Water Round Up

September 2008

Specialists in Recovery of Unaccounted-For Water and Lost Revenue

In This Issue

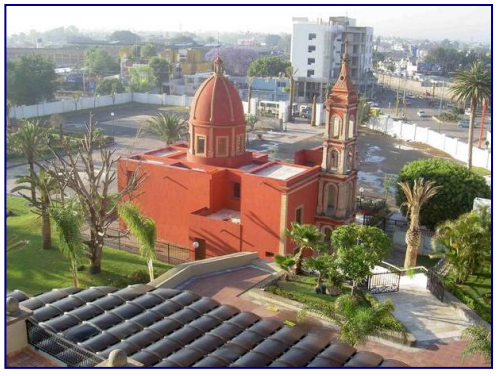
JBS Selected for Implementation of Water Loss Recovery Program in León, Mexico

León is a growing city in the state of Guanajuato in Mexico, located northwest of Mexico City, about a three-hour drive away. Like many cities in Mexico, the León municipal water and wastewater system (or SAPAL) has experienced metered ratios of about 65% accounted for water for many years.

SAPAL serves about 1.4 million people and maintains about 1,150 miles of pipe. In recent years, the agency has implemented programs to increase water distribution to all sectors of the city and to control system pressures. However, sustainable on-going actions to reduce unaccounted for water (UFW) have been only partially successful. In 2008 SAPAL is taking control of this situation with assistance from JBS Associates.

The objective is to augment SAPAL's in-house program to conduct a system wide water distribution audit. The initial program has included the procurement by the agency of portable ultrasonic flow meters, dataloggers and latest technology leak detectors. JBS is providing training, program supervision and data analysis with the goal of ensuring maximum utilization of available resources and implementation of best methods in a varied, and sometimes difficult distribution system environment.

This year a major effort is under way to fully evaluate non revenue water on a sector by sector basis. We are currently assisting the client in a source-to-delivery-point analysis of pilot sectors with the goal of demonstrating all sources of loss and how they can be recovered in a sustainable way. Flow and pressure measurements, night flow tests, leak detection and repair, meter datalogging and meter testing are all activities that are helping in this diagnosis and are expected to lead to significant improvements in the metered ratio.



The León municipal water and wastewater system is considered a leader in Mexico, for this and many other programs it has adopted. It is continuing this tradition by being at the forefront in proactive water loss control in that country.

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The Problem:

Millions of Dollars in Unrealized Revenue

Millions of Gallons of Non Revenue Water each Year

Millions of Dollars Spent On Treating a Symptom Rather than Solving the Problem!

Not all Meter Replacement Programs are Cost Effective!

Not All Leak Detection Programs Are Successful!

Production Meter Accuracy

When one looks at the incremental cost of the various components that make up a water system, from the water treatment plant or well field to the many miles and thousands of metered accounts, pumping stations, control valves, etc., the capital and maintenance cost is staggering.

One of the least expensive components of a water system are its production meters, because there are so few of them. Yet, they may be the most important indicator that a utility manager has concerning the overall efficiency of the water system as a whole. If production meter totals are in-accurate, utility managers have no idea what the true efficiency of the distribution network is. When production meters are over-registering or under-registering then the Non Revenue Water issues (unaccounted for water) will be skewed one way or the other.

A production or finish water meter that is under-registering will cause the NRW totals to appear better than what they really are. If the meters are over-registering, the metered ratio (water produced to water sold) will be appear worse than it really is. Millions have been spent by utilities looking for or trying to solve problems in the distribution network that did not exist because of over-registering production meters, while other utilities had the false impression that their efficiency was better than it really was due to under-registration of the production meters, and $millions have been lost by not correcting the problems.

Water production meters are a leading barometer in the determination of water system, efficiencies.

There is a wide range of products available for water production metering. The following are just a few of the main types:

Velocity Meters (turbines, propeller), Ultrasonics (full body, external strap-on or wetted tranducers), MAG Meters (insert, full body), Differential Pressure Meters (venturi, orifice plates, flow tubes, and others).

