

OKLAHOMA COMMISSIONERS' REPORT

Red River Compact Commission

Annual Meeting Quartz Mountain Resort Altus, Oklahoma April 28-29, 2003

STATE CLIMATE & STREAMFLOW

Much of southern and eastern Oklahoma remains relatively dry. The areas receiving the lowest percent of normal rainfall since October 1, 2002 (the current water year) are the Northeast and Southeast climate divisions (both at 67 percent of normal precipitation). Only two regions, the North Central and Panhandle climate divisions, have received a surplus of normal rainfall during that period. The current state-averaged rainfall total is 13.36 inches, 79 percent of normal.

For the current growing season (since March 1), all regions report precipitation deficits. The South Central and Southeast climate divisions have received less than one-half of normal precipitation—31 percent (1.91 inches) and 42 percent (3.2 inches), respectively. The state-averaged rainfall total is 3.26 inches (60 percent of normal).

Most reservoirs in the Red River Basin are near capacity, although Lugert-Altus and Tom Steed Reservoirs continue to suffer from storage deficits. Currently, Lugert-Altus is at only 45% of available storage; Tom Steed is at 55%.

WATER RESOURCE STUDIES

Surface Water

- Last year, the OWRB and U.S. Bureau of Reclamation began an initial cooperative assessment of water quality, quantity, and base flow hydrology on Sweetwater Creek and the **North Fork of the Red River** watersheds, which include Lugert-Altus Reservoir. A proposed second phase of this study would determine the potential effects of groundwater withdrawals in the basins and include development of models to evaluate the augmentation of Lugert-Altus Reservoir's dependable yield.
- In 2002, the Board completed its instream flow study of the **Baron Fork River**, in eastern Oklahoma, and passed its instream flow rule of 50 cubic feet per second (cfs) to protect the river in March. The State Legislature must still approve the rule. The study, conducted in cooperation with Oklahoma State University, quantified instream flow requirements sufficient to protect the river's environmental benefits while balancing the water supply needs of area residents.
- The OWRB continues to cooperate with the Tulsa District of the U.S. Army Corps of Engineers, through the Corps' Planning Assistance to the States Program, to study water supply alternatives for Adair County Rural Water District No. 5. The District, which currently is supplied through direct diversions from the **Baron Fork River**, is seeking options for a dependable future water supply. A draft study has been completed.

Groundwater

- Congress recently appropriated \$500,000 for the OWRB, through the Bureau of Reclamation, to conduct the initial phase of a comprehensive multi-year study of southeast Oklahoma's **Arbuckle-Simpson Aquifer**. The aquifer supplies flow to many

area rivers and streams—including Byrd’s Mill Spring and the Blue River, the drinking water source for the City of Ada—but more information is required to properly manage and protect the groundwater formation. The investigation, which will begin during the summer of 2003, is in part a response to a recently-proposed project that would involve the transfer of some 60,000 acre-feet of groundwater from the prolific Arbuckle-Simpson to communities in Canadian County in need of future water supply.

Water Quality

- Continuing efforts to improve water quality in **Lake Thunderbird**, the OWRB and the Central Oklahoma Master Conservancy District (COMCD) have begun their fourth year of monitoring chlorophyll and nutrient concentrations in the lake. The OWRB has recommended several management alternatives that have been implemented by the COMCD that have greatly improved the lake’s algae and chlorophyll problems.
- Shoreline erosion control projects at **Lake Carl Blackwell** and **Lake Thunderbird** are being implemented through EPA’s §319 non-point source pollution grants program. By demonstrating innovative ways to combat erosion and suspended sediment, the OWRB seeks to educate lake managers on the habitat-friendly benefits of establishing aquatic plants to improve the health of our state’s aquatic communities.
- Development of a watershed model for **Lake Wister** is underway in conjunction with the Poteau Valley Improvement Authority (PVIA). OWRB is providing analysis of data and model construction while PVIA is collecting the samples. The study will provide details of the type and severity of loadings (sediment, nutrients) to the lake from the watershed. Staff are also monitoring the success of a recent project to establish aquatic vegetation in shallow reaches of Lake Wister. If successful, the plantings will reduce the lake's nutrient content, increase clarity, and provide valuable habitat for fish and wildlife.

