



U.S. Army Corps
of Engineers®

Tulsa District Project Update

Algae and Drought Take Toll on Lakes



ABOVE: During the summer of 2011, the pool level at John Redmond Lake in Burlington, Kansas, dropped to four feet below normal. During low water times, project employees take the opportunity to repair and clean boat ramps; update shoreline erosion protection with placement of stone to keep water and wave action from damaging roads, land, and buildings, and allow naturally occurring vegetation to grow in areas normally inundated with water (provides great food and habitat when the areas have water back on them); place needed habitat structures within lake area; clean up trash; repair waterfowl marsh culverts and dikes; and plant vegetation for wildlife.

LEFT: Blue-green algae, the scourge of the summer of 2011, at Gentry Creek, Lake Eufaula.

Story on page 3

District Commander's Perspective

In the September 2011 edition of the Project Update, we reported on the diversity of the Tulsa District's missions. We highlighted the emergency response to the devastating tornados that struck Joplin, Missouri, the recovery efforts after the spring flooding and the tornado that hit our Canton Lake project, and the impact of the drought as seen by the blue-green algae in too many of our lakes. While the Corps has completed the emergency response at Joplin, we are still working on the recovery from the flooding and other storms. And amid those efforts, the drought continues to bear down and impact our projects.

We want to make sure that this issue gives our appreciation to the wonderful volunteers who descended upon the Canton Lake Project to start digging out and piling up the debris after the tornado last May. The storm totally destroyed the Canadian Area camping area, and we were very lucky that no one was hurt. Only through the herculean efforts of volunteers were we able to open the day use area and the boat ramp before the Fourth of July. We made a point of recognizing several of the volunteers and their companies and a reprint of that article is on page 28 of this update. We continue to work for supplemental funding to repair the damage from last year's storms at Canton as well as at Tenkiller.

Unfortunately, the drought is going to be a much longer term problem than the spring storms and will require much more effort. Last summer's drought worsened to historically severe levels. We are extremely proud of the relationships the Tulsa District continues to enjoy with our partners, including the Oklahoma Water Resources Board, the Kansas Water Office, the Texas Water Development Board, the U.S. Fish & Wildlife Service, the Southwestern Power Administration, Oklahoma Department of Wildlife Conservation, Oklahoma Department of Environmental Quality, Oklahoma Department of Tourism, the Tribes, and the many other local, state, and federal partners who are too numerous to list in this column. Through those relationships, we collectively made extraordinary accomplishments to minimize the impacts to the public during the drought of 2011. We worked through water supply issues at Pine Creek, Tenkiller, and John Redmond to make sure that our scarce water met the most demanding needs. Our lake and project managers also seized the opportunity to take advantage of some of the lowest pool levels in years to make repairs to boat ramps and docks and to improve fish habitat and clean up the "new" shoreline. A truly remarkable effort by leaders who care about their projects and their customers.

We look forward to sharing the FY13 President's Budget with all of our stakeholders in the coming months. There is never enough funding to meet all of our wants and needs, particularly during these tough economic times, but we are appreciative and grateful for



Colonel Michael Teague
Commander, Tulsa District

See Commander's Perspective, page 26

USACE Commander's Vision

A GREAT engineering force of highly disciplined people working with our partners through disciplined thought and action to deliver innovative and sustainable solutions to the Nation's engineering challenges.

Mission:

Provide vital public engineering services in peace and war to strengthen our Nation's security, energize the economy, and reduce risks from disasters.

Commander's Intent:

The U.S. Army Corps of Engineers will become a GREAT organization as evidenced by the following in all mission areas:

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

We will deliver superior performance through disciplined people, thought, and action. We will use the Campaign Plan as a component of our Corporate Strategic Management Process to establish our command priorities, focus our transformation initiatives, measure and guide our progress, and adapt to the needs of the future.

We will align and synchronize our work throughout the Corps and make deliberate and informed corporate decisions on the best use of our resources. If any requirements outside the Campaign Plan arise, we will make a corporate decision to either divert resources or incorporate new objectives and adjust work priorities as necessary.

My intent is for the Corps to be **ONE DISCIPLINED TEAM** – in thought, word, and action – and to meet our commitments, with and through our partners, by "SAYING WHAT WE WILL DO, AND DOING WHAT WE SAY!"



U.S. Army Corps
of Engineers®

The summer and fall of 2011 in the Midwest was highlighted by an “exceptional drought” – the most severe drought classification as characterized by the National Weather Service. The severe lack of rain brought an acute awareness of the value of this precious resource as Tulsa District managed the competing needs of the storage of water in its 35 reservoirs in Oklahoma, southern Kansas, and northern Texas. John Roberts, Tulsa District Deputy District Engineer for Project Management, summed it up in simple terms, “Everyone needs water - trout, mussels, drinking water, industries, hydropower, cows, horses, barges, boaters, swimmers, fish, fishermen, marinas, campers, least terns . . .”

While the Mississippi River and the Missouri River were overflowing their banks, the Midwest was faced with a significant drought. The last time that Tulsa District was in drought conditions was in 2006. We learned many lessons from the summer of 2006 to help us face the 2011 drought. The district implemented the Corps of Engineers Drought Management Committee (CDMC) in August to ensure that communication was being provided to the public and our partners on our drought Level II lakes that were operating to 50 percent of conservation storage. Those lakes were Canton, Great Salt Plains, Lake Texoma, Pine Creek, and John Redmond. The Drought Management Plan called for the activation of the Interagency Drought Management Committee (IDMC), which is chaired by our District Commander, Colonel Michael Teague. This committee is composed of representatives from federal and state agencies and is an interface between the CDMC and the basin water users as represented by the IDMC members. The IDMC provides a forum that solicits input and consolidates the state and federal positions on drought actions.

The IDMC is activated when a reservoir reaches 50 percent of its conservation storage. To be proactive, Colonel Teague first requested a meeting of the IDMC for Oklahoma reservoirs due to the forecasts of the continuing exceptional drought. The intent is for the IDMC is to provide the CDMC with justifications, priorities, and suggested actions that will serve the most critical needs with the remaining project storage in our lakes.

The Oklahoma IDMC meeting was held on September 8, 2011, at the Emergency Operations Center in Oklahoma City. Attendees included Oklahoma Water Resources Board, Oklahoma Department of Environmental Quality, U.S. Fish and Wildlife Service, Oklahoma Secretary of Agriculture, Oklahoma Department of Wildlife Conservation, Oklahoma Emergency Operations Center, Oklahoma



A long strip of riprap was placed in the area of the South Loop of Kiowa Park 1 at Waurika Lake in Oklahoma as part of erosion control work done while the water was low because of drought. The riprap will help prevent the loss of several campsites and the roadway, and will prevent utility lines from being exposed.

Department of Tourism, U.S. National Weather Service, Southwestern Power Administration, U.S. Geological Survey Service, and the Oklahoma Department of Transportation. Topic items that were discussed included U.S. Army Corps of Engineers (USACE) hydrology and lake data collection process, USACE emergency water capabilities for drought response, and lake-specific discussions regarding Canton, Great Salt Plains, Lake Texoma, and Pine Creek Lakes.

The Kansas IDMC meeting was held in Topeka on October 26, 2011. Participants included Kansas Water Office, Kansas Department of Agriculture, Kansas Department of Wildlife, and Kansas Department of Health and Environment. The primary focus in Kansas was the dwindling storage in John Redmond Reservoir, which is the primary water supply for the Wolf Creek Nuclear Power Plant.

As Lake Texoma borders both Oklahoma and Texas, the Lake Texoma Advisory Committee (LTAC) was used as the forum to discuss Texoma water supply storage conditions and issues. The LTAC meeting was held on October 6, 2011.

The lake-specific drought issues are:

Pine Creek Lake. As a result of the Corps of Engineers’ Screening Portfolio Risk Assessment (SPRA) process, several safety issues have been identified with Pine Creek Dam that classified it as extremely high risk. Visual signs of distress were observed at the dam causing District personnel to increase monitoring and begin investigations and implementation of several Interim Risk Reduction Measures (IRRM) to improve the safety of the dam. Several interim measures were implemented, including lowering the conservation pool by five feet, installing a downstream filter, filling voids within the dam, adding and removing piezometers, and increasing monitoring. These measures have made the dam safer and more stable while further investigations and analyses are being conducted.

Continued ... page 23

Tulsa District's Focus on Military Construction

Maj. Gen. Solo visits Sheppard

RIGHT: David Hudson briefs from artists' renderings of the completed building and lobby entrance, a layout of the building floor plan, and a document showing the breakdown of the different Leadership in Energy and Environmental Design categories and the points received for each.

BELOW: Hudson briefs the group inside the Euro-NATO Joint Jet Pilot Training building.



On November 30, 2011, Maj. Gen. Mark Solo, 19 AF/CC, and Chief Michael Williams, 19 AF/CCC, visited Sheppard Air Force Base and made a site visit to the new ENJJPT Operations Complex Phase 1 project being constructed by Tulsa District. Gen. Solo and Chief Williams were escorted by Maj. Talafuse, 19 AF/CCA, Col. Bareihs, 80 FTW/CC, CMSgt. Browning, 80 FTW/CCC, Col. Von Wintzingerode-Knorr, 80 OG/CC, Mr. Joe Spann, and Mrs. Michelle Houck. He was met by Mr. David Hudson, Tulsa District military construction representative at Sheppard. The group was escorted through the building and briefed on the project.

The feedback was very positive. Maj. Gen. Solo was very interested in the LEED certification process, as this was the first building at Sheppard to be certified.



John Roberts, Deputy District Engineer for Project Management, speaks at the groundbreaking for the High Explosives Pressing Facility at the Pantex Plant.

HEPF Groundbreaking

Tulsa District has started construction of the Pantex Plant High Explosives Pressing Facility (HEPF), a \$65 million facility, which will replace buildings constructed during World War II. Construction is expected to take two-and-a-half years.

The 45,000-square-foot HEPF will combine operations currently conducted in six different buildings – two of WWII vintage – into one state-of-the-art facility. The current facilities suffer from aging infrastructure and equipment that is more than 20 years old, making them unreliable and difficult to repair.

A ground breaking ceremony was held on August 30, 2011.

Fort Sill Demos Technology

The Fort Sill Rocket Pond Area Munitions and Explosives of Concern (MEC) remedial investigation being managed by USACE Tulsa District and performed by PARSONS was selected by the Strategic Environmental Research and Development Program (SERDP) and Environmental Security Technology Certification Program (ESTCP) as one of several demonstration sites for new cutting edge geophysics technology development.

The Department of Defense is tasked with tens of billions of dollars in MEC cleanup. A large portion of that cost is spent removing scrap metal and harmless fragmentation currently indistinguishable from MEC. Fortunately, a combination of recently developed advanced electromagnetic induction (EMI) sensors and sophisticated computer modeling processes provide the ability to distinguish MEC from surrounding scrap metal and harmless fragmentation. Recent demonstrations have shown that, potentially, more than 75 percent of the digs for



Metal Mapper in action at Fort Sill

scrap metal and harmless fragmentation can be eliminated by using advanced EMI technologies, thus reducing MEC clean-up project costs considerably.

