OKLAHOMA
Water News
1st Quarter 2017

Inside

OWRB Celebrates 60th Anniversary

From the Director

GMAP Expands Baseline Network to All Major Aquifers

Water for 2060: Be a Leak Detective

Charles Darby Appointed to Water Board

FAP Update

OWRB Celebrates 60th Anniversary

Now celebrating its 60th anniversary, the Oklahoma Water Resources Board continues the legacy established by the 1957 House Joint Resolution that created the state's new water agency.

Beginning in 1955, a water study committee composed of legislators and citizens traveled the state holding public meetings and documenting concerns and suggestions. Their report affirmed that Oklahoma's water resources belong to the people of Oklahoma and should be developed by the people for their own use and benefit with proper attention given to conservation and replenishment. As a result, the new Board was established with seven members well-versed in recreational, industrial, municipal, agricultural, and soil conservation, and tasked with administering water rights, negotiating federal contracts, and developing state and local projects to assure the most effective use of Oklahoma's water resources.

During the annual Governor's Water Conference this fall, the OWRB will celebrate 60 years of success and progress, commending all those involved in strengthening Oklahoma's water resiliency.

From the Director

Julie Cunningham, Executive Director
Oklahoma Water Resources Board

This year marks the 60th anniversary of the Oklahoma Water Resources Board. As we look back at the remarkable progress our state has made in managing and planning for water resource needs, we can take pride in the collective leadership of so many who have contributed to furthering our mission of securing our safety, economy, and quality of life. As we celebrate this milestone, I look forward to advancing our important mission by continuing our history of providing relevant science to inform decisions, low-cost infrastructure financing, and expert service to our citizens in the years ahead.

Another legislative session is underway and I want to thank the 30 exhibitor organizations, legislators, and state officials that made this year's Oklahoma Water Appreciation Day at the Capitol a success. Several bills spurred by discussions by the produced water working group to facilitate use of produced water are making their way through the process, particularly regarding water ownership and state permitting authority. The group's March meeting was well attended by experts from the energy industry, water use sectors, treatment technology companies, researchers, and the press, and next steps for research partnerships were discussed.

With the devastating wildfires that ravaged northeast Oklahoma and its neighboring states in March, we are reminded of the importance of water for our agricultural community. Just a few months of below normal rainfall allowed the fires to spread quickly across the landscape, tragically costing seven lives and resulting in severe losses of livestock, pastures, hay, fences, and facilities totaling hundreds of millions of dollars.

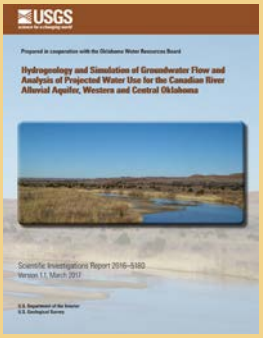
(continued on page 2)

From the Director (continued)

As regional groups around the state are working together to plan for their long-term water needs, we continue to focus on implementation of the Oklahoma Comprehensive Water Plan and core statutory programs to expand water sources, financing options, and knowledge of water quality and quantity trends. In this issue we highlight the Groundwater Monitoring and Assessment Program (GMAP), which was initiated in 2013 as a priority recommendation of the plan. GMAP provides important data and analysis for use by local interests in developing and protecting Oklahoma's groundwater resources. Reports and mapping products are available on our website.

On behalf of the board and staff I am pleased to welcome new board member Charles Darby, who will represent recreational water use in OWRB Region 9. He replaces veteran Board member Richard Sevenoaks, who served for almost 20 years. Richard will be missed for his knowledge and active leadership.

Lastly, I am extremely proud to announce that the OWRB was awarded the Certified Healthy Business title, once again, for employees' actions to stay active and healthy by engaging in various running events, the Community Supported Agriculture program, state sponsored sport leagues and other healthy activities.



In cooperation with the USGS, the OWRB has completed a hydrologic survey of the Canadian River alluvial aquifer, now available online at https://pubs.er.usgs.gov/publication/sir20165180. Along with a detailed description of the hydrogeology of the aquifer, the report includes 10-year hypothetical drought scenarios. Several future predictive scenarios are provided that estimate the Equal Proportionate Share pumping rate for different time periods.

GMAP Expands Baseline Network to All Major Aquifers

The OWRB's Groundwater Monitoring and Assessment Program (GMAP) team is currently expanding the baseline monitoring network to include the Roubidoux and Boone aquifers, the final two major Oklahoma aquifers to be added to the program.

Initiated in 2013 by legislative funding for priority recommendations of the Oklahoma Comprehensive Water Plan (2012), GMAP is Oklahoma's first holistic, long-term, aquifer-based program. Groundwater sampling is conducted on a network of approximately 750 wells in Oklahoma's 22 major aquifers.

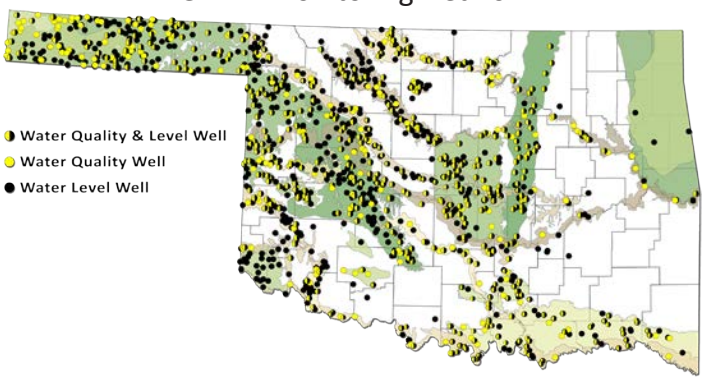
Through the program, water is being sampled from existing groundwater wells and analyzed for parameters such as nutrients, dissolved metals, alkalinity, hardness, dissolved oxygen, pH, and total dissolved solids.

Furthermore, to improve understanding of the effects of seasonal, climatic, and usage patterns, water level data is collected both seasonally and continuously statewide.

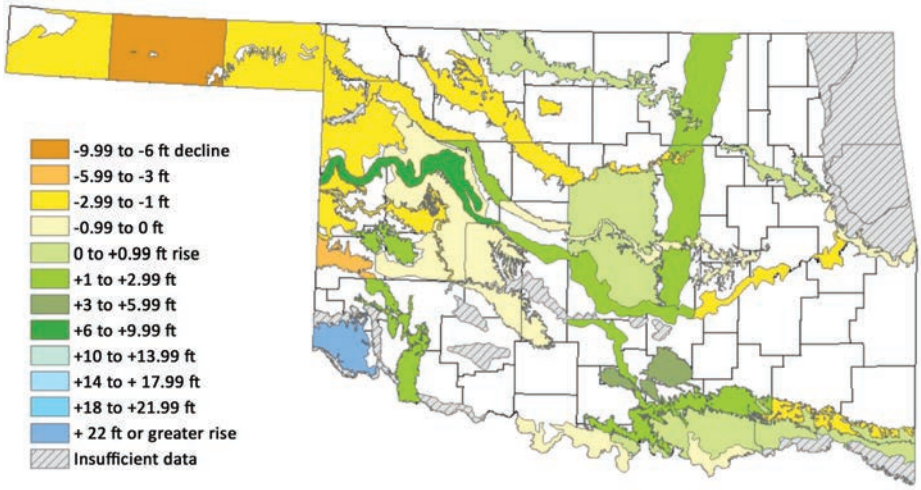
A sub-set of wells from the baseline monitoring network is being evaluated multiple times per year to identify trends and usage over time. To further facilitate this effort, a select number of wells have been equipped with water level data loggers to monitor changes on the scale of weeks, days, or even hours.

For more information about the program and a look at the latest GMAP report, visit www.owrb.ok.gov/GMAP.

GMAP Monitoring Network



Average Five-year Water Level Change



Average five-year water level change by major aquifer and climate division (2012-17), developed by GMAP. Over the last five years, average water levels have exhibited a range of responses across the state. The largest groundwater level increases were observed in the karst bedrock aquifers: Arbuckle-Simpson and Blaine. The largest average declines were detected in the Ogallala-Panhandle in Texas County and the section of the North Fork of the Red River located in the West Central climate division. This map is one example of the numerous products created by GMAP that can be utilized by water resources managers and planners to make informed decisions that affect the sustainability of their water supplies.

Fixing simple water leaks can save homeowners

10%

on their water bills.

The average household's leaks account for more than

10,000

gallons of water wasted every year.

Ten percent of homes have leaks that waste

90

gallons or more per day.

BE A LEAK DETECTIVE!

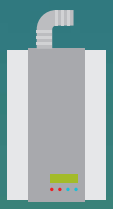
SOMETIMES THE SOURCE OF A LEAK IS OBVIOUS, BUT MORE OFTEN YOU HAVE TO SEARCH FOR THE SIGNS.

EPA WaterSense PARTNER

DO YOU HAVE A LEAK?

Take a look at your water usage during a colder month, such as January or February. If a family of four exceeds 12,000 gallons per month, there are serious leaks.

Check your water meter before and after a two-hour period when no water is being used. If the meter changes at all, you probably have a leak.



WHERE TO LOOK FOR LEAKS

Examine faucet gaskets and pipe fittings for any water on the outside of the pipe.

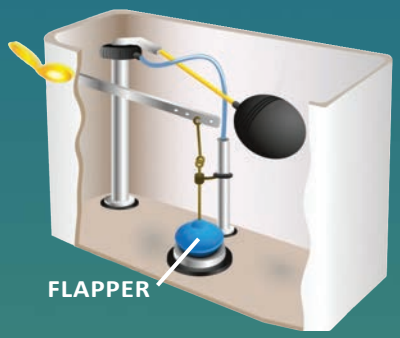
Check the pressure relief valve on the hot water tank. Sometimes these valves are plumbed directly into a drain and may be leaking without your knowledge. If you can't remove the drain pipe, listen for the hissing sound that indicates a leak.

WATER FOR 2060
EFFICIENCY · CONSERVATION · RECYCLING · REUSE

DON'T FORGET THE TOILET!

Identify toilet leaks by placing a drop of food coloring in the toilet tank and wait 10 minutes. If any color shows up in the bowl, you have a leak. Be sure to flush immediately after the experiment to avoid staining the tank.

Turn off the water at the supply line before removing tank parts, and remember to take old toilet parts with you to the home improvement store.



Old or worn-out toilet flappers (valve seal) can cause leaks. Flappers are inexpensive rubber parts that can build up minerals or decay over time. Replacing them every 3-5 years can be a quick and easy fix for your water woes. Use of chlorine products in the tank may decrease the life of your flapper.

If the handle needs to be jiggled to keep the toilet from running, the flush level bar and chain (or the handle itself) may be sticking. Adjust the nut that secures it in the toilet tank. If that does not work, the handle may have to be replaced.

Charles Darby Appointed to Board

Charles Darby

In late January, Governor Mary Fallin appointed Charles Darby of Broken Bow to the Oklahoma Water Resources Board. Darby replaces Richard Sevenoaks of Tulsa, who served on the Board for almost 20 years.

Darby has been actively involved in community and civic affairs for many years, serving on the Broken Bow City Council from 1991-1997 and as Mayor from 1993-1997. Since 1999, Darby has been on the Board of Trustees for the E.T. Dunlap Higher Education Learning Center, serving as Chairperson since 2003. He currently serves on the McCurtain County Emergency Management Services Board of Trustees, McCurtain County E-911 Board of Trustees, and Southeastern Oklahoma Services For Family Violence Intervention Board of Directors, and is the contact and administrator for the Emergency Food and Shelter Program/United Way for McCurtain County. He has been a full time pastor for thirty years, serving in churches both in Texas and in Oklahoma and as the Senior Pastor of Faith Christian Center in Broken Bow for the last 23 years.

OKLAHOMA Water News

1st Quarter, 2017

The Oklahoma Water News *is published quarterly by the Oklahoma Water Resources Board as authorized by Julie Cunningham, Executive Director. The* Water News *is available online at www.owrb.ok.gov. Follow us on twitter @OKWaterBoard for publication notification. For questions, comments, or article submissions, please contact Darla Whitley, Editor, at pubinfo@owrb.ok.gov or (405) 530-8800.*

Financial Assistance Program Update

Loans & Grants Approved as of March 31, 2017

FA Loans—368 totaling $958,885,000
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.

