by Greg Duryea

Kansas Water Plan funding: assistance of the highest order

A total of 250 municipal and rural water districts received assistance in FY 07 (July 1, 2006 through June 30, 2007) as the result of funding through the Kansas Water Plan. Since 1992, Kansas Rural Water has been contracted by the Kansas Water Office to provide onsite assistance to public water systems. "On-site assistance" includes helping systems address the myriad of operational, maintenance, financial, management, regulatory issues, health concerns and safety issues. Other examples in 2007 include the efforts by KRWA staff to restore the water system for the City of Greensburg following the devastating tornado there on May 4. KRWA's Jim Jackson coordinated the effort with other KRWA staff, crews for other municipalities and agencies to make sure that water service was available at the locations requested. During the July flooding in south-central and southeastern Kansas, KRWA provided six staff members to work in various communities to help restore water and wastewater services. The Kansas Water Plan funding helped support those efforts.

Greg Duryea
Tech Assistant

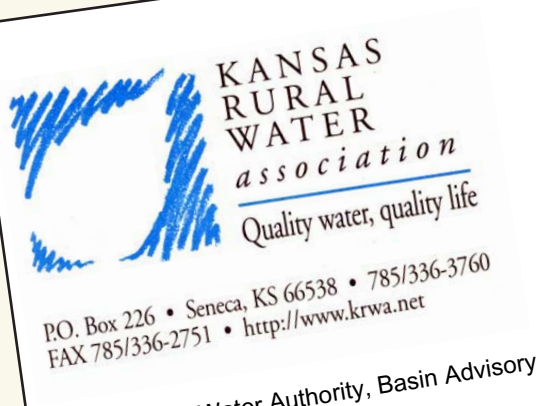
'Special focus' targets big losses

What makes the onsite assistance program unique is the emphasis that the State of Kansas has placed on providing help so that public water systems can reduce unaccounted for water loss. Annually, the Kansas Water Office prepares a list of systems that have unaccounted for water loss of 30% or more. KRWA then contacts those systems to develop a plan of action after the utility develops a system profile and monthly reporting format containing information including purchase or production of water, water sales, water that is provided without charge or percentage of loss. Next, KRWA works with the system to attempt to determine the causes of high water loss. Assistance is then provided to these systems, which may include reviewing recordkeeping, metering and meter reading and conducting leak detection. The Kansas Water Office identified 26 public water systems in FY 07 as having 30% or more unaccounted for water loss. The systems listed in Graphic I received "special focus" through the contract.

What makes the onsite assistance program unique is the emphasis that the State of Kansas has placed on providing help so that public water systems can reduce unaccounted for water loss.

Methods for detecting leaks in water distribution systems usually involve using sonic leak detection equipment, which identifies the sound of water escaping a pipe. Pictured at the left, KRWA Tech Greg Duryea uses an ultrasonic listening device to detect sounds below ground. Other KRWA equipment includes pinpoint listening devices that make contact with valves and hydrants, and correlator devices that can listen at two points simultaneously to pinpoint the exact location of a leak, assuming the size and type of pipe are known.

Summary Report, Fiscal Year 07



TO: Kansas Water Authority, Basin Advisory Committees, State Agencies, Legislative Committees

From: Kansas Rural Water Association, by Elmer Ronnebaum, General Manager

Subject: Summary Report, "Technical Assistance To water Users: Public Water Supply Systems" FY 07

Date: July 25, 2007

As you may have received these reports in prior years, this is the 16th annual report by the Kansas Rural Water Association (KRWA) to summarize the assistance provided to public water systems through funding through the Kansas Water Plan contract for technical assistance to public water systems. This program has been funded through the Kansas Water Plan since 1991 (FY92). Supplemental funding has been provided by the Kansas Dept. of Health & Environment in FY 05, FY 06 and FY 07 to make up Water Plan budget reductions. This program provides invaluable services to public water supply systems across the state.

This contract enabled KRWA to provide assistance to 250 individual public water systems in FY 07. These consisted of 143 different cities and 107 rural water districts or other systems. The Kansas Water Office has assigned 170 water conservation plans to KRWA. To date, 110 have been approved, 30 have been revised and submitted back to systems and 30 plans are in development.

