

OKLAHOMA Water News

Bimonthly Newsletter of the Oklahoma Water Resources Board

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Duane A. Smith
OWRB Executive Director

From the Director

While the OWRB's water quality issues—including statewide monitoring and standards, such as the new phosphorus limit in Oklahoma's Scenic Rivers—have received much attention lately, water use permitting remains the backbone of this agency's many responsibilities. In 1905, the Eighth Legislative Assembly of Oklahoma Territory enacted the first rudimentary water laws outlining procedures for acquiring water rights and regulating use. Since then, the state has worked diligently to administer water rights fairly through the office of the Territorial Engineer, State Engineer, and various successor commissions, offices, and boards.

House Joint Resolution 520, passed by the State Legislature in 1955, directed creation of a water study committee to review Oklahoma's water

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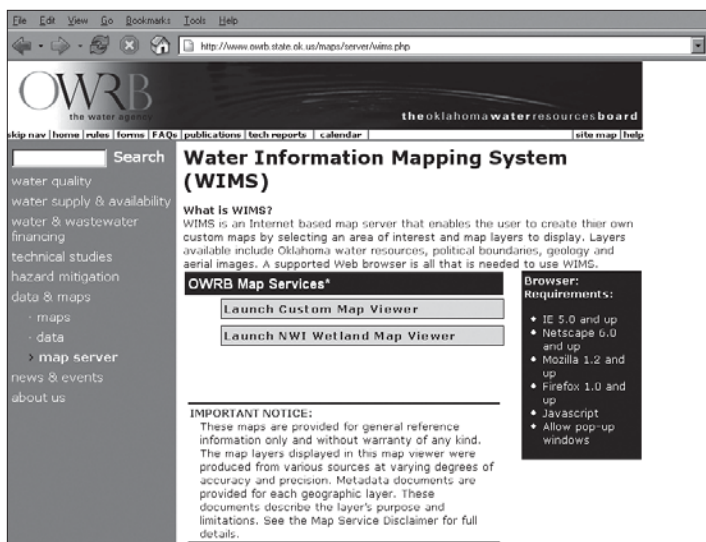
Online Mapping Program Empowers Citizens

A new online mapping application, launched in January, will allow OWRB Web site visitors to build and view custom-made maps containing water resource and related information on Oklahoma.

The OWRB Water Information Mapping System (WIMS), customized by the agency's development and Geographic Information System (GIS) staff from Internet Mapping Server (IMS) software, is the product of more than two years of development and received an important assist from a project to map Oklahoma's wetlands.

"I am extremely proud to say that the Water Resources Board has independently deployed this very useful Web site application," says OWRB Executive Director Duane Smith. "The unique technical expertise possessed by our staff has enabled us to develop a high-quality product that provides a variety of benefits to Oklahoma citizens. And it's relatively easy to use."

Visitors to WIMS can create their own maps by simply selecting an area of interest and one or more of the associated map layers to display. Approximately 40 layers are currently available, including surface and groundwater resources, permit locations (including areas of use



WIMS launch page, www.owrb.state.ok.us/maps/server/wims.php

and dedicated lands), political boundaries, rural water system lines, roads and highways, and geology. Topographic, shaded relief, and aerial images of the state (from 2003) are also available. The OWRB will continuously add additional water resource and related layers and features to WIMS.

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problems. That initial study eventually pointed out the need for a separate agency, the Oklahoma Water Resources Board, to administer water rights, negotiate federal contracts, and develop plans to ensure the efficient use of our state's water resources. While laws governing water use in Oklahoma have undergone mostly insignificant changes since that time, ensuring the proper administration and protection of water has become more and more difficult, especially in light of a shrinking state budget and the federal government's decreased role in funding state water projects.

