



# OKLAHOMA

## water news

MONTHLY NEWSLETTER OF THE OKLAHOMA  
WATER RESOURCES BOARD

Gerald E. Borelli, Chairman

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## New Protective Gear to Aid in Tracking Pollution Sources

It's always midnight in the tunnels. The sounds are few but forbidding. Dank and suffocating, the subterranean caverns twist beneath the city, rarely seeing the light of day.

The "tunnels" are the storm sewers of Tulsa, and this month the Oklahoma Water Resources Board Water Quality staff is using some special new equipment to shed some light on a problem that has long plagued the city. Garbed in breathing apparatuses somewhat like the gear worn by Lloyd Bridges in "Sea Hunt," Environmental Specialists Shon Simpson and Rob Simms have entered the system to try to track down the source of high levels of chromium that for nearly 10 years have been tainting water emptying into the Arkansas River at 23rd street.

The assignment has its dangers.

"Lots of times, businesses will discard pesticides, paints and other compounds into a storm sewer. It's shocking in a large area like this just how often that does happen. Add to that the lead from automobile exhaust washed off the streets and the chemicals from manufac-

turing that are carried down from the atmosphere by rain. When all those chemicals start mixing in a storm sewer, there's no telling what's there," Simpson says.

In order to work safely in the hazardous closed confines of the storm sewer, the OWRB used \$5,000 provided by the Environmental Protection Agency to purchase two sets of breathing equipment and a special meter to discern oxygen content and the presence of combustible gases. Consisting of mask, tank and an assortment of hoses, gauges and alarms, the garb allows a wearer to

*Continued on page 2*

## Board Inquires Water Use of 11,000 State Permit Holders

It's tax time, a time that finds many Oklahomans glaring in a distinctly unfriendly manner at the federal and state tax forms waiting to be filled out. The forms often promise late nights, long hours and some frustrated accounting before they can be properly filled out and sent on their way.

For some 11,000 irrigators, industries, municipalities and rural water districts in Oklahoma, the mails bring another form this time of year— a water use report form from the Oklahoma Water Resources Board.

"Ours are straightforward and fairly simple to fill out. I hope that makes it easier for people to return them in the 30-day period we've requested," says OWRB Programmer Analyst Jann Silvey, who helped design the forms and directed their mailout.

By far, most of the recipients will be irrigators. This year, 9,512 irrigation farmers will be asked to report to what extent their crops were irrigated, what type of irrigation system they used and what energy source powered it. Irrigators who sell water to oil companies, industries, rural water districts or other business concerns will receive an additional form. Irrigators only need to fill out the top part of the extra form, Silvey says, letting the OWRB know how many gallons of water from which stream system and permit number have been sold. Both forms must be signed, she cautions.

Stream Water Division Chief J.A. Wood asks that anyone receiving a water use report for land they no

*Continued on page 2*



Environmental Specialist Shon Simpson, clad in newly purchased breathing gear and protective clothing, is lowered through manhole to check for the presence of toxic chemicals in city storm sewers.

*New Gear, continued from page 1*

walk the sewers invulnerable to any noxious gases or toxic fumes that may be present.

If the gear has an Achilles' heel, it's the feeling of panic it sometimes creates in the untrained and inexperienced wearer. About half the people who have tried on the equipment have found the experience of regulated breathing so disconcerting that they have torn off the facepiece in alarm, Simpson says. Had they been put in a place where the illumination from a flashlight is virtually swallowed in darkness and where rumor has it that rats live "the size of small dogs," their fear doubtlessly would have increased further.

Simpson and Simms acclimatized themselves to the equipment by wearing it around the office for increasing periods of time. Even so, their first experience in the storm sewers was a little unsettling.

"It was like a black hole," Simms says.

"It was very spooky. If you're at all claustrophobic, you have no business being down there," Simpson says.

Business has gone on nonetheless. After checking for combustible gases, Simpson and Simms descend through a manhole, each tethered to a 50-foot air line. One moves off into the inky blackness to take a water sample while the other holds his ground near the manhole entrance. The sample is brought back to the manhole and passed up to a third team member for instant field analysis. A premeasured chemical reagent mixed with the sample changes the color if chromium is present.

To pinpoint the source of the pollutant, Simpson and Simms are moving methodically through the two-mile long drain, entering through preselected manholes. So far, excessive levels of chromium have been detected in two of the many branch lines feeding into the main sewer, but Simpson and Simms are pressing for more.

Simpson points to a 1978 Indian Nations Council of Governments study which detected concentrations of chromium as high as 25.5 milligrams per liter pouring from the end of the sewer, approximately 500 times greater than the .05 allowed by the state water standards. The mean concentration of .96 mg/L is also above the standard, and not too far below the 1.4 mg/L level that scientists designate in the lab as "total mortality"—a toxic concentration in water that will kill everything put into it within 96 hours.

