

South Woodford Water District

WATER LOSS PREVENTION AND LEAK DETECTION PROGRAM

The South Woodford Water District purchases its water from the City of Versailles and has a distribution system that is comprised of 214 miles of transmission mains, with over 1,815 customer services, two pumping stations and three storage tanks. Water loss has been a continuing problem for the water district since it was constructed. South Woodford has suffered a great deal of leaks, mainly due to rock ledges that the pipe was laid around and that #9 rock was used to pad the lines. This has allowed the water to be carried away from the actual area of the leak. In more recent years, the water lines were allowed to be placed in areas that are not visible by any other method than walking. The building of subdivisions has had no rhythm or reason. However, South Woodford is committed to allocating a sufficient amount of resources to identify and correct water loss, thus improving its operating efficiencies.

The following plan outlines processes and procedures that the South Woodford Water District will conduct on a routine basis (both in a reactive and proactive mode) to identify and repair water line leaks, identify and monitor unmetered water usage and reduce its overall water loss.

1. ROUTINE PROCEDURES (Daily/Weekly/Monthly):

- A. COMMUNICATIONS: Monthly meetings to address the status of water loss by personnel from the office, distribution department and board members are planned to assure a unified team effort to minimize water loss.
- B. MASTER METERS: Read and record all master meter readings throughout the distribution system at approximately the same time each day:
 - 1. Main Pump @ Highway 33 = 6-inch
 - 2. Shryock = 3-inch
 - 3. McCowans Ferry = 3-inch
 - 4. Plant meter = 1-inch
 - 5. Plant meter @ Plant = 3/4 – inch
 - 6. Zone Meter: Pump = 3-inch @ Cummins Ferry & Highway 33
- C. RECORDING READINGS: All master meter readings shall be recorded in log books or on spreadsheets. Record readings of both registers on compound meters.

- D. **CONSISTENT METER READING SCHEDULES:** Establish a schedule wherein all customer meters are read at approximately the same time each month to ensure that any inconsistencies are identified and potential service line problems are identified and corrected.
- E. **FIELD PERSONNEL REPOSIBILITIES:** All distribution personnel (meter readers, service techs, etc.) shall immediately report to their supervisor any identified water leaks, tank overflows, telemetry problems, or other concerns that are presently, or could, result in water leaks or loss. A work order will be generated by the supervisor to address the problem immediately or at the earliest possible time given the urgency of the problem.
- F. **OFFICE PERSONNEL RESPONSIBILITIES:** All office personnel shall immediately report any customer reported leaks, tank overflows, pressure problems, or other issues to the field supervisor. The office personnel will generate a work order and coordinate with the field supervisor to make a determination as to whether a field crew needs to be dispatched immediately or later, based on the urgency of the problem.
- G. **RECORDING DATA:** Daily and monthly records (via computer data bases, manual logs, or spreadsheets) shall be maintained by appropriate supervisory personnel to record and analyze the following information:
- Daily and weekly master meter readings
 - Pump Station run times
 - Estimated water losses from line breaks, tank overflows, hydrant usage, etc.
 - Metered customer water sales by route
 - Other un-metered water usage
- H. **DATA ANALYSIS:** Water purchased and usage data obtained and recorded shall be evaluated and analyzed on a daily/weekly/monthly basis to determine:
- Water production and purchase amounts.
 - Meters usage
 - Known un-metered usage
 - Known losses from line breaks, etc.
 - Water loss by distribution zone
- I. **FOCUS ON DISTRIBUTION SYSTEM ZONES:** The Water District's present system has four separate zones as determined by the above master meters.
- Master meter readings will be entered into an Excel spreadsheet daily to identify excessive usage that may indicate a water line break.
 - Data analysis will be focused on water usage and loss in each of these major zones in order to prioritize leak detection efforts based on potential water loss in each area.

- J. **METER TESTING AND REPLACEMENT:** In 2025, the South Woodford Water District replaced all residential and farm meters. The water district has begun to install master meters in any new development within the district. The water district has also been working on getting control methods in place for the building of any subdivision or any additional lines to feed properties not on county right-of-ways.

2. **LEAK DETECTION PROCEDURES:**

- A. **District personnel:** On a monthly basis (as routine system operations permit), district personnel will be assigned to leak detection shifts after hours (typically 11:00 PM to 3:00 AM). Customer usage is minimal at this time and allows field personnel to go valve to valve with listening devices and detect abnormal flows. Personnel will perform leak detection in those areas with the highest known water loss, based on routine data collection and analysis.
- B. **OUTSIDE CONSULTANTS:** Outside consultants will be utilized as circumstances and funding dictate. The water district will utilize the services of Kentucky Rural Water in this process.

3. **CAPITAL IMPROVEMENTS**

As funding permits the district will prioritize and acquire/install the following:

- A. **FLOW METER:** One of the most important tools in detecting water usage and loss is a portable flow meter. As funds are available, the district plans to purchase two of these units.
- B. **GATE VALVES:** All gate valves will be exercised as recommended in the Kentucky Division of Water Regulations. Valves which fail to operate properly will be replaced as funding permits.
- C. **INTERNAL MASTER METERS:** Additional master meters for subsections of the system will be prioritized and acquired in order to more accurately monitor water usage and identify water loss throughout the system.
- D. **BY-PASS METERS:** As funding permits, additional by-pass meters will be installed to further isolate smaller portions of the distribution system in order to more accurately identify and correct water loss problems in specific areas of the system.

- E. **GROUND PENETRATING RADAR:** With the purchase of ground penetrating radar the water district will be able to discover lines not presently shown on current water district maps. Maps will be updated and maintained at the office.

- F. **REPLACEMENT OF OLD TRANSMISION MAINS:** As funding permits, new projects to replace old pipes within the distribution system will be developed.

- G. **ROAD CROSSING:** As funding permits, the district will install a new road crossing about one half mile from Clear Creek Bridge on Highway 33. The 12-inch casing needs a new 6-inch pipe inside the casing. This is one of those instances where the line was padded with #9 rock. The estimated cost of boring through the rock and installing new pipe is in the range of \$68,000. The project will need to be bid at such time as we have funds available.