

OKLAHOMA Water News

1st Quarter 2013

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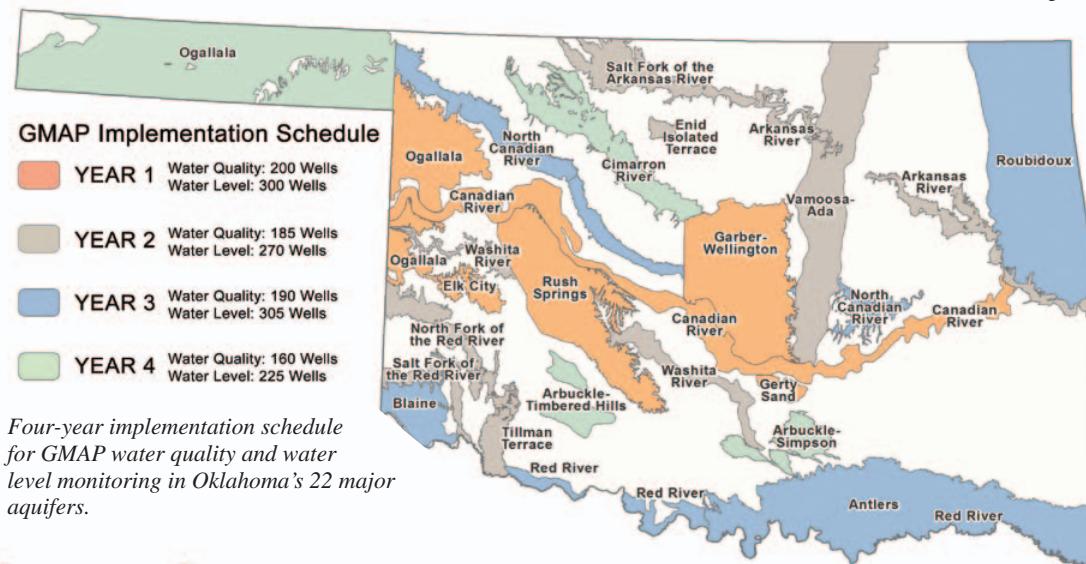
OWRB Initiates Groundwater Monitoring and Assessment Program (GMAP)

With approximately 386 million acre-feet of groundwater in storage, Oklahoma's aquifers provide enormous benefits to agriculture, industry, drinking water suppliers, and other users.

Interest in the formal assessment of Oklahoma's groundwater resources began with groundwater level data collection in the 1950s, and it continued with allocation studies in the early 1970s and an attempt to characterize ambient groundwater quality conditions in the late 1980s. For more than four decades, the OWRB has directed an annual winter (January-March) well measurement program, used to relate changes in groundwater levels in some areas of the state with departures from normal (mean) precipitation levels.

This information has been extremely useful but somewhat limited in scope. Most groundwater quality monitoring activities have focused on compliance with specific regulations. Historically, overall funding for groundwater studies has been limited. In general, insufficient data exists today

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From the Director

While last year's unprecedented passage of water legislation provides reassurance that Oklahoma is on a constructive path toward a more secure water future, this current session has been much more subdued from a water perspective. As always, OWRB staff are assisting our lawmakers as they address constantly evolving water issues, especially in light of a third straight year of statewide drought.

Notable bills filed early on referenced such topics as individual drought relief funding for farmers, ranchers and other rural citizens, establishment of regional water planning groups, wastewater reuse, and expanded Water Board membership and representation. Some of these ideas were included



(continued on page 2)

J. D. Strong, Executive Director
Oklahoma Water Resources Board

From the Director (continued)

in priority and supporting initiatives identified in the 2012 Update of the Oklahoma Comprehensive Water Plan and deserve attention.

The OWRB continues working with the Legislature to foster measures that protect and improve Oklahoma's water resources, especially the Water for 2060 Act, which was sponsored last session by House Speaker Kris Steele and passed with bipartisan support. This forward-thinking legislation arose from one of the Water Plan's most fundamental grassroots suggestions in recommending water usage levels and conservation measures for the next half century. The Act establishes a statewide conservation goal, a funding mechanism for pilot conservation projects, and an advisory council to contemplate incentives and other measures that have promise in reducing Oklahoma's water footprint. Conservation, our cheapest source of water, remains Oklahoma's most viable and accessible planning strategy to avoid inevitable water deficits.

"We must all resist the tendency to accept the last several decades of plentiful water resources as "normal" and become lackadaisical—at precisely the wrong time if history is any indication—in planning for an inevitable and perhaps just as lengthy period of dryness."

A commitment to conservation, along with dependable infrastructure, is our best defense against drought. By now, we should all be familiar with the extreme variability of Oklahoma's precipitation, both geographically and on an annual basis. What better example is there than this ongoing drought episode, which comes right on the heels of the longest sustained period of statewide precipitation in more than a century? We must all resist the tendency to accept these last few decades of plentiful water resources as "normal" and become lackadaisical—at precisely the wrong time if history is any indication—in planning for an inevitable and perhaps just as lengthy period of dryness.

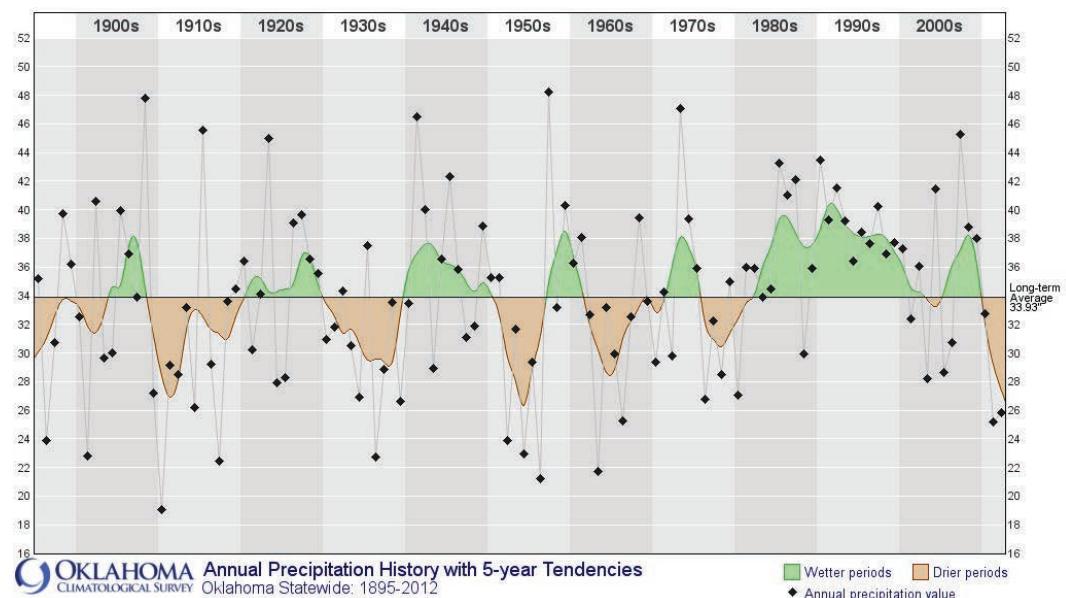
On a related note, the OCWP Instream Flow Workgroup reconvened on March 1. You may recall that the group was originally commissioned during the OCWP update process to conduct an independent technical, legal, and policy analysis of a potential instream flow program in Oklahoma. At this



As drought conditions continue across the state, OWRB staff have responded to increasing numbers of inquiries from water users, concerned citizens, legislators, the media and others about dwindling water supplies. OWRB Hydrologist Maria Moreno shares information on the drought, conservation and planning with Telemundo (Spanish-language network) reporter Carlos Ortiz during a recent interview on the shores of Lake Hefner in Oklahoma City.

initial meeting, we had very beneficial discussion concerning the development of recommendations that effectively balance the water needs of consumptive users with those relying upon water in our streams and lakes for economic development and recreation.

Finally, I want to thank everyone who participated in our annual Water Appreciation Day at the State Capitol on March 19. Each year, this popular event serves to remind Oklahomans that dozens of state and federal water organizations are constantly working on their behalf and improving the management and protection of Oklahoma's invaluable water resources. I am personally reminded each Water Day how proud I am to lead a key agency in this worthwhile endeavor. ♦



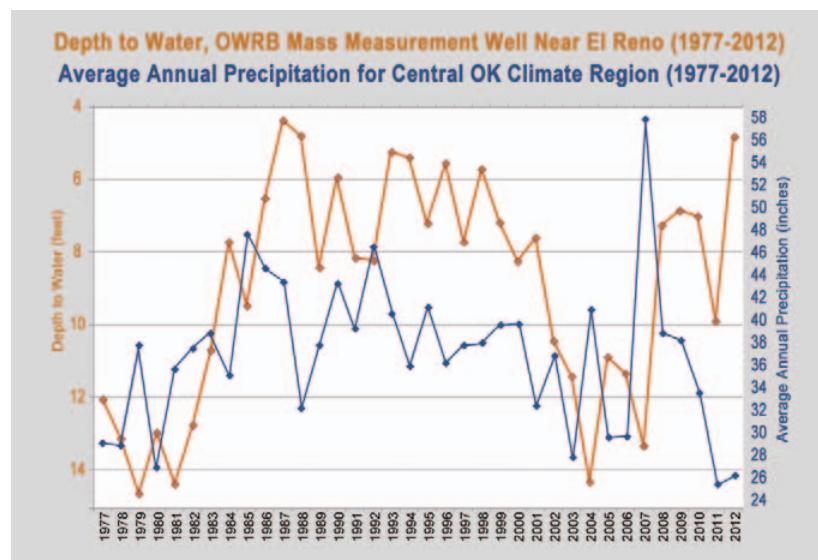
This graph, updated to include 2012 data, plainly demonstrates Oklahoma's often dramatic wet and dry cycles, which frequently confound state water users and planners alike. Since modern climatological record-keeping began in the 1890s, the state has seen five major multi-year, regional drought events. These occurred in the late 1890s, from 1909-18, 1930-40, 1952-58 and, to a lesser extent, 1962-72. It is interesting to note that each of these episodes contained at least one year of above-normal rainfall.

GMAP Initiated (continued)

to manage and protect groundwater resources adequately in the majority of the state's major aquifers.

In 2012, due to a priority recommendation of the Oklahoma Comprehensive Water Plan (OCWP), the Oklahoma Legislature and Governor recognized the importance of Oklahoma's groundwater resources. Concerns about groundwater susceptibility to depletion and pollution were legitimized through appropriation of funding to initiate Oklahoma's first holistic, long-term, aquifer-based Groundwater Monitoring and Assessment Program (GMAP). GMAP will examine the ambient quality and quantity of Oklahoma's groundwater resources to identify areas that are impaired and improve understanding of the effects of seasonal and climatic usage patterns. This data will aid water resource planners and managers in making informed decisions that ultimately result in improved sustainability of water supplies.

Through both baseline surveillance and long-term (trend) monitoring networks, GMAP will provide information on individual aquifers as well as general information at a regional and statewide level. By 2016, staff will complete a general characterization of water levels and geochemistry of all major aquifers. The aquifers will then be placed on a five-year sampling schedule. A minimum of 30 wells per aquifer will be monitored for water quality and at least 40 additional wells monitored for water levels. Water samples will be analyzed for parameters such as nutrients, dissolved metals, alkalinity, hardness, dissolved oxygen, pH, and total dissolved solids. A sub-set of these wells will be



Hydrograph of an OWRB Mass Measurement Program well near El Reno shows 36 years of water level data (red line). Average annual precipitation for the Central OK Climate Region is also plotted (source: OK Climatological Survey). GMAP will significantly increase the number and distribution of wells monitored for water level and add a water quality data collection component to allow for much improved ability to analyze the state's groundwater resources.

used for continuous monitoring and evaluated multiple times per year to facilitate characterization of seasonal changes; a select number of wells will be equipped with water level data loggers to monitor changes on the scale of weeks, days, and even hours.

Data collected through GMAP will be made available to the public in a variety of formats through the OWRB's website at www.owrb.ok.gov/gmap. ♦

OWRB Approves New Rules for Oversight of Water from Mines

On February 19 the OWRB adopted new rules to implement provisions of SB 597, regulating use of groundwater trapped in a producing mine pit that emanates from a sensitive sole source groundwater basin. This decision was preceded by more than 20 stakeholder meetings during two years, a formal public hearing process, and several modifications in response to comments.

The Oklahoma Legislature passed SB 288 in 2003, establishing specific rules for withdrawal of groundwater in sensitive sole source basins. As a result, conflict and litigation arose regarding provisions of the Oklahoma Groundwater Law that exempted the "taking, use, or disposal of water trapped in producing mines" from water permit requirements. In 2010, meetings were held with stakeholders, including the Citizens for the Protection of Arbuckle-Simpson Aquifer, Oklahoma Aggregates Association, National Park Service, Chickasaw and Choctaw Nations, and various cities and mining companies.

In 2011, SB 597 placed new monitoring, management, and reporting requirements on mining operations that take, use, or dispose of water trapped in producing mines. The OWRB was directed to adopt implementation rules to meet these requirements. Additional stakeholder meetings were then held to address SB 597 directives, OWRB authority under agency rules, and technical criteria.

For more than a year, the OWRB continued working with stakeholders to provide a path for existing mining companies to remain exempt from groundwater permitting and regulation if they are able to demonstrate that they are not over-taxing vulnerable groundwater supplies. Since rule adoption, several mining operations have exhibited a willingness to work with OWRB staff in developing their water management plans and initiating monitoring and reporting of activities.

The new statute and subsequent agency rule essentially evens the playing field between mining companies, whose operations may deplete aquifers, and other state water users, such as public water suppliers, who are required to obtain a permit to withdraw groundwater. It also results in increased drinking water reliability, specifically for residents in the Arbuckle-Simpson region, and in added protection for the Chickasaw National Recreation Area. ♦

2013 Water Appreciation Day

The eighth annual Water Appreciation Day was held on March 19 at the State Capitol. Dozens of state, federal, tribal, and local governmental agencies, as well as private organizations, showcased their various water programs and related educational efforts, many of which support "Water for 2060" measures for efficiency, conservation, recycling, and reuse.



2013 Water Appreciation Day Participants

Alan Plummer Associates, Inc.

American Farmers and Ranchers

C. H. Guernsey & Co.

Canton Lake Association

Carollo Engineers

Chickasaw Nation/Choctaw Nation

Citizens for the Protection of the Arbuckle-Simpson Aquifer

Financial Assistance Program (OWRB)

Oklahoma Aggregates Association

Oklahoma Climatological Survey

Oklahoma Conservation Commission

Oklahoma Department of Environmental Quality

Oklahoma Department of Mines

Oklahoma Environmental Services, Inc.