The "Special Focus" projects are those identified with unaccounted for water loss of 30% or more. IN FY 07, KRWA worked with 26 such systems.

KRWA has made available for download the service areas for most public water supply systems in Kansas (525 municipalities, 289 rural water districts and 13 public wholesale water supply districts). The production of the maps was completed in 2007. The data for this project was collected by KRWA in 2004 to 2006, working directly with the public water systems and using printed maps of the 1992 datasets. These were then digitized at the Data Access and Support Center. The RWD dataset was developed to support programs at the Kansas Water Office and Kansas Dept. of Health & Environment.

In FY 07 KRWA provided the following through this contract:

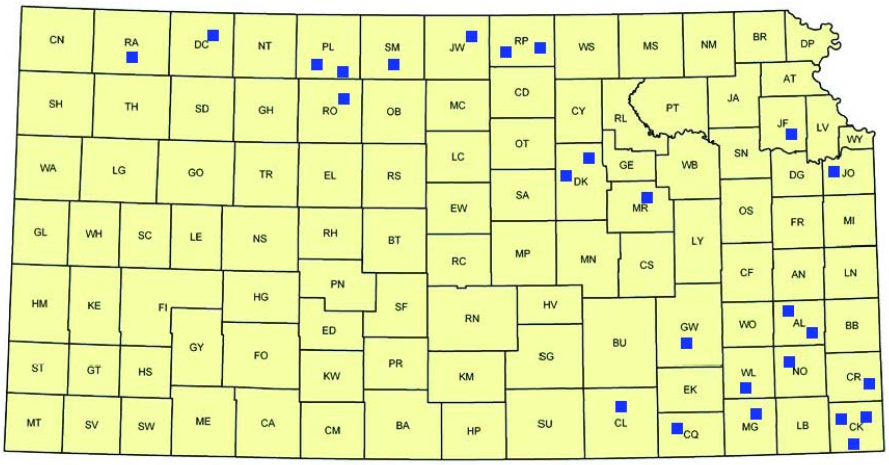
- Assistance to 143 different cities and 107 rural water systems or others. KRWA operates additional contracts with other agencies to provide additional services to systems across the state.
- 53 water loss surveys, locating 243,352,800 gallons of loss on an annual basis. The cost of this production or purchase of water on an annual basis is $650,546. Any leakage detected which is considered an emergency is reduced by 50% for reporting purposes.
- Assigned 23 new Water Conservation Plans; 170 Water Conservation Plans assigned overall
- Worked with 26 "Special Focus" systems to reduce unaccounted for water loss of 30% or more

Expenditures under this contract totaled $142,828.58. Funding was provided in the amount of $125,000. KRWA contributed $17,776.81 towards this contract.

KRWA appreciates the opportunity to provide services to public water systems through this contract.

Special focus projects: systems with >30% unaccounted for water loss

Graphic I



Allen RWD 6
Allen RWD 8
Cherokee RWD 1
Cherokee RWD 4
Cherokee RWD 7
City of Chautauqua
City of De Soto
City of Esbon
City of Glade
City of Kensington
City of Kirwin
City of McDonald
City of Norcatur
City of Solomon
City of White City
City of Woodson
Cowley RWD 7
Crawford RWD 5
Dickinson RWD 1
Greenwood RWD 1
Jefferson RWD 3
Montgomery RWD 9
Neosho RWD 6
Republic RWD 1
Republic RWD 2
Wilson RWD 13

Allen RWD 6

This district only reads meters quarterly and because of this, it is difficult to determine with confidence the amount of unaccounted for water loss. KRWA provided assistance with leak detection. In 2005, the unaccounted for water loss was 31.3%. With assistance and guidance from KRWA, unaccounted for water loss was reduced to 19.1% in 2006. The District was removed as a Special Focus project in January 2007.

Allen RWD 8

Because repair of leaks, Allen RWD 8 was removed from the list for quarterly monitoring. In 2005, the unaccounted for water loss in Allen RWD 8 was 48.8%. With assistance and guidance from KRWA, unaccounted for water loss was reduced to 18.5% in 2006. The District was removed as a Special Focus project in January 2007.