In the fall of 2011, ESTCP tasked PARSONS with using MetalMapper by Geometrics to collect advanced geophysical data for several suspected MEC items at Fort Sill's Rocket Pond Area. This data is currently being processed and interpreted by multiple researchers and geophysicists across the country, including geophysicists from USACE Sacramento and Huntsville Districts.



Randy Tisdel, Project Engineer for the Corps of Engineers, and Col. Anthony B. Krawietz, Commander of the 97th Air Mobility Wing, cut the red ribbon for the reopening ceremony for a recently repaired runway as multiple supporters for the runway project stand by.

Altus Runway Repaired, Reopened

On November 14, 2011, a reopening ceremony was held for a recently repaired runway, after the eastern runway received a complete overhaul to help ensure the safe and timely completion of the training missions at Altus Air Force Base.

Before this project was implemented, the pavement had deteriorated and left rubber deposits, causing a foreign object disposal problem. With the new pavement, the risk for these types of problems is greatly reduced.

Along with increasing safety, the new upgrades also give the base the ability to operate and control more aircraft in the airspace of Altus Air Force Base.

FY12 Top 15

Tulsa District Maintenance Priorities

By making prudent use of FY09 supplemental and regular Operations and Maintenance appropriations, combined with American Recovery and Reinvestment Act funding, Tulsa District has been able to successfully address and reduce the backlog of critical maintenance and repair of its water resource infrastructure. However, the facilities continue to age.

The following are Tulsa District's top 15 FY12 priorities for critical maintenance. Critical maintenance are repairs that, if not performed, could result in failure of the component, resulting in potential loss of the project and the protection of downstream property and population.

As always, public safety will continue to be the primary focus as the District allocates our available resources.

1 Keystone Lake, Oklahoma

Bridge Replacement

The Keystone Lake Spillway Bridge is located at Keystone Lake in Tulsa County, Oklahoma, about 15 miles west of Tulsa, Oklahoma. The bridge carries State Highway 151 on 18 simple spans over the spillway. The existing bridge was built in 1964 and consists of two welded plate girders supporting floor beams and stringers for each 42-foot span. The existing deck is deteriorated and requires replacement. Until replacement, a crane or other heavy equipment cannot be placed on the bridge to do any maintenance or emergency repairs.

A study was completed in March 2011, which evaluated the cost of replacing the deck and rehabilitating the existing superstructure versus the cost of building a new bridge. The estimated cost for rehabilitating the superstructure and replacing the deck was nearly equal to the cost of a complete bridge replacement. The study also determined that there was no fatigue life left in the existing steel. This means it is more likely that fatigue cracks will begin to develop in the steel girders, floor beams, and stringers. The study concluded that the more feasible option would be to replace the bridge. The bridge has been load posted, and the frequency of inspection will be increased to every six months until it can be replaced.

Since the District uses most spillway bridges as a "platform" for operations, the design criteria used is structurally more stringent than normal bridge design criteria. Design variances may be necessary to align the geometry of a new bridge along the existing spillway. The District is coordinating



design and review efforts with the Oklahoma Department of Transportation.

The design of the bridge replacement began in FY10, and a value engineering study has been completed on the design concept. The in-house design of the bridge is near 65 percent complete with an anticipated design completion of May 2012.

Repair Cost Estimate: There are two phases to this project. The first, at an estimated cost of \$1.9 million, to relocate utilities and the catwalk, and the second, at a total cost of \$7.4 million, to replace the bridge. Both phases are unfunded.



2 Kaw Lake, Oklahoma

Install Seepage Filter Blanket on Downstream Face of Dam

The 2005 Periodic Inspection indicated that there was a possible seepage issue with the dam embankment. As a result, several piezometers were installed in 2007, which, over time, have indicated that there is, in fact, seepage in the embankment that fluctuates with the pool level. This situation requires immediate repairs to ensure the safety of the embankment.

Repair Cost Estimate: \$1 million

3 Oologah Lake, Oklahoma

Repair and Replace Service Gates, Hoisting Equipment, and Low-Flow Systems

Although significant progress has been made, several challenges still exist at the Oologah gate tower. The bridge allowing access to the gate tower had cracked corbels that needed structural analysis and repair. If the corbels would have failed, the bridge could have collapsed, and no water releases could have been made through the four service gates inside the gate tower structure. A contract was awarded in May of FY10 to rehabilitate and repair the bridge corbels. The rehabilitation work has been completed, which means interstate size vehicles and cranes can now be used on the bridge.

The 1950s gantry crane at the gate tower installs the emergency gate and removes service gates for maintenance. Previously, the gantry crane was unreliable in its electrical operation and may not have performed satisfactorily in a flood event. The crane was rehabilitated through the American Recovery and Reinvestment Act.

All four service gates have lost structural strength and need to be replaced. A design to replace the worst service gate, gate 4, and to repair the well liner was completed in FY10. The design can also be used to replace the remaining gates and to repair the well liners. A construction contract was awarded in FY11 for the fabrication and installation of a new gate and to repair the well liner in slot 4. Subsequent to the gate contract award, during operations in the summer of 2011, the wire ropes for gates 1 and 2 failed leaving gates 1 and 2 inoperable. Wire rope for all four service gates was purchased and installed in FY11. Fabrication of gate 4 is currently underway and is expected to be completed and installed in FY12. Funds have been identified in FY12 to replace one additional gate, gate 3, and repair that well liner and the 48-inch low-flow valve, which is currently inoperable. The two gates remain to be replaced, two liners to be repaired and rehabilitation of the hoist equipment.



Repair Cost Estimate: \$6 million. If the gate and conduit system repairs are not made, a gate failure could occur. This would result in loss of service to the navigation system and potentially disrupt water supply to the city of Tulsa and other nearby municipalities.



4 Hulah Lake, Oklahoma

Rehab Tainter Gates, Sluice Gate Bulkhead and Debris Removal

The 2009 Periodic Inspection indicated that the tainter gates had critical deficiencies, including rusty tainter gate chains, rusty critical areas on the tainter gates, rusty tie-back beams, and shallow spalls in piers and weirs. These gates are more than 50 years old and require immediate attention to ensure the gate system does not further deteriorate. A \$960,000 contract for partial repair was awarded in FY10, and construction work has been completed for replacing the tainter gate chains. The gate chains were a critical element in ensuring continual operation of the gates. A modification to that contract was awarded in FY11 to rehabilitate the brake drum systems. The gates and hoist equipment still need to be painted, and if additional funding is not available, this will result in increased future costs and the increased probability of structural failure. Additionally, a new sluice gate bulkhead is required in order to perform needed repairs on the sluice gates.

Repair Cost Estimate: \$6.5 million

5 Sardis Lake, Oklahoma

Replace Service Gates

The 2011 Periodic Inspection indicated that the service and emergency gates are in very poor condition. Advanced laminate rust has eaten away over half the thickness of the horizontal girder flanges in places. The only reason the gates are still withstanding the water pressure is that there is some composite action not taken into account in the original design. These gates need to be replaced as soon as possible. The liners and air vents are also very rusty. The low-flow gate has scattered deep pits in some of its members.

Repair Cost Estimate: \$2.5 million



6 Big Hill Lake, Kansas

Repair Intake Tower Service Gates

The 2010 Periodic Inspection indicated that the gates and guides should be rehabbed and repainted within the next few years. The gates were last accessible in 2007, and at that time, the gates and guides had significant rust blisters occurring. No repairs have been performed with the assumption that the gates

and guides are having increased deterioration. These repairs are necessary to ensure that the service gates and guides meet their intended service life.

Repair Cost Estimate: \$1 million.

7 R.S. Kerr Lake, Oklahoma

Rehabilitate Tainter Gates and Operating Equipment

The 2008 Periodic Inspection, as well as the 2009 Annual Inspection Reports, indicated floating debris that passes through the gates continues to cause damage to the gate paint and members. Gates 11 and 12 have bent strut arm braces. Just about every gate has some slightly twisted girder braces, and many of the rib and girder stiffeners are severely rusted and thin. Additionally, the remote controls for the tainter gates have proven unreliable and are no longer used. Many of the control inclinometers have been damaged by debris and are unusable. These gates and the operating equipment are over 40 years old and need immediate repair to extend their useful life.

Repair Cost Estimate: \$9 million



9 Lake Texoma (Denison Dam), Texas

Replace Service/Flood Gates

Both the 2002 and 2007 Periodic Inspection reports indicated the service/flood gates leak profusely. The gates are more than 50 years old, and accumulative corrosion and cavitation is causing significant damage. The gantry crane identified in the FY09 Project Update has been funded through the American Recovery and Reinvestment Act. A contract was awarded in FY10 to repair one emergency gate. In addition, FY11 funds were used to complete the design of new service/flood gates

8 Webbers Falls Lock and Dam, Oklahoma

Repair Tainter Gates

The 2008 Periodic Inspection indicated that the gates and guides be rehabbed and repainted within the next few years. The gates were last painted between 1998 and 2001. Floating debris swirls around in the tailwater and has already worn off paint on the strut arms. In addition, some tight or hard to access locations were not well painted and are rusting. Several bearings in the pillow bushings for the torque rods on the gates have slipped out of their housings. These repairs are necessary to ensure that the tainter gates continue to operate and meet their intended service life.

Repair Cost Estimate: \$8.5 million

with a contract awarded in September 2011 for three new flood gates and the turntable.

Repair Cost Estimate: Three of the six service/flood gates remain unfunded at a total estimated cost of \$3 million. Accelerated wear and corrosion will result if funding is not provided, and continued deterioration to key structural members and surrounding conduit is expected..



10 Tenkiller Lake, Oklahoma

Repair Tainter Gates

The 2009 tainter gate inspection indicated that the paint on the upstream and downstream sides of the tainter gates was starting to show wear and should be painted, as necessary, to prevent further corrosion. Repairs are required of twisting strut arms, repairs of a crack in a rib flange and repairs of lamination in strut flanges and painting of trunnion girders and weld repairs. These repairs are necessary to ensure that the tainter gates continue to meet their intended service life.

Repair Cost Estimate: \$4.2 million

11 Broken Bow Lake, Oklahoma

Repair/Modify Floating Bulkhead

The safe operation for the use and performance of the bulkhead has become a concern. The bulkhead, composed of four different leaves, is a great mechanical design, but some changes are required before it can be utilized to its full potential. Assembling the gate into the appropriate configuration requires considerable scheduling and coordination. Different lake levels require different configurations. A mobile crane is required to maneuver the leaves during assembly. A temporary

crane pad must be constructed by use of a dozer. The pad must be located immediately adjacent to the water's edge in order to provide crane access to the bulkhead leaves. A permanent pad is not feasible due to the ever-changing lake levels and a corresponding change of the shoreline. As a result of the difficulties in using the bulkhead, Gate Operational Condition Inspections could not be made on all gates. Modification of the bulkhead is needed to ensure its use during all lake elevations and to reduce the manpower and equipment costs each time it is assembled and used. Severe leakage in the spillway gallery has become a Dam Safety concern. Assurance and reliability of the bulkhead to function for a long period of time is required to properly assess and correct this problem.