Oklahoma Floodplain Managers Association

Oklahoma Geological Survey

Oklahoma Municipal League

Oklahoma Rural Water Association

Oklahoma Scenic Rivers Commission

Oklahoma Water Law

Oklahoma Water Survey

Oklahoma Water Resources Center (OSU)

Oklahomans for Responsible Water Policy

OWRB Monitoring and Studies

Save The Illinois River

Tulsa District, US Army Corps of Engineers

US Bureau of Reclamation

Water for 2060 (OWRB)

WATER FOR 2060
EFFICIENCY • CONSERVATION • RECYCLING • REUSE

Water Reuse
As part of a larger wastewater treatment plant upgrade, Guymon Utilities Authority implemented a land application system to dispose of greywater.

Conserving Indoors

- Repair dripping faucets, toilets, and other leaks.
- Turn off the tap while shaving or brushing teeth.
- Use a stopper in the sink when washing dishes.
- Do not use running water to thaw food.
- Make sure the dishwasher is fully loaded.
- Add food wastes to your compost pile instead of using the garbage disposal.
- Wash only full loads of laundry or use the washing machine's load size selection.

Conserving Outdoors

- Sweep driveways and sidewalks rather than using a hose.
- Water in the early morning (4 to 7 a.m.) to reduce evaporation.
- Adjust sprinklers to water the lawn, not the house, sidewalk, or street.
- Do not over water. If you step on your lawn and the grass springs back, it does not require water.
- Check your garden hose for leaks and a tight connection to the spigot.
- Wash the car with water from a bucket, or consider using a commercial car wash that recycles water.
- Reduce the amount of turf grass in your yard by xeriscaping or using native and drought-tolerant plants that require less water.

Water Reuse
Hennessey Public added a greywater system as part of a lagoon expansion.

Leak Repair
The El Reno Municipal Authority replaced leaking water lines throughout the city to increase efficiency.

Automated Meter Reading
Lawton Water Authority installed automated meter reading (AMR), which allows them to identify leaks more effectively while increasing efficiency.

cheapest source of water is CONSERVATION.

accessible source of water is conservation. "Water for 2060" represents a range of conservation measures, incentives, and related project financing options to ensure Oklahoma's water future and minimize deficits projected by the 2012 Update of the Oklahoma Comprehensive Water Plan (OCWP).



Visit the OWRB's

Water for 2060 web page:
www.owrb.ok.gov/conservation

Educating Citizens

Oklahoma City has produced a series of creative water conservation public service announcements. Education is an important and often overlooked conservation tool.



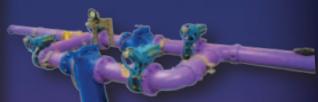
Streambank Stabilization

The Oklahoma Conservation Commission and Oklahoma State University partnered on a streambank stabilization project on Cow Creek. Among other benefits, restoring streams to their natural state reduces sediment loading and enhances water quality, leading to improved water supplies.



Green Infrastructure

Bixby Public Works Authority has embraced low-impact development innovations through the installation of rain gardens and permeable pavement to improve drainage and reduce wastewater treatment costs.



Water Reuse: just look for the purple water lines.

Water Reuse

Gaillardia, a golf course community, has been irrigating with reclaimed water since 1996. This alternative to using potable water from Oklahoma City is also utilized by two electrical utilities. Collectively, these reuse programs save more than 1 billion gallons of drinking water annually.

Rainwater Harvesting

A modest OWRB Water Conservation Grant allowed Tahlequah High School to capture rainwater and store it in a 6,000-gallon cistern for use in watering the area's landscape.



Green Roofs

At OU's National Weather Center, a vegetative roof system (green roof) reduces stormwater runoff, improves water quality, and reduces the building's energy demands.

Incentives

- Tax benefits
- Low-interest loans
- Cost-sharing
- Tiered water pricing

Leak Detection

Grady County Rural Water District #6 has reduced system leakage by 25 percent by replacing old valves and meters and installing a new automated meter reading system, along with improved management techniques.

Reading
called an
(AMR) system,
and repair
increasing



Water Providers

The best way to ensure good conservation is to have a well-managed system and one that takes advantage of eligible funding through the OWRB Financial Assistance Program. The CWSRF and DWSRF loan programs are helping Oklahoma meet Water for 2060 goals today.

Innovative Measures

- High efficiency plumbing codes
- Leak detection and prevention
- Education programs
- Green infrastructure
- Water recycling/reuse
- Control of invasive species
- Use of marginal quality waters

ISF Advisory Group Reconvenes

The OCWP Instream Flow (ISF) Advisory Group, created in 2009 as a workgroup to address instream flow issues for the Oklahoma Comprehensive Water Plan (OCWP), reconvened on March 1 in Oklahoma City to continue deliberating how an instream flow program might be implemented in Oklahoma. Following the directive of an OCWP “priority recommendation” for ISFs, the first facilitated workshop was intended to implement the process developed by the Advisory Group to ascertain the suitability and structure of an ISF program.

The primary focus of the Group is to determine if and how Oklahoma—both legally and practically—can ensure protection for specific amounts of water in a river or stream that are integral to downstream environmental, social, and economic benefits. Early in 2011, the Advisory Group recommended the following process related to creation of a potential instream flow program: (1) address legal and policy questions; (2) study other mechanisms for protecting instream flows; (3) develop a draft methodology for instream flow studies; (4) conduct a study of economic impacts of instream flows; (5) perform an instream flow pilot study in a scenic river; and (6) preserve the instream flow workgroup.

Facilitated by consultants from CH2MHill and Carollo Engineering through funding from the Corps of Engineers, the Advisory Group made its initial attempt to implement this process at the March meeting. Prior to the meeting, members were asked to contribute responses to the following discussion topics/questions:

- What are the most significant potential consequences of an instream flow program in Oklahoma?
- How could any negative consequences be mitigated?
- What are the potential consequences of not implementing an instream flow program?
- What other approaches could be taken to mitigate those consequences?
- How could we measure the social and environmental consequences of an instream flow program?

- How could we measure the financial impacts of an instream flow program?
- How could a pilot project be used to evaluate and measure your benefits and concerns?
- Should an instream flow program be measured by potential economic impacts alone?
- If an instream flow program is developed, what would be the most important aspects for the program to protect or enhance?
- Should legal/regulatory protections be provided for those with existing consumptive water rights? How could those protections be provided?

Many responses focused on how a specific mechanism to protect instream flows might affect current and future water rights and availability for consumptive users. Several members emphasized the complexity of the issue, from both a legal and technical aspect, pointing out that any ISF program would likely require statutory changes.

The Group cited dozens of additional issues and impacts that must be addressed and mitigated prior to ISF implementation, including creation of “artificial shortages” for consumptive users, perception of wasting water by allowing more to flow out of state, reduced water availability for economic development, and impacts on current uses of reservoirs.

Among potential benefits of ISF program implementation, members listed protection of the health of ecosystems and streams, increased biodiversity, reduced endangered species issues, maintenance and enhancement of recreational and tourism opportunities and associated economic benefits, maintenance of adequate flows for wastewater discharges, more reliable lake levels, and increased ability to meet current permit needs.

ISF Advisory Group members will continue discussions and activities aimed at fostering a better understanding of this complicated and, at times controversial, issue at their next workgroup meeting scheduled for May 16, 2013. ♦

Dean Couch Retires

After 30 years of state service, including 27 years as General Counsel, Dean Couch retired from the OWRB on January 31. One of Oklahoma’s most respected authorities on state water law, Couch represented the OWRB in countless important cases, including cases in the U.S. Supreme Court. Couch provided esteemed legal interpretation and scholarly advice to dozens of Board members, OWRB staff, and members of the State Legislature.

Veteran staff attorney Jerry Barnett will temporarily oversee the Office of the General Counsel as the OWRB continues to address a number of lawsuits involving the management and protection of Oklahoma’s water resources. ♦

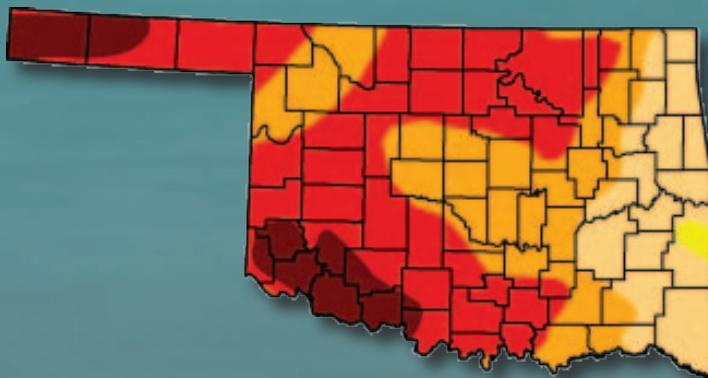


Dean Couch (third from right) at his final board meeting in January. Pictured left to right are Board members Jason Hitch and Ed Fite, Executive Director J.D. Strong, Board Chairman Ford Drummond, and Board members Rudy Herrmann, Linda Lambert, Tom Buchanan, Marilyn Feaver, and Richard Sevenoaks.

Drought Update

U.S. Drought Monitor

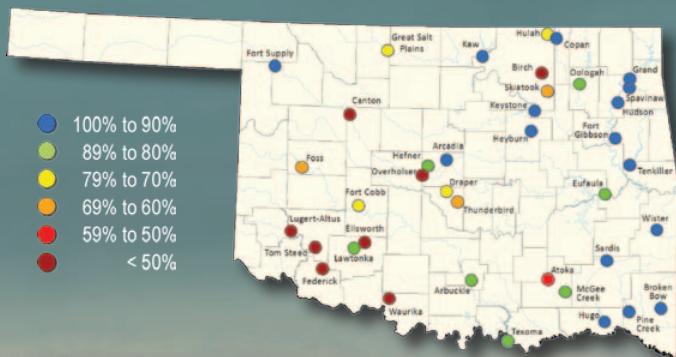
April 2, 2013



| Drought Intensity & Percent of State in Drought Category | |
|--|--------|
| Abnormally Dry | 100.00 |
| Moderate Drought | 100.00 |
| Severe Drought | 83.07 |
| Extreme Drought | 53.07 |
| Exceptional Drought | 9.90 |

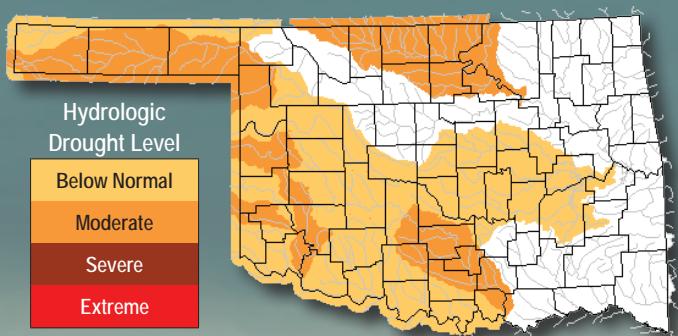
Reservoir Storage

April 1, 2013



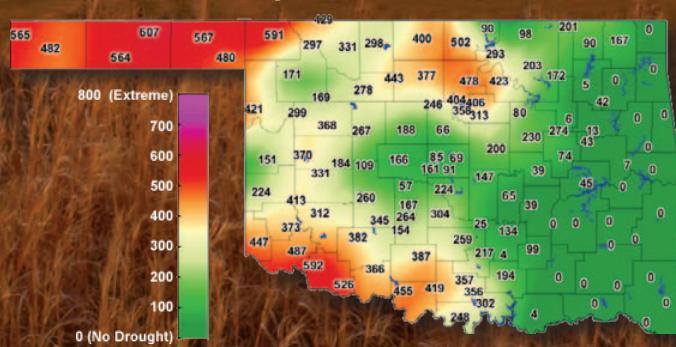
Streamflow (7-Day Average)

April 1, 2013



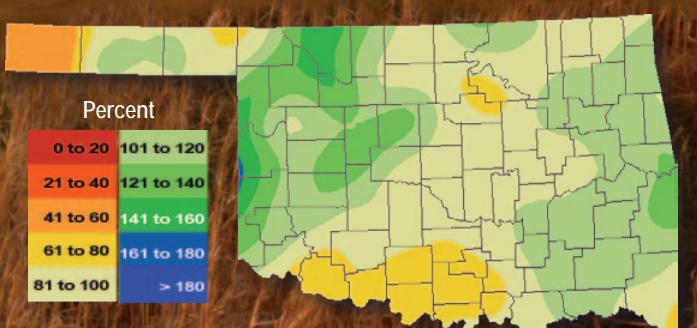
Keetch-Byram Drought Index

April 1, 2013



Percent of Normal Precipitation

Last 90 Days (January 1 to March 31)



Data obtained from the National Drought Mitigation Center, U.S. Geological Survey, U.S. Army Corps of Engineers and Oklahoma Climatological Survey. For more drought information, and to obtain updated information on Oklahoma's drought and moisture conditions, go to www.owrb.ok.gov/drought.

www.owrb.ok.gov

*Ford Drummond, Chairman • Linda Lambert, Vice Chairman • Tom Buchanan, Secretary
Bob Drake • Ed Fite • Marilyn Feaver • Rudy Herrmann • Jason Hitch • Richard Sevenoaks*

Protecting and enhancing the quality of life for Oklahomans by managing and improving the state's water resources to ensure clean and reliable water supplies, a strong economy, and a safe and healthy environment.



1st Quarter 2013

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FINANCIAL ASSISTANCE PROGRAM UPDATE

Loans & Grants Approved as of April 1, 2013

FAP Loans—355 for \$874,360,000

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 very competitive interest rates, averaging approximately 4.762 percent since 1986.

CWSRF Loans—266 for \$1,167,985,974

The Clean Water State Revolving Fund (CWSRF) loan program was created in 1988 to provide a renewable financing source for communities to use 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—159 for \$846,908,300

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—585 for \$51,969,016

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—566 for \$33,776,351

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.

Drought Response Program Grants—7 totaling \$490,791

Through the OWRB's Drought Response Program, funding is available for communities in most dire need during state drought emergencies declared by the Governor. A maximum of \$300,000 is diverted from existing OWRB Emergency Grant funds to establish the Program.

Total Loans/Grants: 1,938 for \$2,975,490,432

Estimated Savings: \$1,022,001,366

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.

For more information, call 405-530-8800 or go to www.owrb.ok.gov/financing.

OKLAHOMA Water News

2nd Quarter 2013

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Drought Update

Supreme Court Sides with Oklahoma in Tarrant Case

On June 13, in a unanimous and consequential decision, the U.S. Supreme Court ruled in favor of Oklahoma in a lengthy dispute with the Tarrant Regional Water District in north Texas over shared water rights in the Red River basin.

In their appeal to the Supreme Court, Tarrant had contended that the Compact provided implicit authority for them to take water from inside Oklahoma boundaries. But writing the majority opinion for *Tarrant Regional Water District v. Herrmann*, Justice Sonia Sotomayor clarified why the Red River Compact did not grant cross-border rights, citing "the well-established principle that States do not easily cede their sovereign powers; the fact that other interstate water compacts have treated cross-border rights explicitly; and the parties' course of dealing."