Cherokee RWD 1

In 2005, the unaccounted for water loss in Cherokee RWD 1 was 58.5%. With assistance and guidance from KRWA, unaccounted for water loss was reduced to 32% in 2006. KRWA is continuing to work with the District to reduce their water loss.

Cherokee RWD 4

The District repaired 18 leaks in October 2006, 29 leaks in November and 11 in December 2006 with those in December being large leaks. Unaccounted for water loss was reduced to less than 20% for two consecutive quarters. In 2005, the unaccounted for water loss was 44.3%. With assistance and guidance from KRWA, unaccounted for water loss was reduced to 29.1% in 2006 but it was 11.1% in April - June and 18.2% in July - Sept. Cherokee 4 was removed as a special focus project.

Cherokee RWD 7

In 2005, the unaccounted for water loss in Cherokee RWD 7 was 26.4%; in 2004 the loss was 36%. With assistance and guidance from KRWA, unaccounted for water loss was reduced to 11.4% in 2006. The District has not been removed as a Special Focus Project due to inconsistent providing of information to KRWA. Assistance is ongoing by KRWA.

City of Chautauqua

A meter upgrade program has reduced the amount of unaccounted for water loss. In 2004, the unaccounted for water loss was 30%. With assistance and guidance from KRWA, unaccounted for water loss was reduced to 20.8% in 2006. Assistance is ongoing by KRWA.

City of De Soto

The City of De Soto has installed some new residential meters for improved metering accuracy. The city's water sales readings for June 2007 should be more accurate than in the past. The city is committed to and working to bring the unaccounted for water loss under control. In 2004, the unaccounted for water loss for the City was 41.9%; in 2005, the loss was 21.3%; in 2006, the loss was 42.2%. The loss amounts to approximately 300 gpm; the city uses the water production facilities at the old Army Ammunition plant. Assistance is ongoing by KRWA.

City of Esbon

A draw down test of the well showed it has reduced capacity. The city's well only produced 10 gpm in June 2007. In 2005, the unaccounted for water loss in Esbon was 28%. In 2006, the loss was 29.4%. In the first two quarters in 2007, the loss was 8.6%. KRWA tested the master meter through which the city purchases water from Jewell RWD 1. The meter was inaccurate by 15% due to the installation of the meter being adjacent to an elbow. The city was removed as a Special Focus project in April 2007.

City of Glade

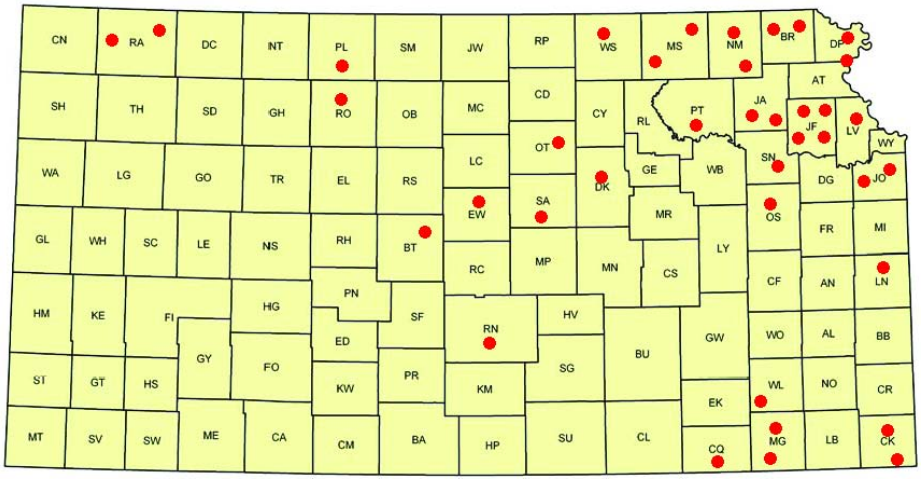
The city reported repairing three small leaks in April - June 2007. In 2005, the unaccounted for water loss in Glade was 41.9%. With assistance from KRWA, unaccounted for water loss was reduced to 31.1% 2006. The city continues as a Special Focus project.