NONPOINT SOURCE MITIGATION PROJECTS

Through the Section 319 (Clean Water Act) Nonpoint Source Management Program, almost \$3.8 million (seven projects) has been expended in the Red River Basin since the program’s inception in Oklahoma in 1990. The Oklahoma Conservation Commission directs the state’s 319 program.

Through the Environmental Quality Incentives Program (EQIP), directed and funded through the Natural Resource Conservation Service, almost \$12 million has been expended on nonpoint source mitigation projects in the Red River Basin. These projects encompass 616,850 acres (964 square miles) in the region. EQIP is a voluntary conservation program that offers financial and technical assistance for agricultural landowners to implement structural and management practices.

WEATHER MODIFICATION

Although the Legislature has declined funding for the state's weather modification program since 2001, the OWRB continues to support research of the technology. For FY-02 and FY-03, Congress included \$2 million and \$3.5 million, respectively, in the budget of the Bureau of Reclamation to implement a multi-year, regional research program to determine the effectiveness and applicability of cloud seeding in mitigating severe weather events, especially hail damage. The regional effort will involve the States of Oklahoma, New Mexico and Texas and will utilize research scientists and agencies of the Oklahoma Weather Center, a unique alliance of federal, state and University of Oklahoma organizations based in Norman, Oklahoma.

STATE LEGISLATION

2002

The Water Resources Board was again very successful in achieving legislative goals established prior to the 2002 legislative session. The 2003 session began in February.

- SB 972—ensures that municipal dischargers will not be subjected to potential increased treatment costs until the phosphorus loadings from all impaired Scenic River watersheds are identified and addressed through the state’s total maximum daily load (TMDL) process.
- SB 1247—expands eligibility for the Board’s Rural Economic Action Plan (REAP) grant program. The bill increases the population limit for eligible entities from 1,500 to 1,750 and the household tap limit for rural water/sewer districts from 450 to 525.
- SB 1306—allows certain swine feeding operations to transfer water rights permits to heirs or other buyers without having to apply for a new permit. Such transfers would be limited to operations that do not increase the size or scope of their operations or the amounts of water withdrawn.
- SB 1348—removes the exemption for poultry operations and hatcheries from the anti-corporate farming statutes, thus preventing the larger, potentially more environmentally damaging corporate poultry operations from becoming established in Oklahoma.
- SB 1410—places a three-year moratorium on state efforts to compact with Oklahoma’s Native American tribes or negotiate agreements to market large supplies of water out of state, unless repealed by the State Legislature. The bill also directs creation of a 19-member joint legislative committee to investigate state water planning issues.
- HB 1995—allows the Board, for the first time, to fund nonpoint source-related projects through the Clean Water SRF Loan Program.
- HB 2330—provides guidance to the OWRB in defining recreational sites related to the three-mile setback provision for swine feeding operations under state groundwater law.
- HB 2349—prohibits the siting of poultry operations within floodplains or close to Scenic Rivers, public drinking water wells, and other important water bodies in the state.

In addition, the Legislature appropriated up to \$1.2 million in FY-03 to fund the **Beneficial Use Monitoring Program (BUMP)**. Created in 1998 and directed by the OWRB, the BUMP is a continuous, statewide water quality monitoring effort. The BUMP’s main goals are to document beneficial use impairments, identify impairment sources, detect water quality trends, provide needed information for the Oklahoma Water Quality Standards, and provide critical information for the prioritization of pollution control activities by state and local entities. Thirty-seven permanent monitoring sites are included in the Red River Basin, although additional water quality monitoring is conducted in the Basin, as required.