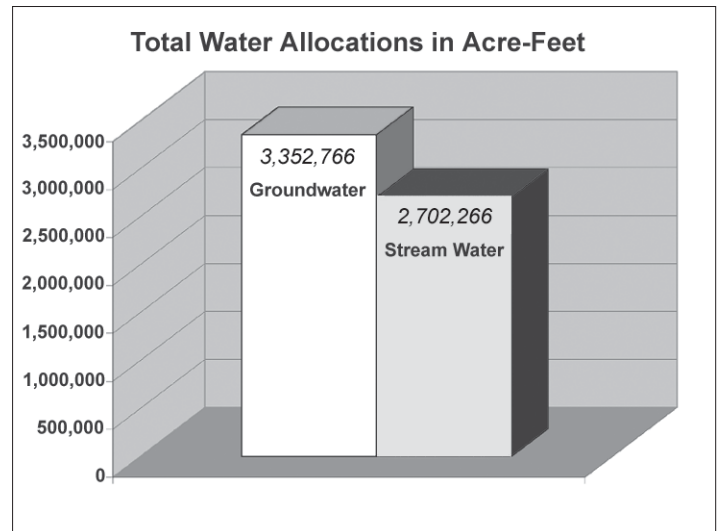
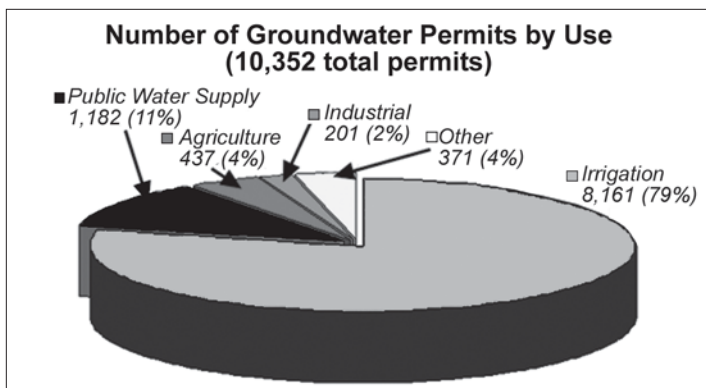
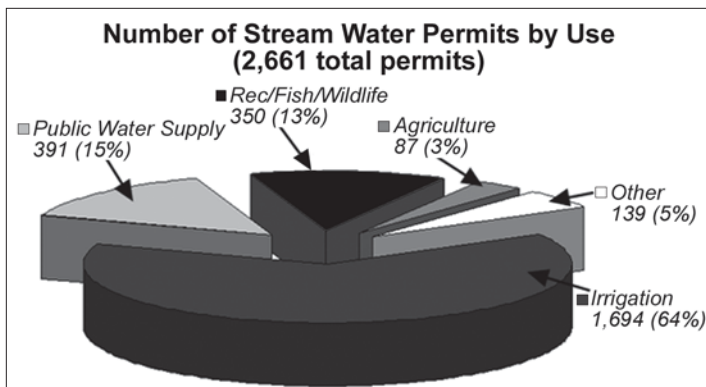
Increased competition for limited water resources, greater scrutiny of proposed water uses, including more protests, and a better informed public with access to a wealth of available water information requires OWRB staff and Board members to be ever-vigilant in their work and decision-making. Today, citizens are more educated than ever about frequently complicated water issues. Their advanced knowledge base allows them to better analyze and understand the multifaceted impacts associated with both small- and large-scale water use. In turn, this informed and empowered public demands that we provide them with even more comprehensive and timely water resource data.

These factors make it necessary for the Water Board to seek out additional resources through which to manage water rights. One option is to establish an annual water rights administration fee, the first such increase since 1995. A \$100 annual fee—in place of the current \$10 to \$25 file maintenance fee currently assessed to holders of stream water permits—would generate a dependable source of funds for the OWRB's water rights program.

This would allow us to hire additional staff to process applications, maintain files, migrate paper documents to digital media, investigate permit complaints, and conduct water use reporting and cancellation/reduction procedures. Currently, only 10 employees are funded to manage the critically important tasks associated with permitting and technical studies work.

We also require additional funds to collect and store more accurate and dependable water use information and to maintain and improve databases that put this information at our fingertips. Hydrologic studies are often expensive and time-intensive and current funding restraints prevent staff from conducting legislatively required updates of aquifer yield determinations, not to mention specialized hydrologic studies and continuance of our partnership with the U.S. Geological Survey in Oklahoma's streamgaging program. And we must allow for further investment in technological advancements that improve staff efficiency and stimulate other innovations, such as web-based applications to provide citizens with online access to Water Board data. In January, the Water Board will release our Water Information Mapping System (WIMS) to provide customized, online mapping services to our Web site customers.