City of Kensington

The city read all meters in April 2007. This resulted in a large water gain in sales from the winter months. A leak on the Bogart well line was repaired and was estimated by the city at 250,000 gallons of loss. The city has also repaired numerous small lines which were prone to leakage. Monitoring continues by KRWA.

City of Kirwin	Water use in the community building was first metered in the April - June 2007 quarter. The well meter was tested for accuracy and the meter tested at 98% accurate. KRWA also assisted in testing fire hydrant flow for estimating the amount of water flushed. In 2005, the unaccounted for water loss in Kirwin was 33%. With assistance and guidance from KRWA, unaccounted for water loss was reduced to 15.9% in 2006, however, the losses have increased to 30.5% in 2007. Additional monitoring of this city continues in 2007.
City of McDonald	KRWA tested the city's well meter at 98% accurate. One leak on Marion Street was detected but the leak was not pinpointed. KRWA plans to use its computerized leak correlator on the city's distribution system to hopefully locate this leak. In 2005, the unaccounted for water loss was 35.3%. In 2006, the loss averaged 48.7%.
City of Norcatur	The city will install a test port (when the budget allows according to the city) so the master meter can be tested for accuracy. The city replaced the master meter in the first quarter of 2006. In 2005, the unaccounted for water loss in Norcatur was 22% in 2004; in 2006, the loss was 3.7%. The city was removed as a Special Focus project in January 2007.
City of Solomon	The city clerk has improved documentation of water production and sales. The City will record all meters, including those not charged (free), monthly. In 2005, the unaccounted for water loss in Solomon was 35%. In 2006, the water loss was reduced to 15.8%. KRWA will continue to help with monthly reports. The City of Solomon has been removed from the list for quarterly monitoring in October 2006.
City of White City	The City has several locations which are not metered. In 2005, the unaccounted for water loss in White City was 23%. Tracking water used to fill fire trucks and estimating free water, the loss was reduced to 19.8% in 2006. Assistance by KRWA continues.
City of Woodson	Fire Department usage is not metered and ranges from 8,000 to 10,000 gallons per month. The operator reported that the water tower contractor took three months to complete repairs and the city flushed water through pressure relief valves last summer. In 2005, the unaccounted for water loss was 34%. With assistance and guidance from KRWA, unaccounted for water loss was reduced to 8.1% in 2006. The city was removed as a Special Focus Project in January 2007.
Cowley RWD 7	The pump seals at the booster station are still leaking. The district reported that they are waiting on the pump installer to correct this situation as they believe the problem should be covered by warranty. It was suggested to the operator to have the pumps repaired in Wichita. This District purchases water from Winfield. In 2005, the unaccounted for water loss in the District was 32.7%. In 2006, the unaccounted for loss was 33.5%.
Crawford RWD 5	Accurate monitoring of flushed water has significantly reduced the unaccounted for water loss. The district still lacks reliable customer meter reading data. In 2005, the unaccounted for water loss was 39.5%. With assistance and guidance from KRWA, unaccounted for water loss was reduced to 28.7% in 2006. In 2007, the loss is averaging 15.3% in the first two quarters. KRWA assistance is continuing to the District.
Dickinson RWD 1	The water district continues to replace pipeline as internal finances allow. Leaks are repaired when detected and located. In 2005, the unaccounted for water loss was 28.3%. In 2006, the loss averaged 25.8%; in 2007, the loss is averaging 37.8%.
Greenwood RWD 1	The district continues to replace lines. The district presently has a KAN STEP project ongoing to replace old grey pvc that was very prone to leakage. In 2005, the unaccounted for water loss was 43.1%. In 2006, the loss was 43%. In the first quarter of 2007, the loss was 31.8%. KRWA monitoring continues.
Jefferson RWD 3	The district located and repaired a large leak in the former Jefferson RWD 6 area in May 2007. The water district continues to monitor the water loss. In 2004, the water loss was 30%; in 2005 the loss averaged 20%; in 2006 the unaccounted for loss was 23.1%. In 2007, the loss has been averaging 30%.
Montgomery RWD 9	A water loss survey was again performed by KRWA with the district's operator on May 17, 24 – 26 and 29. Three leaks were found totaling approximately 23 gallons per minute. In 2004, the water loss was 39%; in 2006, the loss averaged 30%. In 2007, the first quarter averaged 42.8% and second increased to 48.7%.
Neosho RWD 6	The water loss percentage in May 2007 increased. It is confusing as to meter readings having such wide variance from month to month, particularly in February 2007 and May 2007 when the loss averages 41.5% for those two months. In March and April 2007, the loss averages 11.8%. The problem with water loss in this system is in meter reading and reporting. The District has met the requirements for removal as a Special Focus Project; the district has been removed as a special focus project.
Republic RWD 1	This is a self-read district which explains the monthly variance in the percentage of water loss. Water loss in 2005, the loss was 31.1%; in 2006, the loss averaged 26.2%. In 2007, the district reports an average of 42%
Republic RWD 2	The district read all meters in April to June 2007. Plans are to conduct a water loss survey. In 2005, the district had a loss of 30.5%; in 2006, the loss averaged 28.3%. KRWA will continue to attempt to provide assistance to this district.
Wilson RWD 13	The district began reading customer meters in 2006. In 2005, unaccounted for water loss was 31.5%; in 2006, the loss was reduced to 9%. The district was removed from monitoring in January 2007.