Repair Cost Estimate: \$500,000.

12 Skiatook Lake, Oklahoma

Repair and Paint Service Gates and Liners

Severe corrosion and pitting was originally reported on these gates, liners and valves in 2003. This project provides for the repair and painting of two service gates, two emergency gates and a low-flow valve; cleaning, repairing and painting two service gates, two emergency gates and the low-flow valve and associated metal gate liner plates, frames, air vents, and bonnets. Also, rehabbing gate babbitt sill on service gates and welding repair and machining the bottom sealing surface of the service gates.

Skiatook Lake makes continuous water releases through the low-flow valve to meet water quality standards for the city of Tulsa. In addition to flood waters, these water quality releases have taken their toll on all gates and the low-flow valve. Skiatook Lake provided two-billion gallons of water supply releases in 2008.

Accelerated wear and corrosion will result if funding is not provided. Continued deterioration to key structural members and surrounding conduit will result.

Repair Cost Estimate: \$1.1 million.



13 Red River Chloride Control

Procure 36-Inch Water Line

Since 1999, the majority of the breaks in the pipeline seem to be caused by differential settlement of the foundation materials. As a result of the pipeline breaks, gravel and dirt have washed into the line during the breaks resulting in the surge tanks filling with material. The amount of debris in the line is unknown. Additional funds are necessary to make major pipeline replacements. In FY11, \$60,000 was used to purchase pipe and repair kits to keep the system in operation but no significant capital improvements were able to be made. The system is in poor repair and has met its useful life.

Repair Cost Estimate: \$500,000.



15 Kaw Lake, Oklahoma

Paint Bridge and Hoist Machinery

The 2010 Bridge and Periodic Inspections indicate the superstructure steel is rusting in critical stress areas but section loss is presently insignificant. At girder welds, other discontinuities are noted, including rust and a hole. Floor beams and stringers show coating failures and corrosion along flanges and at webs. Welds are missing at connections for floor beams. Cantilever brackets at floor beams lack welds or the welds are noted as poor quality. The steel for the bearings has corrosion with pits. With regard to the hoist equipment, it is in poor to fair condition. Most of the gear boxes have peeling paint and rust. Rusty gears were found and require repair. These repairs are necessary to ensure that the tainter gates continue to operate and meet their intended service life.

Repair Cost Estimate: \$1 million.



14 Hugo Lake, Oklahoma

Refurbish Gear Boxes and Replace Control Cabinets

The shaft seals have failed due to age, requiring immediate repair to ensure the gears do not rust and become defective. The control cabinets are original to the project and need to be replaced. These repairs are necessary to ensure that the tainter gates continue to operate and meet their intended service life.

Repair Cost Estimate: \$500,000.

Arkansas River Basin

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 to its confluence with the Walnut River.

The original levee was constructed in

of this important project was executed.

On September 30, 2011, the contract for construction of the Augusta Levee Project was awarded to Terra Construction Inc., Oklahoma City, Oklahoma; however, actual construction efforts are on hold until resolution of a protest filed in response to the contract award is complete. It is anticipated that construction efforts will begin in March 2012.

cies related to stability (movement of the existing spillway), seepage under the existing embankment, an hydraulic deficiency of not being able to pass the probable maximum flood event, and new seismic requirements.

Construction started in 2006 with a \$4.5 million contract to stabilize the existing spillway with 64 anchors drilled into the downstream spillway weir. In 2007, work commenced to resolve the remaining deficiencies with the construction of a new auxiliary spillway channel with the excavated material being used for a seepage berm on the downstream face of the existing embankment. Construction of the auxiliary spillway channel required two preliminary contracts to facilitate the excavation. These included relocating Highway 58A for \$3.1 million and reconfiguring the current project office for \$900,000. In 2008, a \$41.1 million contract for the first phase of the auxiliary channel excavation was awarded. This contract included 1.3 million cubic yards of excavated material being used to construct a seepage berm on the downstream toe of the existing earth embankment. In addition to the excavation, concrete diaphragm walls and aprons, channel riprap, a channel cut-off wall, new piezometers, and extension of the current relief wells were included in the contract. This contract was substantially completed in December 2010.

The next phase of the project was constructing a new 58A highway bridge, which spans the newly constructed phase 1 auxiliary channel. The bridge is a 540-foot long, six-span concrete bridge; the contract was awarded in August 2010 for \$4.1 million and will be complete January 2012.

The project's most recent contract award occurred in September 2011, with the award of the weir and hydraulic structures contract. This contract



Augusta Levee

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 the city's levee system at several locations along the west side of Augusta. The recommended plan is to raise and extend the existing levee to provide a 500-year level of flood protection. On March 3, 2008, the Project Cooperation Agreement for construction

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 \$167 million, multi-phase Dam Safety project is to correct deficien-



includes a reinforced concrete weir, intake conduit, wet well, upstream and downstream concrete aprons and fuse gates. The contract was awarded to ASI Construction for \$37.5 million with a contract performance period of 940 days. The weir is 481 feet long, 65 feet wide, and 36 feet deep while the nine fuse gates are 53 feet long, 21 feet wide, and 32 feet tall. The concrete structures total 65,000 cubic yards of concrete and 1,250 tons of reinforcing steel.

In addition to the construction activities, engineering and design continues on the phase 2 excavation contract, which is scheduled for award in 2013. The entire dam safety modification project is scheduled for completion in December 2015.

Eufaula Lake EIS for Update of the Shoreline Management Plan and Supplement to the Master Plan

The purpose of the Environmental Impact Statement (EIS) is to address alternatives and environmental impacts associated with an update of the Shoreline Management Plan (SMP) and supplement to the Master Plan (MP), Eufaula Lake, Oklahoma. The EIS would evaluate alternatives and environmental impacts associated with specific proposals for recreational development

facilities on federal lands at Eufaula Lake as identified through the SMP update and MP supplement process.

Eufaula Lake is a multi-purpose reservoir about 12 miles east of Eufaula, Oklahoma, in McIntosh County. At Eufaula Lake, private shoreline uses including private boat docks and vegetation modification managed under a permit system dependent upon shoreline allocation classifications specified in the SMP. Reviews and updates to SMPs are periodically provided, with the last update to the Eufaula Lake SMP occurring in 1998. Similarly, land resources at Eufaula Lake are managed in accordance with MP requirements. In the land allocation portion of the MP, all project lands are assigned categories that determine appropriate uses for these lands. The last update to the Eufaula Lake MP occurred in 1977. Owing to the elapsed time since last updates, changed conditions, and the need to assess lake-wide cumulative effects, the Tulsa District seeks to update the Lake Eufaula SMP and supplement the MP by updating the land allocation portion. Actions appropriate for updating these plans and preparing the EIS will occur concurrently.

As the SMP and MP update processes involve public participation and input, it is possible that specific proposals for recreational or other development features involving project shorelines and/or lands may be received by the

Tulsa District. For proposals that have advanced to a planning stage of sufficient detail to allow for proposal-specific alternative and impact analysis, the EIS would include these analyses. For reasonably foreseeable development, proposals that have not advanced to the point where proposal-specific analyses are possible, these will be assessed under cumulative impacts that will require additional analysis under the National Environmental Policy Act (NEPA) prior to their implementation at Eufaula Lake.

Issues to be addressed in the EIS include but are not limited to: (1) socioeconomic impacts associated with allocation classifications and specific development proposals; (2) matters pertaining to shoreline impacts; (3) potential impacts to cultural and ecological resources; (4) public access and safety; (5) impacts to lake use, public parks, and recreation; (6) aesthetics; (7) infrastructure; (8) lake water quality; (9) traffic patterns; (10) terrestrial and aquatic fish and wildlife habitat; (11) federally listed threatened and endangered species; and (12) cumulative impacts associated with past, current, and reasonably foreseeable future actions at Eufaula Lake.

A public scoping meeting for this action was conducted on June 2, 2011, in Eufaula. In addition, public workshops addressing updates to the SMP and MP may be held at locations near Lake Eufaula. News releases and notices informing the public and local, state, and federal agencies of the proposed action will be published in local newspapers.

The draft EIS will be available for public review and comment. While the specific date for release of the draft EIS has yet to be determined, all interested agencies, Tribes, organizations and parties expressing an interest in this action will be placed on a mailing list for receipt of the draft EIS. In order to be considered, any comments and suggestions should be forwarded to the Tulsa District Office in accordance with dates specified upon release of the draft EIS.

Grand Lake Comprehensive Study

Section 449 of the Water Resources Development Act of 2000

Study

Grand Lake was designed and constructed by the Grand River Dam Authority and initially had the single purpose of hydropower production. To include Grand Lake as part of a comprehensive multipurpose plan for the Arkansas River, the Flood Control Act of 1941 authorized the Corps to operate the flood risk management storage. The flood risk management pool limits were established from elevation 745.0 to 755.0 (Pensacola datum). Flowage easements were acquired up to elevation 750.0 by the State of Oklahoma.

Other federal agencies acquired flowage easements from elevation 750.0 ranging up to 760.0. The administrative jurisdiction of the flood risk management flowage easements was transferred to the Corps in October 1959.

In response to public concerns, Congress established Section 560 of the Water

Resources Development Act of 1996 that authorized the Corps to conduct a study that considered the combined operating purposes of flood risk management 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 were a “new” Corps project.

A letter report was prepared by the Tulsa District to document an initial technical evaluation of historical and theoretical flood events. Based on review of the letter report, the Assistant Secretary of the Army for Civil Works concurred on September 14, 2007, that further detailed study is warranted. With that decision and in accordance with the provisions of Section 449 of the Water Resources Development Act of 2000, the feasibility study could be conducted at full federal cost. However, this provision makes the study totally dependent on available annual funds specifically provided by Congress because it is not consistent with administration budgetary policy. If

a non-federal cost-sharing partner can be identified, the study could become more competitive in the Corps budget process and the likelihood of future funding would increase.

