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September 12, 2012

Jeff Derouen
Executive Director
Public Service Commission
P O Box 615
Frankfort, KY 40602-0615

RE: Case No 2011-00217

Mr. Derouen:

Please find enclosed a copy of the comprehensive unaccounted-for loss reduction plan that you requested.

If you have any further questions, please let me know.

Sincerely,



Danny R. Clarkston
Manager

Enclosures

Cannonsburg Water District

WATER LOSS PREVENTION AND LEAK DETECTION PROGRAM

The Cannonsburg Water District was established in 1966 and operates a distribution system. Currently, the Water District purchases water from the City of Ashland and Big Sandy Water District via nine master meters. In total there are approximately 181 miles of transmission mains, over 3500+ customer services, 5 pumping stations, and 5 water storage tanks. Water loss has been a continuing concern for the Water District due to the size and configuration of the service areas. The Water District is committed to allocating a sufficient amount of resources to continue: read all critical meters daily monitoring tank levels in off-demand hours, keep track of pump run times. Identify zones with significant leaks. By pass meters are then used in these zones to eliminate search area and pin point the leak. Cannonsburg Water District has adopted the following water loss mission statement and operational policy:

We strive to continually monitor our system data for water loss. Proactive efforts will be taken to find any source of unrevenueed water. Repairs will be made at first opportunity. Our intention is to mitigate any potential of interruption of service and recover all possible revenue.

The following plan outlines processes and procedures that the Cannonsburg 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 un-metered 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 & record all master meter readings throughout the distribution system at approximately the same time each day:

* Wholesale Master Meters

- 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 RESPONSIBILITIES:** All distribution personnel (meter readers, maintenance, 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 reported.

- F. OFFICE PERSONNEL RESPONSIBILITIES: All office personnel shall immediately report any customer reported leaks, tank overflows, pressure problems, or other issues (whether during regular operational hours or after hours) to the appropriate field supervisor. The office supervisor will generate a work order and coordinate with the field manager 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
 - Analyze tank draws during day and off demand times
 - Estimated water losses from line breaks using bypass meters, tank overflows, hydrant usage, etc.
 - Metered customer water sales
 - Other un-metered water usage
- H. DATA ANALYSIS: Water purchased and usage data obtained and recorded (item F above) shall be evaluated and analyzed on a monthly basis to determine:
- Water production and purchase amounts
 - Metered usage
 - Known un-metered/unrevenueed usage
 - Known losses from line breaks, etc.
 - Water loss
- I. METER TESTING AND REPLACEMENT: Pursuant to PSC regulations, customer meters will be tested and/or replaced on a periodic schedule to ensure that they are registering water accurately.
- Meters are to be tested as follows:
 1. Larger meters (master meters and customer meters 4" and larger) shall be tested on an annual basis.
 2. All 3" meters will be every two years
 3. All 2" meters will be tested every three years
 4. All 1" and ¾" meters are to be tested or replaced new every ten years
 - All meters will be replaced as warranted

2. LEAK DETECTION PROCEDURES

- A. **DISTRICT PERSONNEL:** On a routine basis (weekly or bi-weekly, as routine system operations permit), District personnel will be assigned to leak detection duties. This includes but is not limited to: Assessment of booster run times, analyzing usage in off demand hours per tank draws, field work within zone of concern, isolation using valves, pressure testing lines for integrity, obtaining and analyzing chlorine a& Fluoride samples, operation of by-pass meters, use of listening equipment, operation of portable flow meters. Shifts after hours (typically 10:00 PM to 4:00 AM) will be critical. Customer usage is minimal at this time and allows field personnel to go valve to valve (and often meter to meter) 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 has routinely utilized the services of Kentucky Rural Water Association aid in this process.

3. CAPITAL IMPROVEMENTS

The District has prioritized and acquire/install the following:

- A. **REPLACE LARGER CUSTOMER METERS:** These meters shall be replaced based on the size of the account. Additional master meters for subsections of the system will be prioritized and acquired by size of the account.
- B. **BY PASS METERS:** All nine zones have a by-pass meter at the effluent of the zone tank. 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.
- C. **Listening device:** The system has a digital leak detector with: filtering, indexing, Limiting (protects the operator from loud noises). Valves, hydrants, meters, blow offs and direct pipe contact will be utilized to eliminate search area and pin point the leaks.
- D. **FLOW METER:** One of the most important tools in detecting water usage and loss is a portable flow meter. The Water District has purchased a portable flow meter to monitor flows in various sections of the distribution.
- E. **METAL DETECTOR:** A metal detector is used to locate gate valves that may be covered with soil, leaves, or snow depending upon weather conditions. The Water District has purchased a Ferro-Magnetic valve box locator.
- F. **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.

G. MAPS: The Water District will maintain updated distribution system maps. Accurate maps depicting line size and location are vital to leak detection.

H. PRESSURE RECORDINGS: Trend charts depicting water pressure in the distribution system will be collected monthly as mandated by PSC and maintained on file. Abnormally low pressures may indicate a line break.