CWSRF Loans—294 totaling $1,338,731,092
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—179 totaling $ 1,014,228,300
The Drinking Water State Revolving Fund (DWSRF) loan program is an initiative of the OWRB and ODEQ 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—652 totaling $57,713,636
The Rural Economic Action Plan (REAP) Program was created by the State Legislature in 1996. REAP grants, used for water/wastewater system improvements, primarily target rural communities with populations of 7,000 or less, but priority is afforded to those with fewer than 1,750 inhabitants.

Emergency Grants—570 totaling $33,918,163
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—10 totaling $1,543,848
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 proceeds to fund the Program.

Water for 2060 Grants—4 totaling $1,500,000
Through the Water for 2060 Grant Program, funding is available for municipalities, counties, water/sewer districts and other public entities for projects that highlight the responsible use of water.

Total Loans/Grants Approved: 2,077 totaling $3,406,520,040
Estimated Savings: $1,161,269,483

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.***

The Oklahoma Water Resources Board meets monthly. Meetings are open to the public. Visit www.owrb.ok.gov for meeting dates/times, locations, and agendas.

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.

OKLAHOMA
Water News
2nd Quarter 2017

Inside

Produced Water Working Group Releases Report and Recommendations

OWRB Publishes Enid Isolated Terrace 20-Year Update

Board Welcomes Stallings and Melton

OWRB Partners with Conservation Commission for Green Infrastructure Projects

Rainfall as a Resource

OWRB Hires New Division Chiefs

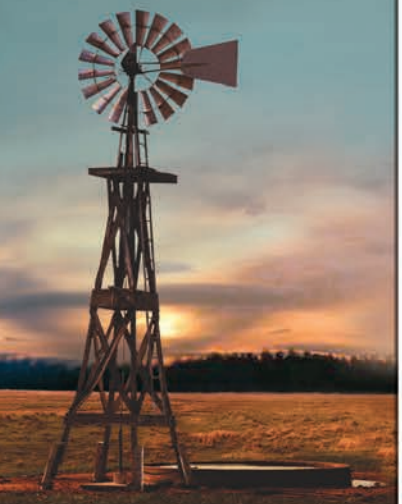
Oklahoma Water Monitoring Reports Available

Rules Approved to Facilitate ASR Project Implementation

Drought Update

FAP Update

Nominations Open for Water for 2060 Excellence Award



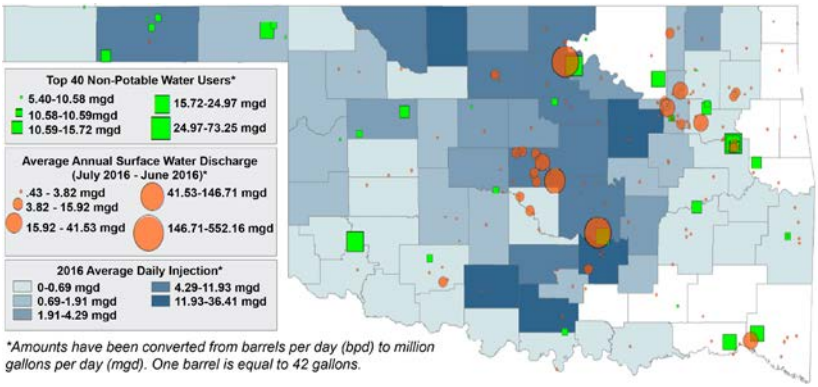
Produced Water Working Group (PWWG) Releases Report and Recommendations

Oklahoma's Water for 2060 Produced Water Working Group (PWWG), developed in December 2015 by Governor Mary Fallin, released a report in late April evaluating current ways that water produced in oil and natural gas operations may be recycled or reused as part of Oklahoma's ongoing efforts to reduce saltwater injection and make produced water a benefit to the state by increasing water supply reliability and drought resiliency across multiple water user sectors.

The workgroup, led by the Oklahoma Water Resources Board (OWRB), included representatives of Oklahoma's oil and gas industry and a wide array of potential water users and stakeholders, including industry, power generation, agriculture, public water providers, state regulators, environmental organizations, and research organizations and universities.

In support of the working group's efforts, a technical study team conducted a preliminary investigation of the feasibility and cost effectiveness of multiple scenarios. This included an analysis of produced water availability in 66 Oklahoma counties. The top 40 major water users in the state (based on permits) were identified, as well as typical water treatment costs for various volumes.

Preliminary Matches of Produced Water with Potential Users



Preliminary matches of produced water with potential users for Oklahoma, created by the technical study team of the Produced Water Working Group (PWWG). These and other findings are available online in the PWWG report at www.owrb.ok.gov/PWWG.

(continued on page 2)

From the Director

Much needed rainfall on the last day of June brought relief to parts of the state that had been suffering from rainfall totals well below normal for that time of year. The return of drought last spring serves as a reminder to Oklahoma communities that now is the time to have a drought plan in place.

I attended the Western States Water Council in Nebraska City in April, where I presented details of our tribal settlement as an example of cooperation, compromise, and inclusion with a low price tag. This was a great opportunity to meet with water leaders from other states to exchange ideas about improving drought resiliency through partnerships and planning at the federal, state, and local levels.

Also in April, we commemorated the 22nd anniversary of the Murrah Building bombing with our annual ribbon tree service on the 19th, and many of our staff participated in the memorial marathon on the 30th. Congratulations to all who made the run and supported our teams!

Julie Cunningham, Executive Director Oklahoma Water Resources Board

(continued on page 2)

PWWG Report (continued)

Ten representative cases were developed and further assessed by coupling a potential produced water user or alternative disposal method to an existing adjoining produced water source. The costs were estimated to range from $0.57 per barrel of water for industry reuse to more than $7 per barrel of water for clean fresh water. The economic benefits of each case were evaluated by the PWWG to prioritize projects and develop recommendations.

Produced Water Working Group Report Recommendations
Reduce the challenges to water reuse through targeted regulations and legislation.
Further investigate methods to facilitate the reuse of produced water in oil and gas operations.
Study further the feasibility of the transferring Mississippi Lime produced water to the STACK play.
Conduct a more detailed evaluation of evaporation as an alternative to injection.
Identify research needs and potential funding partnerships to further accomplish the group's goals.
Continue the PWWG or subgroups to identify opportunities to further cooperative planning.
Support and build upon the Water for 2060 Advisory Council 2015 energy and industry water use sector water conservation findings and recommendations.

Summary of recommendations of the Produced Water Working Group (PWWG) report. Visit www.owrb.ok.gov/PWWG for the full report and links to other PWWG news and resources.

The key finding of the PWWG was that recycling within the oil and gas industry is the best option when possible. Obstacles to this option include the lack of infrastructure, regulations, and other technical barriers.

Evaporation is recommended by the PWWG as the second best option, although more research is needed. This option presents a lower environmental/human health risk than desalination and discharge and can potentially be accomplished near the drilling site to reduce costs of transportation.

Moving forward, the PWWG technical study team has received a $150,000 feasibility study grant from the US Bureau of Reclamation, matched with help from the OWRB and its partners at the Groundwater Protection Council, Environmental Defense Fund, and the Bureau for Economic Geology, to study in greater detail the challenges for industry recycling in the STACK play (in west central Oklahoma) and potential technologies for evaporative solutions.

From the Director (continued)

In late April, I met with all members of our congressional delegation in Washington, D.C., to discuss our agency functions, the Oklahoma Comprehensive Water Plan (OCWP) and its priority recommendations, and other funding and appropriations priorities. Also while there, I attended the Interstate Council on Water Policy (ICWP) board meeting and met with leaders from the USGS, USACE, and NOAA to discuss their strategic priorities and budgets while emphasizing the OWRB's priorities and support.

As noted in our featured article, the Produced Water Working Group (PWWG) finalized and published its recommendations report in April. This report has been very well received and we expect work to continue on these important projects that will help the energy industry meet our Water for 2060 goals of finding ways to use no more fresh water in 2060 than was used in 2010.

We welcomed our new Board members Robert Stallings and Robert Melton at the May Board meeting. We are very excited to work with them, as they both bring a tremendous amount of knowledge and experience to our Board. We also celebrated the successes of our departing Board members, Marilyn Feaver and Ed Fite. Both of these dedicated members made numerous contributions were incredibly supportive to our Board and agency staff in meeting our mission. We are very grateful for all they have helped us accomplish, and they will be missed.

On May 12, the Bureau of Reclamation announced $23.6 million in water reclamation and reuse projects and studies, including three in Oklahoma. The Oklahoma projects include a feasibility study of potential impacts of selected produced water management and reuse scenarios, the City of Ada reuse feasibility study, and the City of Bartlesville feasibility study to augment their water supply with reclaimed water. We look forward to assisting with these important projects that will serve as examples for moving forward on our Water for 2060 goals.

On June 7, I spoke at the 30th Anniversary of the Sovereignty Symposium, focusing on how the settlement helps us advance in implementation of the OCWP and Water for 2060 goals. It was a great opportunity to share how this cooperation promotes conservation, efficiency, planning, and infrastructure investment while protecting recreation, fish & wildlife, and other nonconsumptive interests.

We congratulate Ford Drummond, elected for another term as Chairman in June, and look forward to working closer with him and our other officers, Jason Hitch (Vice Chairman) and Stephen Allen (Secretary), on the upcoming issues.

This year's Oklahoma Governor's Water Conference will be held at the Embassy Suites in Norman on October 31 - November 1. During the luncheon on October 31, we will be celebrating the OWRB's 60th Anniversary! All former OWRB employees are invited to join us. If you are not registering for the conference and would like to attend, please RSVP to Mary Schooley or Mary Nell Brueggen at (405) 530-8800.

OKLAHOMA WATER RESOURCES BOARD

60 YEARS

OKLAHOMA'S WATER AGENCY SINCE 1957

INNOVATION • COLLABORATION • SOUND SCIENCE • SERVICE

ALL former OWRB employees are invited to attend the 60th anniversary luncheon on Oct. 31 at noon! Please RSVP to Mary Schooley or Mary Nell Brueggen at (405) 530-8800.

THIRTY-EIGHTH ANNUAL OKLAHOMA GOVERNOR'S WATER CONFERENCE AND RESEARCH SYMPOSIUM

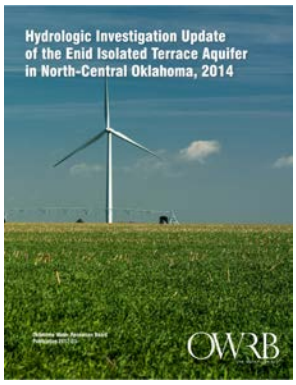
THE VALUE OF WATER INVESTMENT IN OKLAHOMA

OCT 31-NOV 1, 2017
EMBASSY SUITES, NORMAN

LIQUID ASSETS

OWRB Publishes Enid Isolated Terrace 20-Year Update Report

In late June, the OWRB published the 20-year update of the Enid Isolated Terrace (EIT) Aquifer Hydrologic Investigation. The EIT aquifer is located in north-central Oklahoma in the western half of Garfield County with a small portion in Alfalfa County.



20-Year Update of the Enid Isolated Terrace Aquifer Hydrologic Investigation

The report includes an updated description of the area geology and climate, plus detailed hydrogeological information, including an analysis of water use over time, recharge rates, water quality analysis, water level changes over time, and estimated effects of pumping. The objectives of the update were to (1) summarize hydrologic information about the study area from existing reports; (2) evaluate data and information collected between 1982 and 2014; and (3) determine which, if any, changes impacted the aquifer between 1982 and 2014. It should be noted that the study area now includes terrace deposits to the east and west that were identified in recent geologic maps and were not included in the original study area and boundary.

The aquifer is used mainly for public water supply and irrigation with total use averaging 3,243 acre-feet per year from 1967 to 2013. Water quality in the EIT is good with varying water types, although localized high concentrations of nitrates (as nitrogen) and arsenic do occur.

There were approximately 1,600 groundwater wells and 64 groundwater permits located within the study area in 2013. Depth to water was measured in 72 groundwater wells in March 2014 to produce a potentiometric surface map, which indicated that groundwater generally flows to the east-southeast where at least two streams receive discharge from the aquifer. Data from six monitoring wells were analyzed to determine long-term water-level changes in the aquifer. Three wells were equipped with water-level recorders to characterize monthly trends and responses to precipitation.