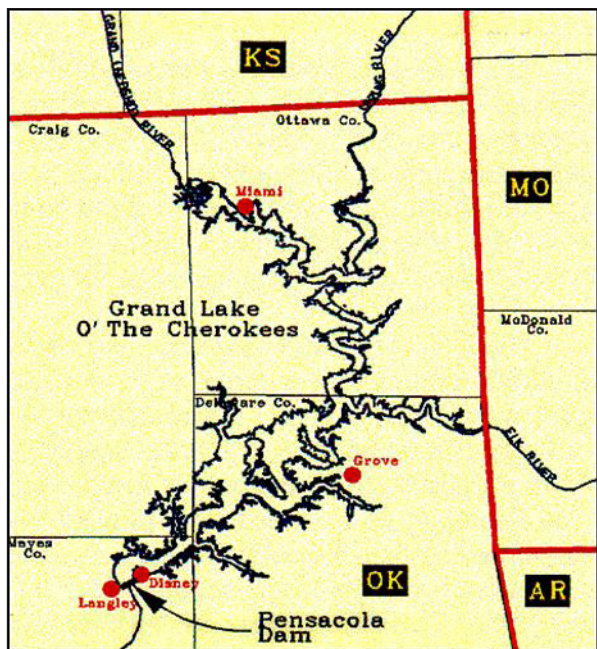
FY08-11 activities included: 1) the preparation of a Hydrology and Hydraulics Geographical Information System (GIS) Needs Assessment Report, 2) meetings with City of Miami officials, 3) development of a Project Management Plan, 4) a scope of work for mapping and long-term GIS support, and 5) initial development of mapping products to complement adjacent area maps created

by the Federal Emergency Management

Agency. Using remaining funds, FY12 activities include completion of mapping products and, to the extent possible, GIS development. Another initiative in 2012 is to leverage the resources of the USACE Silver Jackets Program. Nationwide Silver Jackets programs are developed at the state level with the support from federal, state and local agencies to provide a formal and consistent strategy for an interagency approach to planning and implementing measures to reduce the risks associated with flooding and other hazards. The objective is to utilize the Grand Lake area mapping, in conjunction with a USACE Silver Jackets Program pilot project, to develop various flood mapping products for the Miami, Oklahoma, area. When completed, the flood mapping products will help Ottawa County and the City of Miami, Oklahoma, in floodplain management decision making and reducing risks.

Potential future feasibility phase activities would be dependent upon annual funding. The purpose of the feasibility study would be to identify cost-effective solutions to reduce the risk of flooding and consistent with current Federal policies. Categories of alternatives to consider include structural measures (such as levees and bridge modifications), nonstructural measures (such as flood proofing and buyouts of flood prone structures), changes in the system operation, and combinations of measures.

In the short-term, a strategic activity conducted by the Corps is the operation of flood risk management pool releases consistent with the current system operating plan to potentially reduce impacts of minor flood events. 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 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.



John Redmond Watershed Study

Section 208, Flood Control Act of 1956 and Resolution of the 110th Congress 1st Session, United States Senate, Committee on Environment and Public Works, adopted July 31, 2007

Watershed Study

The study area consists of the 12,500 square-mile Grand/Neosho River Basin in northeastern Oklahoma and southeastern Kansas. Flooding around Grand Lake, sedimentation problems in John Redmond Reservoir, and the 1,800 square miles of uncontrolled drainage areas have increased the need for a basin-wide study to address flooding and floodplain management problems and opportunities, and ecosystem improvements associated with aquatic habitats, wetlands, and watershed corridors.

A feasibility cost-share agreement was executed with the Kansas Water Office (KWO) in September 2006 for the John Redmond Reservoir Study and updated in 2008 to increase study scope and cost. KWO requested a more detailed analysis of all alternatives rather than the preliminary screening process more typical of a feasibility study. This interim study focuses on the ecosystem degradation that has occurred in John Redmond Reservoir. This degradation is largely a result of sedimentation and nutrient loading. Other local issues, such as the logjam and an assessment of dredging as an alternative, are included in the multi-year study.

In 2008, the study team focused on monitoring gauges, conducting watershed modeling, extrapolating data from sediment studies for flood pool estimates, and analyzing alternatives. We also submitted a feasibility scoping meeting package to Corps Headquarters. This is a major milestone to gain policy review and concurrence on alternatives and evaluation measures.

In 2009, Tulsa District completed an alternative analysis at which time it became evident that federal project implementation was not economically justified. The District recommended the study shift to complete a collaborative

watershed management plan. The KWO agreed to this option.

In 2010, the Feasibility Cost Share Agreement and the Project Management Plan (PMP) were revised to reflect the redirection of the study from a feasibility study to a watershed study for that portion of the Neosho Basin upstream of Council Grove and Marion Lakes at the direction of the KWO. The KWO is interested in using the data gathered during the interim feasibility study to develop a comprehensive, holistic watershed study that directly corresponds to and integrates with Kansas' water planning activities, including the Kansas Reservoir Sustainability Initiative and Reservoir Roadmap.

In early 2011, work on this project, except for the stream gauging through the United States Geological Survey, was temporarily suspended due to the lack of funding for FY11. The KWO expressed interest in continuing the watershed study once funding is restored. Also, should funding become available, the KWO expressed an interest in continuing with the USGS gauging activity through the suspended period, if at all possible.

Joe Creek Ecosystem Restoration Project, Tulsa, Oklahoma

Section 1135, Water Resources Development Act 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.

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

This project was awarded for construction on April 19, 2011, at a cost of

\$4,905,750 to Coast to Coast, LLC. Notice to Proceed was issued on June 2, 2011, and completion is expected in October 2012.

John Redmond Reservoir Reallocation Study

Section 208, Flood Control Act of 1956 and Resolution of the 110th Congress 1st Session, United States Senate, Committee on Environment and Public Works, adopted July 31, 2007

Watershed Study

John Redmond Reservoir is located on the Neosho River in Coffee County, Kansas. The reservoir is located in the lower unit, in a system of three projects in the upper Neosho River Basin in Kansas. The original design for the project included storage in the reservoir to capture an estimated 50 years of sedimentation. Sedimentation has occurred at a higher rate than was originally anticipated and has had a greater impact on the water supply storage than planned for. Storage available for water supply purposes in John Redmond has been steadily depleted by sediment deposition such that State of Kansas water supply obligations are being infringed upon.

The study and subsequent report are being done in response to Congressional Senate Report 106-58 to study raising the conservation pool at John Redmond Dam and Reservoir to meet the terms of two existing water supply agreements with the State of Kansas. Water storage has been steadily depleted by uneven sediment deposition such that there is infringement on State of Kansas water supply agreements.

Based on the evaluation of several alternatives, the preferred alternative is to increase the top of the conservation pool elevation from 1039.0 feet National Geodetic Vertical Datum (NGVD) to 1041.0 feet NGVD to meet current water supply agreements and water quality demands.

Corps Headquarters reviewed and provided comments on a draft final report in 2008. The Corps determined that because water supply is the primary reason for the reallocation, all replacement

costs will be paid by the beneficiary, the Kansas Water Office (KWO). The KWO asked Tulsa District to hold the report rather than send it for approval with the recommendation that they pay all replacement costs. The District has held the report since November 2008, and during that time has encountered another obstacle. Since Hurricane Katrina, the Corps has increased focus on dam and levee safety. A national team has been inspecting structures and found risks at Hartford Levee, which is part of Redmond Reservoir. Because of the risks, the pool cannot be raised until corrections are implemented. Modifications to Hartford Levee to address the safety risk factors are currently in progress.

One positive aspect of our effort on this study is that several of the replacement actions identified as KWO actions are occurring on Corps-owned property. This land is leased to the U.S. Fish and Wildlife Service (USFWS). Because of this, Tulsa District has been able to partner with KWO and USFWS to complete partial replacement of wetlands and bottomland hardwoods.

Lawton Wastewater Infrastructure

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

Under Construction

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

The city is conducting a 20-year, three-phase, \$63 million 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 include off-base housing for the Army at Fort Sill. The Corps participation in the overall project will be approximately \$2.5 million.

Construction on the project is now

complete. Final financial data is being collected from the sponsor for use in conducting fiscal closeout that will occur during the last quarter of FY12.

McClellan-Kerr Arkansas River Navigation System, Arkansas and Oklahoma, 12-Foot Navigation Channel

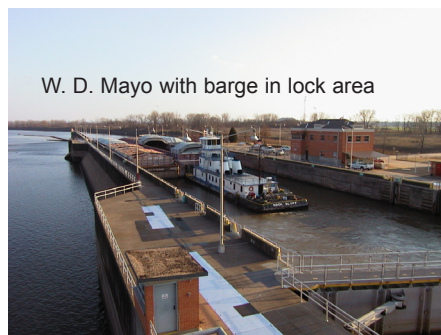
Section 136, Energy and Water Development Appropriations Act, fiscal year 2004 (Public Law 108-137)

Authorized (Not Started)

The McClellan-Kerr Arkansas River Navigation System is approximately 445 miles long, consists of 18 locks and dams, and provides nine-foot-deep inland navigation from the Mississippi River to Catoosa, Oklahoma.

This project will deepen the navigation channel to a minimum depth of 12 feet, thereby increasing the efficiency of the system. Deepening of the channel will be performed by a combination of techniques including altering the flow management, constructing dikes and jetties, and dredging the channel. This project also includes a significant environmental component to include creation of bottomland hardwood forests and high quality wetlands, as well as other environmental enhancements.

The projected cost estimate of \$185.5 million is cost-shared with the Inland Waterway Trust Fund, and is jointly managed by Little Rock and Tulsa Districts. To date, \$7 million have been provided through an FY05 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.



During FY06, dredging commenced and was completed at mile 348 in pool 15 in Oklahoma, which also included construction of a Least Tern Island with rock protection that was accomplished in conjunction with the dredging activities. Design of river structures was accomplished for pools 2, 7, and 5. Stone structures were constructed in Arkansas to improve self-scour of the river, and design of upland dredge disposal sites was also completed in Oklahoma. Mitigation activities, including aquatic and terrestrial surveys, were performed in both Oklahoma and Arkansas. A five-year project plan has been developed that includes an integrated project breakdown of activities and associated costs that has been vetted through the navigation stakeholders.

This project has not been in the budget since FY05 and all funds have been exhausted resulting in no further work on the project.

Oklahoma Comprehensive Water Plan

Study

The Oklahoma Water Resources Board (OWRB) is working with multiple federal, state, tribal and other stakeholder organizations to update the Oklahoma Comprehensive Water Plan (OCWP). Tulsa District is providing technical planning assistance for this effort through the Planning Assistance to States Southeast Oklahoma General Investigation Study and the Washita River General Investigation Study authorities. The data, tools, and prioritization of needs information associated with the OCWP update are shared resources of the studies and will be used, contingent on approvals and funding, for future phase detailed investigations.

Additionally, the Water Resources Development Act of 2007 authorizes the expenditure of \$6.5 million in federal funds for completion of the Oklahoma Comprehensive Water Plan. It further specifies that this effort will be completed with a 75 percent federal and 25 percent non-federal cost-share. To date, no funding has been appropriated.

Implementation Guidance is at Corps Headquarters for review, at which point it will be submitted to the Assistant Secretary of Army for Civil Works for approval.

The OCWP update process has three phases. Currently, the Corps is authorized to participate only in the studies.

The first phase of the OCWP update includes the development of water demand projections by county and region throughout forecast year 2060, as well as a comprehensive inventory and analysis of the state's water supplies.