In the "big picture" viewpoint, a fee increase would provide an avenue through which the OWRB can continue to fulfill its statutory water management mandate and avoid passing this responsibility on to the court system, which would then have to resolve questions and controversies related to state water rights and use. Oklahoma citizens, industries, municipalities, irrigators and other users shouldn't have to go to court every time they need a water right acknowledged and validated. Because state law recognizes an inherent connection between water rights and private property rights, preservation of Oklahoma's existing administration process not only makes sense, it is necessary to provide water users with the security, certainty, and stability that is their right as Oklahomans.



The OWRB maintains 13,013 total permits on file, including 10,352 allocating groundwater and 2,661 allocating surface water. Total water allocated in Oklahoma, again mostly groundwater, is 6,055,032 acre-feet per year.

"WIMS was created to satisfy the increasing public thirst for water information, but the true benefit of the application is that it empowers the public in making intelligent decisions related to water use and protection. An educated public helps us to do a better and more efficient job in managing Oklahoma's water resources," adds Smith.

Staff have also developed a separate, though similar, web-based mapping application specifically designed for internal use that will allow the Water Board to save money that would otherwise be required to purchase expensive GIS software licenses.

Much of the project was funded through a U.S. Environmental Protection Agency grant awarded to the

Oklahoma Office of the Secretary of Environment. The current goal of the ongoing project, which was initiated during the fall of 2004 in cooperation with the Oklahoma Conservation Commission, is to digitize the paper versions of all 1,256 National Wetlands Inventory (NWI) maps for Oklahoma. As these maps are completed and the data transferred to digital format, appropriate wetlands GIS layers are created, integrated into WIMS, and made available to the public on the OWRB's Web site.

The U.S. Fish & Wildlife Service is responsible for cataloging information on the characteristics, extent, and status of the nation's wetlands and deepwater habitats. The NWI is a coordinated effort by the Service to map wetlands and digitize, archive, and distribute the maps.

OWRB Receives EPA Award

The OWRB's Financial Assistance Program has been recognized by the U.S. Environmental Protection Agency for its innovation and stability in financing measures aimed at protecting the nation's waters.

EPA's first ever Pisces Award was conferred to Joe Freeman, chief of the OWRB's Financial Assistance Division, at the annual Council of Infrastructure Financing Authorities State Revolving Fund (SRF) Conference luncheon, held October 31 in Chicago. The new award recognizes states that have exhibited the most innovative and effective financial performance in advancing EPA's goals through the Clean Water State Revolving Fund (CWSRF) Loan Program.

Widely successful since its creation in 1987, the CWSRF provides funding to states to facilitate the construction of municipal wastewater facilities and implementation of nonpoint source pollution control and related water quality protection projects.

According to EPA, the OWRB is considered a CWSRF leader due to its watershed approach to lending. In 2001, the OWRB adopted the Integrated Priority Ranking System, which ranks projects for funding based on the goals of the Clean Water Act and the State's Unified Watershed assessment to eliminate human health threats, restore impaired surface waters, and protect high quality waters and their uses.

The OWRB serves as the state's primary financing vehicle for local government water and wastewater projects. The OWRB's five financial assistance programs—consisting of the Drinking Water and Clean Water State Revolving Fund Loan Programs, State Loan Program, Emergency Grant Program, and Rural Economic Action Plan Grant Program—are collectively responsible for more than \$1.4 billion in financing for community water and sewer infrastructure projects in Oklahoma.

Drillers Encouraged to Use Well Log Application

Prior to the OWRB's launch of its web-based application for online submission of well logs, OWRB staff were required to verify, image, and index all incoming logs from Oklahoma water well drillers. To date, 63 licensed firms have taken advantage of the opportunity to file well logs electronically, remotely logging in over 8,000 wells during the past two years.

Kent Wilkins, Oklahoma Well Drillers Program Coordinator, says the willingness of these firms to utilize the new system has greatly benefited both the OWRB and Oklahoma Well Drillers Program by cutting costs and staff hours. And since the electronic filing system ensures that logs are accurate and complete, the mistakes commonly seen on hand written logs have been virtually eliminated.