2003

Measures of particular importance to the OWRB currently under consideration by the State Legislature include several bills addressing protection of southwest Oklahoma’s Arbuckle-Simpson Aquifer and a proposed project to transfer water to central Oklahoma. These measures include:

- HB 1083—grandfathers in domestic use and existing ‘temporary’ permits in the OWRB calculations of aquifer maximum annual yields (based on the current law specifying a minimum basin life of 20 years).
- SB 288—places a moratorium on the issuance of temporary groundwater permits until the OWRB promulgates rules to assure the use of water protects surface and groundwater quality.
- HB 1422—designates the Blue River, in southeast Oklahoma, as a state-protected “Scenic River.”

- HB 1146—allows the OWRB and other state environmental agencies and public utilities to keep certain sensitive information confidential to reduce the potential for attacks by terrorists on the state’s water systems.
- HB 1660—amends the definition of “waters of the state” to exempt farm ponds, converted croplands, state wetlands, and waste treatment lagoons from applicability under water quality standards (SB 222 also modifies that definition).
- HB 1679 changes the membership of the State Legislature’s water planning committee, created last year through SB 1410, to provide better representation and input from the public in its study of issues related to the Water Plan update, due in 2005.

WATER RESOURCES FINANCING

The Oklahoma Water Resources Board administers the State *Financial Assistance Program* (FAP), backed by the Statewide Water Development Revolving Fund, which awards loans and grants for the construction and improvement of water and sewer facilities. Late last year, the FAP reached the \$1 billion milestone in total loan and grant funds approved since the program’s inception in 1982. The financing initiative was created through an initial \$25 million appropriation, plus \$14 million in additional funding, and has resulted in an eight-fold return on investment.

The Board offers loans from proceeds of revenue bonds to eligible communities for sewer and water improvements and refinancing. In addition, the Board provides loans through the *Clean Water (CWSRF) and Drinking Water Construction Revolving Fund (DWSRF) Programs* for various wastewater and water treatment/distribution projects, respectively, which are often required to bring borrowers into compliance with EPA requirements. The CWSRF Loan Program provides funds for the construction of new wastewater facilities or the replacement or rehabilitation of existing facilities. The DWSRF, a cooperative program recently developed by the OWRB and Oklahoma Department of Environmental Quality, assists municipalities and rural water districts in constructing drinking water treatment and distribution system improvements required to comply with the federal Safe Drinking Water Act.

To date, through the three Board loan programs (the Revenue Bond, DWSRF, and CWSRF), the agency has approved 128 loans totaling more than \$233 million in the Red River Compact region.

The Board’s emergency grant program, funded by interest earnings on the Revolving Fund, has approved 213 grants for almost \$12.5 million in the Basin area. Finally, the *Rural Economic Action Plan (REAP)* grant program, similar to the emergency grant program but giving priority to smaller Oklahoma communities, has approved 167 REAP grants totaling more than \$14.2 million in the Red River Basin.

RED RIVER COMPACT COMMISSION WEB SITE

Through its work on the Engineering Committee, the OWRB continues to host and develop the Commission’s Web site (www.owrb.state.ok.us/rrccommission/rrccommission.html). The current site features links to all state and federal agencies who support and further the work of the Red River Compact Commissioners as well as links to national/regional streamflow conditions (USGS) and Compact articles and provisions. The OWRB is currently developing a detailed, interactive map of the Compact area in New Mexico, Texas, Oklahoma, Arkansas and Louisiana. Staff will work with other Compact states to integrate GIS coverages into the site.

Pertinent Data – Lake Texoma (Denison Dam)

Benefits:

To date, the Lake Texoma project, constructed in 1944 at an approximate cost of \$60 million, has prevented \$174 million in flood losses. The hydropower benefit of the project is approximately \$16 million/year.

