

City of Philadelphia Water Department (PWD) Leakage Management Assessment and Training

Client: **City of Philadelphia**

WSO has carried out annual technical assessments of the City of Philadelphia's leakage and water accountability practices since 2002. The contract has recently been extended to cover the period up to end of June 2007. The scope of work includes assessment of the City's active leakage control activities, repair efficiency, infrastructure management and advice on implementing pressure management. The work also includes workshops on "best practice" theory and technology being utilized in the field of leakage management.

The data collection and analysis exercises assesses the PWD service coverage and quality, water consumption and demand, the policies and status of metering, network and building losses, operation of the networks, billing data system, maintenance practices and their state of repair and rehabilitation. The consultants also completed a series of on-site inspections complemented by flow and pressure measurements in hydraulically discrete areas. This included:

measurement of flow and pressure within hydraulically discrete areas and completion of a Minimum Night Flow analysis;

A new and innovative Pressure Step Test allowed the relationship between pressure and leakage to be more accurately modeled, indicating the ratio between fixed and variable arealeakage within the network system.

The main issues and problem areas identified by the assessment of the water supply system are summarized as follows:

The total level of losses, according to IWA terminology to be 70 million gallons per day, accounting for approximately 25% of the Total System Input of 280 million gallons per day.

- In terms of Leakage Performance Indicators, the level of physical loss is of the order of 148 gallons per service connection per day, which is more than 5 times greater than the UK water industry average.
- Using the IWA Infrastructure Leakage Index (ILI) methodology, the physical loss situation in Philadelphia is 13 times higher than the best that could be achieved, with well maintained infrastructure in above average condition, and with intensive active leakage control using international "best practice";
- Improved prioritization of Active Leakage Control would result in greater water loss savings;
- The low marginal cost of water results in a small financial incentive to carry out leakage management however this excludes the environmental and social benefits of reducing the high levels of physical loss. If this were included then the justification to complete a leakage management exercise may be stronger.