Wilkins urges any licensed driller who hasn't yet taken advantage of the electronic filing system to set up a user account by contacting the OWRB to request a form at 405-530-8800 or go to www.owrb.state.ok.us/supply/wd/drillers.php.

Well construction data screen, one of 10 easily navigable data entry screens in the OWRB's online well log data entry system

First Water Day Set for April 19

The OWRB will host the inaugural Capitol Water Day on April 19, 2006, at the State Capitol in Oklahoma City. The event is scheduled from 9 a.m. to 3 p.m. in the Capitol's 4th floor rotunda.

Water Day will present a unique opportunity for groups to demonstrate the importance of Oklahoma's water resources and provide information on their water management, conservation, and educational programs for state legislators and other government officials.

"Organizations have hosted Ag Day, GIS Day, Consumer Protection Day and various other observations at the State Capitol, so the Water Board believes it's past time for a 'Water Day,'" says Duane Smith, OWRB Executive Director.

"It's our hope that this diverse assembly of water interests will attract the attention of our Governor and Legislative leadership and establish the annual Capitol Water Day as an important venue for providing unique, firsthand perspectives of our most pressing water issues."

Numerous agencies and organizations with water interests—including public water supply, agriculture, tourism and recreation, environmental protection, wildlife conservation, soil conservation, energy, and industry, as well as occupations such as well drillers, floodplain managers, environmental engineers and others—have been invited to showcase how they individually and collectively protect the state's surface and groundwaters.

Fire Tips Offered

The Red Cross offers the following suggestions for a fire disaster plan:

When wildfire threatens:

- Listen to a battery-operated radio for reports and evacuation information. Follow the instructions of local officials.
- Back vehicles into the garage or park it in an open space facing the direction of escape. Shut doors and roll up windows. Leave the key in the ignition. Close garage windows and doors, but leave them unlocked. Disconnect automatic garage door openers.
- Confine pets to one room. Make plans to care for pets in case of evacuation.
- Arrange temporary housing outside the threatened area.
- If advised to evacuate, do so immediately.
- Wear protective clothing--sturdy shoes, cotton or wool clothing, long pants, a long-sleeved shirt, gloves, and a handkerchief to protect face.
- Take disaster supplies kit.
- Lock the house.
- Tell someone when you leave and where you are going.
- Choose a route away from fire hazards. Watch for changes in the speed and direction of fire and smoke.

Courtesy Claremore Progress, Jan. 4.

New Committee Studies Surface Water

The Surface Water Subcommittee of the Arbuckle-Simpson Technical Peer Review Team has been created to evaluate surface water needs and impacts to flows in the study area. Among various tasks assigned to the group is investigation of potential instream flow regimes that could be implemented to minimize impacts to existing water users, landowners, recreation interests, and fish and wildlife. The Subcommittee will seek to balance legal and public policy considerations with technical findings of the ongoing Arbuckle-Simpson Hydrology Study.

Chaired by Derek Smithee, chief of the OWRB's Water Quality Division, the Subcommittee also includes representatives of the U.S. Geological Survey (USGS), Oklahoma Department of Environmental Quality, Department of Wildlife Conservation, U.S. Fish and Wildlife Service, Oklahoma State University, and area landowners.

South Central Region Suffers Driest Spring on Record

With a 2005 rainfall total of 26.54 inches, the South Central climate division (encompassing all of the Arbuckle-Simpson study area) was 14.42 inches below normal, which makes it the region's 6th driest year on record. Contrary to most years, when most rain occurs in the spring and fall, most of 2005's rain occurred in the winter and summer.

Following an exceptionally dry September in 2004, the South Central region experienced a very wet October and November. January 2005 was the 8th wettest on record, but dry conditions emerged again in February and continued throughout 2005.

At more than 8 inches below normal, the South Central region experienced the driest spring on record in 2005. The previous record was set in 1898, with 5 inches below normal for the season.

Heavy rains in July and August brought some relief to the dry conditions. August was the 10th wettest on record--2.8 inches above normal precipitation--but the high August rainfall total occurred within just a few days, resulting in high runoff and flooding with less infiltration into the ground.

