

**MUHLENBERG TOWNSHIP AUTHORITY  
LEAK DETECTION PROGRAM  
JANUARY 2009**

**General**

Efficient water use can prolong supply adequacy, reduce energy consumption, compensate for system inadequacies, and reduce the impact of population growth or economic expansion. The Leak Detection Program provides a basis for improving water use efficiency in the Authority's water system by establishing policies and objectives to be applied during normal operating conditions, as well as during drought emergencies. It is intended to satisfy the needs of the Authority and the requirements of the Delaware River Basin Commission (DRBC) and the Pennsylvania Department of Environmental Protection (DEP).

**Assumptions**

The following assumptions guided preparation of the Leak Detection Program:

- (1) It is an active and continuing water system tool and will be reviewed, revised, and updated periodically.

**Impact**

Successful implementation of the various conservation measures will impact on the water system and its customers in several ways:

- (1) Reduced water consumption will result in lower electric power costs for heating and pumping water and may result in lower water bills.
- (2) Water system pumping, treatment and operation and maintenance costs will likely decline in conjunction with reduced leakage.
- (3) Reduction of unmetered uses and losses will result in direct cost savings and may delay water rate increases.
- (4) The existing well supplies will be able to supply a larger customer base, postponing the need for additional and expensive supply development projects.

**Leak Detection Plan**

Continue to maintain levels of un-metered water that are less than 15 percent of the total water

supplied to the system. Muhlenberg Township Authority is diligent in monitoring its distribution system for leaks. The Authority has conducted system-wide leakage surveys in 1985, 1989, 1990, 1991, 1992, 1994, 1999, 2004, and 2006. Leakage location programs include computerized leak location technique to eliminate “hit or miss” techniques requiring multiple excavations with high labor and equipment costs and the accompanying disruptions of service. Highly sensitive listening devices are used to detect the presence of a leak. Once a leak is detected a Correlator (which employs the principle of time-of-flight measurements of sound waves) is used to determine the precise location of the leak. Leak detection services are provided as part of both a routine maintenance program and on an emergency basis. Leakage repairs are performed either by Authority Personnel or by subcontractor.

Based on historical trends the Authority has established a triggering point for the need of a leakage survey when the water system equals or exceeds 15 percent.

Unaccounted-for-water. Unaccounted-for-water amounts in recent years was 19.1% in 2007 and 14.9% in 2008. Non-revenue water use consisting of hydrant flushing, plant use, and leaks, fires, and meter under-registration has decreased from 220 MG in 2007 to 215 MG in 2008.

The Authority’s Leakage and Loss Management objectives include:

- (a) Review water supply and consumption records and determine un-metered water.
- (b) Maintain records of leaks reported and repairs made to determine areas requiring additional evaluation or main replacement. Include on the record the following:
  - (1) Break Data (who it was reported by, date, location, type, and cause)
  - (2) Pipe Data (diameter, thickness, material, joint, any corrosion or siltation)
  - (3) Environs (soil type, depth of pipe, other structures/pipes in contact)
  - (4) Repairs made, start and finish time/date.
  - (5) Conditions at break
  - (6) Valves Shut Down (number, size, location, time)
- (c) Regularly update water system maps to accurately show pipelines, valves, and hydrants, as well as the age, material, size, and lining of pipelines.
- (d) Continue to monitor and inspect storage facilities for leakage.

- (e) Identify the employees responsible for leak detection, and periodically evaluate the need for leak surveys in any part of the system.
- (f) Review daily pumpage to determine whether the system demand deviates from normal patterns.
- (g) Continue to encourage leak reporting and to give high priority to the expeditious repair of leaks.
- (h) Record estimated un-metered uses, such as firefighting, fire department testing, hydrant flushing, standpipe overflows, etc.
- (i) Continue to test and inspect new main construction.
- (j) Continue to monitor water pumped to waste for turbidity control.
- (k) All valves and hydrants should be exercised and sounded for leakage annually.