"We'll follow up above ground to see if we can find out who's discharging the chromium at those two points, but we don't think that's all of it. With that high a level of metal discharged into a body of water, something needs to be done. We hope to stop it completely," Simpson says.

Whatever the outcome of the Tulsa investigation, the real bonus to the OWRB will be the continuing ability to enter a storm sewer when the situation merits it, says Ron Jarman, OWRB Water Quality Division chief.

"There have been any number of instances in the past when we needed to enter a storm sewer to track down the source of pollution but couldn't because we had no way to protect our people's lives and health."

*Water Use, continued from page 1*

longer own put the name and address of the new owner on the form before sending it back to OWRB offices.

"Not everyone will know who the present landowner is, of course, but those who do can give us a great deal of help. It takes a lot of time and money for the state to track down that information from county offices."

OWRB Executive Director James R. Barnett says the forms are a boon for water planners.

"We are asking for more data than we did several years ago, but the few extra minutes Oklahomans spend on their report means a lot of valuable information for us. If we know how much water has been removed and for what purpose, we can better assess how much water is left and how we can assure it will be there in the future," he says.

Barnett points out that it is also to the water user's advantage to fill out the reports. Failure to notify the board of stream water use could be considered by the Board to be nonuse of water. Since state law requires a stream water right holder to use the full amount of water granted at least once in a seven-year period, the "nonuse" designation could cause the water user eventually to face reduction or cancellation of rights. Willful failure to report annual usage of ground water may also result in cancellation of a permit, Barnett said.

To insure that such action doesn't occur, Barnett encouraged recipients of the form to take care in completing all portions of the form applicable to their operations and return the signed form to the OWRB as soon as possible. If the OWRB spots omissions or incorrect entries, the forms will be mailed back to the water user for correction.

If assistance in filing the report is needed, Barnett urged water users in southwestern Oklahoma to call the OWRB Lawton branch office at (405) 248-7762. Northeastern Oklahoma residents should call the Tulsa branch office for help at (918) 581-2925, while all others requiring help are invited to call (405) 271-2555.



**Jann Silvey, OWRB programmer analyst, explains the value of water use reports in tallying statewide water supplies. Silvey helped in the simplification of the printed form and directed the mailout.**



### Annual Well Measurement Begins in West

Members of the OWRB Ground Water Division began the annual well measurement program on January 10, assisted in the seven northwestern counties by USGS personnel. The measurement of 1,400 wells will move from west to east, culminating in late March.

The program provides information concerning ground water levels throughout Oklahoma, amounts of ground water in storage and trends which affect ground water availability. Data collected are published in long-term continuous records which are used in planning future water supplies.

OWRB field personnel will attach a waterproof tag to each well measured to let the owner know the depth to the water below land surface. Landowners on whose property these wells are located are again asked to allow access to OWRB field representatives.

### Tourism Conference Set February 14-15

The Eleventh Annual Governor's Conference on the Tourism and Recreation Industry will be held February 14-15 at the Skirvin Plaza Hotel in Oklahoma City.

Registration for workshops and the Governor's luncheon is \$20, and an additional \$25 will pay for the legislative reception and appreciation dinner. Tickets are available at the Oklahoma Tourism and Recreation Department, 500 Will Rogers Building, Oklahoma City.

### City of Eufaula Receives OWRB Loan

The city of Eufaula was the recipient of a \$295,770 loan presented at the Board's January meeting, the second issued by the OWRB under the loan program created by the Oklahoma Legislature in 1979.

The check presented to Eufaula Mayor Joe Johnson will pay for renovation and improvements to the existing water treatment plant and installation of new transmission lines to serve the McIntosh County community of 3,100 residents.

The loan closed with a 9.45 percent interest rate. Revenues for repayment will be produced by rate charges to area residents.

### Board Approves Water Quality Standards

New water quality standards for Oklahoma were adopted by a unanimous vote of OWRB members at the January 11 meeting, culminating a 13-month effort by OWRB and cooperating agencies.