More than 5 inches of rain in two days resulted in flash floods on Honey Creek that closed Turner Falls Park for a few days. The region then experienced the 4th driest November and 5th driest December on record.

For climatic summaries, visit the Oklahoma Climatological Survey website at <http://climate.ocs.ou.edu/>.

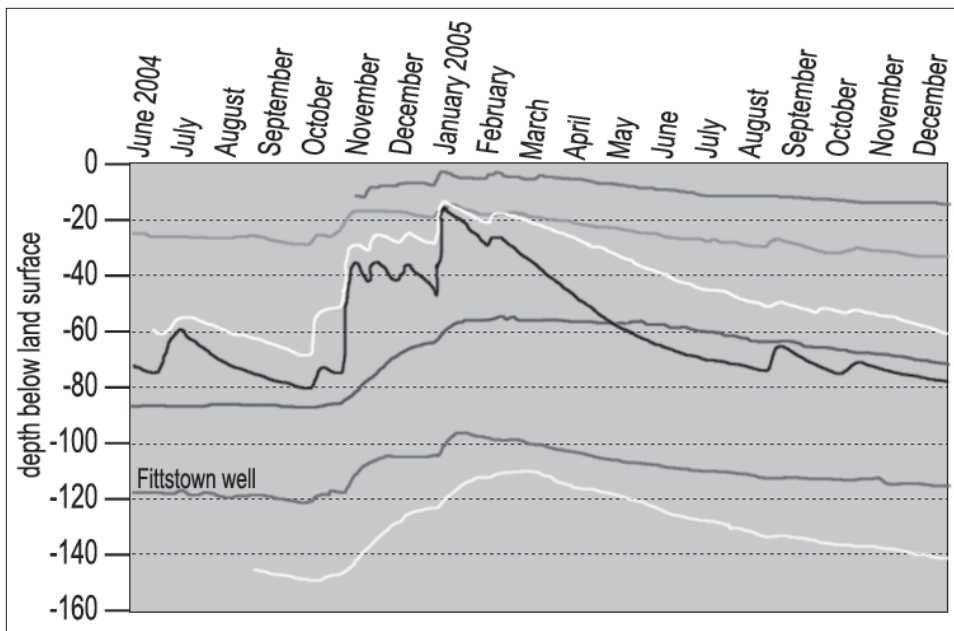
Arbuckle Water Levels Reflect Unusual Weather

In June 2004, the OWRB began installing water-level recorders in wells in the Arbuckle-Simpson aquifer as part of the Arbuckle-Simpson Hydrology Study. These water-level recorders, which measure the depth to groundwater, can be used to determine the aquifer's seasonal fluctuation and response to recharge from precipitation and discharge from pumping. A longer period of record is available from the Fittstown Well, which has been monitored by the U.S. Geological Survey (USGS) since 1958.

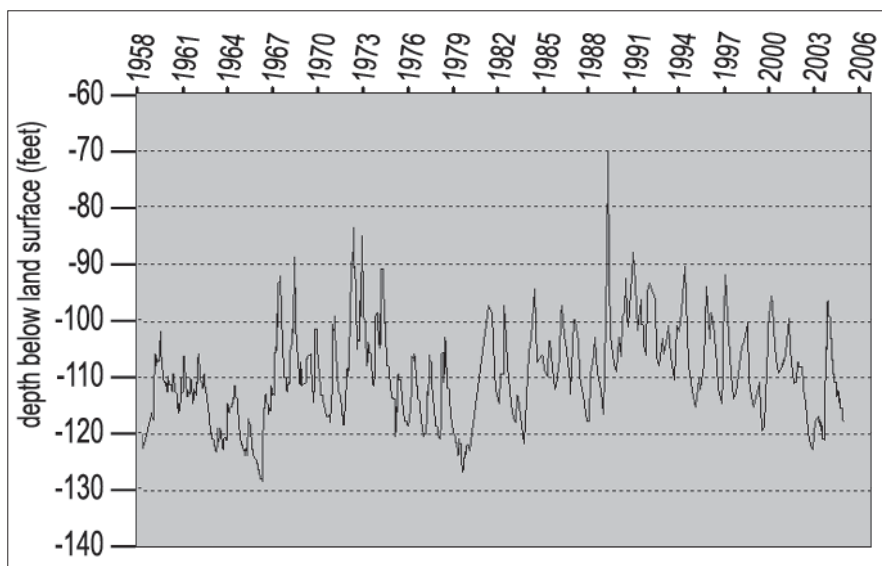
The amount of recharge to the aquifer depends on several factors, including rate and intensity of rainfall, soil moisture, evaporation, and depth to the water table. The magnitude and response time to a precipitation event in a particular well is partially dependent on aquifer characteristics such as the amount of fractures, karst features, porosity, and permeability. Although water level responses have varied from well to well, the data show a correlation between water levels and the timing and amount of precipitation.