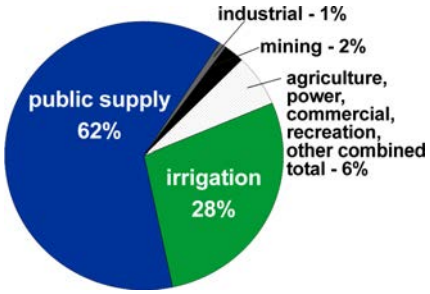
Changes in the City of Enid have also affected water use numbers. The population of Enid increased from about 45,000 in 1982 to about 50,000 in 2010. Beginning in 1995, the City of Enid also began utilizing the Cimarron Terrace aquifer for municipal supply, which decreased the percentage of municipal groundwater use from the EIT.

Annual Reported Water Use*

	1967-2013	1967-1997	1998-2013
Average	3,243	3,095	3,520
Median	3,301	3,284	3,402
Minimum	1,434	1,434	2,106
Maximum	4,882	4,246	4,882

*Shown in acre-feet. Excludes the year 1992.

Annual Reported Water Use by Sector



Average use per year for three time periods (table) and average annual groundwater use by type from the study area, 1967–2013 (pie chart). These figures illustrate the comprehensive overview provided by the study report. Area stakeholders can utilize the updated information for water planning and economic development.

The information provided by the EIT 20-Year Update Report will be utilized by the OWRB and other local and regional stakeholders to ensure the appropriate management and protection of this vital water resource.

The report is available online at **www.owrb.ok.gov/gwstudies**.

Board Welcomes Robert Stallings and Robert Melton

Two new members joined the OWRB in May: Robert Stallings (Enid) and Robert Melton (Claremore).

Robert Stallings

Robert Melton

Robert Stallings will represent oil and gas production interests. He is the founding partner, chairman, and principal engineer for Envirotech Engineering & Consulting. He has worked in the oil and gas industry since 1980. He also has strong background in water issues having worked on multiple water infrastructure projects throughout western Oklahoma, and is a licensed water well driller. Stallings represents the OWRB's Region 2, and his term expires in May 2024.

Robert Melton will represent municipal water use interests. He is the chief executive officer of Melton Dodge (Chrysler Jeep) and president of Melton Land Co. He has served on a number of municipal, industrial, and retail development boards, and has been actively involved in community and education philanthropy. Melton represents the OWRB's Region 8, and his term expires in May 2022.

OWRB Partners with Conservation Commission for Three Green Infrastructure Projects

The OWRB has partnered with the Oklahoma Conservation Commission to fund three green infrastructure projects through the Clean Water State Revolving Fund (CWSRF) program. The projects are focused on McMurtry, Grand, and Eufaula lakes, where several water quality impairments have been identified, such as low dissolved oxygen, nutrients, and turbidity.

The Lake McMurtry project focuses on creation of a pervious parking lot, a low impact development (LID) practice that will increase infiltration and reduce runoff with the goal of improving downstream water quality.

At Lake Eufaula, a wetland along the shore will be constructed. The new area will capture and treat stormwater runoff from a portion of the City of Eufaula and sequester nutrients and other pollutants from entering the lake. Additionally, the wetland will help mitigate the losses of naturally occurring wetlands and create educational and recreational opportunities.

At Grand Lake, a bioretention structure and rain garden will be installed at the Ecosystems and Education Center in Langley. The new areas will capture and treat stormwater runoff from the parking lot, helping to address the lake's water quality issues.

For more information on these projects, contact Lori Johnson at (405) 530-8800. For more information on water quality at McMurtry, Grand, and Eufaula lakes, visit www.owrb.ok.gov/bump.

CW$RF OKLAHOMA

Eligible Green Infrastructure/Low Impact Development (LID) Practices

- Permeable/porous pavements
- Green roofs
- Street trees/urban forestry
- Expansion of tree boxes
- Vegetated swales
- Vegetated median strips
- Cistern and rain barrels
- Land conservation and reforestation
- Elimination of curbs/gutters
- Rain gardens
- And many more!

Soak Up the Rain!

Natural hydrologic processes have always cleansed water as it flows through rivers, lakes, streams, aquifers, and wetlands. In the last several decades, artificial systems have been constructed that emulate these processes to promote water quality improvements.

Constructed wetlands can provide an enormous number of ecological functions, including water purification, flood protection, shoreline stabilization, groundwater recharge, and wildlife habitat. Constructed wetlands can mitigate pollution from both point and nonpoint sources. The slow velocity of water in wetlands allows sediments and nutrients to be trapped and held by plants.

Permeable pavement can help reduce runoff by allowing infiltration of precipitation and water flows. Alternative materials, including pervious asphalt and concrete, interlocking pavers, and plastic grid pavers, allow water to seep through the surface down to underlying layers of soil and gravel. In addition to reducing runoff from rain, permeable pavement can help filter out pollutants and reduce the need for costly conventional drainage features.

Rain gardens can be created in depressed areas in the landscape that collect rain water from a roof, driveway, or street and allow it to soak into the ground. Planted with grasses and flowering perennials, rain gardens can be a cost effective and beautiful way to reduce runoff. Rain gardens can also help filter out pollutants in runoff and provide food and shelter for butterflies, song birds, and other wildlife.

Bioretention is a process in which contaminants and sedimentation are removed from stormwater runoff, often incorporating drainage systems and amended soils. Stormwater is collected into the treatment area, which consists of a grass buffer strip, sand bed, ponding area, organic layer or mulch layer, planting soil, and plants. This practice mimics natural hydrology through infiltration as well as evaporation and transpiration of stormwater runoff.

Green roofs partially or completely cover rooftops with vegetation and a growing medium planted over a waterproof membrane. Green roofs absorb rainwater while providing insulation and wildlife habitat.

Infiltration basins are shallow impoundments that are designed to infiltrate stormwater into the soil. These systems are highly efficient at pollution removal and can help recharge groundwater.

rainfall as a resource

What are rain barrels?

Rain barrels are containers used to collect rain from the roof of a building via the gutter and downspout. The barrel should have a spigot to which a hose may be attached, and an overflow hose to direct water away from the foundation if rain continues to fall after the barrel is full. Rain barrels are often made from 55-gallon food-grade plastic barrels, although they can also be made of other materials.

The next time it rains, watch where the rain goes. Does it soak into the ground? Does it flow across a lawn? Does a downspout send it down a driveway or parking lot to the street and into a storm drain?

By collecting and storing rainwater from rooftops for lawn and garden use, rain barrels stop stormwater runoff from flowing to the nearest storm drain.

Why use rain barrels?

Rain barrels help to conserve water and reduce stormwater runoff. In the summer, outdoor tasks such as watering lawns and gardens typically make up about 40% of household water use. Considering seasonal droughts, restrictions on lawn watering, and the increasing cost of water, it makes sense to use rainwater instead of municipal water outdoors. Unless it is collected, rainwater runs off impervious surfaces, such as roofs and pavement, gathering pollutants that often end up in local streams, rivers, pond, lakes, and marine waters. Keeping and using rainwater on your property helps reduce pollution and erosion while improving local watershed health.

The USEPA estimates that a rain barrel will save most homeowners about 1,300 gallons of water during peak summer months.

How do I install a rain barrel?

1. Purchase or make a rain barrel.
2. Select a location under a downspout.
3. Determine the height of the barrel.
4. Build a platform. Elevating a rain barrel a foot or so above the ground increases water pressure, which comes solely from gravity. Full rain barrels typically weigh more than 400 lbs., so the platform must be made of sturdy materials such as cinder blocks or bricks. The platform must be flat, level, and large enough to support the entire base of the barrel.
5. Place the rain barrel on the platform.
6. Cut the house downspout to fit the barrel's opening. You may connect the downspout directly to the lid opening, connect them via a flexible pipe, or simply direct the downspout to the opening in your barrel. You may also wish to install a downspout diverter, which allows you to divert water back into your downspout during winter or when you do not wish to collect rainwater.
7. Attach a hose to the overflow fitting. Use a length of hose sufficient to drain excess rainfall away from your foundation into a garden area or into another rain barrel. Keep the overflow valve open at all times.

Rainwater Quality

Rainwater is "soft," or free from minerals and chemicals such as chlorine, fluoride, and calcium that are often present in municipal water. Rainwater is considered ideal for watering plants, filling swimming pools, or washing cars and windows.

Rainwater Quantity

Just 1/4 inch of rainfall on a typical roof will fill a rain barrel, and a full rain barrel will water a 200 square foot garden. A good rule of thumb is that 1 inch of rain on a 1000 square foot roof yields 623 gallons of water. You can calculate the yield of your roof by multiplying the square footage of your roof by 623 and dividing by 1000.

Visit your local home improvement store or shop online for rain barrels. Commercially available 55-gallon rain barrels start at around $60.

For more tips, visit Oklahoma City's "squeeze every drop" web page at www.okc.gov/departments/utilities/squeeze-every-drop.

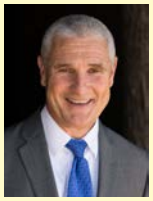
Winterize your barrel.

1. Disconnect the diverter.
2. Completely drain the barrel. Direct the water away from the house foundation.
3. Replace the diverter with a cover or invert the diverter and reinstall.

WATER FOR 2060
EFFICIENCY · CONSERVATION · RECYCLING · REUSE

OWRB Hires New Division Chiefs

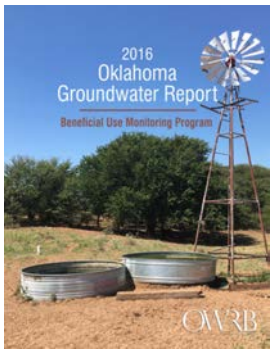
Bill Cauthron has been named Chief of the OWRB's Water Quality Programs Division. Bill began his career at the OWRB as an intern conducting Clean Lakes Phase I and Phase II studies, and was hired full time in 1989. He later assumed the duties of lead investigator for the National Lakes Assessment and was instrumental in establishing Oklahoma Water Watch, the agency's volunteer lake monitoring program. From 1998-2015, Bill oversaw the Beneficial Use Monitoring Program (BUMP), funded by the Oklahoma legislature in 1998 to assess lakes and streams and expanded in 2013 to include the Groundwater Monitoring and Assessment Program (GMAP). In 2015, Bill assumed the role of Assistant Chief of the Division. He has represented the OWRB in partnership programs such as the USGS Cooperative Stream Gaging Program and the NRCS National Water Quality Initiatives.

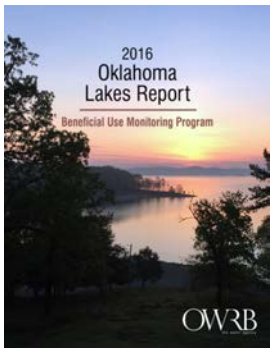


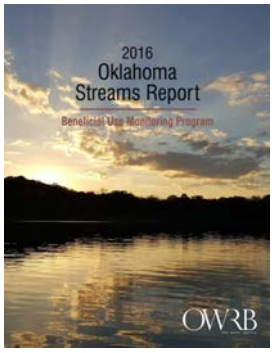
Kent Wilkins has been named Chief of the OWRB's Planning and Management Division. Kent has been involved in environmental hydrogeology and geology for more than 30 years. Prior to joining the OWRB in 1990, he worked as a well-site geologist at oil and gas drill sites and a consultant for investigating leaking underground fuel storage tank sites. Kent began his career at the OWRB assisting the Well Drillers and Water Quality programs from the McAlester field office. He later moved to the Oklahoma City office and worked directly for the Well Drillers Program. In 2012, Kent became Assistant Chief of the Planning & Management Division. Kent is a Certified Remediation Consultant, Certified Floodplain Manager, and a Registered Professional Environmental Specialist. He is a member of the Oklahoma Ground Water Association, National Ground Water Association, and Oklahoma Floodplain Managers Association.

Oklahoma Water Monitoring Reports Available

The Oklahoma Water Resources Board's Beneficial Use Monitoring Program (BUMP) annual reports of statewide water quality data for lakes, streams, and groundwater are now available online at **www.owrb.ok.gov/BUMP**.







