

TEXAS WATER UTILITIES JOURNAL

LEAK DETECTION - ACCOUNTING FOR LOST WATER

by Sam Godfrey

Wasted water is a problem experienced in many areas of today's water industry. Water is a very valuable resource and should be considered liquid money. If you are unable to account for water loss in your distribution system, your losing potential earnings. A water system is a customer driven revenue generating utility. It has to be in top working condition to generate its highest possible profits. With the rising cost of water rates and peak summer demands, its time to implement a leak detection program to help remedy water unaccountability problems.

WATER ACCOUNTABILITY

A water audit is the first step in discovering water unaccountability and determining a system's conservation needs. It will assess the efficiency of the water system to identify and quantify water loss. A water audit is a thorough examination of water system records and field control equipment. The audit will help account for all water distributed through a water system. Water audits should be performed on a monthly basis and a yearly summary kept in order to maintain accurate accountability records.

COMPILING WATER AUDIT INFORMATION

Accurate information is needed to complete a factual water audit. The results of an audit depend on the information compiled from system records. A water audit can be compared to a check book. Its a check and balance of your water on a regular basis.

Information needed to complete a water audit includes:

- Total amount of water supplied to water system (master meter usage)
- Total amount of water sold or used from the system
- Master or service meter adjustments (+ or - accuracy of recent meter test)
- Treatment plants use - (backwash, storage overflows, etc.)
- Estimate unmetered use - (parks, cemeteries, fire departments, etc.)
- Estimate known losses - (leaks, theft, etc.)
- Accounting Procedure errors

The process to identify unaccounted-for water is:
$$\text{Water Produced} - \text{Water Sold} = \text{Unaccounted-for water}$$

The percentage of (unaccounted-for or lost water) can be calculated by dividing the total unaccounted-for water by the

total water produced for the period (month or year) times 100. (Unaccounted-for water / water produced X 100 = percentage of loss)

AUDIT RESULTS

After the balancing process of a water audit, it is time to determine your water systems efficiency. Utilities should attempt to keep water unaccountability to a minimum and eliminate unnecessary loss and forfeited revenues. Accounting to the Texas Water Development Board, a system with a water loss of less than 5% is considered excellent. 10-15% is considered a marginal loss and there is a need to begin an effort to determine the cause of unaccountability. Unaccounted for water over 15% in a water system is an indication of immediate water conservation needs.

LEAK DETECTION

Leak detection is a complete "hi-tech" hands on survey of the water distribution system in order to identify leak sounds and pinpoint exact locations of leaking water pipes. This process can locate leaks and identify water in a distribution system that is contributing to your everyday water losses. Over the past fifteen years of

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performing in the field leak detection surveys, I have identified water leaks and water loss that would have never surfaced or been located. The Ultra Sonic method of leak detection can pinpoint leaks and eliminate unnecessary excavations. Water will take the path of least resistance and will flow down hill before it will eventually surface. The cost of a leak survey will identify that “liquid money” and allow you as a provider to recover lost revenues. Some of the benefits of hand on leak detection are:

- Reduce unaccounted-for water
- Recover lost water and generate revenues
- Reduce legal public liability (property damage lawsuits and health issues)
- Improve public relations (provide customer service to assure system maintenance)
- Reduce road damage
- Increase water system knowledge. A hands-on survey can help identify 100% of distribution system and update mapping.
- Eliminates unnecessary water demand and identified system efficiency.
- Can defer the construction of a new water facility that would be supplying a higher percentage of unused water.

TYPES OF LEAK SURVEYS

The complete, partial or

emergency type applications offer several examples of what the customer may need. The complete survey is performed on 100% of the water system and can also be referred to as a maintenance procedure. This survey will check the entire water system and help reduce overall system problems. A partial survey is performed on specific areas with known problems. These sections are generally older or have a high repair history. The emergency survey will target a location with low pressure or water surfacing in specific areas. An emergency survey will pinpoint a leak to an exact spot in order to eliminate unnecessary excavation and road repair cost.

Leak detection is a maintenance type service that can help utilities conserve water and operate more efficiently, ultimately generating more revenues. Make sure your system does not have a high unaccountable water loss and save that valuable resource.

Editors Note: For more information on leak detection call Sam Godfrey, SAMCO Leak Detection Services, Inc. at (512) 263-7043.

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