During 2005, rainfall totals in the region were low (14.42 inches below normal) and most of the year's rain occurred atypically in the winter and summer. The heavy late summer rains in 2005 had little effect on groundwater levels, because recharge is significantly lower in the summer when there is higher loss of moisture to evaporation and transpiration through plants (see hydrograph at top right). Following one of the driest years on record, water levels are again on the decline.

Although water levels are low, historically they have been lower, as illustrated at the Fittstown Well (see hydrograph at middle right), which reached its lowest recorded depth in 1967 at 128 feet below surface. Currently, the water level is 118 feet, which is 26 feet lower than the same time last year. It is not yet as low as January 2004, when it was 122 feet below surface. Real-time water-level measurements from the Fittstown well can be viewed on the USGS website at <http://waterdata.usgs.gov/ok/nwis/current/?type=gw>.



Water levels recorded in observation wells from June 2004 to December 2005. The water level in one well rose 34 feet in 5 days in response to 3.78 inches of rain that fell in the area January 2-5, 2005. However, after 6.66 inches of rain August 14-16, 2005, water levels in the same well rose only 9 feet in 5 days.



Water levels at the Fittstown well from 1958 to present. The lowest recorded water level was 128 feet in April 1967, and the highest recorded level was 70 feet in May of 1990. Currently, the water level is at 118 feet.

Fittstown Weather Station Provides Water Level Data

The Fittstown Mesonet weather station, located on the Arbuckle-Simpson aquifer, was commissioned in May 2005. The station will provide information essential to understanding how the aquifer responds to variations in precipitation and other climatic factors.

A 255-ft observation well drilled in October will provide daily water level measurements at the station. Real-time climatological data are available on the Oklahoma Mesonet website (www.mesonet.org).

Laura Oak Named Employee of the Quarter

Laura Oak was selected by the Board's Employee Recognition Committee as OWRB/OSE Employee of the Quarter in October. A Financial Loan Analyst in the Board's Financial Assistance Division, Laura performs a variety of tasks with gusto and perseverance.

Laura's character and good nature have been valuable in alleviating tension, building teams, and motivating coworkers.

One of the most notable contributions Laura has made is serving as chair or cochair for the OWRB State Charitable Contribution Campaign for the past 11 years, and successfully rallying the agency to new records nearly every year.



Executive Director Duane Smith with Oak

Lorena Males Passes Away

Lorena G. Males, a member of the Oklahoma Women's Hall of fame and widow of former Board member and conservationist L. L. Red Males, passed away January 3 in her home in Cheyenne, Oklahoma. She was 96 years old.

Mrs. Males was born in Forgan, Oklahoma in 1909, and she married Red Males in 1928. Red Males was a member of the nine-member Oklahoma Water Resources Board, serving the agency under five governors. He directed establishment of the Sandstone Creek Project, the nation's first upstream flood control project, which included 24 dams constructed between 1950-1952. Mr. Males was one of the first Oklahoma Water Pioneers honored in 1985 by Governor George Nigh.

Hook, McGaugh, and Schuelein Retire

In November and December, three employees representing more than 80 years of combined agency experience retired from the Water Resources Board.

Jann Hook, head of the OWRB's Information Services Section, retired in November following 26 years of service to the agency. Among her many impressive accomplishments, she was largely responsible for leading the Board's many technological advancements in recent years, including establishment of the agency's Geographic Information System (GIS). Hook also chaired the state's GIS Council.