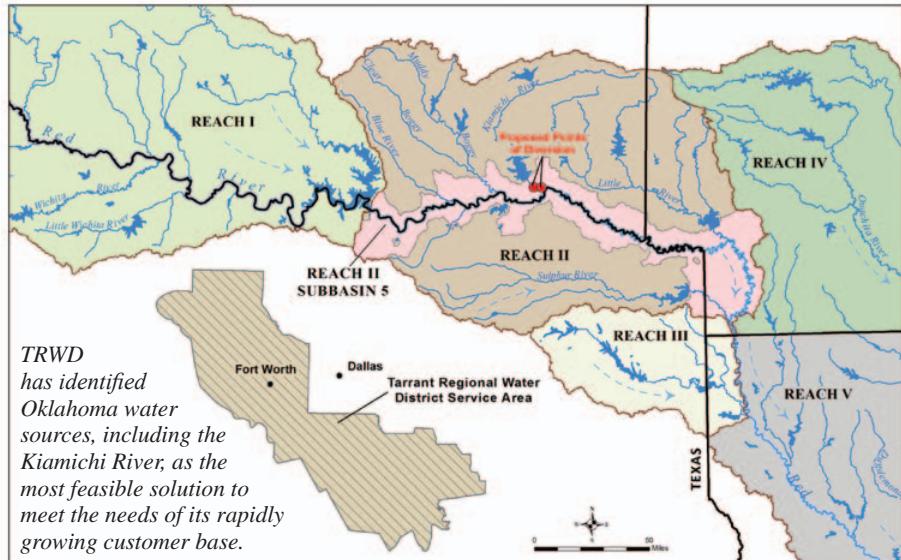
In responding to the decision, Gov. Mary Fallin stated "Today's ruling is great news for the state of Oklahoma and yet another victory in the effort to protect our state's water resources. We've maintained all along that Oklahoma must have the ability to set its own water policy and today's unanimous

Supreme Court decision solidifies that position. My congratulations go out to Attorney General Scott Pruitt and his office for their great work in this case on behalf of the state."

OWRB Executive Director J.D. Strong similarly praised the decision.

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Red River Compact Lands & Tarrant Regional Water District Service Area



From the Director

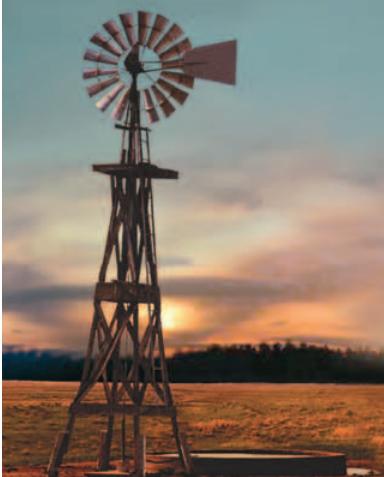
While the recently concluded legislative session was relatively quiet on the water front—especially compared to last year's flood of landmark water legislation—there were a few measures of note.

HB 2193 outlines procedures for the OWRB to properly administer the new Water Infrastructure Credit Enhancement Reserve Fund. The Fund, authorized through passage of State Question 764 last November, enables Oklahoma to meet its projected \$82 billion water and wastewater infrastructure needs through 2060, a priority initiative of the 2012 Update of the Oklahoma Comprehensive Water Plan.

(continued on page 2)



J. D. Strong, Executive Director
Oklahoma Water Resources Board



Tarrant Case (continued)

"Obviously, this is vindication for Oklahoma and the two neighboring Red River Compact states who joined with us to hold Texas accountable to the promises and provisions of our 33-year-old Compact agreement. It's also a victory for the seven mostly arid western states who sided with Oklahoma and stood to lose at least as much control over their limited surface water supplies."

"Most importantly, though, this decision is a resounding victory for the citizens of Oklahoma and our ability to manage their water for their benefit. While the elegant

defense of our position by Oklahoma's legal team spawned considerable optimism, it's a relief that the high court has reaffirmed our interpretation of long-settled agreements over the apportionment of interstate waters. After many years of legal maneuvering and saber-rattling, this should end, once and for all, Tarrant's attempts to circumvent Oklahoma's water management authority," he said.

Tarrant Regional Water District provides water to more than 1.7 million people in north Texas, including Fort Worth, and expects its customer base to more than double by 2060. 

From the Director (continued)

SB 965, which transitions the nine-member OWRB Board from its long-standing Congressional District and at-large representation to a new regional scheme, passed by one vote just before the Legislature adjourned on May 24. This change loosely mirrors the eight 1995 OCWP planning regions plus a ninth in the Panhandle. The measure takes effect in 2014 and will be slowly phased in over the coming years.

A new Emergency Drought Relief Fund, enabled through HB 1923, includes \$3 million for future drought mitigation and projects. While details have yet to be resolved, in the event of a gubernatorial drought declaration, expenditures will be approved through an Emergency Drought Commission consisting of the Secretary of Agriculture and Executive Directors of the OWRB and Oklahoma Conservation Commission.

While no bills were passed to implement a true regional water planning program, the most popular recommendation

of the OCWP and the only priority initiative yet to be implemented, last year's increased appropriations to implement OCWP priorities were left intact. And not only were efforts to repeal the groundbreaking Water for 2060 Act soundly rejected, all appointments have now been made to the Advisory Council envisioned under that legislation, passed last year. Lastly, all of the OWRB's new rules, including those to implement the new mining pit water regulations in the Arbuckle-Simpson, were approved by the Governor and Legislature.

There have been several recent developments of note in lawsuits involving the OWRB. Of course, Oklahoma's resounding victory in *Tarrant Regional Water District v. Herrmann* is first and foremost.

Following presentation of oral arguments to the U.S. Supreme Court on April 23, the justices deliberated the complicated details of interstate water apportionment envisioned under the Red River Compact. Oklahoma's case was strong, as nine other states formally supported our position while Tarrant received such support from only one state: its home state of Texas. These states, including two other Red River Compact members, share our view that Tarrant is wrong in its interpretation of our long-settled

"Oklahoma's case was strong, as nine other states formally supported our position while Tarrant received such support from only one state: its home state of Texas."

agreement over the apportionment of shared waters. The court's favorable decision, announced June 13, will end, once and for all, the repeated attempts by North Texas entities to undermine Oklahoma's water management authority.

In late April, the Oklahoma Supreme Court issued a ruling in the lawsuit brought against the OWRB and its ongoing process for determining the maximum annual yield for the Arbuckle-Simpson aquifer. While the Court directed the OWRB's hearing examiner to provide the parties with additional notice and opportunity to respond to certain communications, we are encouraged that they generally upheld the integrity of our hearing process. We remain hopeful this important matter can be brought to the Board for final consideration very soon. 

Currently, five OWRB Board members represent each of Oklahoma's five Congressional Districts (at right) with four at-large members. Senate Bill 965, passed this legislative session, reconfigures the boundaries for those regions (above). Initial transition will begin with Region 4 on July 1, 2014.



Citizens Urged to Check and Disinfect Wells in Tornado Stricken Areas

The National Ground Water Association (NGWA) recommends that anyone with a household water well in an area affected by recent tornados should closely inspect their well casing and well cap for damage from falling trees or flying debris.

The well casing—the vertical pipe extending above the ground surface—provides access to the well through the well cap on top. If the casing or well cap are cracked, loose, or bent, surface contamination could enter the well.

Angie Taylor, coordinator of the OWRB's Well Driller and Pump Installer Program, recommends that all well owners in the affected areas take the extra precaution of disinfecting their wells.

"Even if your well and water appear to be unaffected, other wells in these areas have been compromised," adds Taylor. "Contaminants entering the groundwater at a location near you may affect your water as well."

Taylor further noted that because water moves horizontally through aquifers, it is important to disinfect your well at least once each year. It is also important to disinfect if flooding has occurred around your well.

If the well casing or cap has been damaged, Taylor discourages well owners from making repairs themselves. A driller licensed by the OWRB should be contacted. A search form for finding licensed Oklahoma drillers is available on the OWRB website at www.owrb.ok.gov/wd/search/public_search.php. ♦



This Cleveland County homeowner's well cap and casing were broken completely off at ground level by the May 19 tornado, leaving a direct conduit for contaminants to reach the groundwater. The damaged well was brought to the attention of OWRB staff by a licensed well drilling firm that is currently providing repairs to the well at no cost to the owner.

Disinfecting Your Well With Chlorine Bleach

STEP 1: If your water is muddy or cloudy, run the water from an outside spigot with a hose attached until the water becomes clear and free of sediments.

STEP 2: Determine what type of well you have and how to pour the bleach into the well. Some wells have a sanitary seal with either an air vent or plug that can be removed. If it is a bored or dug well, the entire cover can be lifted off to provide a space for pouring bleach into the well.

STEP 3: Pour a one-gallon bottle of unscented bleach down into the well casing.

STEP 4: After the bleach has been added, run water from an outside hose into the well casing until you smell chlorine coming from the hose. Then turn off the outside hose.

STEP 5: Turn on all cold water faucets both inside and outside the home until the chlorine odor is detected in each faucet, and then turn them all off. (If you have a water treatment system, switch it to bypass before turning on the indoor faucets.)

STEP 6: Wait 6 to 24 hours before turning the faucets back on. It is important not to drink, cook, bathe, or wash with this water during this time period because it contains high amounts of chlorine.

STEP 7: Once the waiting period is up, turn on an outside spigot with hose attached and run the water into a safe area where it will not disturb plants, lakes, streams, or septic tanks. Run the water until there is no longer a chlorine odor. Turn the water off.

STEP 8: The system should now be disinfected and you can use the water. Source: EPA

New OWRB Map Viewer Provides Quick Access to Water Level and Streamflow Information

Due in part to increased interest and concern in the continued decline in water levels across the state, the OWRB has developed a new online map viewer to simplify access to real-time surface water information. The "Lake Level and Streamflow Conditions for Oklahoma" map viewer contains clickable links on statewide stream gages and major lakes.

OWRB GIS personnel continue to develop additional online data and mapping tools that enhance public access to other water data as well as maximize agency transparency. For example, the Oklahoma Comprehensive Water Plan (OCWP) map viewer places all relevant state water information at the fingertips of citizens and water users. Oil and gas companies frequently utilize this convenient tool to locate potential sources of water as well as local water right holders from whom they might purchase rights.

Go to www.owrb.ok.gov and click on "Interactive Maps" to see the full suite of map viewers available to help users find the latest information about water resources in Oklahoma.

Lugert-Altus Lake Suffers Impact of Golden Algae Blooms

Lugert-Altus Lake in southwest Oklahoma experienced a significant fish kill in late winter (lasting from December 2012 through February 2013) caused by a golden algae bloom. Officials from the Oklahoma Department of Wildlife Conservation (ODWC) are currently discerning the severity of the kill.

ODWC completed a four-day survey at Lugert-Altus on April 25 with gill nets and by electrofishing. During this survey, no fish were caught. In ordinary surveys, ODWC would expect to capture about 1,000 fish in an effort of this magnitude. It would appear that the lake is no longer a viable fishery.

"While this is certainly disappointing, ODWC is going to do what we can to bring back the fishery. Right now we are evaluating our options, which include re-introducing forage fish such as shad and bluegill into the lake this spring and stocking sport fish to see if that is successful. It will be dependent on a decline in golden algae toxicity," says Larry Cofer, southwest region fisheries supervisor for ODWC.

It is also likely that fish will return to the lake from upstream ponds and the river as toxicity from golden algae declines. The ODWC will continue to sample the lake for golden algae and fish to confirm and report the possible return of fish to the lake.

While golden algae are naturally occurring, they have the potential to produce blooms that are toxic to gill-breathing organisms and turtles. Factors such as water quality, cooler water temperatures, nutrients in the water, salt concentrations, low rain levels, and low amounts of healthy green algae create favorable conditions for a golden algae bloom.

Drinking water is a concern in lakes when there is a fish kill and Lugert-Altus Lake is one source of drinking water for the City of Altus. The Oklahoma Department of Environmental Quality (ODEQ) has reviewed operation of the Altus public water supply and determined that the algae bloom should have no effect on drinking water. At the current time, Altus is not using its intake structure located in the lake. The ODEQ is working closely with the City of Altus to ensure the safety of drinking water supplied to its residents.

"The ODEQ encourages recreating on Oklahoma's many lakes, rivers and streams. We also want to remind people that to be safe in any body of water, people should never pick up dead or dying fish for consumption. It is also very important to be mindful of water conditions," says ODEQ Executive Director Steve Thompson.

The ODEQ reminds swimmers of precautions to reduce exposure to waterborne micro-organisms:

- Avoid swimming in polluted water. (Oil sheen, floating debris, and dead fish are visible signs of polluted water.)
- Avoid swimming in stagnant (unmoving) water.

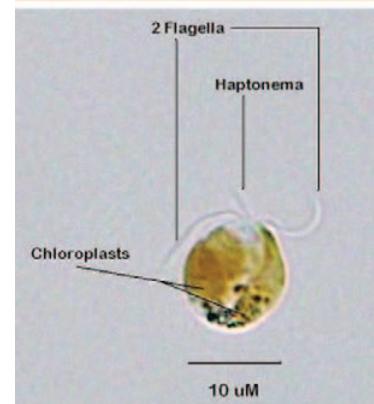
- Avoid swimming in water with a temperature greater than 80 degrees. (If water does not feel cool when you first enter, it is likely to be warmer than that.)
- Avoid swimming in water with a green surface scum.
- Avoid swimming after a heavy rain.
- Avoid swimming near storm drains.
- Avoid swallowing water while swimming.
- Hold your nose or wear nose plugs when jumping into water.
- Wear ear plugs.
- Wear swim goggles.
- Wash cuts and scrapes with clean water and soap.
- Shower before and after swimming.
- Take children to the restroom frequently.
- Use swim diapers on infants.

Additional information can be found at <http://www.deq.state.ok.us/factsheets/water/swimming.pdf>.

The ODWC urges boaters and anglers on Lugert-Altus and other lakes to clean boats, live wells, and fishing gear to help reduce the chance of golden algae spreading to other lakes.

The ODWC is working with the ODEQ and other state agencies, as well as fish biologists from other states, to develop methods to control golden algae blooms and better understand this species. ♦

A golden alga (*Prymnesium parvum*) is a planktonic or microscopic floating plant. *Prymnesium parvum* often exist as one species in a mix of many species inhabiting a water body and cause no obvious problem. However, at times this algae bloom in large numbers and release toxins that cause fish kills. Dying fish typically show bleeding of the gills, fins, and scales and behave as if there is oxygen depletion. Golden alga blooms, however, seldom cause dissolved oxygen depletions. Sometimes, the water has a golden color when this happens and thus the common name. *P. parvum* is a very tiny (8 to 11 micrometers or about the size of a human red blood cell) oval or elliptical shaped, single-cell alga that has two hair-like flagella for swimming, a short tail or haptonema that it uses for attachment, and two saddle-shaped chloroplasts. *P. parvum* has not been shown to be toxic to other animals (wildlife, livestock, or humans).



(Information courtesy the Texas Parks and Wildlife Department)

Reasons to Test Your Well Water

The taste, odor and appearance of your drinking water can give you an indication of its quality, but do you know if your water is really safe? A glass of water may contain dissolved minerals, organic compounds, or even live organisms. Some of these materials, if present in very small amounts, are no problem for drinking water. Other materials, however, may be serious health risks.