The BUMP Lakes and Streams reports feature summaries of physical, chemical, and biological data obtained through sampling at approximately 130 lakes and 100 stream sites throughout the state, and include an assessment of beneficial use impairments or threats for each site. The online version contains summary pages listed by stream site or lake site with links to downloadable data. Agency monitoring staff sample streams in the network annually and lakes on a three-year rotation. Oklahoma's major aquifers are sampled through the Groundwater Monitoring and Assessment Program in approximately 750 wells across the state. The GMAP online report also includes summaries for each aquifer that show nutrient, mineral, and metal statistics as well as general parameters, such as depth to water, alkalinity, hardness, and total dissolved solids (TDS).

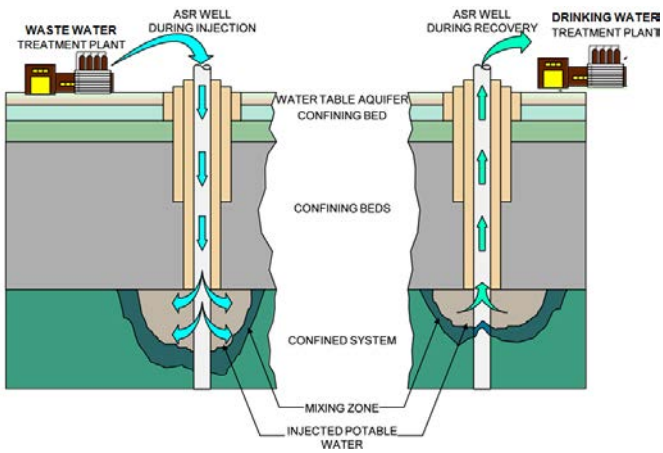
Rules Approved to Facilitate ASR Project Implementation

On June 13, Governor Mary Fallin approved proposed permanent rule changes to Oklahoma's Water Quality Standards, including language that will allow functionality and flexibility in the use and protection of Oklahoma's groundwater, particularly regarding Aquifer Storage and Recovery (ASR) projects.

While the protection of existing water quality remains at the foundation of the groundwater standards, the new language will allow flexibility of their application with the most sensitive beneficial use setting the baseline of protection.

Prior to these changes, the standards required existing water quality to be maintained with no introduction of non-natural substances and lacked clear targets to protect beneficial uses. These measures essentially prevented the development of ASR projects.

The revisions were developed through the ASR workgroup, which convened in 2016 with members from multiple organizations and agencies, holding informal stakeholder meetings and a formal comment period in December.

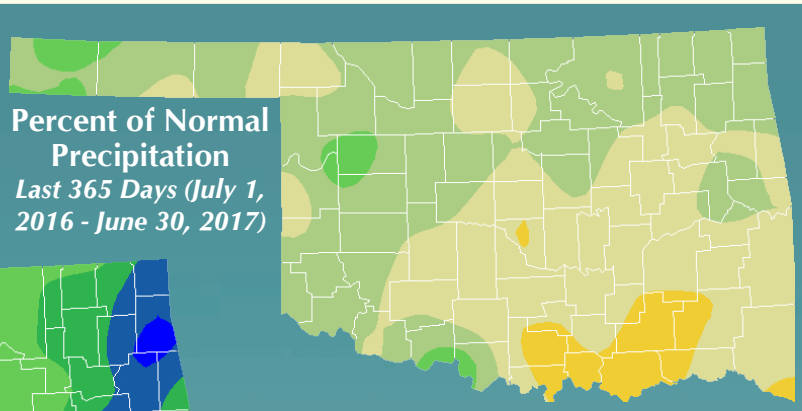


Aquifer Storage and Recovery (ASR) project diagram

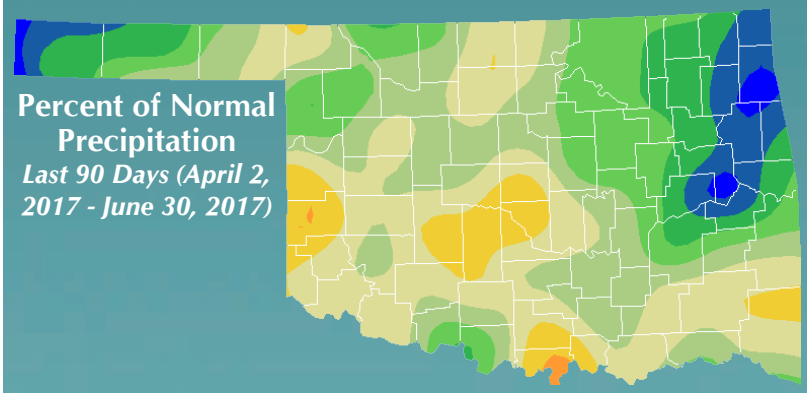
Drought Update

RAINFALL	Last 90 Days April 2, 2017 – June 30, 2017				Last 365 Days July 1, 2016 – June 30, 2017			
Climate Division	Total Rainfall (inches)	Departure From Normal (inches)	Percent of Normal	Rank Since 1921	Total Rainfall (inches)	Departure From Normal (inches)	Percent of Normal	Rank Since 1921
PANHANDLE	9.47"	+2.07"	128%	23rd wettest	22.26"	+1.68"	108%	25th wettest
NORTH CENTRAL	12.56"	+0.92"	108%	29th wettest	33.05"	+1.63"	105%	28th wettest
NORTHEAST	21.46"	+6.69"	145%	9th wettest	45.59"	+2.92"	107%	23rd wettest
WEST CENTRAL	9.88"	-0.61"	94%	48th wettest	32.36"	+3.96"	114%	14th wettest
CENTRAL	13.25"	-0.01"	100%	46th wettest	35.49"	-2.14"	94%	40th wettest
EAST CENTRAL	22.30"	+7.64"	152%	7th wettest	43.92"	-2.22"	95%	43rd wettest
SOUTHWEST	10.35"	-0.58"	95%	47th driest	32.04"	+1.77"	106%	24th wettest
SOUTH CENTRAL	13.16"	-0.63"	95%	49th wettest	33.65"	-7.06"	83%	32nd driest
SOUTHEAST	15.45"	+0.23"	101%	47th driest	42.54"	-8.05"	84%	24th driest
STATEWIDE	14.27"	+1.77"	114%	22nd wettest	35.58"	-0.89"	98%	43rd wettest

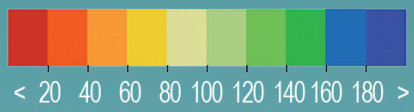
OKLAHOMA CLIMATOLOGICAL SURVEY

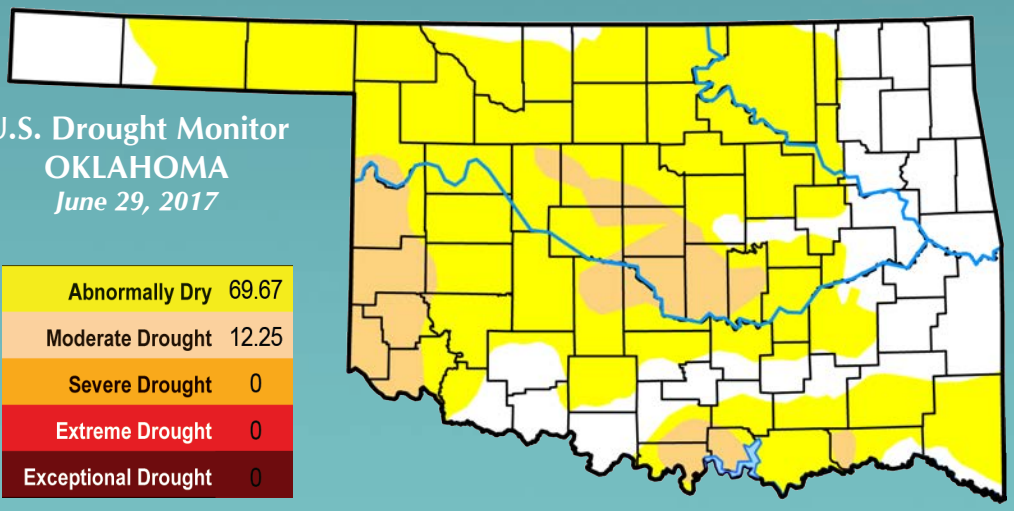


Percent of Normal Precipitation
Last 365 Days (July 1, 2016 - June 30, 2017)



Percent of Normal Precipitation
Last 90 Days (April 2, 2017 - June 30, 2017)





U.S. Drought Monitor
OKLAHOMA
June 29, 2017

Abnormally Dry	69.67
Moderate Drought	12.25
Severe Drought	0
Extreme Drought	0
Exceptional Drought	0

Data obtained from the National Drought Mitigation Center, USDA,NOAA and Oklahoma Climatological Survey. For more drought information, and to obtain updated information on Oklahoma's drought and moisture conditions, visit **www.drought.ok.gov**.

Financial Assistance Program Update

Loans & Grants Approved as of July 1, 2017

FA Loans—379 totaling $1,016,565,000
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.

CWSRF Loans—306 totaling $1,439,902,200
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—189 totaling $1,154,148,300
The Drinking Water State Revolving Fund (DWSRF) loan program is an initiative of the OWRB and ODEQ 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—669 totaling $59,349,341
The Rural Economic Action Plan (REAP) Program was created by the State Legislature in 1996. REAP grants, used for water/wastewater system improvements, primarily target rural communities with populations of 7,000 or less, but priority is afforded to those with fewer than 1,750 inhabitants.

Emergency Grants—573 totaling $34,007,132
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 proceeds to fund the Program.

Water for 2060 Grants—8 totaling $2,625,000
Through the Water for 2060 Grant Program, funding is available for municipalities, counties, water/sewer districts and other public entities for projects that highlight the responsible use of water.

Total Loans/Grants Approved: 2,130 totaling $3,707,015,820
Estimated Savings: $1,256,705,226

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, 2017

Published online at www.owrb.ok.gov.

Follow us on twitter @OKWaterBoard for publication notification.

The Oklahoma Water News *is published quarterly by the Oklahoma Water Resources Board as authorized by Julie Cunningham, Executive Director. For questions, comments, or article submissions, please contact Darla Whitley, Editor, at pubinfo@owrb.ok.gov or (405) 530-8800.*

Nominations Open for the Oklahoma Water for 2060 Excellence Award

In support of the Oklahoma Water for 2060 Act and recommendations by a special advisory council to the Governor and Legislature, the Water for 2060 Excellence Award program was developed to recognize individuals and entities in three categories—Public Water Supply, Energy/Industry, and Crop Irrigation/Agriculture Production— that serve as outstanding examples of water use efficiency and conservation of fresh water resources. Award winners will be acknowledged at the annual Governor's Water Conference luncheon on October 31.

Eligible public water supply entities include cities, towns, rural water districts, wholesale water providers, or water corporations that provide water to the public for human consumption and/or other purposes. Example projects include (but are not limited to) water conservation planning and implementation, leak detection, water loss audits, conservation pricing, regionalization, outdoor watering restriction ordinances, conservation education programs, and water reuse systems.

The Energy/Industry award will recognize entities that use water for mining, extraction, fabricating, washing, diluting, cooling, sanitation, or other relevant uses for the production and/or transport of goods or commodities in Oklahoma. Example projects include (but are not limited to) reuse/recycling, grey water systems, rainwater/capture systems, water efficient practices in landscaping or other outdoor uses, and employee education programs.

The Crop Irrigation/Agriculture Production category is open to entities primarily engaged in the practice of cultivating the soil, producing crops, and/or raising livestock. Example projects include (but are not limited to) water conservation planning and implementation, replacing systems with water-efficient technologies such as low pressure systems, irrigation scheduling based on soil water content or soil water tension, replacing fresh water use with recycled or marginal waters (including tailwater reuse), conversion to less water-demanding crop varieties, and conservation tillage/soil health practices that conserve water, improve infiltration rates, and reduce runoff.

Projects implemented within the last five years are eligible. Any individual, group, agency, association, council or organization may nominate an entity or may self-nominate.

Nomination forms are available online at www.owrb.ok.gov/2060/award.php.

For questions or comments contact Lindy Clay at (405) 530-8858 or by email at lindy.clay@owrb.ok.gov.

WATER FOR 2060
EFFICIENCY · CONSERVATION · RECYCLING · REUSE

The Oklahoma Water Resources Board meets monthly. Meetings are open to the public. Visit www.owrb.ok.gov for meeting dates/times, locations, and agendas.