Major changes included new standards for dissolved oxygen concentrations which depend on whether a stream is designated a primary warm water fishery requiring a 5 mg/L level or a secondary warm water fishery

#### ACTIVE CONSERVATION STORAGE IN SELECTED OKLAHOMA LAKES AND RESERVOIRS AS OF JANUARY 19, 1983

PLANNING REGION LAKE/RESERVOIR	CONSERVATION STORAGE (AF)	PERCENT OF CAPACITY
<b>SOUTHEAST</b>		
Atoka	93,100	75.1
Broken Bow	889,700	96.9
Pine Creek	54,000	69.5
Hugo	157,600	100.0
<b>CENTRAL</b>		
Thunderbird	100,700	95.0
Hefner	61,700	81.9
Overholser	12,100	76.1
Draper	79,400	79.4
<b>SOUTH CENTRAL</b>		
Arbuckle	58,700	93.8
Texoma	2,399,600	91.0
Waurika	190,400	93.8
<b>SOUTHWEST</b>		
Altus	73,300	55.2
Fort Cobb	71,500	91.2
Foss	144,800	59.4 <sup>1</sup>
Tom Steed	73,900	83.1
<b>EAST CENTRAL</b>		
Eufaula	2,141,500	91.9
Tenkiller	627,500	100.0
Wister	27,100	100.0
<b>NORTHEAST</b>		
Eucha	79,600	100.0
Grand	1,390,700	93.2
Oologah	544,200	100.0
Hulah	29,600	96.6
Fort Gibson	365,200	100.0
Heyburn	6,600	100.0
Birch	19,200	100.0
Hudson	200,300	100.0
Spavinaw	29,700	99.0
<b>NORTH CENTRAL</b>		
Kaw	428,600	100.0
Keystone	571,100	92.7
<b>NORTHWEST</b>		
Canton	89,900	92.2
Optima	6,200	--- <sup>1</sup>
Fort Supply	13,900	100.0
Great Salt Plains	31,400	100.0
<b>STATE TOTALS</b>	<b>11,062,800<sup>2</sup></b>	<b>92.3<sup>2</sup></b>

1. In initial filling stage
2. Temporarily lowered for maintenance
3. Conservation storage for Lake Optima not included in state total

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.

requiring a 3 mg/L level. In earlier versions, a single criterion with a variance was set.

Ron Jarman, OWRB Water Quality Division chief, said some streams are naturally low in dissolved oxygen, while others are impacted by discharges from publicly owned sewage treatment works. "In no case will the new standards allow for degradation of water quality below that which already exists," said Jarman.

## Pollution Can Linger Centuries in Aquifers, Says Pettyjohn

Citing a case of ground water pollution 99 years old traced to striking miners who set fires in tunnels honeycombing New Straitsville, Ohio, Dr. Wayne A. Pettyjohn warned that pollution can render water unusable or hazardous for decades, perhaps centuries.

In his January 20 seminar in Oklahoma City, sponsored by the OSU Water Research Institute, Pettyjohn said fires set in 1884 when angry miners shoved burning, wood-filled coal cars into the shafts dried up or contaminated many wells. However, those which still produce, issue water hot enough to make instant coffee.

In more recent samples, Pettyjohn said scores of brine holding ponds constructed in the oilfields of central Ohio in the 1960's continue to contaminate shallow ground water with concentrations as great as 50,000 mg/L and degrade area streams as well with this salty flow.

He pointed out that the contaminants that come back to haunt later generations are the results of short-circuited planning procedures. Responsible planning must consider the composition and volume of the waste; the exact location of its disposal; potential detrimental effect of the leachate on the environment; and the hydrogeology of the system. Many wastes are long-lived and chemically complex, and when they are mixed they may form new compounds of dangerous or unknown effects on the environment, he said.

"Some pollutants produce only the inconveniences of bad taste, odor, color, hardness or foaming, while others are far more serious when pathogenic organisms, flammable or explosive substances are concerned," he warned.

As an example, he cited Love Canal, Niagara Falls, New York, abandoned by Hooker Chemicals and Plastics Corporation, which began burying chemical-filled drums along Love Canal in 1942. The company abandoned the plant in 1953 and deeded the 16-acre tract to the city board of education in exchange for one dollar.

"The area was soon developed," Pettyjohn pointed out, "and by 1976 an abnormally high water table caused some of the chemicals to seep to the surface in pools, and fumes seeped into home basements. More than 80 chemicals have been identified, at least seven of them carcinogenic," he said.

Are examples of ground water pollution by industrial wastes rarities?

"Not likely. The EPA estimates there are more than 1000 nationally," Pettyjohn concluded.

### JANUARY CROP AND WEATHER SUMMARY

Wheat, oats and barley made good growth in most areas of the state during the month after slow, soaking rains in late December and snows in January. Many farmers in northwest Oklahoma have only recently planted seed, so many wheat fields do not yet have a stand.

Pastures and ranges were in good to fair condition due to the rains, with surplus forage supplies reported in southwestern Oklahoma. Cattle were in generally good condition and the major cattle-producing districts have received enough moisture to provide adequate pasture growth.

At mid-month, temperatures ranged from a low of six degrees in the Panhandle to a high of 59 degrees in the Southeast.

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