MAY 1989

Oklahoma Water News

MONTHLY NEWSLETTER OF THE OKLAHOMA WATER RESOURCES BOARD

Wellhead Protection is Critical to Safeguard Drinking Water

OWRB leads in developing plans; Lawton Branch completes report on test site in Kiowa County

Groundwater geologists estimate that Oklahoma's 21 major aquifers store 320 million acre-feet of water, of which about half can be made available for use. Fifty-five percent of all water used in the state is groundwater. It is a critically important resource, especially in western Oklahoma, where salt and other minerals often degrade scant surface waters.

The state's aquifers provide public water supply to 300 cities and towns, water to scores of rural water districts and the domestic needs of countless rural families.

Groundwater run from a faucet today may be few years old, several thousand, or even tens of thousands of years old. The sobering fact is that todays's pollution not only threatens our drinking water, but could poison the water supply of future generations. Cleanup of pollution is difficult (if not impossible) and enormously expensive. So serious are the consequences of long-term groundwater pollution that the U.S. Environmental Protection Agency and the Water Resources Board are focusing on protecting wells and wellfields that supply drinking water to Oklahoma's communities.

In 1986, amendments to the Safe Drinking Water Act authorized the states to develop and implement Wellhead Protection Programs. The amendments required programs to safeguard surface and subsurface areas around a public water supply well or wellfield, through which contaminants could reach the water.

In 1987, EPA spelled out technical criteria for isolating the Wellhead Protection Areas from pollution

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Susan Lutz, OWRB librarian who also serves as publications specialist, reviews Robert Fabian's new report which details a wellhead protection strategy Fabian prepared for the Town of Lone Wolf in Kiowa County.

Working Word: Infrastructure

The following article—written by Louis A. Gatti, executive director of the Oklahoma Municipal Contractors Association (OMCA)—appears in the May edition of the monthly OMCA newsletter "Towntalk." Some statistical information has been updated.

During the oil embargo, a service station operator who was out of gas posted a sign that read, "Thank God it isn't water."

Of the world's water supply, only one-third of one percent is available for human use from lakes, rivers and wells; 97.2 percent existing in the oceans. Water in the atmosphere accounts for 10 times as much as do rivers. That information affects everyone, everywhere.

Because of dam building efforts following the drought of the 1930's, Oklahoma now has 34 major federal reservoirs containing 13,353,785 acre-feet of water covering 555,450

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sources. They provided the states technical guidance in determining the radius of influence, depth of drawdown of the water table at any given point, time of travel of various contaminants in various hydrologic conditions and distance from the well(s). EPA also asked state researchers to evaluate available engineering pump tests, data from field reconnaissance, topographic information, and the geology of the water-bearing formation.

The EPA guidelines make it possible to precisely map the Wellhead Protection Area, identify and protect alternate water sources, and put in place a long-term management strategy. The guidelines ask dialog with state, local and public water supply systems and solicit their assistance in designing and implementing the plan.

Wellhead protection is a concept whose time has come.

The task before OWRB Geologist Bob Fabian was to delineate the Wellhead Protection Area for the wellfield at Lone Wolf, in Kiowa County, in southwestern Oklahoma. The town of 613 people (roughly 340 households) uses 28 million gallons of water a year from six wells in the alluvium and terrace of the North Fork of the Red River.

Fabian's new report, "Wellhead Protection Area Delineation for a Public Water Supply, Town of Lone Wolf, Kiowa County, Oklahoma," applies the strategy to a small wellfield, but he said the OWRB has the expertise to apply it to any public water supply system in the state. He points out that the Kiowa County test site is an example of a small wellfield in a simple aquifer system on which ample hydrogeologic information was available.

And he says the Water Resources Board, as the state's "water agency," is well suited to play a significant role in Oklahoma's Wellhead Protection program.

"The OWRB is assigned responsibility by Oklahoma Statutes to perform hydrologic studies on the state's groundwater basins," Fabian says. "The Board has the professional staff and years of information available to determine Wellhead Protection Areas for both simple and complex aquifer systems."

Executive Director James R. Barnett agrees with Fabian's assessment. "Through permitting and enforcement activities, the staff has wide experience in identifying existing and potential point source contamination." He says Board specialists also can help in management programs and in locating alternate water supplies. "Years of licensing water well drillers, collecting well log data, issuing permits for groundwater use, conducting hydrologic surveys, monitoring groundwater quality and measuring well levels give the OWRB a wealth of information and expertise which should prove invaluable in establishing a Wellhead Protection Program in Oklahoma," Barnett declared.