If you get your water from a private well, it is your responsibility to monitor its quality.

Much of Oklahoma's groundwater meets Safe Drinking Water Act (SDWA) standards without any treatment. However, in some areas, there are health concerns, such as nitrate, fluoride, or arsenic concentrations above the drinking water standard. The more common problems, such as hardness or high concentrations of iron, are not health concerns.

In general, water analyses can be classified as bacteriological, inorganic, and organic tests. The bacteriological tests check for indicator species of bacteria (for example, coliforms or E. coli). Inorganic tests measure the concentration of dissolved minerals and the pH, or acidity. If other contaminants are suspected, the water may be tested for organic chemicals (including volatile organic compounds, pesticides, and petroleum products), radiological contaminants (such as uranium, radium, and radon) or heavy metals (such as arsenic, mercury, lead, or cadmium).

The only way to be certain that your water supply is safe is to test it regularly for common contaminants and conduct additional tests if

| CONCERN | WHAT TO TEST |
|---|---|
| Water supply for infant less than 6 months | Nitrate |
| Lead pipe or lead solder in plumbing (older home) | Lead, copper, zinc, pH, alkalinity |
| Close to old fuel storage tanks | Hydrocarbons, volatile organic compounds |
| Close to gas and oil drilling | Chloride, total dissolved solids, sodium, barium, lead, pH, electrical conductivity, volatile organic compounds |
| Close to confined livestock area | Nitrate, total coliform bacteria |
| Close to a chemical/pesticide spill or sprayer loading/rinsing area | Specific chemical or pesticide |
| Close to a landfill or dump site | Volatile organic compounds, heavy metals, synthetic organic compounds |

| PROBLEM | IF YOU EXPERIENCE | WHAT TO TEST |
|----------------------------------|---|---|
| Appearance of Water | Brown or yellow | Iron, tannin |
| | Frothy or foamy | Detergents |
| | Cloudy | Turbidity |
| | Organism brown precipitate | Iron, pH |
| | Black flakes | Manganese, pH |
| Staining of fixtures or clothing | Red or brown | Iron, pH |
| | Yellow | Iron, hydrogen sulfide, hardness, pH |
| | Black | Manganese, hydrogen sulfide, pH |
| | Green or blue | Copper, pH |
| Odor or taste of water | Bitter | Nitrate, sulfate |
| | Rotten egg | Hydrogen sulfide |
| | Soapy | Detergents, surfactants |
| | Metallic | pH, iron, zinc, copper, lead |
| | Salty | Total dissolved solids, chloride, sodium, electrical conductivity |
| | Septic, musty, earthy | Total coliform bacteria, iron, pH |
| | Gasoline, oil, kerosene | Hydrocarbons, organic compounds |
| Other | Tarnished silverware | Hydrogen sulfide, pH |
| | Stomach ache, diarrhea | Total coliform bacteria, nitrate, sulfate, manganese |
| | Discoloration or mottling of children's teeth | Fluoride |
| | White deposits on pots and fixtures or soap scum dissolved solids | Hardness, alkalinity, sulfate, total |
| | Corrosion of plumbing | Electrical conductivity, pH, lead, iron, manganese, copper, sulfate, chloride |

If you get your drinking water from a private well, it is your responsibility to monitor its quality.

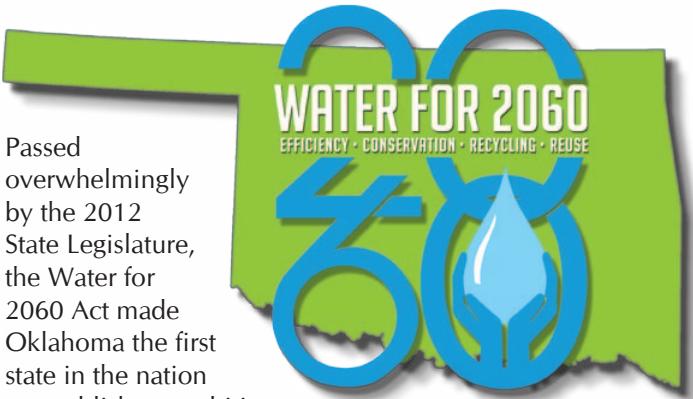
Information Courtesy Oklahoma Cooperative Extension Service

you suspect a particular contaminant. Testing for all possible contaminants can be very costly, so it can be very helpful to narrow down the most likely suspects.

The Oklahoma Department of Environmental Quality (ODEQ) conducts routine bacteriological and inorganic chemical tests. Contact DEQ at 405-702-1000 for information on taking the water sample, how to get it to the laboratory, and the cost. 💧

Council to Develop Water Conservation Strategy

Fifteen Oklahomans with unique and divergent perspectives on Oklahoma's water resources have been selected to develop a blueprint for stabilizing—and possibly even reducing—rising demands for Oklahoma's finite freshwater resources, while at the same time protecting important growth and economic development goals.



Passed overwhelmingly by the 2012 State Legislature, the Water for 2060 Act made Oklahoma the first state in the nation to establish an ambitious

goal of consuming no more freshwater in 2060 than is utilized today. The Act charges the Water for 2060 Advisory Council with studying and recommending appropriate water conservation and reuse practices, incentives, and educational programs to achieve this ambitious goal. Members are well versed in various water interests and were appointed by the Governor, Speaker of the House and President Pro Tempore of the State. The final appointment was made on May 22.

Both the goal and the Council were a direct result of a priority recommendation of last year's update of the Oklahoma Comprehensive Water Plan (OCWP) calling for moderation of

water use patterns to avoid impending deficits projected by the plan.

"The Council's charge mirrors one of the Water Plan's most fundamental grassroots recommendations to identify truly effective, vetted and feasible measures through which we can reduce Oklahoma's water footprint. The Water Plan provided the data, but the Council members will provide the real world experience in identifying those conservation incentives and measures that have the greatest likelihood of success," says J.D. Strong, OWRB Executive Director, who will chair the Council.

Fourteen other members join Strong on the Council:

Jim Bachmann (Tulsa)
 Lauren Brookey (Tulsa)
 Tom Buchanan (Altus)
 Bob Drake (Davis)
 Danny Galloway (Stillwater)
 Charlette Hearne (Broken Bow)
 Roger Griffin (Broken Bow)
 Mark Helm (Oklahoma City),
 Nathan Kuhnert (Oklahoma City)
 Phil Richardson (Minco)
 Kevin Smith (Enid)
 Trent Smith (Choctaw)
 Joe Taron (Shawnee)
 Jerry Wiebe (Hooker)

"I am tremendously excited to work with this impressive group. Each and every Council member shares my commitment to preserving our increasingly limited water supplies. We all recognize that conservation and reuse represent Oklahoma's most viable strategy to reduce or eliminate future water deficits and the resulting devastation to our economy," Strong adds. ♦

Simple Tips for Sprucing Up Your Sprinkler

Before you ramp up your watering this spring and summer, spruce up your irrigation system by remembering four simple steps: inspect, connect, direct, and select:

- Inspect. Check your system for clogged, broken or missing sprinkler heads. If you're not the do-it-yourself type, go with a professional—look for an irrigation professional certified through a WaterSense labeled program.
- Connect. Examine points where the sprinkler heads connect to pipes/hoses. If water pools in your landscape or you have large wet areas, you could have a leak in your system. A leak about as small as the tip of a ballpoint pen (or 1/32nd of an inch) can waste about 6,300 gallons of water per month.
- Direct. Are you watering the driveway, house, or sidewalk instead of your yard? Redirect sprinklers to apply water only to the landscape.
- Select. An improperly scheduled irrigation controller can waste a lot of water and money. Update your system's schedule with the seasons, or select a WaterSense labeled controller to take the guesswork out of scheduling.



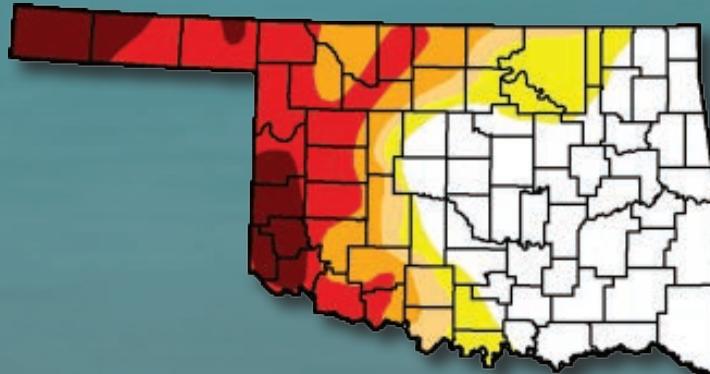
Planting a beautiful yard this spring?

Spruce up your sprinkler before you ramp up your water use.



Drought Update

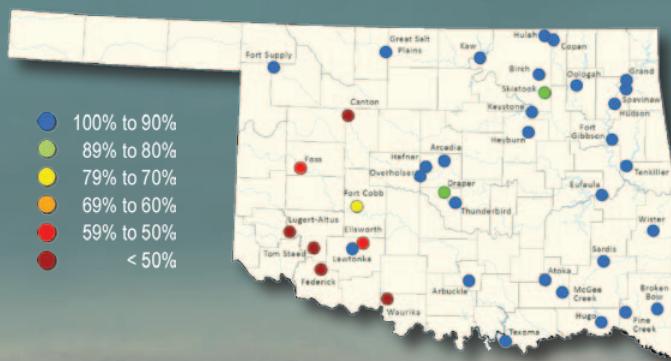
U.S. Drought Monitor
June 25, 2013



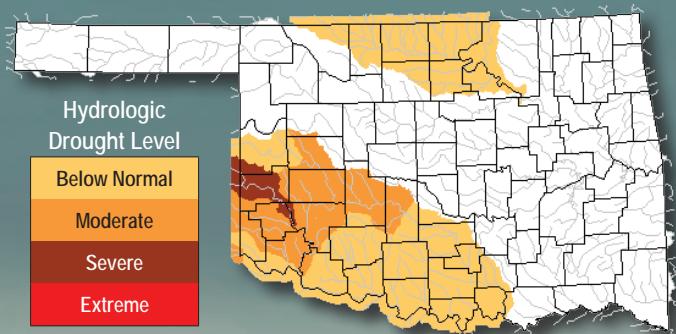
Drought Intensity & Percent of State in Drought Category

| | |
|---------------------|-------|
| Abnormally Dry | 53.14 |
| Moderate Drought | 42.09 |
| Severe Drought | 36.76 |
| Extreme Drought | 26.35 |
| Exceptional Drought | 8.69 |

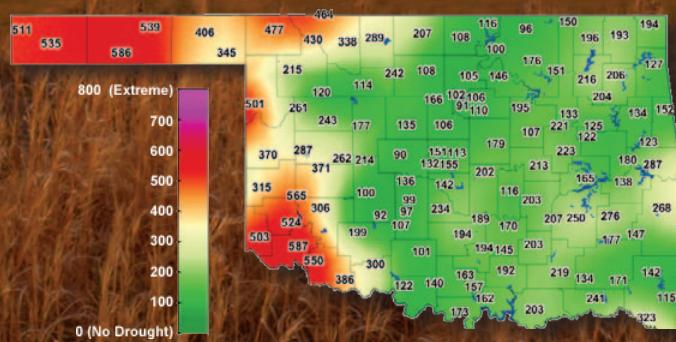
Reservoir Storage
June 25, 2013



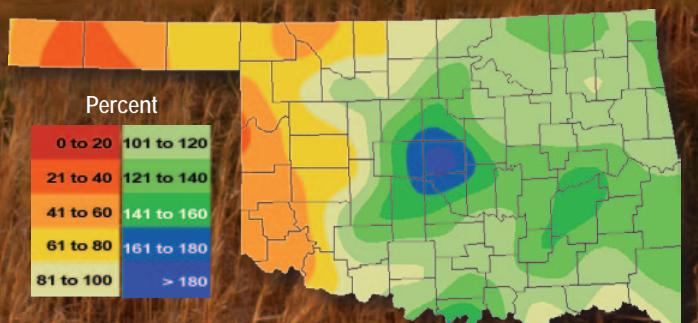
Streamflow (7-Day Average)
June 24, 2013



Keetch-Byram Drought Index
June 25, 2013



Percent of Normal Precipitation
Last 90 Days (March 27 through June 24)



Data obtained from the National Drought Mitigation Center, U.S. Geological Survey, U.S. Army Corps of Engineers and Oklahoma Climatological Survey. For more drought information, and to obtain updated information on Oklahoma's drought and moisture conditions, go to www.owrb.ok.gov/drought.

www.owrb.ok.gov

*Ford Drummond, Chairman • Linda Lambert, Vice Chairman • Tom Buchanan, Secretary
Bob Drake • Ed Fite • Marilyn Feaver • Rudy Herrmann • Jason Hitch • Richard Sevenoaks*

Protecting and enhancing the quality of life for Oklahomans by managing and improving the state's water resources to ensure clean and reliable water supplies, a strong economy, and a safe and healthy environment.



2nd Quarter 2013

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FINANCIAL ASSISTANCE PROGRAM UPDATE

Loans & Grants Approved as of July 1, 2013

FAP Loans—359 for \$886,515,000

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 very competitive interest rates, averaging approximately 4.762 percent since 1986.

CWSRF Loans—270 for \$1,186,245,974

The Clean Water State Revolving Fund (CWSRF) loan program was created in 1988 to provide a renewable financing source for communities to use 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—159 for \$848,623,300

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—591 for \$51,969,016

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—566 for \$33,776,351

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.

Drought Response Program Grants—7 totaling \$490,791

Through the OWRB's Drought Response Program, funding is available for communities in most dire need during state drought emergencies declared by the Governor. A maximum of \$300,000 is diverted from existing OWRB Emergency Grant funds to establish the Program.

Total Loans/Grants: 1,952 for \$3,007,620,432

Estimated Savings: \$1,031,640,366

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.

For more information, call 405-530-8800 or go to www.owrb.ok.gov/financing.

OKLAHOMA Water News

3rd Quarter 2013

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GMAP Establishes Baseline Network for Six Aquifers

Board Selects New Officers

Pratt Appointed New Corps District Commander

Shower Better and Save Water

The Future of Oklahoma's Water Supplies

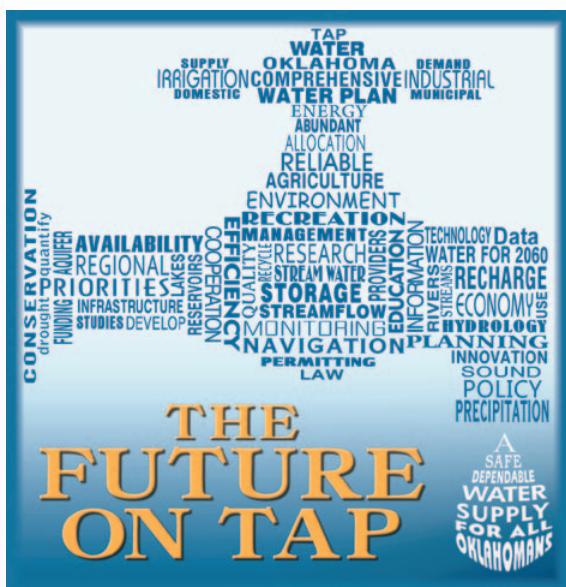
Drought Update



The Future on Tap: 34th Annual Governor's Water Conference to Focus on Future Supply

The 34th Annual Oklahoma Governor's Water Conference and Research Symposium will be held on October 22-23 at the Sheraton-Reed Conference Center in Midwest City. Registration and sponsorship information are available online at www.owrb.ok.gov/waterconference.

