responses to comments were completed in early May and the final EA, Reallocation Report, and water supply agreements were sent to Corps Headquarters in June 2006. The final report recommends the reallocation of 300,000 acre-feet from hydropower to water supply. Water supply agreements for 105,000 acre-feet were sent with the report for review and approval.

## Washita Feasibility Study

Red River and Tributaries above Denison Dam, Texas, Oklahoma, and New Mexico, House Resolution dated February 25, 1938; Senate Resolutions dated February 18, 1954 and June 19, 1962.

### Study

The Washita River is a tributary to the Red River in Oklahoma and flows into Lake Texoma. The reconnaissance study identified a federal interest for flood damage reduction and ecosystem restoration. We identified a potential sponsor in Oklahoma Department of Wildlife Conservation. They are interested in a study of golden algae. This algae can create a toxin which is deadly to fish. This toxin has the potential to have very serious impacts on the regional economy due to the striper fishery on Lake Texoma.

Presently, the Oklahoma Department of Wildlife Conservation is conducting the study without Corps involvement or federal cost share. The district will coordinate closely as the state study moves forward.

## Wichita River Basin Chloride Control Project, Texas

Water Resources Development Act of 1986.

### Final Design and Construction

This project is located in the Wichita River Basin, a tributary of the Red River west of Wichita Falls, Texas.

The purpose of this project will be to provide chloride control measures within the Wichita basin to allow improvements to water quality for municipal, industrial and agricultural uses.

The project is designed to divert natural chloride brine emissions at three major source areas upstream of Lake Kemp, Texas, and convey the captured brines to a brine containment facility located at Truscott, Texas.

Improvements include constructing a low flow dam, pump stations, and diversion pipelines, and raising Truscott Brine Dam to accommodate additional inflow.

A portion of this project -- the diversion facilities at Area VIII, pipeline, and the Truscott Brine containment facility -- have been constructed and have been in operation since 1987.

Fiscal year 2006 efforts are focused on completion of contract plans and specifications at Area X, initiation of plans and specifications for Area VII and continuance of baseline environmental monitoring activities.

**For updated project information, visit our web site.**  
**<http://www.swt.usace.army.mil>**  
**918-669-7366**