OKLAHOMA
Water News
3rd Quarter 2017

Inside

Author Seth Siegel to Keynote Governor's Water Conference

Governor's Water Conference Agenda

OWRB REAP Grant to Help with Cleveland County Water Needs

OWRB Launches Fish Monitoring Sites Map Viewer

Drought Update

FAP Update

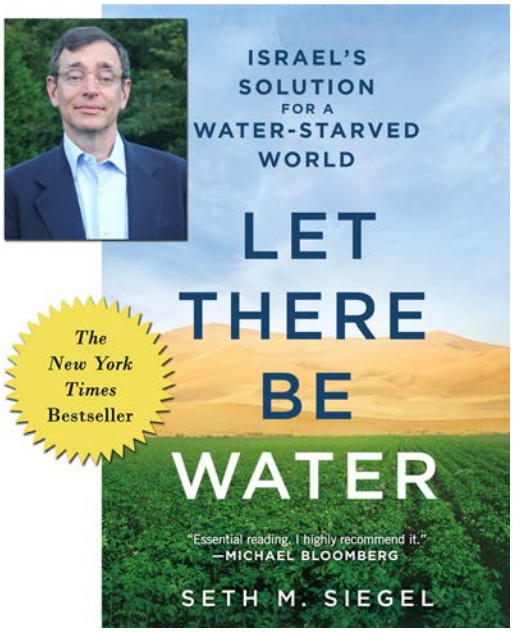
Author Seth Siegel To Keynote Governor's Water Conference

The 38th Annual Oklahoma Governor's Water Conference will be held on October 31 - November 1 at the Embassy Suites Conference Center in Norman, OK. This year's keynote speaker is Seth Siegel, author of *Let There Be Water*, which focuses on the methods and techniques that have enabled Israel to lead the world in cutting-edge water technology.

According to Siegel, Israel can serve as a model for other countries on how to combat water shortages. Even though 60 percent of Israel is comprised of desert, the country has not only solved its water problems, but now has an abundance of water–enough to supply water to its neighbors in Palestine and the Kingdom of Jordan.

In *Let There Be Water*, Siegel offers an analysis of water-saving innovations like the creation of smart seeds for drought-friendly plants, careful reuse of treated wastewater, and desalination. He also points out that cooperation on water systems can forge diplomatic ties and promote unity.

Siegel's essays have appeared in *The New York Times*, *The Wall Street Journal*, *The Los Angeles Times,* and many other publications on business, political, and cultural issues. Siegel is a member of the Council on Foreign Relations, an independent, nonpartisan membership organization and think tank dedicated to a better understanding of the world and foreign policy choices.



Seth Siegel's Let There Be Water *focuses on the methods and techniques that have enabled Israel to lead the world in cutting-edge water technology. Complimentary copies of the book will be offered to attendees of the Oklahoma Governor's Water Conference on Oct. 31-Nov. 1 at the Embassy Suites in Norman.*

From the Director

We have closed the books on another summer of unpredictable Oklahoma weather! The statewide rainfall fluctuated from well below average in July to almost record high in early August and back into dry weather in early September (see page 4)! The quarter ended with severe shortages in the Southeast region, which typically leads the state in average rainfall. Once again, this provides all the more reason for every community across the state to prepare for drought, which can appear at any time and place with little warning!

From Oct. 31-Nov. 1, the OWRB and Oklahoma Water Resources Center will host the 38th Annual Oklahoma Governor's Water Conference and Research Symposium. As always, we have prepared a full slate of dynamic experts to address the state and nation's most important water issues and we anticipate 300 to 400 attendees—public water officials and academics, private professionals, students, and citizens who share an avid interest in Oklahoma's water resources management, development, and protection.

(continued on page 2)

Julie Cunningham, Executive Director Oklahoma Water Resources Board

From the Director (continued)

With this year's theme–"Liquid Assets: the Value of Water Investment in Oklahoma"--we will focus on the economic value of water and water infrastructure investment in the agriculture, municipal, industrial, tourism, energy, and navigation water use sectors and the impact it has on our economy and way of life.

Governor Mary Fallin will kick off the event, followed by keynote speaker, Seth Siegel, author of the New York Times bestseller *Let There Be Water*. Attendees will hear from experts from each sector as well as our congressional and state legislative delegation; Major General Ed Jackson, Deputy Commanding General for Civil and Emergency Operations, US Army Corps of Engineers; Kenneth Wagner, Senior Advisor to the Administrator for Regional and State Affairs, US Environmental Protection Agency; and Layne Carter, NASA Marshall Space Flight Center, regarding important legislation, infrastructure, federal support, and water recycling in space.

We will celebrate the OWRB's 60th anniversary with a look back at milestones in Oklahoma's rich water history; present the Water Pioneer award to a new group of distinguished honorees who have positively impacted Oklahoma's water management; and present our first-ever Water for 2060 Excellence Awards to deserving nominees who demonstrate water efficiency, conservation, and recycling in Oklahoma's largest water use sectors—Public Water Supply, Crop Irrigation/Agriculture Production, and Energy/Industry.

There are many other great speakers and topics lined up for what will be an engaging two days of focus on Oklahoma water. Please take a look at the agenda and visit **www.owrb.ok.gov/GWC** for the most up-to-date information. I look forward to seeing you at the Conference!

OKLAHOMA WATER RESOURCES BOARD

60 YEARS

OKLAHOMA'S WATER AGENCY SINCE 1957

INNOVATION • COLLABORATION • SOUND SCIENCE • SERVICE

ALL former OWRB employees are invited to attend the 60th anniversary luncheon on Oct. 31 at noon! Please RSVP to Mary Schooley or Mary Nell Brueggen at (405) 530-8800.

PLEASE RSVP BY OCTOBER 20.

WATER CONFERENCE AND RESEARCH SYMPOSIUM

THE VALUE OF WATER INVESTMENT IN OKLAHOMA

OCT 31-NOV 1, 2017
EMBASSY SUITES, NORMAN

LIQUID ASSETS

OKLAHOMA GOVERNOR'S WATER CONFERENCE AND RESEARCH SYMPOSIUM AGENDA

October 31, 2017

8:30 WELCOME
Ford Drummond, Chairman, OWRB
Oklahoma Governor Mary Fallin
Keynote: Seth Siegel, Author of *Let There Be Water*

10:00 BREAK

10:30 CONCURRENT SESSIONS
Water Conference: Energy Panel
Michael Teague, Oklahoma Secretary of Energy & Environment
Michael Dunkel, CH2M, Facilitator for the Produced Water Working Group
Nikki Fuller, Executive Director, Southwestern Power Resources Association
Usha-Maria Turner, OGE Energy Corp
Research Symposium: Poster Presentations

12:00 LUNCHEON
Video Welcome from Senator James Inhofe
OWRB 60th Anniversary Celebration
Julie Cunningham, Executive Director, OWRB
Dr. Bob Blackburn, Executive Director, Oklahoma Historical Society
Oklahoma Water Pioneer Awards

2:00 CONCURRENT SESSIONS
Research Symposium: Irrigation Water Use Efficiency
Water Conference: Nonconsumptive Use Panel
Video Welcome from Congressman Tom Cole
Scott Robinson, Director, Port of Muskogee
Roy Williams, CCE, President & CEO, Greater Oklahoma City Chamber
Dian Jordan, PhD, Sociologist

3:00 BREAK

3:30 GENERAL SESSION
Gary McManus, Oklahoma State Climatologist
Major General Ed Jackson, US Army Corps of Engineers (USACE)
Kenneth Wagner, US Environmental Protection Agency (EPA)
Poster Contest Award Winners: Dr. Kevin Wagner, Director, OWRC

5:00 RECEPTION

November 1, 2017

8:30 WELCOME
Julie Cunningham, Executive Director, OWRB
Water for 2060 Excellence Awards
Michael Teague, Oklahoma Secretary of Energy & Environment
Jim Reese, Oklahoma Secretary of Agriculture
Keynote: Layne Carter, NASA Marshall Space Flight Center
Oklahoma Legislative Update

10:00 BREAK

10:30 CONCURRENT SESSIONS
Water Conference: Municipal and Industrial Panel
Matt Newman, Tulsa Regional Water Policy Task Force
Robert Moore, Manager, Marshall County Water Corp.
Kim Peterson, Mayor, Guymon, OK
Marc Hoss, Plant Manager, Koch Industries
Continuing Legal Education Sessions, OBA Environmental Law Section
Research Symposium: Role of University Water Centers & Institutes
Federal & State Programs to Support Water Management in Oklahoma

12:00 LUNCHEON
Dr. Todd Halihan, Professor of Hydrogeophysics, Oklahoma State University
Video Welcome from Senator James Lankford
4H Speech Contest Winners

2:00 CONCURRENT SESSIONS
Water Conference: Agriculture Panel
Video Welcome from Congressman Frank Lucas
Jim Reese, Oklahoma Secretary of Agriculture
Tracy Streeter, Executive Director, Kansas Water Office Director
Jimmy Emmons, Leedy, OK
Dan Sebert, National Watershed Coalition
Symposium Session 4: Surface Water Assessment & Management

3:00 BREAK/ADJOURN WATER CONFERENCE

3:30 Research Symposium: Groundwater Hydrologic Evaluations
OWRB Monthly Meeting

5:00 ADJOURN RESEARCH SYMPOSIUM

OWRB REAP Grant to Help with Cleveland County Water Needs

On September 20, a special reception was held by the Cleveland County RWSG & SWMD #1 to accept a ceremonial check from the OWRB for a Rural Economic Action Plan (REAP) grant approved in late June. The $150,000 grant will be used to explore opportunities for adding a water supply source.

The District's goal is to supply water services to the rural community located on the east side of Cleveland County, which currently has no public water or sewer facilities. Residents have been relying on shallow wells, pond water filtering systems, and hand dug cisterns, as well as septic systems for sewage disposal. For some areas, in addition to insufficient quantities of groundwater, there are significant water quality issues as well.

To help alleviate these needs, the District has entered into a groundwater lease agreement with Oklahoma Department of Wildlife Conservation to take and use 960 acre-feet per year of groundwater from 1,920 acres of land. The grant funding will be utilized for water rights acquisition, surveying, and drilling a deep test well.

In addition to supplying services to the rural community, the District plans to provide water supply to the City of Lexington to meet about 35 percent of the city's demand.

OWRB presentation of ceremonial check to Cleveland County RWSG & SWMD #1. Pictured left to right: Kimberly Hornbuckle, Consulting Engineer; Kent Wilkins, OWRB; Joe Freeman, OWRB; Harold Haralson, Cleveland County Commissioner; Bobby Cleveland, State Representative; Gary Koehn, District Board Member; Jerri Hargis, OWRB; Sara Senyondo, OWRB; Richard Tarp, District Treasurer; and Robert Grisham, District Board Member.

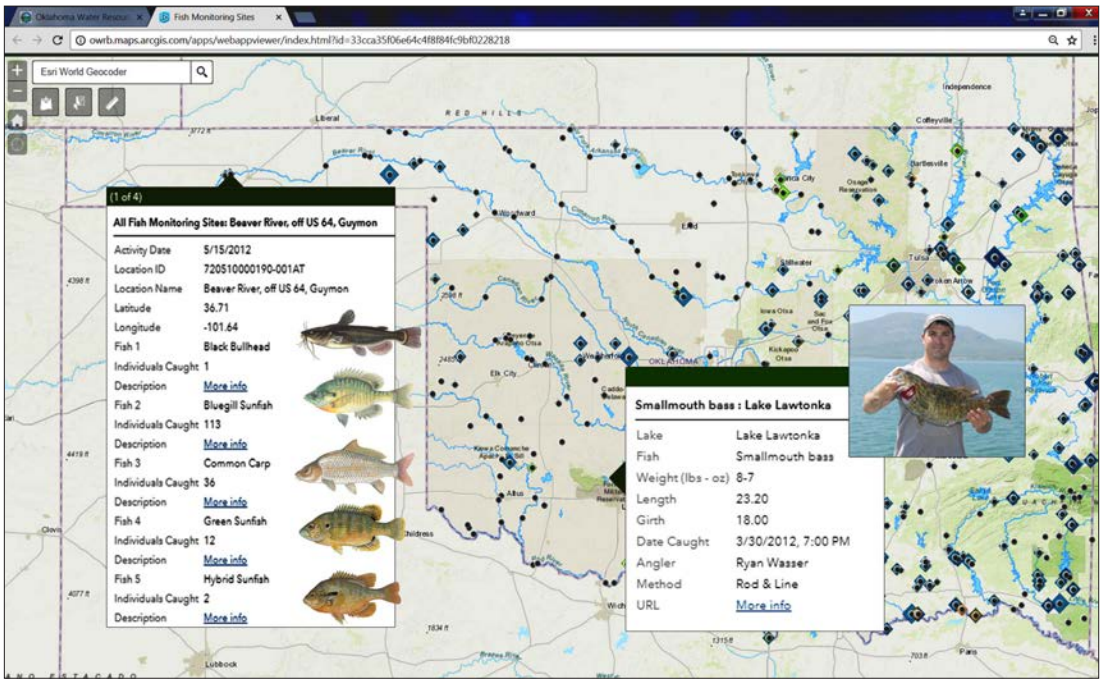
Joe Freeman, chief of the OWRB's Financial Assistance Division, calculated that the grant will save the District's customers $270,000 in principal and interest charges by not having to borrow the project funds.