Mike McGaugh, who retired in December, spent much of his 27 years in the agency's drafting section, lending

his considerable talents to countless high-profile agency reports and publications, including the *Appraisals of Water and Related Land Resources of Oklahoma*, precursors to the 1980 *Oklahoma Comprehensive Water Plan* and subsequent update in 1995; the enormously popular *Oklahoma Water Atlas*, including its two revisions; and *Rural Water Systems in Oklahoma*. More recently, he patiently served the Water Board as purchasing officer.

Jim Schuelein, who also retired in December, was the chief of the OWRB's Administrative Services Division. Hired in 1978, Jim also served the agency through an assortment of roles, including Human Resources Director, agency Certified Procurement Officer, and Employee Benefits Coordinator. Following the bombing of the Alfred P. Murrah Federal Building and related damage to the agency's Oklahoma City office, he earned a Governor's Commendation in appreciation of his work on the State Employees Bombing Recovery Committee. He was also recognized for outstanding service by the International Personnel Management Association and received the Human Resources Hero Award from the Office of Personnel Management.

Friends and staff gathered to express appreciation and best wishes to the three retirees.



Mike McGaugh, left, surveys a wide array of snack foods furnished by his friends and colleagues on his last day of work at the OWRB.



Jim Schuelein with Mike Melton at Jim's retirement party

Oklahoma Drought Monitor

Reservoir Storage

Lake storage continues to be of concern in many areas of Oklahoma, especially in the east. As of January 3, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 84.6 percent full, a 0.1 percent increase from that recorded on December 19, according to information from the U.S. Army Corps of Engineers (Tulsa District). Twenty-one reservoirs have experienced lake level decreases since that time; 27 reservoirs are currently operating at less than full capacity (compared to 28 two weeks ago). Thirteen reservoirs—including Lugert-Altus, only 38.5 percent full—are now below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs

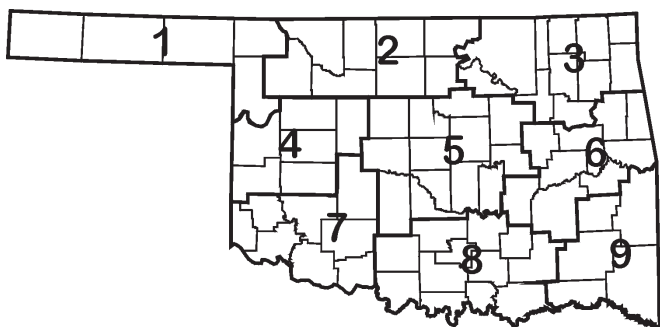
As of January 3, 2006

Climate Division	Conservation Storage (acre-feet)	Present Storage (acre-feet)	Percent of Conservation Storage
North Central	493,851	493,425	99.9
Northeast	3,787,053	3,291,822	86.9
West Central	276,790	252,891	91.4
Central	154,225	134,381	87.1
East Central	2,968,683	2,232,375	75.2
Southwest	301,810	193,442	64.1
South Central	2,887,753	2,700,881	93.5
Southeast	1,491,229	1,152,599	77.3
State Totals	12,361,394	10,451,816	84.6

Drought Indices

According to the latest Palmer Drought Severity Index (December 31, below), state drought conditions continue to worsen. Both the Southeast and East Central climate divisions remain in “severe drought” while the Northeast and South Central regions are in “moderate drought.” In addition, Central and Southwest Oklahoma are in the “mild drought” category. All of Oklahoma’s nine climate divisions have undergone PDSI moisture decreases since December 17.

The latest monthly Standardized Precipitation Index (through November, below) reflects increasingly dry conditions throughout much of Oklahoma, especially in the east. In particular, among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), **“extremely dry” conditions are present in East Central (3- and 6-month periods) and Southeast (6, 9 and 12 months) Oklahoma.** “Very dry” conditions also persist in those regions as well as in the Northeast, Central, and South Central climate divisions within the past 12 months. Considering longer periods (through six years), the Southeast and East Central climate divisions report long-term “very dry” and “moderately dry” conditions over multiple time periods during the past 48 months.