This year's conference theme, "The Future on Tap," focuses on the many water challenges that lie ahead for Oklahoma. Due to persistent drought and recent projections indicating that statewide demand for water will increase by at least one-third over the next 50 years, it's clear that water stress will continue to mount. Innovative water policies and programs will be required to sustain and protect our water resources and the growth and prosperity those resources afford every Oklahoman. Speakers and conferees at the 34th Annual Governor's Water Conference and Research Symposium will explore sensible solutions to these threats to Oklahoma's water future.



Governor Mary Fallin and Lt. Governor Todd Lamb will open the conference. The keynote address will be given by Steven Solomon, author of *Water: The Epic Struggle for Wealth, Power, and Civilization*. Solomon's all-encompassing inquiry into the science and politics of water is predicated on the incontrovertible, yet too often disregarded, fact that water is essential to both life and civilization. He inspires citizens to place a higher value on water and establish wiser approaches to its use. Solomon has written for *The New York Times*, *BusinessWeek*, *The Economist*, *Forbes*, and *Esquire*, and he has been a featured guest on numerous popular television and radio news programs.

Tuesday morning's remaining agenda will include a panel on Preparing for Drought, featuring Veva DeHeza, Regional Drought

(continued on page 2)

From the Director

As temperatures drop, the irrigation season winds down, and communities ease up on their water usage, the multi-year Oklahoma drought continues to hang on. In September, folks in many areas—including, surprisingly, the Panhandle—received much-needed rainfall, which provided some temporary relief. Unfortunately, southwest Oklahoma wasn't so lucky, and it remains the most consistently dry region of the state since the beginning of the current drought episode in late 2010. Still, much of our state remains in drought, reminding us yet again that only time, and a lot of rainfall events, can bring us out of such dire, long-term disasters. And should the drought suddenly "end," the devastating impact to Oklahoma's economy will extend for years.

(continued on page 2)



**J. D. Strong, Executive Director
Oklahoma Water Resources Board**

Water Conference (continued)



Governor Mary Fallin emphasizes the importance of being good stewards of Oklahoma's invaluable water resources in a video recorded by Outdoor Oklahoma producer Blake Podhajsky (standing) and Micah Holmes of the Oklahoma Department of Wildlife Conservation (ODWC). The ODWC generously volunteered filming services in support of the Oklahoma Governor's Water Conference and its ongoing partnership with the OWRB.

Information Coordinator for NOAA; Collins Balcomb with the US Bureau of Reclamation; and an update on Water for

2060 by OWRB Executive Director J.D. Strong. The luncheon program will include presentation of the Oklahoma Water Pioneer Awards and updates from Oklahoma's new Secretary of Energy and Environment, Michael Teague, and USACE Tulsa District Engineer, Col. Richard Pratt.

Tuesday afternoon events will include the Oklahoma Water Magazine, with concise updates on water issues currently in the spotlight. The first of two unique, interactive roundtable discussions, beginning at 3:30 on Tuesday, will explore the topic of Conjunctive Water Management. Participants will delve into the pros and cons of managing hydrologically connected surface and groundwater supplies.

Wednesday morning's plenary session will include a legal update by Oklahoma Attorney General Scott Pruitt; a legislative update by Brian Bingman, President Pro Tempore of the Oklahoma Senate; and an international view of sustainable infrastructure by Sharlene Leurig with Ceres, a non-profit organization advocating sustainability leadership. Jon Radtke with Coca-Cola North America Group; Greg Fisher with Denver Water; and John Tintera, representing oil/gas production, will continue the in-depth discussion of sustainability practices. Wednesday's luncheon will include Dr. David Zetland, author of *The End of Abundance*,

(continued on page 3)

From the Director (continued)

While we can't make it rain, the state will soon be in a much better position both to provide an immediate helping hand to those ravaged by drought and to make our communities and rural areas more resistant to future drought events. The new Emergency Drought Relief Fund, approved last legislative session, makes \$3 million available for drought mitigation and projects. We are working closely with the Department of Agriculture, Food and Forestry and Conservation Commission to determine project eligibility and expenditure guidance.

The first meeting of the Water for 2060 Advisory Council was held on August 20 at the OWRB. While this get-together primarily served to provide initial guidance to the 14 appointed members, we had excellent discourse about how potential conservation measures might impact various water users and constituency groups. It is evident to me that their minds are wide open to the consideration of new conservation strategies, incentives, and technologies as well as the creation of "new" supplies through utilization of unconventional water sources. I'm excited to lead this exceptional group over the next few years as we work cooperatively to develop Oklahoma's first statewide water conservation plan.

I want to congratulate Michael Teague, who Governor Fallin recently appointed as Oklahoma's first Cabinet Secretary of Energy and Environment. Secretary Teague brings unique experience to this new combined post. As the recent District Commander of the Army Corps of Engineers' Tulsa District, he was the leader of one of the OWRB's most important

planning partners. I look forward to working closely with Secretary Teague on the many issues facing our water supplies as a critically important element in both energy production and environmental sustainability in Oklahoma.

At the same time, I will miss Gary Sherrer, Oklahoma's former Secretary of Environment, who stepped down on July 1 to pursue other interests. As Gov. Fallin stated in her announcement, Gary was especially gifted in obtaining consensus among people with diverse interests and agendas. He remains a model of dedicated public service.

On another related note, I welcome Col. Richard Pratt, who assumes the Corps' leadership role in the Tulsa District region. Both Col. Pratt and Secretary Teague will speak back-to-back during the October 22 Governor's Water Conference luncheon.

For a complete picture of the 34th Annual Governor's Water Conference, which will be held October 22-23 at the Reed Center in Midwest City, refer to the draft agenda in this issue of the "Water News." We've got yet another impressive lineup, including keynote speaker Steve Solomon, author of "Water: The Epic Struggle for Wealth, Power, and Civilization." Also appearing will be Lt. Gov. Todd Lamb, Attorney General Scott Pruitt, EPA Regional Administrator Ron Curry, and a number of other national figures to discuss wide-ranging water topics. To register, visit the OWRB's website or call us at 405-530-8800. In conclusion, please take note that our next Board meeting has been moved to coincide with that event following adjournment on the last day. 

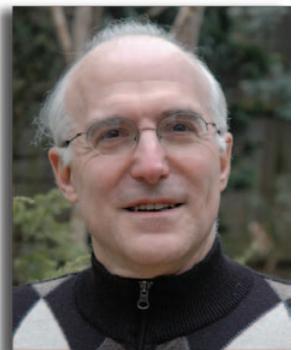
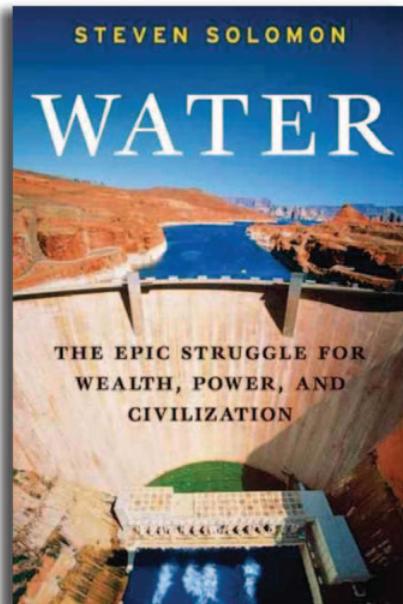
Water Conference (*continued*)

Roundtable 1: Conjunctive Management

Conjunctive Management refers to the coordinated management of hydrologically connected surface and groundwater supplies to increase the combined water supply yield while enhancing water reliability and associated economic and environmental benefits. Should future policy reflect management in areas of the state, such as in the Arbuckle-Simpson aquifer, where groundwater pumping impacts surface water flows and availability, and vice versa, or are the potential ramifications to private property rights too great?

announcement of poster contest winners, and presentations by 4H speech contest winners.

Wednesday afternoon's roundtable discussion will focus on Out-of-Basin Water Transfers, and will include representatives



Steven Solomon, author of Water: The Epic Struggle for Wealth, Power, and Civilization, will provide the keynote address for the Governor's Water Conference on October 22.

from the Canton Lake Association, Oklahoma Farm Bureau, Waurika Master Conservancy District, and Denver Water.

The regular monthly meeting of the OWRB will be held at 3:30 on Wednesday.

(*continued on page 4*)

34th Annual Oklahoma Governor's Water Conference and Research Symposium

8:00 Welcome

Rudy Herrmann, OWRB Chairman
Gov. Mary Fallin
Lt. Governor Todd Lamb

Water Issues in the Region
Ron Curry, Administrator, EPA Region VI

Keynote Address
Steve Solomon, Author

9:30 Break

10:00 Preparing for Drought

Drought Impacts and Outlook
Veva DeHeza, NOAA

Drought Mitigation Tools
Collins Balcombe, Bureau of Reclamation (OK-TX)

Minimizing Drought Impacts through the Water Plan
J.D. Strong, OWRB Executive Director

11:30 Luncheon

Michael Teague, OK Secretary of Energy & Environment
Col. Richard A. Pratt, Tulsa District Engineer, USACE
Oklahoma Water Pioneer Awards

1:30 Oklahoma Water Magazine

OCWP Instream Flow Workgroup
John Rehring, Carollo Engineers, Inc.

Oklahoma Groundwater Monitoring Assessment Program
Derek Smithee, OWRB

Water for Recreation & Tourism
Gene Gilliland, OK Department of Wildlife Conservation

Navigation in Oklahoma
Bob Portiss, Director, Tulsa Port of Catoosa

3:30 Roundtable Discussion: Conjunctive Water Management

5:00 Reception

8:00 Welcome

Rudy Herrmann, OWRB Chairman

Legal Update
Scott Pruitt, Oklahoma Attorney General

Legislative Development
Sen. Brian Bingman, President Pro Tempore

Developing Sustainable Water Systems
Sharlene Leurig, Ceres

9:30 Break

10:00 Breakthroughs in Water Sustainability

Partnerships in Conservation
Jon Radtke, Coca-Cola North America Group

Conservation as a Water Supply Solution
Greg Fisher, Denver Water

Oil/Gas Production Water Recycling
John Tintera, Sebree & Tintera

11:30 Luncheon

Luncheon Address: The End of Abundance
Dr. David Zetland, Author

OWRC Poster Contest Winners

4H Speech Contest Winners

1:30 Roundtable Discussion: Out-of-Basin Water Transfers

3:00 Break

3:30 OWRB October Monthly Meeting

5:00 Adjourn

For the most up-to-date agenda and conference information, go to www.owrb.ok.gov/waterconference

Water Conference (*continued*)

A block of rooms has been reserved at the Sheraton Hotel (adjacent to the Reed Conference Center) at a standard

Roundtable 2: Out-of-Basin Water Transfers

Out-of-basin water transfers are commonly utilized to address supply challenges presented by the unequal distribution of water resources in Oklahoma and throughout the western U.S. How should the state reconcile the often significant water supply benefits of interbasin transfers—with the impacts to users and economies in the originating basin?

The regular October meeting of the Oklahoma Water Resources Board will be held at the Sheraton-Reed Conference Center in Midwest City, Oklahoma, at 3:30 p.m. on Wednesday, October 23, 2013.

Teague Assumes New Energy and Environment Post



Col. Michael Teague, a 28-year veteran of the U.S. Army Corps of Engineers will serve as Oklahoma's first Secretary of Energy and Environment. Gov. Fallin announced the appointment on August 16. Teague retired from the Corps in August and assumed his new duties on September 3. As the USACE's Tulsa District commander, Teague was responsible for a civil works program encompassing

all of Oklahoma, a large portion of southern Kansas and the panhandle of northern Texas. He oversaw over 700 employees in engineering, construction and operations, as well as an annual budget of \$700 million.

Throughout his career, Teague has dealt with power generation and distribution, water desalination, and environmental impact studies. He has facilitated and negotiated numerous solutions regarding federal and state agencies, tribes, and local stakeholders and has acted as a liaison between the Tulsa District and the United States Congress.

Teague received a bachelor's degree in civil engineering from Norwich University and master's degrees in operations analysis from the Naval Postgraduate School and in national security and strategic studies from the Naval War College. ♦

room rate of \$124/night. Space is limited so conferees are encouraged to make reservations as soon as possible by calling (405) 455-1800 or (888) 627-8566. ♦

October 22-23, 2013 **THE FUTURE ON TAP**

Register online at www.owrb.ok.gov/waterconference.

GMAP Establishes Baseline Network for Six Aquifers

In its initial year of operation, the OWRB's Groundwater Monitoring Assessment Program (GMAP) has experienced considerable success in establishing its baseline water well quantity and quality network. Early results from staff activities conducted this summer indicate up to a 98 percent success rate in the sampling and measurement of targeted wells.

Initial data have been collected for five aquifers: Ogallala Northwest, Canadian River, Elk City, Gerty, and Rush Springs. Data include water level measurements for 199 wells and a variety of water quality measurements for 143 wells. Sampling is scheduled to begin in the Garber-Wellington aquifer in October. ♦



Kevin Killhoffer, a sampling technician for the OWRB's Groundwater Mapping and Assessment Program (GMAP), tests groundwater for alkalinity and hardness. This well, located west of Sharon, is one of 42 tested last summer in the northwest segment of the Ogallala Aquifer.

Board Selects New Officers

At its July 16 meeting, the nine-member Board elected new officers for the next year: Rudy Herrmann (Tulsa), Chairman; Tom Buchanan (Altus), Vice Chairman; and Linda Lambert (Oklahoma City), Secretary. ♦

Pratt Appointed New Corps District Commander

Col. Richard Pratt is the new commander of the Tulsa District of the U.S. Army Corps of Engineers. Col. Pratt assumed his new appointment at a Change of Command ceremony on July 12. He succeeds departing commander Col. Michael Teague, Oklahoma's new Secretary of Environment and Energy.

A native of Cape Cod, Massachusetts, Pratt received his commission from Norwich University Military College in Vermont in 1990. Most recently, he worked as the engineer organizational integrator at the Navy War College in Newport, Rhode Island. Pratt earned a Master of Science Degree in Education from Long Island University in 1998. He is a registered Professional Engineer in the Commonwealth of Virginia. ♦



Secrest, Wood Pass Away

The OWRB family recently lost two influential members: former Board member Bill Secrest and division chief J.A. Wood.