If ever there was a case of an old adage being appropriate, it is in safeguarding precious groundwater supplies, where indeed, "an ounce of prevention is worth a pound of cure."

For a copy of Robert Fabian's report entitled "Wellhead Protection Area Delineation for a Public Water Supply, Town of Lone Wolf, Kiowa County, Oklahoma," write to Librarian Susan Lutz at the Oklahoma Water Resources Board, P.O. Box 53585, Oklahoma City, 73152, or call (405) 271-2555. □

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acres and 120 smaller lakes containing 1,000 acre-feet or more.

The chief concern of "Towntalk" is seeing that potable water gets to the businesses and homes of three million Oklahomans. That's where the working word, infrastructure, comes into play.

In Oklahoma, there is a need for $2 billion in infrastructure improvements to assure the delivery of fresh, drinkable water and to replace ailing sewer lines. That's a considerable sum of money, but only about $666 per person if divided equally among our populace.

The $2 billion in capital improvements—one-time outlays—need to be made by the year 2000. By 1991, federal Environmental Protection Agency grants for improvements to water and sewer lines and wastewater treatment plants will be a thing of the past. It looks like the source of the $2 billion will be the Oklahoma people led by the Governor and Legislature.

What is this infrastructure that needs fixing? The dictionary defines infrastructure as the foundation or underlying base of an organization, or the basic facilities, equipment and installations needed for the functioning

Above, the sand filtration units which are part of Chelsea's new state-of-the art water treatment plant enabled by a loan from the Board's Financial Assistance Program. To date, the Board has approved 56 loans for $49 million for water and sewer improvements; 148 emergency grants for $10 million.

of a system or organization. In the potable water world, infrastructure is the water treatment plants, pumping stations and pipelines that deliver water—everything up to the water meter. Then there are the sewer lines and wastewater treatment plants, for you can't have potable water without a system to carry away the waste. This accounts for where the $2 billion investment for Oklahoma is needed.

What happens if the necessary investment in infrastructure is not made?

First, Oklahoma neglects her people. Potable water is more vital, by far, than gasoline. Drinkable water should be abundantly available in Oklahoma.

Secondly, Oklahoma fails to prepare for the prosperity, reblooming of the economy, and for massive industrial expansion that is on the horizon.

Thirdly, Oklahoma misses a fine opportunity to become the "State of Excellence" that is ours for the taking.

Infrastructure, including first-class, finely built water supply and delivery systems, are fundamental to a modern state and its quality of life.

Oklahoma must upgrade her infrastructure; $2 billion for potable water is a small price. The state should begin by making money available to the Oklahoma Water Development Revolving Fund that has been drastically depleted since it was created in 1982.

The success of the Board's Financial Assistance Program shines in dozens of communities throughout Oklahoma. Left, outlet structure of the #1 primary cell of Burlington's total retention sewage treatment facility financed by an OWRB grant. Center, new water storage tank at Heavener stands as testimonial to the success of the program. Construction of this tank and Heavener's water and sewage facilities were financed by OWRB loans. Right, Weleetka's new water treatment plant. The plant and emergency spillway at the town's water supply dam were financed by loan and grant funds from the Board.

mainstream

Lee Creek Settlement Reached

After nearly a decade of sometimes heated debate, Oklahoma and Arkansas have finally reached an agreement regarding the construction of a dam on Big Lee's Creek near the border between the two states.

The City of Fort Smith is seeking to impound the creek and create a 634-acre reservoir which would serve as a municipal water source for eastern Oklahoma and western Arkansas. Phase I of the project would flood 34 acres of Oklahoma land and approximately 1.5 miles of Lee Creek.

According to State Attorney General Robert Henry, Oklahoma has dismissed its U.S. District Court lawsuit which had challenged a U.S. Army Corps of Engineers permit allowing Phase I construction. Another lawsuit filed by the State of Oklahoma in the District of Columbia Circuit of the U.S. Court of Appeals has also been dismissed.

Henry said a primary goal of the dispute was to prevent potential adverse environmental impacts posed by Phase II of the project, which includes plans for raising the dam and creating a much larger, 2,800-acre reservoir. Legal roadblocks also sought to reinforce Oklahoma's position concerning the flooding of Oklahoma land.