As with customer metering, proper type, water quality, meter installation, application and sizing are critical to achieving consistent meter accuracy. Although some manufacturers of MAG meters indicate that the amount of straight pipe may be reduced, as a rule, the more straight pipe ahead and after a meter installation will help insure good meter accuracy at all anticipated flow rates and possibly extend the life of the meter. Although specs change, manufacturers suggest no less than 3 diameters of straight pipe for MAG meters. Ultrasonic, velocity, and differential pressure meters should have 10 diameters where possible. Long term accuracy will be affected by installation criteria, water quality conditions and flow velocity.

When did you last have your water production meters tested?

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Is a Meter Sizing Problem Resulting in Unrealized Revenue?

Are Old, Outdated or Miss-Applied Meters The Cause of Your Revenue or Water Loss?

JBS Does Not Sell Products, or Participate in Revenue Sharing Programs.

We have nothing to gain from our recommendations, but their successful implementation by our clients.

Production Meter Testing

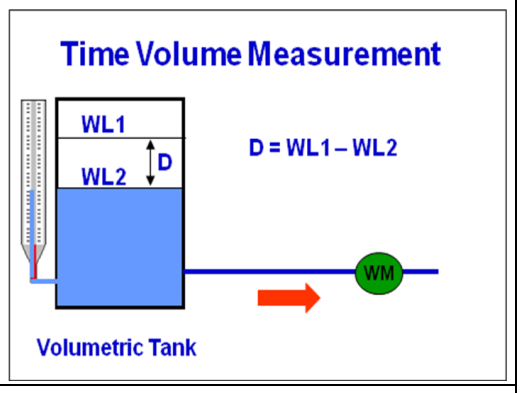
The American Water Works Association has recommended at least annual testing for all production meters. Some utilities take that a step further and test their meters monthly. There are a number of ways to test the accuracy of production meters. Many utilities test the recording equipment or the 4 to 20MA signal and base the accuracy of the meter on the results of that test. However, it is suggested that an actual flow test or a comparative test be made along with any electronic calibration of the recording equipment. Testing the electronic recording equipment is not testing the meter. It is testing the signal parameters of the instrumentation.

A flow test can be conducted by a number of methods. The more popular ones include a time/volume check of drawdown of known dimensions such as of a wet well, or a ground storage tank, comparing the drop or rise against time and against the totalizer on the meter. Quality, calibrated, portable ultrasonic flow meters are used as well. Keep in mind these tests may be handicapped by inadequate straight pipe. An uncalibrated test meter may be more inaccurate than the meter being tested. A third method that has been used for over 100 years is the portable pitot rod, which is a sensitive differential pressure meter. Straight pipe requirements are important for this test as well. Skillfully used with either manometers or digital recording equipment, pitot rods can accurately determine flow rates, velocities and water volumes. Under Ideal conditions, it is difficult to beat the accuracy of a time-volume measurement. A stop watch, tape measure and calculator will do the job.

Ultrasonic Flow Meter

Pitot Rod Installation

Pitot Rod and Digital Recorder



Drawdown Based on Time Volume

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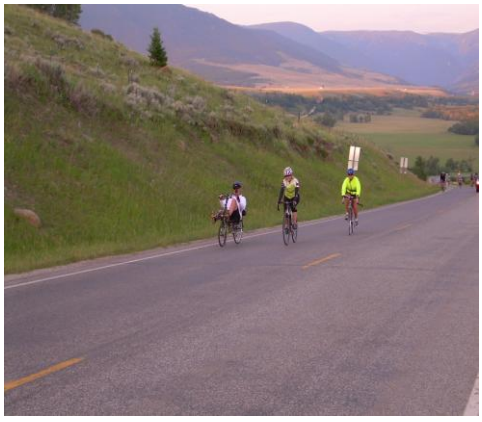
Photos from the 2008 Tour de Wyoming Bike Ride

Descending to Bear Creek

Medicine Wheel area

Medicine Wheel area

At the snow line



Sunrise, leaving Red Lodge

North Fork of Clark River

In July our cycling group headed west to Wyoming to participate in the 6 day Tour de Wyoming bike ride. The event started in Cody and worked its way up to Red Lodge, Montana and back. Spectacular scenery and wonderful people.