A staunch rural water advocate, Secrest served the OWRB for 24 years. He was a longtime board member of both the National and Oklahoma Rural Water Associations, also serving as manager of Rural Water District 4 in Wagoner County for 20 years, as well as city manager of Broken Arrow and mayor of Coweta. In 1998, for his efforts on behalf of the state's water resources, he was honored by Gov. Frank Keating and the OWRB as an Oklahoma Water Pioneer. Secrest died August 27 in Tulsa. He was 84.

J.A. Wood passed away on September 2 at age 72. Following his high school graduation, Wood began his OWRB career in 1959, but soon left to join the U.S. Army, serving in the Vietnam War from 1963 to 1966. He then obtained an engineering degree from Oklahoma University and returned to the OWRB for 20 years, including an extended role as chief of the agency's Planning and Management Division. Wood retired from the OWRB in 1996. ♦



Shower Better and Save Water

The shower is a place where we can wake up, wind down, or get ready to tackle the day. But it's also a place where Americans are wasting water, energy, and money. Whether you are remodeling your bathroom or just looking to save water and money, you can shower better.

Replacing a showerhead with a WaterSense labeled model will save the average family the amount of water it takes to wash more than 70 loads of laundry every year. Plus you'll save the energy used to heat that water, which means you'll save money on utility bills.

What's more, WaterSense labeled showerheads are independently certified for spray force and water coverage, which means you really will shower better.

For more information, visit www.epa.gov/watersense/products/showerheads.html. ♦



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GALLONS
of water**



**13 DAYS
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per YEAR**

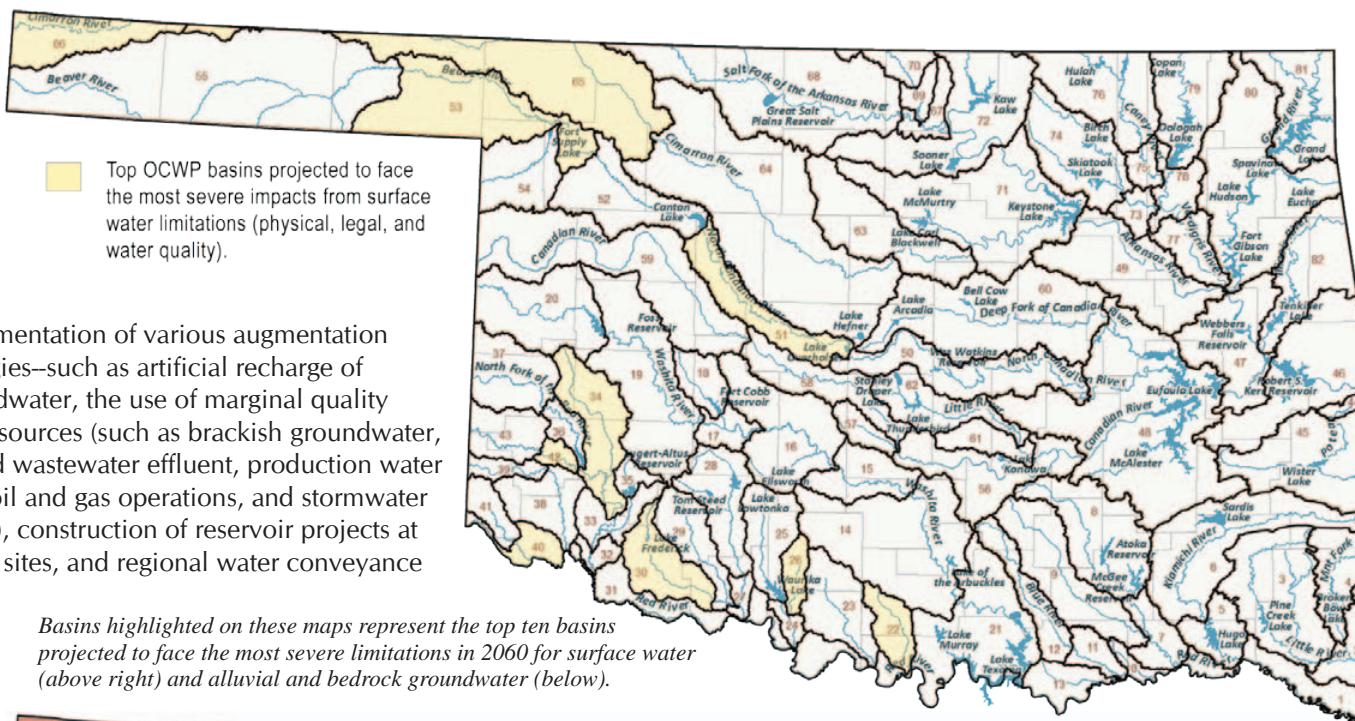


ShowerBetter



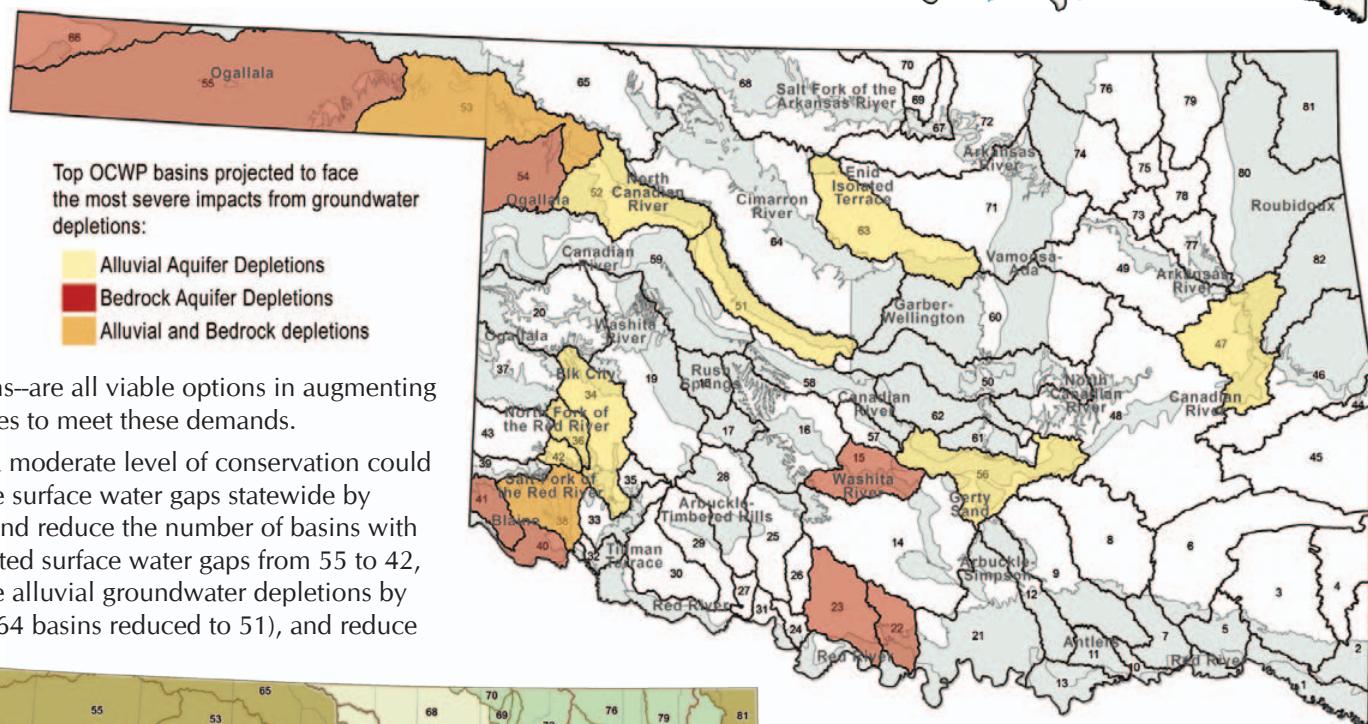
The Future of Oklahoma's Water Supplies

The results of technical evaluations conducted for the 2012 Update of the Oklahoma Comprehensive Water Plan reveal that statewide consumptive demand for water will increase by 33% between 2010 and 2060.



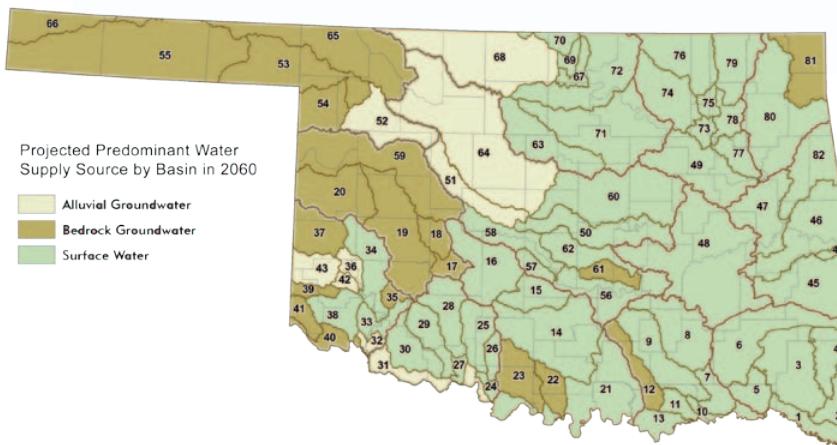
Implementation of various augmentation strategies—such as artificial recharge of groundwater, the use of marginal quality water sources (such as brackish groundwater, treated wastewater effluent, production water from oil and gas operations, and stormwater runoff), construction of reservoir projects at viable sites, and regional water conveyance

Basins highlighted on these maps represent the top ten basins projected to face the most severe limitations in 2060 for surface water (above right) and alluvial and bedrock groundwater (below).



systems—are all viable options in augmenting supplies to meet these demands.

Even a moderate level of conservation could reduce surface water gaps statewide by 25% and reduce the number of basins with projected surface water gaps from 55 to 42, reduce alluvial groundwater depletions by 32% (64 basins reduced to 51), and reduce

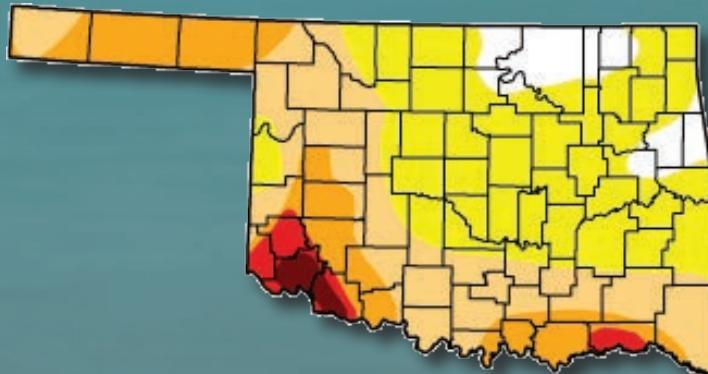


bedrock groundwater depletions by 15% (34 basins reduced to 26). Additionally, moderate-to-aggressive conservation could satisfy projected statewide growth in water demand by 2060, plus yield cost savings of at least \$47.5 million per year (2010 dollars) associated with reduced need for drinking water and wastewater treatment. 



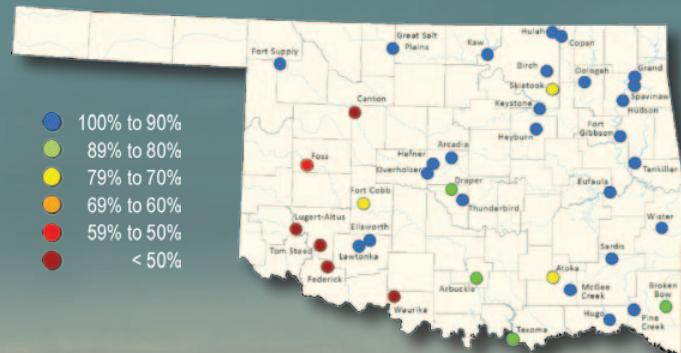
Drought Update

U.S. Drought Monitor
September 24, 2013

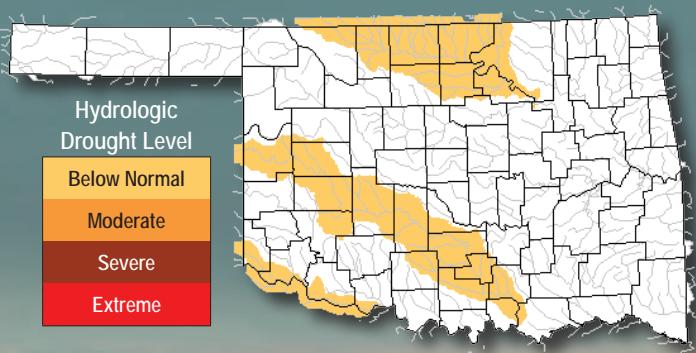


Drought Intensity & Percent of State in Drought Category

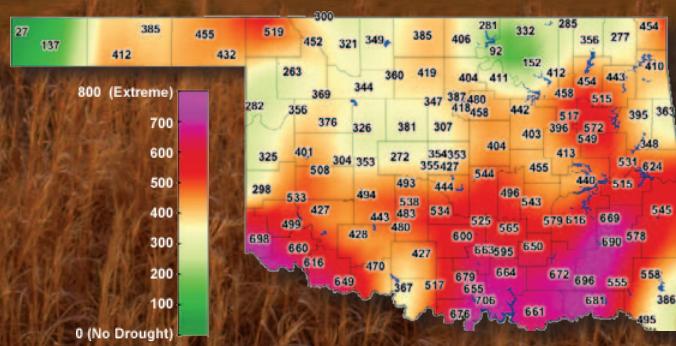
Reservoir Storage
September 25, 2013



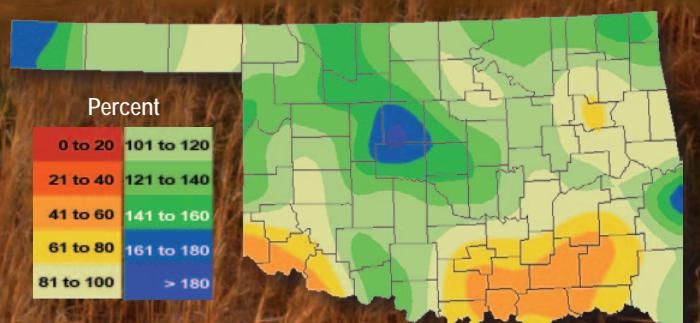
Streamflow (7-Day Average)
September 25, 2013



Keetch-Byram Drought Index
September 26, 2013



Percent of Normal Precipitation
Last 90 Days (June 28 through September 25)



Data obtained from the National Drought Mitigation Center, U.S. Geological Survey, U.S. Army Corps of Engineers and Oklahoma Climatological Survey. For more drought information, and to obtain updated information on Oklahoma's drought and moisture conditions, go to www.owrb.ok.gov/drought.

www.owrb.ok.gov

*Rudy Herrmann, Chairman • Tom Buchanan, Vice Chairman • Linda Lambert, Secretary
Bob Drake • Ford Drummond • Marilyn Feaver • Ed Fite • Jason Hitch • Richard Sevenoaks*

Protecting and enhancing the quality of life for Oklahomans by managing and improving the state's water resources to ensure clean and reliable water supplies, a strong economy, and a safe and healthy environment.