State Representative Bobby Cleveland also attended the ceremony to show his support of water and wastewater infrastructure funding for rural areas of Oklahoma.

OWRB Launches Fish Monitoring Sites Map Viewer

The OWRB's Streams Monitoring section has collaborated with OWRB GIS staff to launch an interactive map viewer highlighting the agency's fish collection data from 2003 to 2016 at nearly 400 sites across the state.

Biological specimens are analyzed as part of the OWRB's Beneficial Use Monitoring Program (BUMP) and the Statewide Surface Water Statistical Survey monitoring program. More than 150 species are represented on the viewer, which can be accessed at **www.owrb.ok.gov/maps**.



OWRB's new Fish Monitoring Sites map viewer. To access the viewer, visit www.owrb.ok.gov/maps.

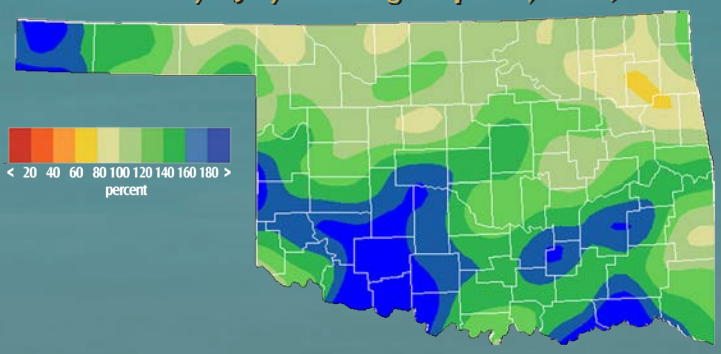
The layers panel to the left of the map viewer allows the user to select to view all fish species collected, fish by type, or all sports fish. Some sites are linked to record fish data and photos.

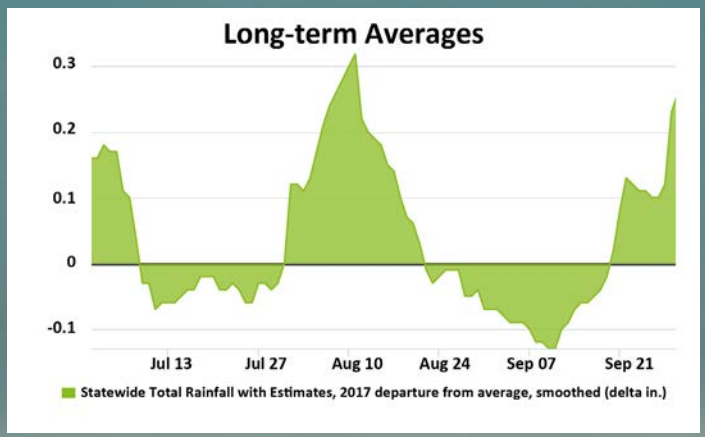
The goal of the OWRB's monitoring programs is to provide statistically sound, unbiased information on the health of streams and rivers across Oklahoma. OWRB staff collect fish data between May and October from each stream reach using seines or electrofishing equipment, depending on water conditions. Most fish are identified on site and released.

Drought Update

Percent of Normal Precipitation

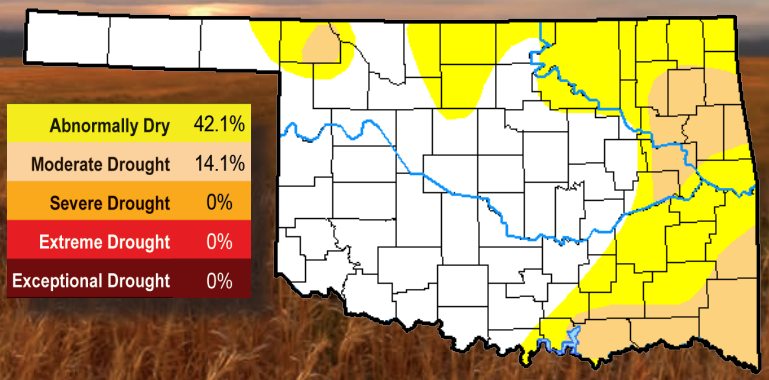
Last 90 Days (July 2 through Sept. 29, 2017)





U.S. Drought Monitor

October 3, 2017



Data obtained from the National Drought Mitigation Center and Oklahoma Climatological Survey. For more drought information, and to obtain updated information on Oklahoma's drought and moisture conditions, visit www.drought.ok.gov.

Financial Assistance Program Update

Loans & Grants Approved as of September 30, 2017

FA Loans—380 totaling $1,022,310,000
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.

CWSRF Loans—309 totaling $1,455,918,950
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—190 totaling $1,166,748,300
The Drinking Water State Revolving Fund (DWSRF) loan program is an initiative of the OWRB and ODEQ 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—672 totaling $59,561,641
The Rural Economic Action Plan (REAP) Program was created by the State Legislature in 1996. REAP grants, used for water/wastewater system improvements, primarily target rural communities with populations of 7,000 or less, but priority is afforded to those with fewer than 1,750 inhabitants.

Emergency Grants—575 totaling $34,178,455
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 proceeds to fund the Program.

Water for 2060 Grants—8 totaling $2,625,000
Through the Water for 2060 Grant Program, funding is available for municipalities, counties, water/sewer districts and other public entities for projects that highlight the responsible use of water.

Total Loans/Grants Approved: 2,140 totaling $3,741,761,193
Estimated Savings: $1,267,704,274

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, 2017

Published online at www.owrb.ok.gov.

Follow us on twitter @OKWaterBoard for publication notification.

The Oklahoma Water News is published quarterly by the Oklahoma Water Resources Board as authorized by Julie Cunningham, Executive Director. For questions, comments, or article submissions, please contact Darla Whitley, Editor, at pubinfo@owrb.ok.gov or (405) 530-8800.

The Oklahoma Water Resources Board meets monthly. Meetings are open to the public. Visit www.owrb.ok.gov for meeting dates/times, locations, and agendas.

OKLAHOMA
Water News
4th Quarter 2017

Inside

OWRB Initiates Annual Water for 2060 Excellence Awards

2017 Annual Report of OWRB Programs & Initiatives

- *Water Use Appropriation*
- *Water & Wastewater System Financing*
- *Hydrologic Investigations*
- *Water Quality Standards*
- *Water Quality & Quantity Monitoring & Lake Restoration Projects*
- *Well Driller & Pump Installer Licensing*
- *Dam Safety & Floodplain Management*
- *Water for 2060*
- *Water Resource Mapping*
- *Legal Update*
- *OWRB Partnerships*

Drought Update

FAP Update

OWRB Initiates Annual Water for 2060 Excellence Awards

The inaugural Oklahoma Water for 2060 Excellence Awards ceremony was held during the 38th Annual Oklahoma Governor's Water Conference on November 1, 2017. The program was developed to recognize individuals and entities that make exceptional contributions to the promotion and implementation of water use efficiency and conservation of Oklahoma's fresh water resources for the Crop Irrigation and Agriculture Production, Energy and Industry, and Public Water Supply sectors. The awards support Oklahoma's Water for 2060 Act and the recommendations of a special advisory council to Governor Mary Fallin and the Oklahoma Legislature. Winners included Jimmy Emmons, the Long Family Farms Partnership, Koch Fertilizer, Newfield Exploration Company, Continental Resources, OG&E, the City of Oklahoma City, and the City of Edmond.

Ginger and Jimmy Emmons, winners of the 2017 Water for 2060 Excellence Award for Crop Irrigation and Agriculture Production. Presenting the award on behalf of Governor Mary Fallin are Jim Reese, Secretary of Agriculture (far left) and Julie Cunningham, OWRB Executive Director (far right).

CROP IRRIGATION & AGRICULTURE PRODUCTION

Jimmy Emmons

Jimmy Emmons, a third generation farmer in Leedey, was recognized for discovering and sharing methods for combating increasing irrigation and synthetic fertilizer needs through conservation and no-till farming. Starting in 2012, with technical assistance from USDA-NRCS soil scientist Steve Alspaugh, Jimmy

(continued on page 2)

From the Director

I hope everyone had a wonderful holiday season in spite of the cold and dry weather conditions! Even though heavy rains earlier in the year put year-end totals well above average, the last three months of the year were extremely dry at 3.12 inches below average statewide.

Julie Cunningham, Executive Director Oklahoma Water Resources Board

The 2017 Governor's Water Conference and Research Symposium was attended by a diverse crowd of more than 450 individuals from industry, government, and academia. The theme was "Liquid Assets: The Value of Water Investment in Oklahoma," focusing on the importance of water to Oklahoma's economy.

During the Conference, we were pleased to present the first annual Water for 2060 Excellence Awards, a recommendation of the Water for 2060 Advisory Council, to recognize exceptional contributions to the promotion and implementation of water conservation, efficiency, and reuse initiatives. Even though no funding has been authorized to implement

(continued on page 2)

From the Director (continued)

the Council's twelve recommendations, the OWRB is finding ways to make progress in meeting our goal of using no more fresh water in 2060 than was used in 2010. Additional efforts include feasibility studies by the Produced Water Working Group, the development of new groundwater rules to allow Aquifer Storage and Recovery programs, development of rules allowing communities to augment public water supplies through Indirect Potable Reuse, and the development of a Water for 2060 web portal for existing water conservation programs at the state, county, and local level (see details on page 6).

A special thanks goes out to our award winners, sponsors, speakers, and everyone who attended the 2017 Water Conference. I hope to see you next year!

This issue of the Oklahoma Water News contains the annual report of OWRB activities for 2017. The OWRB's hard-working and dedicated staff have focused their efforts on increasing and improving our services and products—in spite of declining state appropriations—through improved efficiencies and by seeking out federal and local partnerships and other funding opportunities. More of our 2017 accomplishments will be discussed in the following pages.

Congratulations to our 2017 Water Pioneers!

Glen Cheatham invested his professional career in water resource development, first as Port Manager at the Port of Muskogee and later as Manager of the Oklahoma Waterways Branch where he oversaw the McClellan-Kerr Arkansas River Navigation System for Oklahoma and obtained funding for Montgomery Point Lock and Dam, which now serves to protect the navigation system and strengthen its resiliency.

Jim Townsend served in the Oklahoma House of Representatives from 1964-1980, serving as majority floor leader from 1975-1978. The legislation he is most well-known for is the 1970 Scenic Rivers Act, which resulted in special protective status for the Illinois River, Flint Creek, Barren Fork Creek, Lee Creek, Little Lee Creek, and the Upper Mountain Fork River.

Pete White served as a City Councilman and led the reorganization of the Oklahoma City Water Utilities Trust, which was given Standard and Poor's and Moody's highest bond ratings, placing it in the top 5.5% of nationwide water and wastewater utilities. Mr. White also played an important supporting role in the Water Rights Settlement between Oklahoma City, the State of Oklahoma, and the Chickasaw and Choctaw Nations.

Water for 2060 Excellence Awards (continued)

experimented with small plots of cover crops following wheat to formulate a conservation plan that would improve the health of the soil and reduce input costs. Jimmy selected cover crops that were less water-intensive and good sources of nitrogen. The next year, soil tests and water use analyses showed positive results. In 2014, Jimmy's project expanded beyond 2,000 cropland acres to include 5,000 rangeland acres. In 2015, Jimmy further reduced his water usage by implementing a rotational grazing system so that his cattle herd fed on the cover crops. This reduced the amount of hay needed to feed the 200-head herd, and in turn, reduced irrigation requirements. Jimmy has taken the additional step of reaching out to other farmers and ranchers across the nation to advocate switching to a soil health based agriculture system to improve resiliency.