Authorization:

- Flood Control Act, approved 1938 (flood control and power);
- Public Law 868, 1940 (improving navigation, regulating flow of Red River, controlling floods, and other beneficial uses);
- Public Law 454, 1944 (impoundment designated as Lake Texoma);
- Public Law 273, 1953 (Denison water supply storage);
- Public Law 164, 1955 (construction of Willis Site Bridge);
- Public Law 146, 1957 (Sherman water supply);
- Public Law 282, 1970 (water supply dam on Big Mineral arm);
- Public Law 662, 1986 (added recreation as a project purpose and authorized reallocation of additional storage for water supply).

Location:

On the Red River at river mile 725.9, 5 miles northwest of Denison in Grayson County, Texas.

Purpose:

Flood control, water supply, hydroelectric power, regulation of Red River flows, improvement of navigation, and recreation.

History of Construction:

Construction began in August 1939 and was completed in February 1944. The project was first available to operate for full flood control without any restrictions in January 1944. The first hydroelectric turbine was placed on line in March 1945 and the second in September 1949. Construction of a highway bridge across Lake Texoma at the Willis Ferry site started 24 April 1958 and was completed 30 October 1960. The 5,426-foot-long bridge replaces a former crossing south of Woodville, Oklahoma, on Oklahoma State Highway 99 and Texas State Highway 91. The roadway surface is about 37 feet above the top of the power pool.

Type of Structure:

The structure is a rolled earthfill embankment with a rock-protected upstream slope. The main embankment is 15,200 feet long. The maximum height of the structures is 165 feet above the streambed.

Hydrologic Data:

The estimated peak discharge for the May through June 1908 flood was 470,000 cfs. The volume was 8,517,000 acre-feet which is equivalent to 4.73 inches of runoff. The peak inflow for the May 1990 flood was 300,000 cfs with a volume of 5,087,000 acre-feet. The peak inflow for the May through June 1987 flood was 315,000 cfs with a volume of 2,879,000 acre-feet. The total volume of inflow for the 1957 flood was 8,364,000 acre-feet.

Lake Data: Based on 1985 sedimentation survey.

| Feature | Elevation | Acres | Capacity | Equivalent Runoff¹ |
|---------------------------|------------------|--------------|------------------------|--------------------------------------|
| | feet | acres | acre-feet | inches |
| Top of Dam | 670.0 | --- | --- | --- |
| Maximum Pool | 666.4 | --- | --- | --- |
| Top of Flood Control Pool | 640.0 | 141,418 | 5,194,163 | 2.88 |
| Flood Control Storage | 617.0-640.0 | --- | 2,613,777 ² | 1.45 |
| Top of Power Pool | 617.0 | --- | 2,580,386 ³ | 1.43 |
| Conservation Storage | 590.0-617.0 | --- | 1,570,216 ⁴ | 0.87 |
| Bottom of Power Pool | 590.0 | 42,787 | 1,010,170 | 0.56 |

¹From a 39,719-square-mile drainage area upstream from the dam; 33,783 square miles contributing.

²Oklahoma's largest lake in conservation storage; second largest in surface area (~88,000 acres).

³Excludes inactive storage in Cumberland pool.

⁴Includes 150,000 acre-feet for water supply (150 mgd yield).

Power Data:

The powerhouse contains two 35,000 kilowatt generators, with provisions for three additional 43,000 kilowatt units. One 20- foot-diameter steel-lined conduit provides water for each power unit. Each of the five power conduits is equipped with two 9- by 19-foot vertical life gates located in the intake structure. The powerhouse and power conduits are located adjacent to the outlet works near the right abutment. Additional power data are as follows:

| Item | Amount |
|--|---------------|
| Required Flow for Firm Energy, average cfs | 1,800 |
| Average Net Power Heads, feet | |
| Power Pool, full | 103.2 |
| Power Pool, empty | 75.0 |
| Critical Hydroperiod | 92.2 |
| Dependable Capacity, kW | 54,000 |
| Installed Capacity, kW | 70,000 |
| Potential Capacity, kW | 199,000 |
| Average Annual Firm Energy, kWh | 126,470,000 |