3rd Quarter 2013

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Barry Fogerty

E-mail comments, questions,
or article submissions to
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or call us at (405) 530-8800.

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FINANCIAL ASSISTANCE PROGRAM UPDATE

Loans & Grants Approved as of September 5, 2013

FAP Loans—360 for \$890,865,000

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 very competitive interest rates, averaging approximately 4.762 percent since 1986.

CWSRF Loans—272 for \$1,189,805,974

The Clean Water State Revolving Fund (CWSRF) loan program was created in 1988 to provide a renewable financing source for communities to use 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—161 for \$859,213,300

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—598 for \$51,969,016

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—566 for \$33,776,351

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.

Drought Response Program Grants—7 totaling \$490,791

Through the OWRB's Drought Response Program, funding is available for communities in most dire need during state drought emergencies declared by the Governor. A maximum of \$300,000 is diverted from existing OWRB Emergency Grant funds to establish the Program.

Total Loans/Grants Approved: 1,964 for \$3,026,120,432

Estimated Savings: \$1,037,190,366

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.

For more information, call 405-530-8800 or go to www.owrb.ok.gov/financing.

OKLAHOMA Water News

4th Quarter 2013

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Arbuckle-Simpson Hydrology Study Timeline

Fix a Leak: Simple Steps to Big Savings

Drought Update



Annual Report of OWRB Activities for 2013

Implementation of OCWP Priority Recommendations

Considerable progress was made during 2013 toward implementing Oklahoma Comprehensive Water Plan (OCWP) priority recommendations. The OWRB enhanced and expanded its water monitoring activities and hydrologic studies, and meetings were convened by the Water for 2060 Advisory Council and Instream Flow Advisory Group.

The Groundwater Mapping and Assessment Program (GMAP), Oklahoma's first holistic groundwater monitoring program, is fully operational; well sampling began in August. Long-term collection of data will provide invaluable information on the ambient quality and quantity of Oklahoma's groundwater resources, vastly improving the detection of impairments as well as the understanding of seasonal, climatic, and usage patterns. As many as 2,000 wells will eventually comprise the monitoring network with coverage of every major aquifer in the state.

The Beneficial Use Monitoring Program (BUMP), which provides surface water quality data crucial to the establishment of fair and defensible Water Quality Standards, now includes 130 lakes and 103 stream sites, including selected United States Geological Survey (USGS) sites and other gages located strategically to characterize each of the 82 OCWP planning basins.

Studies are ongoing in the Rush Springs Aquifer. The Study was initiated in 2011-12 in conjunction with a hydrologic investigation and stream water allocation model of the Upper Washita River Basin. The OWRB is working cooperatively on the project with the Bureau of Reclamation (USBR) and Fort Cobb and Foss Reservoir Master Conservancy Districts. The project is scheduled for completion by the end of 2015.

The OWRB is initiating 20-year updates of hydrologic studies for the Enid Isolated Terrace and Elk City Sandstone aquifers, both anticipated for completion in late 2014. Under contract with the USGS, the OWRB will conduct a 20-year update of the groundwater study for the North Canadian River Alluvium and Terrace Groundwater Basin from the Beaver-Harper County line to Lake Overholser at the Canadian-Oklahoma County line. Along with development of a new groundwater flow model, the investigation will determine if there has been any significant depletion in the basin. Work is anticipated to be completed by late 2014.

(continued on page 2)

From the Director

Prompted by a 2003 law change and informed by more than a decade of study, numerous public meetings with citizens and stakeholders, and a meticulous hearing process, OWRB members voted in October to approve staff's recommendation setting a new 0.2 acre-feet per acre per year (AFY) equal proportionate share (EPS) withdrawal rate for the Arbuckle-Simpson aquifer. The decision—long-awaited by many, especially those living in and around the south central Oklahoma region—was both a controversial and consequential one.

The Arbuckle-Simpson aquifer is the sole drinking water source for many cities and towns, including Ada and Sulphur, a vital component of the



J.D. Strong, Executive Director
Oklahoma Water Resources Board

(continued on page 2)

Annual Report (continued)

The USGS has also been contracted to begin a basin study of the Canadian River Alluvium and Terrace aquifer and a 20-year update of the North Fork of the Red River Alluvium and Terrace aquifer.

The nine-member OWRB Board approved the Final Order for the Arbuckle-Simpson Maximum Annual Yield in October (see From the Director and the timeline on pages 4-5 for more details about the study and events leading up to the approval of the Final Order).

The OCWP Water for 2060 Advisory Council, a 15-member group selected to develop recommendations aimed at stabilizing Oklahoma's water use through improved conservation and efficiency, held its first two meetings. Focusing on the pros and cons of incentives, the Council was afforded a unique opportunity to interact with selected public water supply representatives and learn about existing efficiency practices already in place in communities and rural water systems.

The OCWP Instream Flow Workgroup met three times during 2013. Discussion primarily centered on a potential pilot study that would incorporate a process for addressing economic and related impacts resulting from establishment of instream flow requirements.

Governor's Water Conference

The 34th Annual Oklahoma Governor's Water Conference was held in Midwest City in October. The conference attracted more than 400 water officials and citizens interested in Oklahoma's water resources and the latest developments concerning water planning, management, quality, and infrastructure financing issues. This year's keynote speaker was Steven Solomon, author of *Water: The Epic Struggle for Wealth, Power, and Civilization*. Attendees also heard from Oklahoma Lieutenant Governor Todd Lamb, EPA Regional Administrator Ron Curry, and Oklahoma Attorney General Scott Pruitt, among other key state and regional experts

(continued on page 3)

From the Director (continued)

Chickasaw National Recreation Area, and key to the overall economic prosperity of south central Oklahoma. While the OWRB is typically guided by the state's long-standing groundwater law in conducting maximum annual yield investigations of Oklahoma's major groundwater basins, heightened concern for the Arbuckle-Simpson required that its study incorporate a whole new level of complexity—a legislative mandate to establish a withdrawal rate that would not reduce the natural flows of area springs and streams. That requirement not only necessitated an unprecedented level of data collection and monitoring, as well as significant funding to accomplish that work, but also revealed from the outset that the final EPS would likely result in much tighter restrictions on future withdrawals from the aquifer.

Prior to deliberating the action that would reduce the aquifer's EPS to one-tenth of its current default withdrawal limit, OWRB Board members were required to carefully consider the rippling impacts of their decision. At the Board meeting, parties on each side of the issue—including municipal officials; representatives of the Citizens for the Protection of the Arbuckle-Simpson Aquifer (CPASA), National Park Service, and Nature Conservancy; and legal counsel for local landowners—were provided a final opportunity to express their views. Chief among their concerns was implementation, specifically the time allotted for water users to address the considerable need for additional water and property rights and related management issues. In the end, exhibiting confidence in the work of countless experts and OWRB staff, along with the promise that the agency would develop a fair and sensible implementation strategy, the Board approved the new EPS.

As evidenced by three subsequent court filings, not everyone agrees with the Board's decision, declaring that the number should be higher or lower, that it should be slightly more or less protective of the resource. But what can't be argued is

that sound science and data—utilizing the unique parameters mandated under Senate Bill 288—led to a fair and logical conclusion. On both the science and legal/policy front, the process was strengthened by experienced professionals utilizing the latest technology, extensive public information, and a well-planned rule-making and hearing procedure.

From a more general viewpoint, widespread interest in the Arbuckle-Simpson issue points out an encouraging trend. As we witnessed in developing the 2012 Update of the Oklahoma Comprehensive Water Plan, citizens are now more aware of water-related issues. And they are more vocal than ever before in advocating their particular interests in Oklahoma's surface and groundwater supplies. As I've said many times before, the subject of water isn't going away anytime soon. And that's a good thing.

In late October, the OWRB and Water Resources Research Center co-hosted another great Water Conference where more than 400 conferees heard from various state and national speakers. In addition to two fascinating roundtable sessions, discussion of prospects for drought in the state and region, and exploration of various conservation successes, the concurrent Research Symposium provided a forum for researchers and academia to present the latest in water research. And it was a great pleasure to present a predecessor of mine, former OWRB Director Patty Eaton, and long-time U.S. Geological Survey hydrologist, Bob Blazs, with 2013 Oklahoma Water Pioneer Awards.

The OWRB also received incredible recognition recently when the agency was named one of The Oklahoman's Top Workplaces—the only state agency among 50 organizations. The list was compiled solely from employee surveys. It's an enormous honor that directly reflects the supreme professionalism of our employees, both past and present, and unique pride they have for the OWRB. 

Annual Report (continued)

highlighting the latest developments impacting Oklahoma's water resources. This year's Oklahoma Water Pioneer Awards were presented to Bob Blazs, 43-year veteran of the USGS, and Patty Eaton, former Secretary of Environment and OWRB Executive Director. Two roundtable discussions focused on the controversial topics of Conjunctive Management and Out-of-basin Transfers.

Legal Developments

On June 13, Oklahoma won a historic legal victory in the case of Tarrant Regional Water District v. Herrmann when the U.S. Supreme Court unanimously upheld certain Oklahoma laws controlling state water against a challenge from the Tarrant Regional Water District, which serves a large area in north Texas. In 2007, Tarrant applied for a permit to take water from the Kiamichi River in southeastern Oklahoma and simultaneously filed a federal lawsuit against OWRB members. Tarrant challenged the legality of several Oklahoma statutes that place restrictions on the use of stream water out-of-state. After Oklahoma's legal team had won victories in U.S. District Court and again in the Court of Appeals, the Supreme Court definitively ruled that Tarrant has no right to cross the state border and take water from Oklahoma because (1) Oklahoma laws are within the state's authority and right to control its waters under the Red River Compact (a Congressionally-approved agreement among Oklahoma, Texas, Arkansas, and Louisiana), and (2) Oklahoma laws are not contrary to the Commerce Clause of the U.S. Constitution.

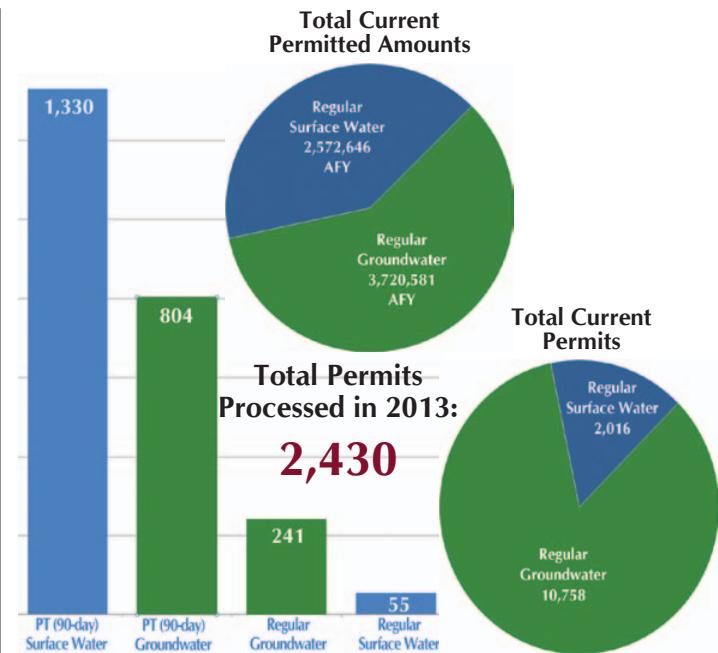
Two major cases in federal court involving claims by the Choctaw Nation of Oklahoma and the Chickasaw Nation regarding certain water sources in southeastern Oklahoma were stayed multiple times throughout 2013 to allow the parties to continue their efforts, which are currently ongoing, to reach agreed resolution of pertinent issues.

On October 23, the OWRB concluded a multi-year technical study and administrative process when it issued an order determining the maximum annual yield for the Arbuckle-Simpson Groundwater Basin in south-central Oklahoma. Among other things, the order determined that the equal proportionate share of the yield to be allocated to each acre of land overlying the basin is 0.20 acre-foot per acre per year. Appeals to the order have been filed in the District Courts of Pontotoc and Oklahoma Counties.

Water Use Permitting

In 2013, the OWRB continued to receive a relatively high number of water use permit applications. Staff processed 2,134 Provisional Temporary (90 day) permit applications and 296 long-term stream water and groundwater applications during the year. Applications for stream water and groundwater permits were down only slightly from the last two years.

Most of the permit applications received in 2013 were for oil and gas exploration activities and agricultural operations. Applicants were most interested in groundwater, especially in western Oklahoma where stream flows were greatly reduced due to continuing drought conditions.



Suppliers of public water particularly in southwestern Oklahoma counties, including Harmon, Jackson, and Greer, experienced acute and long-term water supply concerns. A number of field investigations were conducted in response to complaints about declining stream flow, declining water levels in wells, and interference between junior and senior water right holders.

The OWRB's web-based Provisional Temporary permit program continues to provide enhanced convenience to Oklahoma water users, promoting the state's energy industry, and saving a considerable amount of staff time. Provisional temporary permits are the most common type of permit administered by the OWRB, and are primarily utilized for oil and gas exploration activities.

Financial Assistance Program

In 2013, the OWRB approved 48 grants and loans totaling more than \$160 million to address water and wastewater infrastructure needs. Four bond issues were closed last year—two for the Drinking Water State Revolving Fund in the amounts of \$41.4 million for a new money issue and \$35.5 million for a refunding issue, and two for the State Loan Program totaling \$48.7 million.

OWRB financing in 2013 saved communities and water systems more than \$50 million over traditional financing avenues. The OWRB was able to pass along an additional gross savings of more than \$5 million to its current borrowers via the 2013 Refunding of the 2003 Drinking Water SRF Bond Issue.

The Water Infrastructure Credit Enhancement Reserve Fund (SQ764), effective November 1, is a \$300 million pledge of credit from the state, which was instrumental in Standard and Poor's subsequent rating upgrade to AAA of the State Revenue Bond Loan Program. The upgrade allows municipalities and rural water/sewer districts to receive loans from the program at lower interest rates than what they could receive through conventional financing.