Locations of water loss surveys conducted



Cherokee RWD 2
City of Arlington
City of Blue Rapids
City of Cedar Vale
City of Chapman
City of Claflin
City of Clearview City
City of Galena
City of Gardner
City of Glade
City of Gorham
City of Green
City of Herndon
City of Lyndon
City of Mayetta
City of McDonald
City of Morrill
City of Nortonville
City of Reserve
City of Stockton
City of Troy
City of Valley Falls
City of Washington
City of Wathena
City of Winchester
Jackson RWD 3
Jefferson RWD 2
Linn RWD 2
Marshall RWD 3
Montgomerty RWD 6
Montgomery RWD9
Nemaha RWD 3
Nemaha RWD4
Pottawatomie RWD 4
Saline RWD 8
Shawnee RWD 8
Suburban Water Company
Wilson RWD 11

Water loss surveys conducted, FY 92 - FY 07

	FY 92	FY 93	FY 94	FY 95
Number of Surveys	64	55	38	26
GPM detected	530.25	285.25	457.5	137.5
GPY detected	282,956,760	149,927,400	240,426,400	72,270,000
$ Cost Savings	$280,981	$270,011	$340,610	$92,176

	FY96	FY 97	FY 98	FY 99
Number of Surveys	23	29	25	54
GPM detected	268.25	238	151.75	632.75
GPY detected	141,176,160	125,092,800	79,759,800	332,573,400
$ Cost Savings	$180,985	$192,555	$150,771	$572,037

	FY 00	FY 01	FY 02	FY03
Number of Surveys	50	49	49	38
GPM detected	393.25	448.75	454	275
GPY detected	206,692,200	235,863,000	238,753,800	144,540,000
$ Cost Savings	$339,137	$607,989	$423,858	$225,522

	FY 04	FY 05	FY 06	FY 07
Number of Surveys	40	44	40	53
GPM detected	246	256.5	261	463
GPY detected	129,665,000	134,790,120	137,181,600	243,352,800
$ Cost Savings	$421,953	$278,814	$253,846	$650,564

	Total 92 - 07
Number of Surveys	677
GPM detected	5,499
GPY detected	2,895,021,240
$ Cost Savings	$5,281,809