Phase two of the water plan update identifies the local and regional problems and opportunities related to the use of water for public supply, agricultural, industrial, recreational, and environmental uses. This particular segment of the planning process, involving close partnerships with both municipal and rural water system representatives, identified infrastructure needs, management options, and other measures to maximize the efficiency of Oklahoma's public water suppliers.

The third phase of the state water planning process involves the implementation of planning initiatives and tools derived from the issues, problems, and needs identified during phase two. The Oklahoma Water Resources Board is drawing upon the expertise of Oklahoma's foremost water experts from various water use sectors; local, state and federal governments as well as universities, to develop policy recommendations for consideration by the state legislature.

In 2008, we developed a programmatic work plan and developed and distributed a pilot Geographic Information System project and an infrastructure survey for municipalities and rural water districts. Coinciding with these integrated efforts was an extensive public participation program to create a transparent and open planning process.

In 2009, we completed assessments of water demand and ground and surface water supplies. The results of these two assessments were compared to define gaps where supply is inadequate.

In 2010, conservation assessments, refinements to demand projections, and regional supply alternative assessments were completed.

In 2011, we completed production of Watershed Planning Regional Reports/Basin Technical Appendices; identification of potential measures for use in future formulation of hot spot and infrastructure needs alternative solutions; developed a wastewater infrastructure Capital Needs Assessment and Provider Planning Guide; and prepared/submitted final draft reports.

In 2012, we are developing a series of potential alternatives for addressing specific future gaps; making revisions to final draft reports; and completing model documentation and training for the Oklahoma Gap Tool, Reservoir Yield Model, and Climate Demand Model. The OCWP Update is scheduled to be formally submitted to the Governor and state legislature in February 2012.

Oologah Lake Watershed Feasibility Study, Oklahoma and Kansas

Section 208 of the Flood Control Act of 1965 and Resolution of the 110th Congress 1st Session, United States Senate, Committee on Environment and Public Works, adopted July 31, 2007

Watershed Study

The focus of this ongoing watershed study is the approximately 2,350 square-mile subset of the 4,300 square-mile Verdigris River watershed upstream of the dam at Oologah Lake in Oklahoma to the dams at the four federal reservoirs in the Verdigris River Basin in southeastern Kansas. The purpose of this watershed study is to assess the existing conditions in the watershed and identify the problems contributing to impairment of the aquatic resources, as well as potential solutions to restore aquatic habitat and quality on a regional basis. The City of Tulsa, as the local partner and sponsor, has worked proactively with the Corps to engage representatives from over 30 federal, state, and local agencies, universities, special interest groups, and individuals throughout

the watershed in both Oklahoma and Kansas. Through this collaborative planning process, the stakeholders have identified issues and potential solutions for application on a regional basis to improve the quality of water resources in the watershed. This approach provides the opportunity to achieve sustainable water resources solutions on a regional basis.

This study will present various management strategies that can be implemented throughout the watershed on a regional basis. Since the majority of the land in the Oologah Lake watershed and study area is privately owned, the potential solutions are those that can be implemented by individual landowners. Although this effort is led by the Corps and the City of Tulsa, implementation of the many strategies established in the report as a result of the collaborative planning process will occur by other federal, state, and local agencies with authorities to assist the individual landowners in the watershed.

The study will culminate in a report documenting the process and findings, and will include appendices with water quality data, water quality analysis, and outputs from the modeling effort that has served as the primary planning tool throughout the study.

In 2012, the first draft of the watershed study will be circulated among the many partners. The final document is expected to be completed by May 2012.

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 FY08, the alternative analysis and selection was completed.

In 2009, we completed cost estimates that identified project implementation could be done through the Continuing Authorities Program. This means the reports do not have to go to HQ and Congress for approval.

In 2010, the CE-QUAL-W2 modeling, which models how the recommended plan would affect water quality in Spavinaw and Eucha Lakes, was completed. The modeling results show that the recommended plan would achieve its objectives. The model(s) and model documentation were submitted for agency technical review and were approved.

In 2011, the model documentation was incorporated into the feasibility report and forwarded to Southwestern Division for approval. The recommendations in the report include implementing the project under Section 206 of the Continuing Authorities Program.



Tribal Support Program

10 USC 3036(d)(2)

Continuing

Oklahoma is home to 38 federally recognized Tribes. Tulsa's program has traditionally consisted of grant application support, contract administration support, and construction oversight for HUD Indian Community Development Block Grants (ICDBG) projects. Some of these projects include wellness centers, food distribution centers, medical clinics, substance abuse centers, and many more. The impact these projects have on quality of life for an often underserved demographic is tremendous.

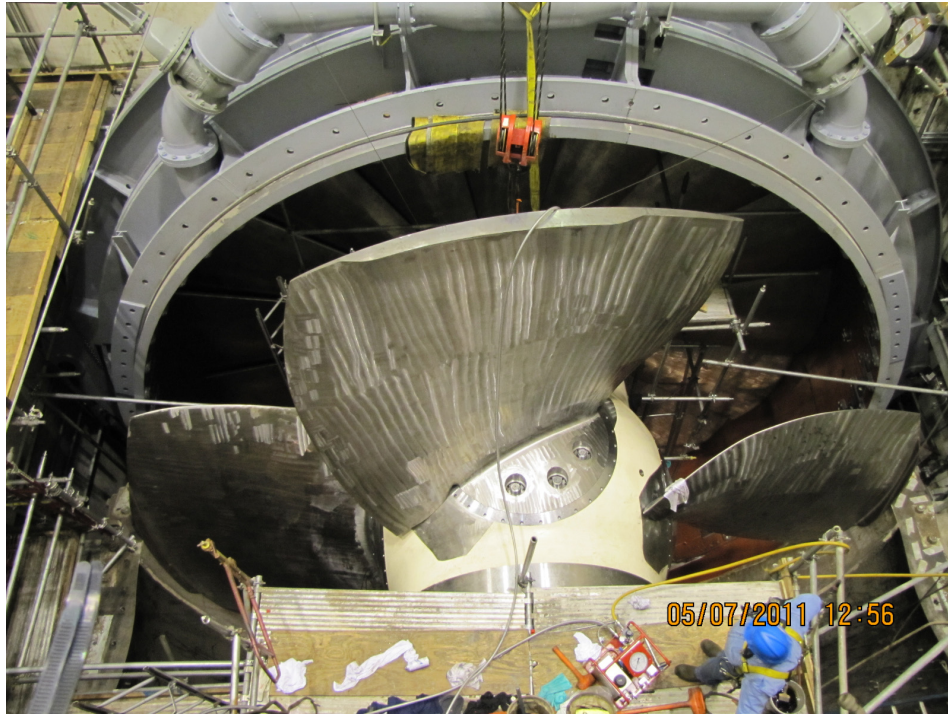
In FY11, Tulsa's Tribal Support Team became involved in a unique collaboration among five Tribes and the Northeastern Tribal Health System (NTHS). In an effort to provide high quality medical care, five Tribes combined their ICDBG grants, and the NTHS matched the money to construct one large \$8.4 million medical facility with multiple specialties. A design-build contract was awarded by

NTHS in July 2011, and construction is estimated to complete in August 2012.

The District Tribal Team has also developed an interest in our planning expertise. In FY11, Tulsa District executed two cost-share agreements for Tribal studies. One was with the Fort Sill Apache Tribe, and the other agreement includes both the Chickasaw and Choctaw Nations. These studies are being conducted under the Planning Assistance to States and Tribes Authority, and will complete in September of 2012.

In FY12, we assisted 15 Tribes with grant applications and are supporting more than 20 construction projects. We have been contacted by Tribes to assist with non-granted projects such as a USDA wastewater project, a housing project, a travel plaza, and more.

In FY12, Tulsa District expects to execute a non-cost-share agreement with the Cherokee Nation for technical review of the W.D. Mayo Hydropower Plant. The Cherokees were authorized to construct a hydropower plant at W.D. Mayo Lock and Dam in WRDA 1986; however, it has only recently become economically feasible.



Webbers Falls Powerhouse Major Rehabilitation, Oklahoma

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

Under Construction

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 69,000 kW. These turbines were the first tube turbines, of this magnitude ever built and placed into operation. As a result, the design did not consider all of the factors specific to the operation of slant-axis turbines and the project has been plagued with mechanical reliability problems during its operation. The major rehabilitation project 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 upgraded, which will increase the capacity of the plant by 8.5 percent.

In February 2001, the Corps of Engineers Hydroelectric Design Center (HDC) recommended that the Ozark and Webbers Falls turbine replacements be combined into one contract for a savings of over \$5 million to the government and power customers. The Webbers Falls Turbine Replacement contract was subsequently included as an option under the Ozark contract that was awarded in May 2005.

The Webbers Falls Powerhouse Rehabilitation project's current cost is \$72.7 million with a scheduled completion date of May 2015. The project scope includes the turbine rehabilitation, generator rewind, rehabilitation of the intake/tail race gantry cranes, the bridge cranes, the intake gates and bulkheads, and installation of new 13.8KV breakers.

In 2008, the three turbine runner options were awarded to Andritz Inc. for \$39.1 million. This contract is currently under

construction with the first unit scheduled to begin commercial testing in January 2012. In addition to the turbine runners, the turbine and generator bay bridge crane rehabilitation contract was awarded and completed in 2008 for \$2.3 million, and the intake and tail race gantry crane rehabilitation contract was awarded in 2009 and completed in 2010 for \$3.8 million using American Recovery and Reinvestment Act funds. In September 2010, a \$3.1 million contract was awarded to rehabilitate four intake gates, four tailrace bulkheads, and three intake bulkheads. The gate and bulkhead job is anticipated to be completed in May 2012. In December 2010, a \$4.9 million contract was awarded for the rewinding of all three generators. This project is scheduled for completion in November 2013.

All work, with the exception of the gantry cranes, is funded by customer funding sub-agreements through the Southwestern Power Administration.

Red River Basin

Bowie County Levee

Energy and Water Development Appropriation Act of 2001 and 2003

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 that will be constructed. This plan consists of restoring six miles of existing levee, constructing four miles of new levee, and constructing 1.4 miles of channel to divert Barkman Creek flows to the Red River.

In February 2010, Tulsa District formulated its final offering for a mitigation plan. The sponsor has considered the plan and has indicated that it will offer an alternative plan. When the sponsor ultimately offers its plan, Tulsa District will evaluate it and determine its acceptability as a valid alternative. After the mitigation plan is mutually accepted, the Environmental Assessment (EA) can be revised and published, thus clearing the way for formulation and submittal of the project decision document.

Tulsa District has been directed to submit a Post Authorization Change Report (PACR) to the Division Commander for approval. This PACR will serve as the decision document that is the basis for the Project Partnership Agreement (PPA) for the project. The PACR will be submitted within the six months following the publication of the revised EA. Approval should follow submittal within another six months.

The PPA will be submitted within six months of approval of the PACR. Approval of the PPA, which should take an additional six months, will clear the way for the sponsor to begin real estate acquisition, occurring within 24 months of the approval of the EA. Upon completion of the real estate acquisition, taking approximately 12 months, a construction contract can be awarded, and construction will begin. Construction is estimated to take three years.