Long Family Farms Partnership

The Long Family Farm has been in operation in Texas County since the early 1900s, producing corn, wheat, soybeans, sorghum, and sunflowers on 12,000 acres of farmland. Over the years, the Longs have become exemplary water stewards by adapting to new technology and farming methods, significantly reducing their water use while maintaining (and improving) crop production levels.

Pat Long, Long Family Farms Partnership

In the 1970s, the Longs were producing 100 bushels per acre of corn using flood irrigation, which provided uneven soil coverage and had a high rate of evaporation. Today, the Longs produce an average of 220 bushels per acre using the center pivot with about 90% water efficiency. In 2012, the Longs began growing genetically modified drought resistant corn and installed high tech monitoring systems on their center pivots that send out notifications if a sprinkler malfunctions. In 2014, the Longs converted all of their irrigated acres to no-till farming for soil health and water conservation, which increased the number of acres irrigated per well and doubled their yields.

ENERGY & INDUSTRY

Koch Fertilizer

Koch Fertilizer's Enid facility, one of the largest fertilizer production plants in North America, is undergoing an expansion that will increase its daily water needs from four million gallons per day to six million. Working with the City of Enid, Koch implemented a strategy to lessen the burden of additional water usage requirements on the city's water supply. Installation of new technology will allow Koch to use treated wastewater instead of drinking water for the majority of its water needs. The City of Enid and Koch Fertilizer are working together on minor improvements so the full amount of wastewater can be used by Koch, dropping the total potable water demand to around 1 million gallons per day or less.

Michael Teague, Secretary of Energy and Environment (left), and Julie Cunningham, OWRB Executive Director, present the Water for 2060 Excellence Award to Marc Hoss, Koch Fertilizer Enid facility plant manager.

(continued on page 7)

2017 Annual Report of OWRB Programs & Initiatives

Water is essential for Oklahoma. Oklahoma's economic future and quality of life depend on it. With an estimated 390 million acre-feet of water stored in major groundwater basins, more than 15 million acre-feet of storage in major reservoirs, and 170,000 miles of rivers and streams, Oklahoma is a water rich state with the resources to support agriculture production, municipal development, business and industry, outdoor recreation, and so much more.

Management of the state's water resources presents many challenges, including competition among users, distribution of supplies, and shortages during periods of extended drought. The OWRB remains focused on ensuring a reliable supply of clean water for all Oklahomans through its agency programs and initiatives.

Water Use Appropriation

Oklahoma's fresh water resources are managed by the OWRB through more than 13,000 permits for 6.7 million acre-feet of water per year for public water supply, agriculture, industry, power generation, recreation, and oil and gas drilling. Approximately 1,500 provisional temporary permits are issued each year for oil and gas developers or others in need of a temporary (90-day) source of water. The agency coordinates statewide water use reporting, manages shortages during times of drought, and responds to public complaints.

In 2017, OWRB staff issued 102 groundwater and stream water permits for a total of 245,006 acre-feet and 1,775 provisional temporary permits. The agency manages a total of 13,035 active permits for 2.9 million acre-feet of surface water and 3.8 million acre-feet of groundwater.

OWRB permitting specialist Kelsey Bowman assists with the permit application process.

Water & Wastewater System Financing

As the State's primary water and wastewater infrastructure financing agency, the OWRB has provided more than $3.8 billion in financing to Oklahoma communities, rural water districts, schools, and other authorities at an estimated savings of $1.3 billion over conventional financing. This is due, in part, to the continued achievement of a AAA bond rating by S&P on the basis of the Board's innovative management of the programs. The programs protect the health and safety of Oklahomans by providing funding to the meet the critical need for safe drinking water supplies and adequate wastewater treatment. For each federal dollar invested, the programs provide an average of 3.5 dollars in infrastructure financing with 100 percent of the costs funded through administrative fees.

OWRB financial analysts Charles de Coune and Tonya White meet with the Okemah Utilities Authority to discuss financing opportunities through OWRB loan programs.

In 2017, the OWRB approved 36 loans and 14 grants totaling $288.5 million to fund public water/wastewater infrastructure improvements with an estimated savings of approximately $38.2 million as compared to traditional financing.

In cooperation with the Oklahoma Rural Water Association (ORWA), 68 training sessions and 254 technical assistance visits were provided to communities across Oklahoma.

Hydrologic Investigations

The OWRB conducts statutorily required hydrologic investigations to determine the amount of water available for allocation. Hydrogeologists, modelers, private engineering consultants, and federal agencies assist the OWRB in characterizing hydrologic properties of aquifers such as recharge, effects of groundwater pumping, water demand, and contaminant flow paths.

In 2017, the OWRB completed a 20-year update of the Enid Isolated Terrace. In support of the Upper Washita River Basin project, the Rush Springs study is scheduled to

(continued)

OWRB Geologist Chris Neel meets with Enid city officials and members of the Northwest Action Plan (NWAP) to present results of the Enid Isolated Terrace hydrologic investigation.

be completed by early 2018. Twenty year updates of the Elk City Sandstone and the Gerty Sand aquifers, as well as an investigation into the Cimarron Alluvium and Terrace aquifer, are underway.

Through contracts with the US Geological Survey, the OWRB completed the Canadian River and North Fork of the Red River studies. Investigations are underway on the Roubidoux, Salt Fork of the Red River, and Washita River Reach 1 aquifers.

The OWRB continues collaborative work with the US Bureau of Reclamation (USBR), Foss Reservoir Master Conservancy District (MCD), and Fort Cobb MCD on the Upper Washita Basin Study, scheduled for completion in 2018. The OWRB is also collaborating with the USBR on the Upper Red River Basin Study, scheduled for completion in 2018.

Dependable Yield studies of three sole-source supply lakes for the communities of Hominy, Langston, and McAlester Army Ammunition Plant will be completed in the spring of 2018. The OWRB performed bathymetric studies (lake floor contours) to get an accurate volume of the lakes at any water level. CH2M engineers, funded in part by the US Army Corps of Engineers Planning Assistance to States grant, used this data and OWRB historical use reports to estimate the amount of water these communities can rely upon in the worst drought on record to plan their future projects accordingly.

Water Quality Standards

The OWRB promulgates Oklahoma's Water Quality Standards by designating beneficial uses and developing water quality criteria to protect these uses, developing antidegradation policies, and developing and implementing rules, including use support protocols.

In 2017, the OWRB and other members of the Oklahoma-Arkansas Scenic Rivers Joint Phosphorus Study Committee completed a study to determine the total phosphorus threshold response level at which algae production results in undesirable or harmful conditions. After a series of meetings and the release of the final study report, the six-member study committee reached a consensus on recommendations, which were reviewed and approved by the states' governors.

Proposed amendments to Oklahoma's Water Quality Standards included a comprehensive revision of Oklahoma's groundwater quality standards, including an updated antidegradation policy and inclusion of a new Domestic Untreated Water Supply beneficial use. Numeric and narrative criteria were created to protect groundwaters used for drinking water supplies that may be utilized for aquifer storage and recovery or other artificial recharge activities.

Water Quality & Quantity Monitoring & Lake Restoration Projects

The OWRB administers Oklahoma's water monitoring network to track the water quality and quantity of Oklahoma's streams, lakes, and groundwater basins. Scientifically defensible data collected are used to assist businesses, governments, and citizens in making water resources decisions, improve understanding of the effects of drought and usage patterns, identify areas of impairment, and refine Oklahoma's Water Quality Standards. Staff limnologists work with municipalities to complete lake sedimentation studies, capacity yield determinations, and restoration projects.

Sampling was conducted quarterly at 165 Beneficial Use Monitoring Program sites on 39 Oklahoma lakes in 2017 (as part of a five-year rotation for 130 lakes) and at 32 lakes as part of the National Lakes Assessment program. Stream sampling was conducted at 84 stations on a 6-week rotation. Fish distribution data collected at nearly 400 sites across the state are now available through an interactive GIS data viewer.

Baseline sampling for the Groundwater Monitoring and Assessment Program includes 750 water quality monitoring sites and more than 1,000 water-level recording sites in all major aquifers. The program will now enter a long-term trend monitoring phase.

Additional monitoring projects during the year included the assessment of baseline characteristics of riverine and oxbow lakes, watershed stormwater monitoring at Lake Thunderbird, watershed monitoring at Lake Arcadia, bathymetric mapping, and real-time monitoring in the Grand/Neosho River Watershed.

Cooperative work with Oklahoma City and the Department of Wildlife Conservation at Lake Stanley Draper continued

to develop beneficial aquatic plant communities and control invasive plants. The OWRB also continued to work cooperatively with the Central Oklahoma Master Conservancy District to monitor and improve water quality in Lake Thunderbird.

Well Driller & Pump Installer Licensing

The OWRB protects Oklahoma's groundwater from contamination by ensuring the integrity of water well construction through the licensing of well drillers and pump installers. OWRB staff also assist drillers with required well log reporting. As a result more than 176,000 well logs are available to the public via the agency's website through record searches and interactive maps.

In 2017, the OWRB cooperated with the Oklahoma Ground Water Association to conduct 14 continuing education training sessions for drillers to meet licensing requirements. The sessions were attended by more than 80% of the state's licensed drillers. The OWRB continues to work with the Oklahoma Department of Environmental Quality to develop more uniformity in water well drilling rules.

Dam Safety & Floodplain Management

Oklahoma's 34 largest reservoirs provide 15 million acre-feet of water storage capacity, essential during times of drought and flooding. The OWRB coordinates the Oklahoma Dam Safety Program to ensure the safety of more than 4,700 dams and the Floodplain Management Program to assist more than 400 communities in reducing costly flooding risks to life and property.

In 2017, the OWRB approved 16 applications to construct/repair/modify dams. Staff worked with dam

(continued)

With the Legislature's passage of the Water for 2060 Act in 2012, prompted by a priority recommendation of the Oklahoma Comprehensive Water Plan, Oklahoma became the first state in the nation to establish a goal of consuming no more fresh water in 2060 than was consumed in 2010. To meet this ambitious goal, the Water for 2060 Advisory Council was convened in 2013 to study and recommend voluntary water conservation practices, incentives, and educational programs to promote wise water usage while supporting Oklahoma's population growth and economic development goals. In 2015 the Council submitted its 12 key recommendations with funding requirements to the Governor and Legislature.

Although a funding source has not been identified, the OWRB is moving the recommendations forward. The Water for 2060 Excellence Award program was initiated last fall with presentations to eight awardees at the Governor's Water Conference. The Board has also established a steering committee of water outreach and education entities to pool conservation information and resources into a Water for 2060 web portal.

The OWRB is focused on stretching existing water supplies by promoting water conservation, identifying needed state policy reforms, finding untapped, marginal quality waters and identifying new conservation, efficiency, and reuse practices in every sector.

Produced Water Working Group

A Governor-directed multi-disciplinary Produced Water Working Group (PWWG) completed a high-level look at issues specific to reuse of produced water in Oklahoma. Economically feasible solutions included evaporation technologies and reuse of water within the oil and gas industry via a pipeline network. A final report with the results of the feasibility study will be published this summer.

Aquifer Storage & Recovery

The OWRB has developed new groundwater rules due for legislative approval this session to allow entities to develop an Aquifer Storage and Recovery program within the state. Upon successful completion of the OWRB and ODEQ permitting process, an entity may store water by recharge of an aquifer with approved water to be recovered later for use in its water treatment plant. The amount of water available for recovery will be subject to an approved Site-Specific Aquifer Storage and Recovery Plan that will be updated annually via continued monitoring and reporting.

Indirect Potable Reuse

The OWRB and the ODEQ continue to work in the Water Reuse Workgroup to develop rules for Indirect Potable Reuse (IPR). In 2018, the OWRB has proposed rules that implement the Sensitive Water Supply-Reuse antidegradation classification, and has assisted the ODEQ in developing new water quality permitting rules, which will allow for implementation of IPR in municipal reservoirs. The workgroup continues to tackle a variety of guidance and technical issues that are needed to fully implement IPR.

owners to reach over a 90% completion rate of updated Emergency Action Plans in case of a dam breach. OWRB staff provided breach inundation maps and inspection reports to 25 low hazard-potential dam owners. OWRB dam safety workshops were attended by more than 300 real estate agents and 50 engineers.