GPM = gallons per minute
GPY = gallons per year

Systems assisted through FY '07 Kansas Water Plan Contract

Allen RWD 4
Allen RWD 6
Allen RWD 7
Allen RWD 8
Allen RWD 13
Anderson Cons. RWD 1
Anderson RWD 3
Anderson RWD 4
Anderson RWD 5
Atchison Cons. RWD 5
Bourbon Cons. RWD 2
Brown RWD 1
Brown RWD 2
Butler RWD 5
Butler RWD 7
Caldwell Utilities
Cherokee RWD 2
Cherokee RWD 6
Cherokee RWD 9
City of Abilene
City of Ada
City of Agra
City of Andale
City of Argonia
City of Attica
City of Aurora
City of Axtell
City of Barnes
City of Baxter Springs
City of Beattie
City of Bennington
City of Blue Rapids
City of Bonner Springs
City of Burdett
City of Burlington
City of Canton
City of Carbondale
City of Centralia
City of Chanute
City of Chapman
City of Chase
City of Chautauqua
City of Clearview City
City of Coldwater
City of Colony
City of Conway Springs
City of Corning
City of Council Grove
City of Courtland
City of Cunningham
City of De Soto
City of Deerfield
City of Dorrance
City of Dwight
City of Edgerton
City of Effingham
City of Ellis
City of Elwood
City of Emmett
City of Enterprise
City of Esbon
City of Eskridge
City of Eureka
City of Fontana
City of Fort Scott
City of Galena
City of Gardner
City of Garnett
City of Girard
City of Goessel
City of Goff
City of Grainfield
City of Greeley
City of Green
City of Greenleaf
City of Greensburg
City of Grenola
City of Gridley
City of Hartford
City of Haviland
City of Herington
City of Hesston
City of Hiawatha
City of Highland
City of Holcomb
City of Holyrood
City of Horton
City of Humboldt
City of Iola
City of Jennings
City of Kiowa
City of Kismet
City of LaCygne
City of LaHarpe
City of Larned
City of Lawrence
City of Lecompton
City of Lenora
City of Linn Valley
City of Louisburg
City of Lyndon
City of Marysville
City of Mayetta
City of McFarland
City of McLouth
City of Melvern
City of Minneapolis
City of Moran
City of Morganville
City of Morrill
City of Natoma
City of Neodesha
City of Ness City
City of New Strawn
City of Norton
City of Nortonville
City of Osawatomie
City of Oskaloosa
City of Otis
City of Oxford
City of Ozawkie
City of Paola
City of Park City
City of Parker
City of Parsons
City of Peabody
City of Phillipsburg
City of Pleasanton
City of Pomona
City of Prescott
City of Preston
City of Protection
City of Quenemo
City of Quinter
City of Randall
City of Republic
City of Reserve
City of Richmond
City of Sabetha
City of Scammon
City of Seneca
City of Silver Lake
City of Soldier
City of St. Marys
City of St. Paul
City of Sterling
City of Tonganoxie
City of Troy
City of Valley Falls
City of Vermillion
City of Washington
City of Wathena
City of Waverly
City of Weir
City of Wellington
City of Wellsville
City of Wetmore
City of White Cloud
City of Whiting
City of Winchester
Clay RWD 1
Clay RWD 2
Clay RWD 3 (proposed)
Cloud RWD 1
Coffey RWD 2
Coffey RWD 3
Cowley RWD 3
Cowley RWD 4
Cowley RWD 5
Cowley RWD 6
Crawford RWD 1
Crawford RWD 4
Crawford RWD 6
Crawford RWD 7
Dickinson RWD 2
Douglas RWD 1
Douglas RWD 3
Elk RWD 1
Ellis RWD 6
Finney RWD 1
Franklin RWD 1
Franklin RWD 2
Franklin RWD 3
Franklin RWD 4
Franklin RWD 5
Franklin RWD 6
Greenwood RWD 1
Greenwood RWD 2
Jackson RWD 3
Jefferson RWD 7
Jefferson RWD 11
Jefferson RWD 12
Jefferson RWD 13
Labette RWD 7
Labette RWD 8
Leavenworth RWD 5
Leavenworth RWD 10
Leavenworth Water Dept.
Linn RWD 1
Linn RWD 2
Linn RWD 3
Linn Valley Lakes
Lyon RWD 3
Lyon RWD 5
Marshall RWD 3
Miami RWD 1
Miami RWD 3
Miami RWD 4
Montgomery RWD 6
Montgomery RWD 9
Montgomery RWD 11
Montgomery RWD 12
Morris RWD 1
Nemaha RWD 2
Nemaha RWD 3
Nemaha RWD 4
Neosho RWD 8
New Century Air Center
Osage RWD 2
Osage RWD 3
Osage RWD 4
Osage RWD 5
Osage RWD 6
Osage RWD 7
Phillips RWD 1
Pottawatomie RWD 2
Pottawatomie RWD 3
Pottawatomie RWD 4
Public Wholesale Dist. 5
Public Wholesale Dist. 12
Public Wholesale Dist. 13
Reno RWD 1
Rice RWD 1
Saline RWD 3
Sedgwick RWD 2
Shawnee Cons. RWD 3
Shawnee Cons. RWD 4
Shawnee RWD 8
Smith RWD 1
Suburban Water Co.
Sumner RWD 2
Sumner RWD 3
Sumner RWD 4
Timber Creek East Water Dist.
Tuttle Creek State Park
Wabaunsee RWD 2
Washington RWD 1
Washington RWD 2
Wilson RWD 9
Woodson RWD 1