During FY11, all funds on hand were rescinded by the Secretary of the Army who has the authority to transfer funds to the Flood Control and Coastal Emergency (FCCE) appropriation from other flood control appropriations to meet emergency requirements. In this instance, funds were reprogrammed to respond to historic floods on the Missouri and Mississippi Rivers, along with major floods on the Ohio, Columbia, and other rivers.

Chickasaw Choctaw Water Resource Study

Section 22 WRDA 1974, as amended

The Chickasaw and Choctaw Nations are endeavoring to complete a regional water plan. One of the first steps in this plan is to establish an in-stream flow methodology and a process for gathering and managing infrastructure data. This 12-month, \$180,000 study is being cost-shared at 50 percent between the Tulsa District and the two Nations.

The in-stream flow methodology is of great importance in establishing what minimum flows are needed to support all water needs. To accomplish this, the study team has created a panel of experts from six disciplines and five states. The result of this activity will be a guidance document that scientists, appointed by the Nations, will be able to use to address the specifics of instream flows in the region.

The infrastructure activity will involve development of a methodology that considers what data will need to be gathered, how it will be gathered, and how it will be man-

aged. It is complex, as the information will come from Tribes, municipalities, counties, rural water districts, and others in the region that employ a multitude of consultants.

Denison Land Conveyance (WRDA 2007)

Water Resources Development Act of 2007 Section 3182, (j) and (k)

Conveyance of Land at Lake Texoma, Texas

The Water Resources Development Act of 2007 authorized the Secretary of the Army to convey to the City of Denison up to 900 acres of land at Lake Texoma, which were included in a 2005 lease application. The conveyance is to be at fair market value and is subject to completion of National Environmental Policy Act (NEPA) documentation and other real estate requirements such as survey and appraisal. All costs are to be funded by the city.

A Notice of Intent to prepare an Environmental Impact Statement (EIS) was published in the Federal Register on August 6, 2008. A public information meeting was held September 11, 2008, as a part of the NEPA EIS scoping process. Public comments were accepted and summarized in a scoping report, which is posted to the Tulsa District website.

The draft EIS is complete. A Notice of Availability (NOA) was published in the Federal Register on November 4, 2011. The NOA officially started the 45-day public review period. A public workshop was held in Denison, Texas, on November 15, 2011. The Public Review period ended on December 21, 2011. The final EIS is scheduled to be completed on March 20, 2012. The Record of Decision will be issued on May 17, 2012. The conveyance of land will occur on or before July 31, 2012.

Comments regarding the EIS may be directed to: Mr. Stephen Nolen or Mr. Ken Shingleton, Environmental Analysis & Compliance Branch, U.S. Army Corps of Engineers, Tulsa District, 1645 S. 101st East Avenue, Tulsa, OK 74128-4609.

Email Stephen.L.Nolen@usace.army.mil

or Kenneth.L.Shingleton@usace.army.mil.

Kemp Lake Reallocation Study

Water Resources Development Act 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 (WCWID) #1. The lake was constructed for the primary purposes of irrigation, water supply, and related uses.

The reallocation study is being conducted with the Texas Water Development Board (TWDB) in conjunction with the Wichita County Water Improvement District #2 and the City of Wichita Falls.

Tulsa District awarded a contract to conduct flood plain inventory, and finished hydraulics and hydrology work to include the probable maximum flood, modeling, and yield analysis. We also completed preliminary geotech studies.

In 2010, TWDB and the Corps focused on reconciling the two models used to calculate firm yield but found no resolution to the difference.

In 2011, a third party organization analyzed the Water Availability Model and RiverWare models for Lake Kemp and found that when the differences between the models are reconciled, neither predicts a significant increase in the lake's firm yield from raising the lake's conservation pool by six feet. The study team is currently working with the TWDB and WCWID on a path forward.

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.

A water supply yield analysis has been completed and reviewed by the Texas Water Development Board. The analysis indicates substantially less yield from a reallocation from the flood pool than the initial estimate. As a result, studies have been suspended and a draft report of findings was completed at the end of 2011.

Red River Chloride Control Project Elm Fork (Area VI)

This project was authorized for construction 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; and as amended by the Water Resources Development Acts of 1974 and 1976. The Water Resources Development Act of 1986, Public Law 99-662, amended the above authorization to separate the overall project into the Arkansas River Basin and the Red River Basin. Section 3136 of the Water Resources Development Act of 2007 reaffirmed that operation and maintenance responsibilities would be at full federal expense.

Feasibility Study

The Red River Chloride Control Project is authorized to identify and implement measures to reduce naturally occurring brine emissions into several sub-basins within the Red River Basin in northern Texas and southern Oklahoma. The project's primary purpose is to improve water quality for municipal, industrial, and agricultural uses along the Red River within Oklahoma, Texas, Arkansas, and Louisiana.

The State of Oklahoma has expressed a renewed interest in the Area VI element of the Red River project, and reevaluation efforts are underway. Area VI is located on the Elm Fork of the North Fork of the Red River in Harmon County, Oklahoma.

Reevaluation efforts at Area VI, Oklahoma, have included significant progress on the feasibility study. The draft document has been completed and includes the following studies without a

chloride control in place: municipal and industrial water uses, agricultural uses, recreational analysis, hydrology and hydraulics analysis and initial array of design alternatives. This document has been submitted for Agency Technical Review. Additionally, significant progress has been made on phase 2 of the studies to evaluate the same studies with a solution for chloride control in place.

Area VI reevaluation feasibility study phase is expected to complete with current funding during FY12.

Red River Chloride Control Project, Wichita Basin, Texas

This project was authorized for construction 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; and as amended by the Water Resources Development Acts of 1974 and 1976. The Water Resources Development Act of 1986, Public Law 99-662, 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. Section 3136 of the Water Resources Development Act of 2007 reaffirmed that operation and maintenance responsibilities would be at full Federal expense.

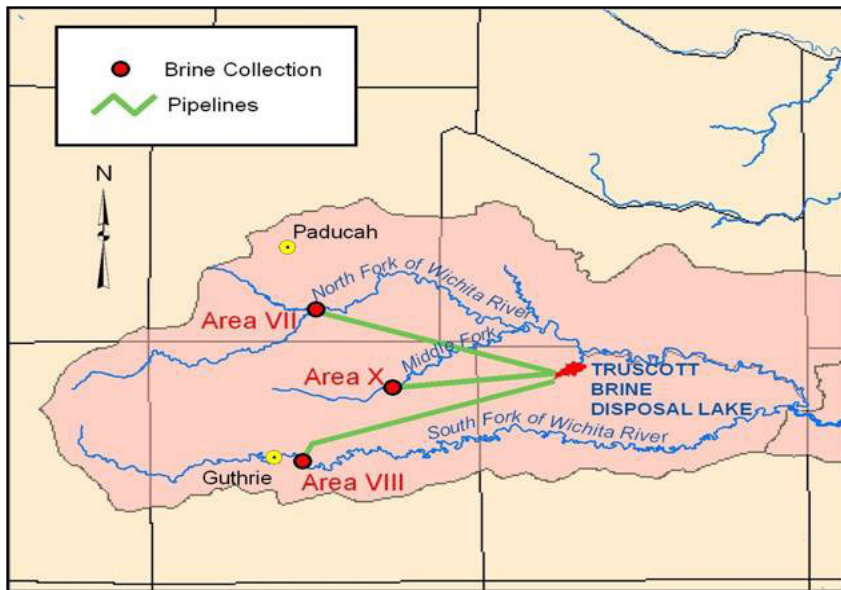
Under Construction

The Red River Chloride Control Project is authorized to identify and implement measures to reduce naturally occurring brine emissions into several sub-basins within the Red River Basin in northern Texas and southern Oklahoma. The project's primary purpose is to improve water quality for municipal, industrial, and agricultural uses along the Red River within Oklahoma, Texas, Arkansas, and Louisiana.

Improvements include construction of low-flow dams, pump stations, and diversion pipelines to impoundment facilities.

This project is a select major water strategy of the 2007 Texas Water Plan for the region.

Portions of the Wichita River Basin Chloride Control element, located in



In 2012, we are developing a series of potential alternatives for addressing specific future gaps; making revisions to final draft reports; and will complete model documentation and training for the Oklahoma Gap Tool, Reservoir Yield Model, and Climate Demand Model.

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 Oklahoma Water Resources Board signed the feasibility cost-share agreement in June of 2008. It was fully executed by the Commander in July 2008. This study is one of three that is being integrated into the Oklahoma Comprehensive Water Plan.

In 2008, the Corps developed a programmatic work plan and developed and distributed a pilot Geographic Information System project and an infrastructure survey for municipalities and rural water districts. Coinciding with these integrated efforts was an extensive public participation program to create a transparent and open planning process.

In 2009, we completed assessments of water demand and of ground and surface water supplies. The results of these two assessments were compared to define gaps where supply is inadequate.

In 2010, conservation assessments, refinements to demand projections, and regional supply alternative assessments were completed.

In 2011, we completed production of Watershed Planning Regional Reports/Basin Technical Appendices; identified potential measures for use in future formulation of hot spot and infrastructure needs alternative solutions; developed a wastewater infrastructure Capital Needs Assessment and Provider Planning Guide; and prepared/submitted final draft reports.

northwest Texas, have been constructed and in operation since 1987. Features include two low-flow collection dams, a pump station, and diversion pipeline to the Truscott Brine Disposal Reservoir. Additional construction efforts at the Area X pump house were completed in August 2010.

With carryover funds from FY10, land appraisal efforts for the remaining right of way at Area X in Texas were completed. In addition, detailed baseline environmental monitoring activities were continued.

As soon as additional funding is made available, efforts to complete construction efforts at Area X will be initiated.

Southeast Oklahoma Water Resource Study

1983 Supplemental Appropriation Act (PL 98-63)

Study

This study has been reinitiated to support the Oklahoma Comprehensive Water Plan (OCWP). The Oklahoma Water Resources Board is the sponsor. This is one of three studies that will result in development of watershed management plans. These plans will be integrated into the OCWP.

In 2008, the Corps developed a programmatic work plan and developed and distributed a pilot Geographic Information System project and an infrastructure survey for municipalities and rural water districts. Coinciding with these integrated efforts was an extensive public participation program to create a transparent and open planning process.

In 2009, we completed assessments of water demand and of ground and surface water supplies. The results of these two assessments were compared to define gaps where supply is inadequate.

In 2010, conservation assessments, refinements to demand projections, and regional supply alternative assessments were completed.

In 2011, we completed production of Watershed Planning Regional Reports/Basin Technical Appendices; identified potential measures for use in future formulation of hot spot and infrastructure needs alternative solutions; developed a wastewater infrastructure Capital Needs Assessment and Provider Planning Guide; and prepared/submitted final draft reports.

In 2012, we are developing a series of potential alternatives for addressing specific future gaps; making revisions to final draft reports; and will complete model documentation and training for the Oklahoma Gap Tool, Reservoir Yield Model, and Climate Demand Model.