(continued on page 6)

Arbuckle-Simpson Hydrology Study

Timeline of Events

| 2003 | | 2005 | | 2007 | | 2009 | | 2011 | | 2013 | |
|-------|------|---|---|---|---|---|--|-----------------------------------|-----------------------------------|--|---|
| Month | Year | Month | Year | Month | Year | Month | Year | Month | Year | Month | Year |
| JAN | 2003 | OWRB begins field work | Presentation to Oklahoma City Geological Society | Surface Water Subcommittee holds first meeting | Annual Report submitted to USBR | USGS Gravity and Magnetic Data published | Report published: Geochemical Investigation of the Arbuckle-Simpson Aquifer (USGS) | Photo of stream sampling | Photo of surveyor working | Photo of bridge over stream | Protestants file action in Oklahoma Supreme Court for extraordinary procedural relief |
| FEB | 2003 | Fact Sheet available on OWRB website | Synoptic water level measurements on 64 wells in Hunton Anticline | 5th edition of newsletter sent to stakeholders | Arbuckle study team visits Edwards Aquifer in Texas | Annual Report submitted to USBR | Report published: Analysis of Seismic Reflection Data from the Hunton Anticline (OSU) | Photo of surveyors with equipment | Photo of surveyor working on rock | Photo of bridge over stream | Oklahoma Supreme Court issues Stay |
| MAR | 2003 | List of stakeholders developed for email updates; 1st edition of newsletter sent | Geochemical sampling targets estimation of groundwater age and rate of movement | Photo of geochemical sampling equipment | Work begins on the Helicopter Electromagnetic and Magnetic (HEM) study | Work begins on groundwater flow model | Report published: Depth Section Imaging for Airborne Geophysical Survey (USGS) | Photo of surveyors with equipment | Photo of surveyor working on rock | Photo of bridge over stream | Oklahoma Supreme Court decision allowing case to proceed |
| APR | 2003 | Senate Bill 288 passes, imposing a moratorium on issuing groundwater permits outside the basin until the OWRB approves MAY that will not reduce flow in springs and streams | Fittstown Mesonet station established | EPA runs geophysical logs on select wells | Report published: Indicators of Hydrologic Alteration | Report published: Instream Flow Assessment of Mill Creek (OSU/USGS) | Report published: Three-Dimensional Geologic Model of the Arbuckle-Simpson Aquifer (USGS) | Photo of surveyor with tripod | Photo of people at table | Photo of bridge over stream | Prehearing conference held in Ada |
| MAY | 2003 | | 4th edition of newsletter sent to stakeholders | OWRB/USGS conduct aquifer test on Murray Co. RWD wells | Report published: Indicators of Hydrologic Alteration Streams (Nature Conservancy) | Report published: Instream Flow Assessment (OSU/USGS) | Report published: Hydroclimatic Reconstruction Through Tree-ring Analysis (OU) | Photo of surveyor with tripod | Photo of people at table | Photo of bridge over stream | Hearing held in Sulphur |
| JUN | 2003 | | | Report published: Deep test well drilled near Blue River | Report published: Stream Water Management Network Model (Hydrosphere) | Public meeting in Ada to present study results | Reports published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | Hearing Examiner notifies parties of USGS communication |
| JUL | 2003 | | | Mill Creek stream gage installed | Arbuckle-Simpson map viewer launched on OWRB website | Report published: Distributed Water Resources Assessment (OU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | Parties file responses to USGS communication |
| AUG | 2003 | 2nd edition of newsletter sent to stakeholders | Deep test well drilled near Blue River | Report published: Stream Water Management Network Model (Hydrosphere) | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | Hearing Examiner issues 2nd Proposed Order |
| SEP | 2003 | Peer Review team established with experts from USGS, OGS, EPA, and OSU | Deep test well drilled near Blue River | Report published: Stream Water Management Network Model (Hydrosphere) | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | Board issues Final Order |
| OCT | 2003 | USGS installs stream gages in Pennington Creek and Blue River | Mill Creek stream gage installed | Report published: Stream Water Management Network Model (Hydrosphere) | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | Board denies reconsideration of final order |
| NOV | 2003 | USGS begins geochemical sampling | Arbuckle-Simpson map viewer launched on OWRB website | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | OWRB continues monitoring Arbuckle-Simpson groundwater and surface water | |
| DEC | 2003 | Presentation to Ardmore Geological Society | Study team tours Byrd's Mill Spring | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | First Proposed Order issued by Hearing Examiner | |
| | 2004 | 3rd edition of newsletter sent to stakeholders | Annual Report submitted to USBR | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | 2012 | |
| | 2005 | | | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | | |
| | 2006 | | | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | | |
| | 2007 | | | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | | |
| | 2008 | | | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | | |
| | 2009 | | | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | | |
| | 2010 | | | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | | |
| | 2011 | | | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | | |
| | 2012 | | | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | | |
| | 2013 | | | Report published: Distributed Water Resources Assessment (OU) | Report published: Electrical Resistivity Imaging, Evaluation of Fracture Properties, Estimating Hydraulic Parameters, Deep Test Well, Analysis, and Characterization of the Aquifer (OSU) | Final Study Report sent to USBR (OWRB) | Photo of surveyor with tripod | Photo of report cover | Photo of bridge over stream | | |

Annual Report (continued)

Floodplain Management

The OWRB has initiated seven FEMA RiskMAP Discovery projects throughout Oklahoma. RiskMAP is an innovative approach to fostering working partnerships between FEMA and participating NFIP communities, regional agencies, state agencies, tribes, and universities in identifying and communicating risk throughout local watersheds. The OWRB continues to train and accredit floodplain administrators in Oklahoma's 396 participating National Flood Insurance Program (NFIP) member communities. With assistance from the Oklahoma Floodplain Managers Association, the OWRB conducted 19 training opportunities in 2012-13. The OWRB and US Army Corps Engineers, along with local partners, are participating in the Silver Jackets program fostering data sharing and flood resiliency.

Water Quality Standards

In November 2013, the EPA sent final approval of all new and revised water quality standards made during the 2012-2013 Water Quality Standards Triennial Review. Revision topics included modification to regulatory default flows for implementing the Agricultural Beneficial Use; removal of the numeric criteria for color; clarification of the applicability of Seasonal Temperatures for calculating BOD load; restoring language determining the applicability of the Fish Consumption Beneficial Use; changes to the Beneficial Uses of certain segments of Canadian River, Rush Creek, and Wewoka Creek in Appendix A; updates to Numerical Human Health Criteria in Appendix G; and additions to Appendix H regarding Beneficial Use Designations for Certain Limited Areas of Groundwater.

The OWRB initiated participation in a joint study of phosphorus levels and Oklahoma's scenic rivers. The joint study will be managed by a six-member committee appointed by the Governors of Oklahoma and Arkansas. The committee will issue interim reports and hold at least one public meeting each year with stakeholders.

Lake Rehabilitation

The EPA funded project at Eucha Lake using floating wetlands for water quality benefits was completed in 2013. Results showed significant water quality benefits to fish and wildlife as well as improved water quality. Despite the extreme drought in Southwest Oklahoma, the EPA-funded aquatic plantings in Fort Cobb Lake have done well. The ODWC will continue to maintain these founder colonies of plants with hopes for their spread in the next several years. OWRB staff continued to work cooperatively with the Central Oklahoma Master Conservancy District (COMCD) to monitor and improve water quality in Lake Thunderbird, where an innovative system to oxygenate lake water has been installed. COMCD operation of the system has resulted in progressively improved quality of raw water supplied to Norman, Del City, and Midwest City over the last three years.

Dam Safety Program

Continuing last year's efforts to evaluate the hazard classification of more than 600 dams across Oklahoma,

OWRB FY13 Expenditures and FY14 Budget

| Activity Name | FY13 Expended | FY14 Budgeted |
|---------------------------------------|------------------------|------------------------|
| Administration | \$2,339,603.43 | \$2,382,564.00 |
| Water Quality | 3,829,174.55 | 4,210,386.00 |
| Financial Assistance | 2,260,172.30 | 5,652,073.00 |
| Planning & Management | 3,598,551.34 | 4,982,613.00 |
| Information Technology | 493,086.64 | 890,718.00 |
| Totals | \$12,520,588.26 | \$18,118,354.00 |
| Fund Name | | |
| General Appropriations | \$4,840,760.92 | \$5,277,772.00 |
| Drillers & Installers Indemnity Fund | 0.00 | 50,000.00 |
| OWRB Revolving Fund | 1,621,014.67 | 1,991,926.00 |
| Water Resources Revolving Fund | 791,834.26 | 1,153,691.00 |
| Drillers & Installers Regulation Fund | 12,500.00 | 25,000.00 |
| Water Infrastructure Development Fund | 1,080,100.57 | 1,839,402.00 |
| Federal Funds - OWRB | 1,729,983.04 | 2,226,055.00 |
| USGS Cooperative Agreement | 469,422.00 | 286,425.00 |
| DW Loan Administration Fund | 499,697.39 | 2,239,548.00 |
| CW Loan Administration Fund | 1,475,275.41 | 2,928,535.00 |
| CW Loan Fund | 0.00 | 100,000.00 |
| Totals | \$12,520,588.26 | \$18,118,354.00 |

the OWRB conducted detailed reclassification analyses on 15 dams and is currently working with these owners to ensure their dams meet state requirements. A free inspection program was introduced for low hazard-potential dams. Inspection and maintenance training was conducted for private and municipal dam owners. Breach inundation maps of 15 high hazard-potential dams were developed, provided to dam owners at no cost, and integrated into site-specific Emergency Action Plans to assist emergency managers in the event of dam failure.

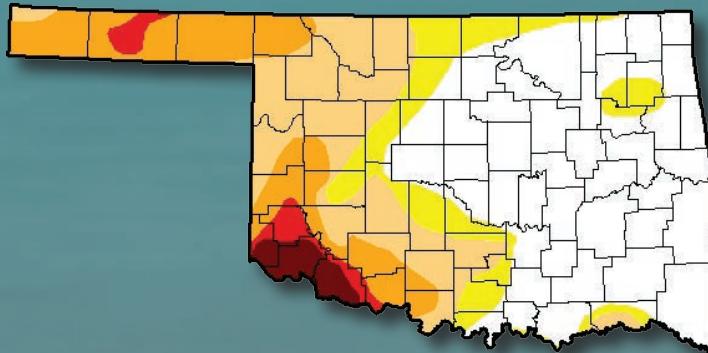
Well Drillers & Pump Installers Program

During 2013, OWRB staff licensed 29 new Well Drilling and Pump Installer firms and 69 new operators. Staff maintained licenses for 367 licensed firms and 667 licensed operators. The OWRB also received reports for 3,312 water wells, 1,735 monitoring wells, 2,031 geotechnical borings, and 2921 heat exchange wells completed in 2013. The OWRB maintains a well log database of more than 156,000 well completion, boring, geothermal, and plugging records that are accessible to the public via the OWRB website. ♦



Drought Update

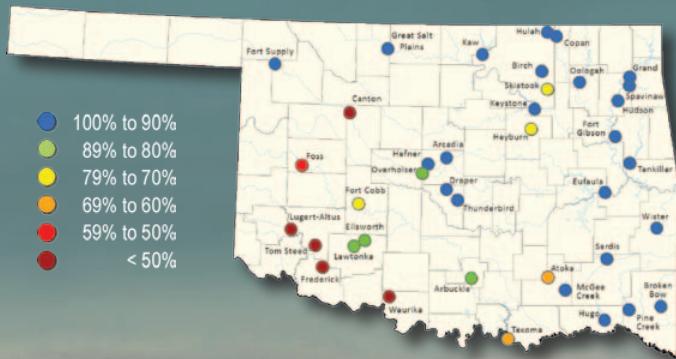
U.S. Drought Monitor
December 17, 2013



Drought Intensity & Percent of State in Drought Category

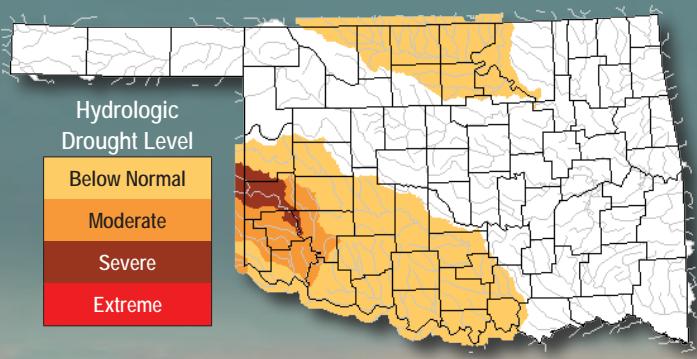
Reservoir Storage

December 16, 2013



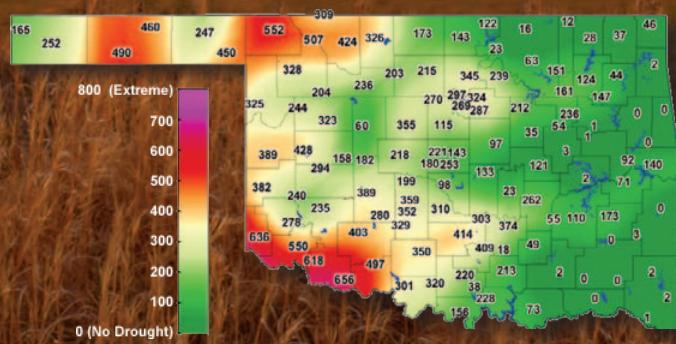
Streamflow (7-Day Average)

December 15, 2013



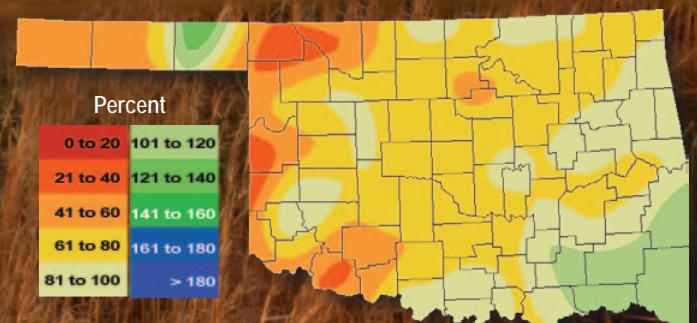
Keetch-Byram Drought Index

December 16, 2013



Percent of Normal Precipitation

Last 90 Days (September 20 through December 18)



Data obtained from the National Drought Mitigation Center, U.S. Geological Survey, U.S. Army Corps of Engineers and Oklahoma Climatological Survey. For more drought information, and to obtain updated information on Oklahoma's drought and moisture conditions, go to www.owrb.ok.gov/drought.

www.owrb.ok.gov

*Rudy Herrmann, Chairman • Tom Buchanan, Vice Chairman • Linda Lambert, Secretary
Bob Drake • Ford Drummond • Marilyn Feaver • Ed Fite • Jason Hitch • Richard Sevenoaks*

Protecting and enhancing the quality of life for Oklahomans by managing and improving the state's water resources to ensure clean and reliable water supplies, a strong economy, and a safe and healthy environment.



4th Quarter 2013

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FINANCIAL ASSISTANCE PROGRAM UPDATE

Loans & Grants Approved as of December 9, 2013

FAP Loans—360 for \$890,865,000

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 very competitive interest rates, averaging approximately 4.762 percent since 1986.

CWSRF Loans—274 for \$1,200,670,974

The Clean Water State Revolving Fund (CWSRF) loan program was created in 1988 to provide a renewable financing source for communities to use 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—163 for \$867,703,300

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—598 for \$51,969,016

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—566 for \$33,776,351

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.

Drought Response Program Grants—6 totaling \$418,848

Through the OWRB's Drought Response Program, funding is available for communities in most dire need during state drought emergencies declared by the Governor. A maximum of \$300,000 is diverted from existing OWRB Emergency Grant funds to establish the Program.

Total Loans/Grants Approved: 1,967 for \$3,045,403,489

Estimated Savings: \$1,042,867,369

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.

For more information, call 405-530-8800 or go to www.owrb.ok.gov/financing.