Having an unaccounted for loss of 30% or more doesn't necessarily mean that the pipelines are failing. That's too often the assumption. The conclusion locals often jump to is to go on a search for leaks. The fact is that until the master meters are tested, or other meters are sample tested, we'll look for the obvious which may be cattails growing under the overflow of the storage tank or checking the accounting processes. There's no reason to spend time looking for leaks that may not even exist. Systems often flush lines without using a meter to register the amount of water flushed. Some systems provide water free of charge and do not record the use – sometimes even when there is a water meter on the service! All these contribute to unaccounted for water loss.

In addition to working with the targeted 'special focus' projects, KRWA conducted a total of 53 water loss surveys in the period July 1, 2006 to June 30, 2007, locating and correcting an annual loss of 243,352,800 gallons of water. The cost of production or for the purchase of that water is $650,500 annually. KRWA reduces the estimated loss by 50% or more when the leaks are of an emergency nature.

Conservation plan development

Another significant endeavor of the contract is to help public water systems with the development of water conservation plans. As of June 30, 2007, the Kansas Water Office had assigned a total of 170 water conservation plans to KRWA for assistance. A total of 110 plans have been approved either by the Kansas Water Office or the Department of Agriculture - Division of Water Resources. There are 30 additional plans that have been revised and returned to the respective systems for approval by their governing bodies; there were 30 more plans in development as of June 30.

In FY07 (from July 1, 2006 to June 30, 2007), KRWA provided assistance to 250 public water systems as a benefit of the Kansas Water Plan contract. There were

In FY07 (from July 1, 2006 to June 30, 2007), KRWA provided assistance to 250 public water systems as a benefit of the Kansas Water Plan contract. There were 143 different cities and 107 rural water districts involved.

143 different cities and 107 rural water districts involved.

Mapping of RWD service areas

Kansas Rural Water Association has also been supporting a joint project between the Kansas Water Office and the Data Access Storage Center to update the service areas and infrastructure of all rural water districts in Kansas. This project was first completed in 1994 and was published in an 11 x 17 format. The 2006-2007 project has been published electronically. KRWA has loaded all the county maps and respective water system maps on the Association's Web site at www.krwa.net. See pages 112-113 in this issue for additional information about the mapping project. Any system that notices any correction that needs to be made on these maps, or updating, should notify KRWA so that an updated map can be prepared and placed online. KRWA is assuming that responsibility.

Expenditures under the contract totaled $142,828,58. The contract amount was $125,000 for FY07. A report is available online at KRWA's Web site at www.krwa.net. That report also shows the assistance by basin.

of hours working with systems under this contract. Additional staff will be employed as appropriate. In addition to the work with systems that have >30% unaccounted for water loss, the Kansas Water Office has also identified those systems that have a negative water loss for assistance. The contract also anticipates that KRWA will provide some assistance to cities and RWDs with GIS development of their infrastructure and improved mapping and also promote regional public water supply development as identified by state agencies.

Beginning in July 2007, additional funds will allow for an enhancement of services provided by KRWA as a benefit of the Clean Drinking Water Fee / Kansas Water Plan contract.

FY 08 contract expands

Beginning in July 2007, additional funds will allow for an enhancement of services provided by KRWA as a benefit of the Clean Drinking Water Fee / Kansas Water Plan contract. Due to the loss of funding for both a training and groundwater tech position, KRWA staff will significantly increase the number