WRDA 1999 Conveyance of Lands to State of Oklahoma

The Water Resources Development Act of 1999, Section 563(e), authorized the Secretary of Army to convey to the State of Oklahoma lands in the Lake Texoma State Park. The law required conveyance to be at fair market value, and all costs are to be paid by the state. Conveyance must comply with environmental laws, including the National Environmental Policy Act (NEPA). In 2006, 558 acres of land was sold to the state through the Commissioners of Land Office (CLO). The land was withdrawn from the park lease. The CLO subsequently sold the land to Pointe Vista Development, L.L.C. The state has requested conveyance of additional lands in the state park through the Oklahoma Tourism and Recreation Department.

A Notice of Intent to Prepare an Environmental Impact Statement (EIS) was filed in the Federal Register on August 21, 2009. A public information meeting was held in Kingston, Oklahoma, on September 22, 2009, as a part of the NEPA scoping process. Comments from the public meeting regarding the proposed conveyance of Texoma State Park lands were made part of the scoping report that is posted to Tulsa District's website, www.swt.usace.army.mil.

The draft phase of the EIS is expected to begin in the Spring of 2012.

Although the formal comment for EIS scoping has ended, comments regarding the EIS may be directed to Stephen Nolen, Environmental Analysis & Compliance Branch, U.S. Army Corps of Engineers, Tulsa District, 1645 S. 101st E. Avenue, Tulsa, OK 74128-4609. Fax: 918-669-7546 Email: Stephen.L.Nolen@usace.army.mil



On Saturday, November 19, 2011 Eagle Scout candidate Jacob Jester and fellow Boy Scouts from Troop 449 of Eufaula, Oklahoma, built artificial fish habitat structures called "Spider Blocks." This activity is part of a partnership between Mr. Jester, Troop 449, and the USACE Eufaula Area Office. Through this partnership, Mr. Jester provided the labor to build 50 spider blocks with the Eufaula Area Office supplying the materials. These spider blocks will serve to improve the recreational fishing opportunities for visitors to Eufaula Lake. The time Mr. Jester spent working on the project will count towards service hours needed to achieve the rank of Eagle Scout. In Phase 2 of the project, Mr. Jester, with the help of USACE staff, will place the structures in various locations around the lake.

Drought, continued from page 3

The conservation pool of Pine Creek continued to drop at a significant rate due to the drought. As the District received daily reports on the declining conservation pool, International Paper Company was also getting daily updates using the Water Control Data System on our Tulsa District Homepage. International Paper uses 25-30 million gallons of water each day for their operation. If the plant is idle, the impact to the southeastern Oklahoma economy would be devastating.

In September 2011, arrangements were made to have a working group meeting with International Paper, Oklahoma Department of Environmental Quality, Oklahoma Water Resources Board, Oklahoma Secretary of Agriculture Office, U.S. Fish and Wildlife, and the Corps of Engineers to discuss the releases from Pine Creek and to con-

serve remaining conservation storage for both water supply and downstream water quality purposes. Bi-weekly telephone calls occurred with International Paper and agencies to continue discussions regarding the conservation pool and to brainstorm additional ways to conserve water in the reservoir, while International Paper also effectively implemented conservation measures of its own. Water supply availability was compounded by downstream water quality requirements, which is another authorized purpose of the Pine Creek Lake project. Downstream users have "run of river" permits from the Oklahoma Water Resources Board and also rely on dependable river flows from Pine Creek releases. Endangered species of mussels are found downstream, and the U.S. Fish and Wildlife Service expertly monitored

Continued ... page 24

and advised on needed flows for environmental purposes. In December 2011, Pine Creek finally received much needed rain that not only refilled the conservation pool, but placed the lake into flood stage.

Sardis Lake. As the summer progressed, we were experiencing some unique conditions due to the extreme drought. The Kiamichi River above and below Sardis became dry, and endangered mussel species suffered from lack of flow. Sardis storage then became a useful tool, as small water releases were started from there in early August to help protect two endangered species of mussels in the Kiamichi River below Sardis Dam. Since the Sardis project does not have authorized water quality storage, representatives of the U.S. Fish and Wildlife Service, the Oklahoma Water Resources Board, the Oklahoma Department of Wildlife Conservation, and the U.S. Army Corps of Engineers cooperated in the joint decision that protected the threatened mussel beds, using donated storage from the Oklahoma Water Resources Board, which contracts for the Sardis water supply storage.

Due to the continuing dry weather conditions, the mussel beds would have been exposed to drying and excessive heat if the water release had not been made, which could have proven fatal to the mussels. “Fortunately, we can protect the two endangered species by releasing what will amount to about one inch of water from the Sardis reservoir for the month of August,” said COL Michael Teague, Commander of the Tulsa District of the Corps of Engineers. “The impact to the Sardis pool is minimal. With no inflow, the lake is forecast to drop just a little over one-half foot during the next month, the majority of that due to evaporation.”

Flows, water quality, and the endangered mussels were monitored, and a decision to continue or modify the water releases was made jointly by the affected agencies. Close communication by the water resource and environmental agencies during the extreme drought conditions helped effectively manage water conservation storage at Oklahoma lakes.

The two types of endangered mussels being protected by the decision are the Ouachita rock pocketbook and the scaleshell mussels. Sardis Lake is located in Pushmataha County, Oklahoma, on Jackfork Creek just above the Kiamichi River. It provides flood control, water supply, recreation, and fish and wildlife benefits.



Dan Martinez, U.S. Fish and Wildlife Service, discusses measures to protect endangered mussel habitat below Sardis Lake.

Canton Lake. Oklahoma City contracts for all the conservation storage in Canton Lake. During the fall of 2011, water utility officials from Oklahoma City met with representatives from the Oklahoma Water Resources Board, Canton Lake representatives, Oklahoma Department of Wildlife Conservation, and the Corps of Engineers to carefully plan all water releases so they were conducted in the best interest of both lakes and to replenish drinking water supply for Oklahoma City. In October, the Corps released 30,000 acre-feet of water from Canton Lake into the North Canadian River to meet the city’s water supply needs.

The release lowered Canton’s level by about 5.5 feet and impacted recreation. The lake level eventually fell below the boat ramps and rip-rap on the dam. However, Canton Lake is functioning as intended during a drought by providing drinking water storage.

Water supply is one of many authorized purposes of Corps of Engineers’ reservoirs that must be balanced with other purposes in the system of reservoirs, which include water storage for hydropower, flood risk management, water quality, and recreation. In times of drought, meeting drinking water supply needs is a primary purpose.

Lake Tenkiller. In September, representatives from the U.S. Fish and Wildlife Service (USFWS), Oklahoma Department of Wildlife Conservation (ODWC), Southwestern Power Administration (SWPA), and Tulsa District met to discuss issues related to the Illinois River trout fishery below Tenkiller Lake, Oklahoma. The conservation pool at Tenkiller Lake is fully allocated for water supply and hydropower, and no storage exists to support releases for the trout fishery. Throughout the extremely hot and dry summer of 2011, releases were made using storage donated from several water supply contract holders. That storage was close to being depleted, and discussions centered on how to sustain the fishery in anticipation of the exhaustion of donated storage and continued drought conditions. Discussion topics included reevaluation of release patterns (e.g., “pulsed releases”) to conserve donated storage for as long as possible, alterations in hydropower operations to include increased use of Tenkiller by SWPA and lower load turbine operations, potential cessation of fish stocking by ODWC, and other short-term measures. Absent rainfall, these measures would only prolong flows to support the fishery for a short period (a few weeks). While the meeting focused on immediate short-term needs, the group also discussed long-term strategies for alleviating similar conditions in the future.

SWPA cooperated by putting priority on generation from Tenkiller over other hydropower projects in the Arkansas River basin, which benefitted the trout fishery. SWPA also tried generating from two turbine units at half load, instead of one unit at full load, in an attempt to improve dissolved oxygen levels downstream.

Eventually, in spite of everyone’s best efforts, ODWC had to temporarily

cease stocking of trout due to high water temperatures and low dissolved oxygen content. Stocking was resumed once much needed rains recharged the reservoir.

The Corps of Engineers continues to operate within its authorities with every attempt to protect the valued trout stream. Longer term solutions are also being explored.

Blue-Green Algae (BGA). Shortly after reports of blue-green algae blooms at Grand Lake prior to the 4th of July holidays, BGA blooms were noted on several Tulsa District lakes. While BGA exist in most surface waters, excessive blooms are typically caused by elevated nutrients in lake water, calm and hot weather conditions, and a lack of reservoir inflows/outflows that, in normal years, provide for flushing of excessive nutrients and algae from a lake. Several species of BGA are known to produce toxins that can pose health problems for swimmers and pets directly exposed to lake water during bloom conditions. While monitoring continues, Tulsa District Oklahoma lakes with verified bloom conditions have thus far included Lakes Keystone, Eufaula, Tenkiller, and Fort Gibson. Tulsa District personnel worked in concert with those from the Oklahoma Department of Environmental Quality (ODEQ) to collect data, monitor conditions, and issue advisories and beach closures, as appropriate. To date, monitoring continues, and the Tulsa District is refining a plan for reporting, quantifying, communicating, and responding appropriately to bloom conditions in the future. The plan is being refined this winter in anticipation of similar future events. The Tulsa District will continue to coordinate this issue with the ODEQ and other state and local entities, as appropriate.

Long-term solutions to BGA bloom conditions in reservoirs are difficult. While weather and hydraulic conditions play a large role in annual bloom formation, technical tools are available for watershed-based planning aimed at reducing impacts of sedimentation and nutrient loading to large reservoirs. Linked watershed and lake response models are one management approach. The Tulsa District is currently engaged in such an effort for Oologah Lake, Oklahoma. It is believed this approach can serve as a model for use in other Tulsa District lakes.

Lake Improvements During the Drought.

Meanwhile, while managing all the negative aspects of the drought, Tulsa District Operations managers made the best of a bad situation, taking advantage of the lowest water conditions in years to perform routine, but needed maintenance on facilities that are usually underwater.

“This window is being taken advantage of to enhance work that we do routinely, and it has given us a better angle to do a better job with those routine maintenance jobs,” said Eugene Goff, Operations Project Manager, Kansas Area.

The drought throughout the district reduced water levels at most lakes by several feet, exposing silt, debris, trash -- even an ancient skull. Lake managers used the opportunity to get maintenance done more easily and less expensively.

“We did a ton of cleanup at lakes in our area,” said Mark Ellison, Operations Project Manager, Red River Area. “We spent many weeks cleaning the shoreline of our lakes, with volunteers helping to pick up old tires and other trash and debris.

“One of the more unusual items discovered was a bison skull that was found about a quarter of a mile below Denison Dam on the Red River,” said Ellison. The age of the relic is unknown, but Ellison said it has been a long time since bison roamed that area. It is on display in the Texoma Lake Office.