The agreement states that before Phase II development begins, Arkansas must first obtain written approval from the OWRB and the Oklahoma Wildlife Conservation commissioner or secure approval from the Oklahoma Legislature and the Governor.

But opposition to the project still exists. The Sierra Club and Cherokee Nation of Oklahoma are asking the 10th U.S. Circuit Court of Appeals to block issuance of the Corps permit. The two groups believe the accord between Oklahoma and Fort Smith does not sufficiently protect the environment and historical sites in eastern Oklahoma. Also, the National Wildlife Federation is continuing to pursue its lawsuit in the District of Columbia Circuit Court of Appeals. That suit seeks to block issuance of a hydropower license for the project.

Condon Appointed to Board

In April, Gov. Bellmon announced the appointment of Frank H. Condon of Idabel to the Oklahoma Water Resources Board. Condon, a chemical engineer with wide experience in environmental affairs, is Technical Director for the Weyerhaeuser Company. He has been associated with the company for 19 years and employed in the industry for 26 years.

He attended Vanderbilt University and received a BS degree in chemical engineering from the University of Alabama. Condon is a member of the Technical Association of Pulp and Paper Industries, chairman of the Southeast Technical Managers Committee and member of the Southwest Technical Managers Committee.

Frank H. Condon

Condon and his wife, Susan, are the parents of three adult sons, Frank Jr., Michael and William. He succeeds Ernest R. Tucker on the Board.

Junior Scientists Honored

As part of its annual statewide contest, the Oklahoma Junior Academy of Science and Engineering (OJAS) has presented Water Resources Board

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awards to two student scientists.

Awards were won by Amy Graham, of Ponca City East Junior High School, for "Bioassays of Water in the Ponca City Area Using *Daphnia magna*," and by Cathy Sauer, of Moore Highland East Junior High School, for "Does the Sodium Chloride Vary in the Surface Water of Central Oklahoma?"

A total of 420 students participated in 12 regional contests; 98 research papers were selected for oral presentation at the state event.

The April contest rewarded young authors of outstanding research papers in physics and biological sciences. The competition began in 1936, according to OJAS Director Jimmie Pigg.

ACTIVE CONSERVATION STORAGE IN SELECTED OKLAHOMA LAKES AND RESERVOIRS AS OF APRIL 26, 1989

PLANNING REGION LAKE/RESERVOIR	CONSERVATION STORAGE (AF)	PERCENT OF CAPACITY
SOUTHEAST		
Atoka	120,568	97.7
Broken Bow	913,988	99.6
Pine Creek	76,515	98.5[2]
Hugo	157,600	100.0[2]
McGee Creek	109,558	99.8
CENTRAL		
Thunderbird	105,925	100.0
Hefner	69,310	92.0
Overholser	15,016	94.2
Draper	87,170	87.2
Arcadia	27,390	100.0
SOUTH CENTRAL		
Arbuckle	62,571	100.0
Texoma	2,445,460	92.7
Waurika	200,188	98.6
SOUTHWEST		
Altus	125,089	94.1
Fort Cobb	77,937	99.4
Foss	160,693	65.9[1]
Tom Steed	77,084	86.6
EAST CENTRAL		
Eufaula	2,241,474	96.2
Tenkiller	615,841	98.1
Wister	63,250	100.0[2]
Sardis	302,099	99.9
NORTHEAST		
Eucha	79,567	100.0
Grand	1,329,280	89.1
Oologah	543,665	99.9
Hulah	30,594	100.0
Fort Gibson	365,200	100.0
Heyburn	6,600	100.0
Birch	19,200	100.0
Hudson	200,300	100.0
Spavinaw	30,000	100.0
Copan	43,400	100.0
Skiatook	265,710	83.2
NORTH CENTRAL		
Kaw	426,816	99.6
Keystone	611,367	99.3
NORTHWEST		
Canton	97,500	100.0
Fort Supply	13,647	98.2
Great Salt Plains	31,400	100.0
STATE TOTALS	**12,148,972**	**96.0**

1. Conservation storage lowered for project modification
2. Seasonal pool operation

Data courtesy of U.S. Army Corps of Engineers, Bureau of Reclamation, Oklahoma City Water Resources Department, and City of Tulsa Water Superintendent's Office.

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MARY E. WHITLOW, Editor **BRIAN VANCE, Writer** **BARRY FOGERTY, Photographer** **BRAD NESOM, Layout Artist**

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