Palmer Drought Severity Index

Climate Division (#)	Current Status 12/31/2005	Value 12/31	Value 12/17	Change In Value
NORTHWEST (1)	NEAR NORMAL	0.06	0.60	-0.54
NORTH CENTRAL (2)	NEAR NORMAL	-0.17	0.45	-0.62
NORTHEAST (3)	MODERATE DROUGHT	-2.39	-2.19	-0.20
WEST CENTRAL (4)	NEAR NORMAL	-0.30	0.21	-0.51
CENTRAL (5)	MILD DROUGHT	-1.45	-1.19	-0.26
EAST CENTRAL (6)	SEVERE DROUGHT	-3.35	-3.13	-0.22
SOUTHWEST (7)	MILD DROUGHT	-1.18	-0.66	-0.52
SOUTH CENTRAL (8)	MODERATE DROUGHT	-2.21	-1.93	-0.28
SOUTHEAST (9)	SEVERE DROUGHT	-3.90	-3.58	-0.32

Standardized Precipitation Index

Through November 2005

3-Month	6-Month	9-Month	12-Month
MODERATELY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
NEAR NORMAL	MODERATELY WET	NEAR NORMAL	NEAR NORMAL
VERY DRY	NEAR NORMAL	VERY DRY	MODERATELY DRY
NEAR NORMAL	MODERATELY WET	NEAR NORMAL	NEAR NORMAL
VERY DRY	NEAR NORMAL	MODERATELY DRY	NEAR NORMAL
EXTREMELY DRY	VERY DRY	EXTREMELY DRY	VERY DRY
NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
VERY DRY	NEAR NORMAL	VERY DRY	MODERATELY DRY
VERY DRY	EXTREMELY DRY	EXTREMELY DRY	EXTREMELY DRY

Financial Assistance Program Update

Loans/Grants Approved as of December 13, 2005

FAP Loans—316 totaling \$566,120,000

The OWRB's Financial Assistance Program (FAP), created by the State Legislature in 1979, provides loans for water and wastewater system improvements in Oklahoma. The tremendous popularity of the bond loan program is due, in part, to extended payoff periods of up to 30 years at extremely competitive interest rates, averaging approximately 4.762 percent since 1986.

CWSRF Loans—171 totaling \$580,244,915

The Clean Water State Revolving Fund (CWSRF) loan program was created in 1988 to provide a renewable financing source for communities to draw upon for their wastewater infrastructure needs. The CWSRF program is Oklahoma's largest self-supporting wastewater financing effort, providing low-interest loans to communities in need.

DWSRF Loans—54 totaling \$206,350,539

The Drinking Water State Revolving Fund (DWSRF) loan program is an initiative of the OWRB and Oklahoma Department of Environmental Quality to assist municipalities and rural water districts in the construction and improvement of drinking water systems. These projects are often mandated for communities to obtain compliance with increasingly stringent federal standards related to the treatment of drinking water.

REAP Grants—438 totaling \$38,258,018

The Rural Economic Action Plan (REAP) Program was created by the State Legislature in 1996. REAP grants, used for water/wastewater system improvements, target primarily rural communities with populations of 7,000 or less, but priority is afforded to those with fewer than 1,750 inhabitants.

Emergency Grants—520 totaling \$30,538,145

Emergency grants, limited to \$100,000, are awarded to correct situations constituting a threat to life, health, or property and are an indispensable component of the agency's financial assistance strategy.

Total Loans/Grants—1,499 totaling \$1,421,511,617

Estimated Savings—\$448,632,975

Applicants eligible for water/wastewater project financial assistance vary according to the specific program's purpose and requirements, but include towns and other municipalities with proper legal authority, various districts established under Title 82 of Oklahoma Statutes (rural water, master/water conservancy, rural sewage, and irrigation districts), counties, public works authorities, and/or school districts. Applications for agency financial assistance programs are evaluated individually by agency staff. Those meeting specific program requirements are recommended by staff for approval at monthly meetings of the nine-member Water Board.

More information about the OWRB's Financial Assistance Program can be obtained by calling the OWRB at (405)530-8800.

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Harry Currie, Lonnie L. Farmer, Ed Fite, Jack Keeley, Kenneth K. Knowles, Richard C. Sevenoaks

Brian Vance, *Writer/Editor* • Darla Whitley, *Writer/Layout* • Barry Fogerty, *Photography*

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