Water is well below the end of boat ramps at Red River Area lakes. This allows dredging to the extreme ends of the ramps to remove siltation and debris, improving accessibility.

A persistent issue at Corps lakes is erosion encroaching on the Public Use Areas, which are situated as closely as possible to the water. Over time, the banks erode and close in on the recreational vehicle campsites.



“Low water levels let crews get the proper equipment into the area to do erosion control and stabilize the banks in the Public Use Areas,” said Ellison. “During high water you get a lot of erosion. We got a chance to get in at Waurika Lake and stabilize those banks, and that means there will be less maintenance on those RV sites at Kiowa Park I and Chisholm Trail Park because we provided that safe zone. It’s a good thing. It holds up pretty good. We’ve got riprap and gabion baskets [cages filled with riprap, sand or soil] in there. It’s one technique we use on those eroded banks.”

Courtesy docks usually floating in the water are sitting high and dry with grass growing around them, making it easy to replace flotation bumpers and decking.

“You can do it with the water, but it’s a lot more labor intensive,” said Ellison. “It saves us money and time when we can do it at the lower levels.”

“While most of the work was regular maintenance, some work could not have been done at all unless the water was low,” said Goff.

“The U.S. Fish and Wildlife Service did a lot of work that they wouldn’t have been able to do,” said Goff. “They’ve done a lot of work on the marshes. It was done without high cost because they didn’t have to work in wet conditions. It will carry years and years down the road. There will be monumental benefits as we receive moisture.”

“The Fish and Wildlife Service rehabilitated some of the dikes at John Redmond Reservoir and replaced outfall structures, which holds the water in the

Continued ... page 26

marsh. Eroded areas in the marsh that allowed leaking were repaired to help the marsh function as intended and work at full capacity,” said Goff.

“We would not pray for it again. But we did take advantage of what the weather dealt us, and we made the best of it.”

Mark Ellison

“Fish and Wildlife couldn’t control the water like they should; now they’ve got better management of the marsh,” said Goff. “Sometimes they draw the water down to let vegetation grow, and other times they store water to get it into the vegetation for the wildlife.”

Other work at Corps lakes with low water levels included extending boat ramps, planting winter wheat for soil stabilization, placing fish structures and habitat, removal of beaver dams and lodges, and re-working the sand on some swim beaches.

Recent rains have raised water levels at some lakes, even helping some move from drought stage to flood pool, and the window of opportunity for low-water work is closing. As bad as the drought has been, for Corps lakes it wasn’t all bad.

We would not pray for it again,” said Ellison. “But we did take advantage of what the weather dealt us and we made the best of it.”

B.A.S.S. sportsman Edwin Evers wants you ...



to get ‘hooked’ on wearing a life vest



U.S. Army Corps of Engineers

Commander’s Perspective from page 2

the opportunity to continue providing services for flood risk management, navigation, hydropower, recreation, water supply, and fish and wildlife. Our #1 priority is safety and, to that end, we will continue to maximize our funds to major maintenance to make sure the infrastructure remains safe. Our FY12 Top 15 Maintenance Priorities are included and described in this issue. Our top priority remains the 48-year-old bridge over the Keystone Dam on Oklahoma Highway 51. We will continue the design efforts while working on major improvements in the utilities and catwalks. All of this leads up to and prepares us for the major bridge replacement to come.

Just as we responded to the storms and the drought, we continue to work with our stakeholders in everything we do to provide the best possible services to the American public.



- HOME
 - ABOUT US
 - MISSIONS
 - HISTORY
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- Hot Topics
- NEWSLETTERS
- TULSA CONTACTS
- LOCAL CONTACT NUMBERS
- FREEDOM OF INFORMATION
- NEWS RELEASES
- PUBLIC MEETINGS
- PUBLIC NOTICES
- PUBLIC COMMENTS WANTED
- CIVIL WORKS BOUNDARY MAP
- LAKE & RIVER INFORMATION
- INFORMATION
- ORGANIZATION
- AGRICULTURE & GRAZING LEASES
- CONTRACTING
- LIBRARY - Documents
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eNews from the Tulsa District [View Past eNews](#)

Tulsa District website to get new look in 2012



The Tulsa District website will be getting a brand new look in spring 2012 as part of the Corps-wide web migration.

For a preview of how it will look and feel, check out the Headquarters, U.S. Army Corps of Engineers new site at <http://www.usace.army.mil>.

Headquarters, and all USACE divisions and districts are moving their main public websites to the American Forces Public Information Management System or AFPIMS in order ... [more](#)

Drought Monitor



To provide relevant information to the public regarding the effects of drought on Tulsa District reservoirs, [updated reservoir information will be kept current here.](#)

For further information, click [here for the latest two-page map.](#)

... [more](#)

Tulsa District flood mitigation project receives prestigious award



TULSA — The Tulsa District U.S. Army Corps of Engineers was invited to attend the presentation of the "Tulsa Award" December 8 at Tulsa City Hall in recognition of its role in flood mitigation efforts in partnership with the City of Tulsa.

The award is given by the National Hazard Mitigation Association and it recognizes exemplary leadership in reducing disaster losses from floods, tornadoes, winter storms, summer heat, and oth ... [more](#)

Two graduate ranger training program



Two graduates of the Tulsa District Park Ranger Training Program were recognized by Tulsa District commander, Col. Mike Teague at the district headquarters Dec. 6.

Rangers Cathi Carr from Eufaula Lake and Dakota Allison from Keystone Lake graduated the program, which is designed to manage recruitment for the district's Natural Resource Management program and prepare trainees to work as park rangers.

Trainees in the tw ... [more](#)

Corps of Engineers participates in Team Up to Clean Up event at

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1 2 3 4 5 6 7 Next

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Public Comments Wanted

Review Plan - Eufaula Lake Environmental Impact Statement for Update of the Shoreline Management Plan and Supplement to the Master Plan
Open for Comments Until: April 30

Review Plan - Red River Chloride Control Project, Elm Fork, Area VI General Reevaluation Report
Open for Comments Until: November 30

Public Notice

Review Plan - Eufaula Lake Environmental Impact Statement for Update of the Shoreline Management Plan and Supplement to the Master Plan

This review plan is an autonomous appendix to the Project Management Plan for the Eufaula Lake Environmental Impact Statement for Update of the Shoreline Management Plan and Supplement to the Master Plan.

Comments should be di ...

Open for Comments Until: April 30

Deployments

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<http://www.swt.usace.army.mil>

Corps Commander Awards Canton Volunteers

Tornado cleanup volunteers recognized for outstanding public service

By Debbie Chaloupek, park ranger, Canton Lake, and Sara Goodeyon, public affairs specialist, Tulsa District U.S. Army Corps of Engineers

CANTON, Okla. — Canton Lake in western Oklahoma is a part of the Tulsa District U.S. Army Corps of Engineers' system of lakes built for flood risk reduction, water supply, and hydropower. It also provides recreation opportunities in a region where few exist. It boasts the Canadian Recreation Area which was one of the most popular Corps recreation areas in the nation. That was until a tornado ripped through the recreation area May 24, leaving behind near-complete destruction with debris scattered everywhere, including the bottom of the lake.

"The tornado did a tremendous amount of damage to the area," said Kathy Carlson, the lake manager at Canton. "It totally destroyed 77 Class A campsites, two restrooms, a new courtesy boat dock, more than 20 camping trailers, several vehicles and numerous trees, while many other facilities were severely damaged."

Debris was scattered all over the lake, trees were down everywhere, in both the Canadian Area and in the Longdale Recreation Area across the lake on the north shoreline, said Carlson. As the lake manager, it was Carlson who would be responsible for doing something about the mess, but with the current economic slow-down and drastically reduced funding for recreation projects, clean up and rebuilding would be a challenge.

That's when the volunteers stepped in to help.

"Large numbers of volunteers, more than 200 people with chain saws, vehicles, trailers and even heavy equipment, came forward in the aftermath of the tornado to help clean up the mess and get us back on our feet," said Carlson. "The volunteer effort put forth saved the Corps thousands of dollars on this cleanup effort and was directly responsible for making it possible to re-open the Canadian Day Use Area and boat ramp before the Fourth of July holiday."

Tulsa District Commander COL Michael Teague sought to recognize such outstanding effort on the part of the volunteers. In a ceremony October 17 at the Canton Lake Office, COL Teague recognized the local companies and organized volunteers who gave their assistance with the debris cleanup.

Teague presented Renewable Energy Systems Americas, Inc. with the Department of the Army's Commander's Award for Public Service. It is the fourth highest public service award that may be granted to private citizens. It recognizes service or achievements that contribute significantly to the accomplishment of the mission of an Army activity. Renewable Energy Systems Americas, Inc. provided more than 50 volunteers to assist with debris cleanup, along with heavy equipment to remove large downed trees and helped demolish a severely damaged concrete block restroom building.



COL Michael Teague, Commander, Tulsa District U.S. Army Corps of Engineers, traveled to Canton Lake, Oklahoma, October 17 to thank volunteers who helped with the cleanup of the Canadian Recreation Area after a May 24, 2011, tornado nearly destroyed the site. Teague presented the Department of the Army's Commander's Award for Public Service and the Army's Certificate of Achievement to the volunteers and representatives for volunteer groups. Pictured are Owen Dougherty, Brian Bower, and Jeremy Cantrell, Siemens Energy Incorporated; Tammy Kelln, Chesapeake Energy Corporation-Waynoka field office and Damon Suderman of the Chesapeake Energy Corporation-Weatherford field office; Bennie Lamb, Kevin Munden, and Richie Geren, Renewable Energy Systems Americas, Inc.; Jean Howard and Mark Fuqua, Canton Chamber of Commerce/Walleye Rodeo Association; Kathryn Carlson and COL Teague, Tulsa District U.S. Army Corps of Engineers. Not Pictured is Danny Giager of Southern Baptist Disaster Relief.

Teague also presented the Department of the Army's Certificate of Appreciation, which recognizes outstanding public service, to each of the following companies and organizations: Meridian Engineering Company, Siemens Energy Incorporated, Chesapeake Energy Corporation-Waynoka Field Office, and Chesapeake Energy Corporation-Weatherford Field Office, the Canton Chamber of Commerce and the Southern Baptist Disaster Relief.

Each of these groups organized large numbers of volunteers to assist the Canton Lake staff with the cleanup efforts. These volunteers assisted with the cleanup of tree limbs in the Canadian Area and debris removal from the north shoreline and along Canton Dam.

The future of the campground at the Canadian Recreation Area is unclear. A tremendous amount of work remains to be done there. One thing is clear, though, and that is that Corps lakes and lands are a vital and integral part of the community, and when catastrophe strikes, that community pulls together.

Carlson noted that by banding together to get the Canadian Day Use Area reopened, the volunteers did more than just clean. Just as importantly, their generous, caring and unselfish response helped raise the spirits of all those affected by the May tornado, said Carlson. This is a great example of how the Corps and the local communities can be partners in working to preserve the benefits of Canton Lake.