The OWRB worked closely with communities throughout the state in 2017 to identify flood risks and update flood maps through FEMA's Cooperating Technical Partners program. Staff conducted 5 new Community Assistance Visits and 50 Community Assistance Contacts.

Water Resource Mapping

The OWRB provides water-related information through the interpretation of spatial data using standard and customized GIS applications.

In 2017, OWRB GIS staff created a new map viewer showing the details of fish collections at nearly 400 stream monitoring sites over a 13-year period. GIS staff also updated existing OWRB map viewers with a new format and added data from three additional lakes to the *Lakes of Oklahoma* map viewer. Progress continued on a project to map water, wastewater, stormwater, and water reuse infrastructure for small public water and wastewater systems and to make that data available to the systems on a secure map viewer.

Legal Update

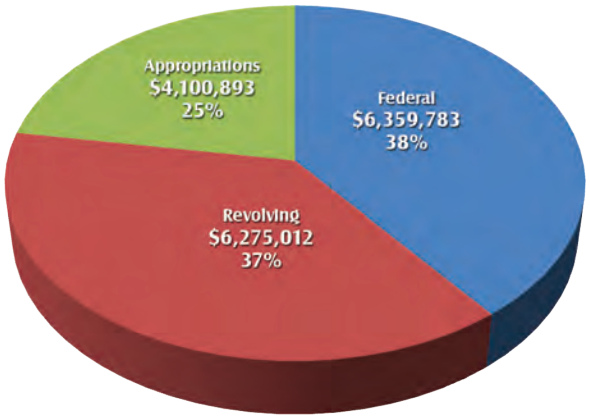
In September 2017, the state's implementation of Senate Bill 288 was upheld by Court of Civil Appeals, affirming the OWRB order setting the Maximum Annual Yield (MAY) at 0.2 acre-feet per acre for the Arbuckle-Simpson Groundwater Basin. Passage of SB 288 in 2003 prohibited the OWRB from issuing groundwater permits that would reduce the "natural flow" of springs and streams draining "sensitive sole source" groundwater basins. This is the first act of the Oklahoma Legislature to address a connection between groundwater and stream water in groundwater rights administration in Oklahoma.

In October, the OWRB approved the permit to authorize transportation of water out of the Kiamichi River stream system for use in Oklahoma City. Pursuant to the terms of the permit, Oklahoma City will release water currently held in Sardis Reservoir, where it will travel to one of four authorized diversion points on the Kiamichi River in Pushmataha County to be transported to Oklahoma City. The OWRB's administrative order has been appealed to the District Court of Pushmataha County. The authorized inter-basin transfer was the subject of last year's tribal water rights settlement between the Choctaw and Chickasaw Nations, State of Oklahoma, and Oklahoma City that was designed to protect existing area recreational and ecological uses.

OWRB Partnerships

The OWRB actively seeks collaborative funding and technical assistance opportunities. Current projects include data management, storage and dissemination activities, basin scale hydrologic studies, regional planning efforts, municipal reservoir capacity and restoration studies, and tailrace studies. Partners include the Grand River Dam Authority, City of Norman, Central Oklahoma Master Conservancy District (MCD), Mountain Park MCD, Fort Cobb MCD, Oklahoma Department of Environmental Quality, Oklahoma Conservation Commission, Groundwater Protection Council, US Geological Survey, US Army Corp of Engineers, US Bureau of Reclamation, US Environmental Protection Agency, US Agricultural Research Service, US Department of Agriculture Natural Resources Conservation Service, and others.

FY18 FUNDING OF THE OWRB BY SOURCE



OUR MISSION

The mission of the Oklahoma Water Resources Board is to protect and enhance 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.

The OWRB received its fifth consecutive "Top Workplaces" award for 2017. The Top Workplaces program recognizes Oklahoma's best employers based entirely on employee opinions gathered through anonymous surveys. The OWRB was also given its second certified healthy business award for its efforts to keep employees active and healthy.

TOP WORK PLACES 2013-17 THE OKLAHOMAN

CERTIFIED HEALTHY OKLAHOMA

Water for 2060 Excellence Awards (continued)

Newfield Exploration

Reed Durfey, Newfield Exploration

Newfield Exploration Company's Barton Water Recycling Facility is located in the STACK play of the Anadarko Basin. The facility is a multi-million dollar investment that will connect to seven pits with nearly 6.5 million barrels of storage capacity utilizing more than 70 miles of underground pipeline by the end of 2017. The facility reduces the amount of fresh water needed by extending the life cycle of each barrel of water produced in operations through recycling and reuse. The facility was constructed to handle nearly 100 percent of the area's produced and flowback water. Newfield has invested more than $40 million to date in water management infrastructure in its STACK play. Recycling flowback and produced water ensures more fresh water stays at its source for other community uses. The Barton facility is expected to recycle produced water for years to come, leading to continued water savings for Newfield and the community.

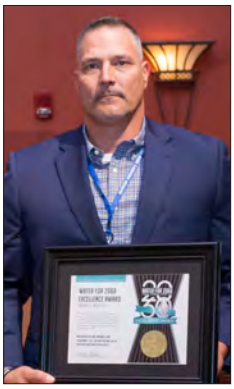
Continental Resources

Anthony Luvera, Continental Resources

Continental Resources operates four recycling facilities in the SCOOP and STACK Plays, and can recycle 4.2 million gallons of water per day (with a peaking capacity of 10.5 million gallons per day) total at these facilities. Since its inception in 2013, Continental's efforts have resulted in approximately 588,000,000 gallons of recycled water. Continental's ultimate goal is to reduce its fresh water use by approximately 50% within the service areas of its recycling facilities. Additionally, Continental is working with the Oklahoma Corporation Commission and other producers to make available its recycling facilities when capacity is available, further reducing the industry's fresh water footprint. Continental continues to work toward identifying and exploring emerging technologies, multi-sector water sharing opportunities, and potential sources of marginal quality waters that might prove suitable for industry operations.

OG&E

The Low Volume Wastewater Reuse Project at OG&E's Mustang Station in Oklahoma City reflects a commitment to the responsible use of natural resources, including the use of water for power production. In 2013, the OG&E Mustang Station began refining the plant's wastewater treatment process. The goal was to reuse as much water as possible, thereby alleviating stress on existing fresh water supplies. OG&E initiated reuse of in-plant low volume wastewater (LVW) as a source of cooling tower makeup water. A pump and associated controls were added to the LVW pond, and piping was installed to connect to a cooling tower supply line. This simple but innovative system now allows wastewater, previously discharged to a treatment plant, to be used as recirculated cooling water. By the end of 2016, Mustang Station LVW project had resulted in saving approximately 21 million gallons of fresh water.



Tony Shook, OG&E

PUBLIC WATER SUPPLY

City of Oklahoma City

Last July, the City of Oklahoma City adopted a Water Conservation Plan to provide guidance for the implementation of individual water conservation and efficiency programs, to analyze and discuss the impact of current programs, and to prepare residents for drought conditions. The plan supports the statewide goal established in the Water for 2060 Act, which emphasizes education and incentives rather than mandates alone. Additionally the plan recommends a multifaceted approach to reach all customer categories through expanded education and local partnerships to continue successful demand management and water use efficiency. The conservation program supports the adoption of water efficient technologies as well as behavioral changes to save water in homes and businesses. The adoption and implementation of the water conservation plan and individual strategies are an ongoing process that will be monitored for water savings and adjusted to ensure real water savings are achieved.

Malarie Gotcher, City of Oklahoma City

City of Edmond

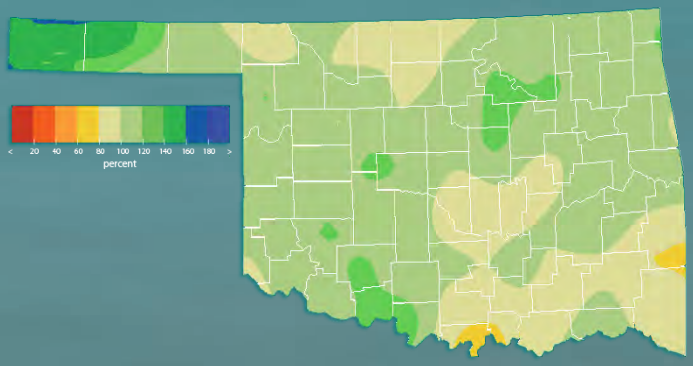
With a service area of approximately 80 square miles, the City of Edmond provides water to more than 84,000 customers. The City's population is projected to grow to more than 136,000 people by 2060. Water demand for the region is predicted to double. To accommodate the projected increase in demand, the City is doubling its water storage capacity with a new two-million-gallon elevated storage tank. The new storage tank has been designed and situated to work in conjunction with an existing pump station site and repurposed underground storage tank to minimize water loss. As a general rule, water drained from a tower during times of low water usage or for tower maintenance and repair will be released or flushed into a storm drain. This new system allows the City to drain the entire volume of water from the tower into the underground storage tank when necessary and then recirculate that water back into the distribution system. As a result, the City estimates it can save a million gallons of water each year.

Earl Hall, City of Edmond

Drought Update

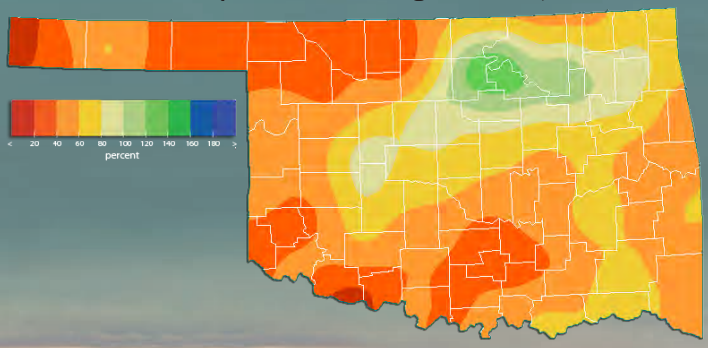
Percent of Normal Precipitation

Last 365 Days (Jan 1, 2017, through Dec 31, 2017)



Percent of Normal Precipitation

Last 90 Days (Oct 3 through Dec 31, 2017)



While the rainfall map for 2017 (365-day period) shows near normal precipitation, during the last three months of the year (90-day period) precipitation was well below normal across most areas of the state.

Data obtained from the Oklahoma Climatological Survey. For more drought information, and to obtain updated information on Oklahoma's drought and moisture conditions, visit www.drought.ok.gov.

Financial Assistance Program Update

Loans & Grants Approved as of December 31, 2017

FA Loans—383 totaling $1,050,865,000
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.

CWSRF Loans—319 totaling $1,550,590,377
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—192 totaling $1,174,883,300
The Drinking Water State Revolving Fund (DWSRF) loan program is an initiative of the OWRB and ODEQ 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—672 totaling $59,561,641
The Rural Economic Action Plan (REAP) Program was created by the State Legislature in 1996. REAP grants, used for water/wastewater system improvements, primarily target rural communities with populations of 7,000 or less, but priority is afforded to those with fewer than 1,750 inhabitants.

Emergency Grants—575 totaling $34,178,455
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 proceeds to fund the Program.

Water for 2060 Grants—4 totaling $1,500,000
Through the Water for 2060 Grant Program, funding was available in 2015 for municipalities, counties, water/sewer districts and other public entities for projects that highlight the responsible use of water.

Emergency Drought Relief Grants—4 totaling $1,125,000
Through the Emergency Drought Relief Grant Program, funding was provided in 2013 by the Legislature–through the Emergency Drought Relief Commission–to address severe drought issues in specific Oklahoma counties.

Total Loans/Grants Approved: 2,155 totaling $3,873,122,620
Estimated Savings: $1,307,112,702

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, 2017

Published online at www.owrb.ok.gov.

Follow us on twitter @OKWaterBoard

The Oklahoma Water News *is published quarterly by the Oklahoma Water Resources Board as authorized by Julie Cunningham, Executive Director.*

For questions, comments, or article submissions, please contact Darla Whitley, Editor, at pubinfo@owrb.ok.gov or (405) 530-8800.

Oklahoma Water Resources Board meetings are open to the public. Visit www.owrb.ok.gov for meeting dates/times, locations, and agendas.