

FILED

JUL 8 2008

Missouri Public
Service Commission

Staff Report of Inspection

Case No. WC-2007-0452

PSC STAFF

v.

**SUBURBAN WATER & SEWER COMPANY
and
GORDAN BURNAM**

Prepared By:

**Martin Hummel
Water & Sewer Department
and**

**Jim Merciel
Water & Sewer Department**

July 20, 2007

Staff's Inspection: On July 13, 2007, Martin Hummel and Jim Merciel of the Water & Sewer Department ("Staff"), accompanied by Gordon Burnam and Paula Belcher of Suburban Water & Sewer Company ("Company"), made an inspection of the water system facilities serving BonGor Lake Estates. Prior to and subsequent to this field inspection, the Staff has made various inquiries of Mr. Burnam and Ms. Belcher in order to compile a current assessment of the condition of the Company's water system.

System Description: The system has one 1,050 foot deep 6 inch diameter well, one submersible pump capable of 120 gallons per minute, a master meter, and a 6 foot diameter 80 foot tall standpipe, sometimes referred to as the tank. These facilities are located near the north end of the system. Distribution piping of about 7,000 feet of primarily 2 inch diameter PVC is run in easements in various locations, mostly in back yards, and not in the streets. There is one 2 inch flush valve at the south end of the system. A connection exists to Consolidated Public Water Supply District No. 1 ("Water District") with a 2 inch Water District owned meter located at the very north end of the system, which is normally shut off. This connection is available for emergency use such as maintenance of Suburban's system or if the well fails.

Component Descriptions

- **Meter:** The device used to measure the volume of water delivered to a customer.
- **Meter Box/Meter Setting/Meter Well:** A housing consisting of a barrel in the ground, a rim and removable lid on the surface of the ground, and a meter yoke onto which the

Attachment A

meter fits by threaded connections. For installations in which a meter is not installed, a "jumper" is installed in the meter yoke in place of a meter.

- **Jumper:** A short piece of pipe installed in place of the meter, which allows unmetered water to flow to the customer.
- **Flush Valve:** A valve at the end of a water distribution pipe that allows water to freely flow on to the ground, resulting in a velocity of flow in the distribution pipe that will carry sediment, rust and debris out of the pipe.
- **Well:** The source of drinking water, consisting of a drilled hole, approximately 1,050 feet deep in this instance, with a submersible pump located at the end of a "drop pipe" several hundred feet deep into the water in the well.
- **Standpipe or Tank:** A steel structure into which the well pump transfers water. The purpose of the elevation of the standpipe is to maintain system pressure. Some of the volume of water in the tank is used when instantaneous customer demand is greater than the production capability of the well pump, that volume is replaced when customer instantaneous demand is less.

Comments Regarding the Current Operation of the System

Meters for Customers: While the Staff observed several meter boxes in the field, not all meter locations were observed, and the Staff is relying on information provided by Mr. Burnam. There appears to be a meter box (not to be confused with an actual meter) to every building, house, duplex or fourplex, except for 3 buildings. Several of the fourplexes have one meter box for the entire building, which is owned by one person or entity and is considered as one customer. Others have one meter box for each living unit. Many of the fourplex meter boxes have no meters installed, instead using a jumper so that water flows, with the company assessing the flat rate. However, several of the meter boxes are broken, collapsed, or completely buried, possibly needing to be replaced or have a surface extension added. Thus, by working on a few of the meter boxes and installing meters in all of them, metered service with a meter for each customer is feasible. Work verifying which meter/connection serves which living unit of fourplexes, installing new meters, verifying the accuracy of those meters to be kept in service, and landscaping around some meter boxes in order to facilitate efficient meter reading needs to be done. Currently, there are about 42 meters read monthly, possibly another 42 that are not read (and may not work) and possibly 36 customers/living units with no meter (a single meter may serve 4 living units in a fourplex). On a going-forward basis, all meters need to be read and used for billing purposes, and a ten year meter replacement program with appropriate record keeping needs to be implemented.

Meters must be in place and functioning in order for this system to be competently operated, no matter who is operating it or what is the source of water. The customer meters are used by the operator and manager in assessing the condition of the distribution piping by comparing the

amount of water sold to all customers with the amount of water pumped through the master meter. Or, alternatively when wholesale purchase is involved, the meters are even more critical since water lost through leaks on the company's distribution system is purchased at the wholesale rate, which is considerably greater than the basic cost of pumping from a well. Meters are also valuable in detecting leaks on customer-owned plumbing. Finally, the customer meters are the "cash register" for the Company's sale of water to its customers.

Distribution System Plan/Map: A verified as-built plan needs to be produced so that the Company, and its operator, can make sound decisions regarding system maintenance and improvements. Such a plan should show the location and size of all distribution pipes and valves, as well as the location of other utilities (gas, electric, phone, and sewer) that are nearby. Apparently, a preliminary system plan, but not an "as-built" plan, was drawn in 1972. At this time, the best current information should be used to confirm pipe and valve locations and sizes.

Flushing Capability: There is currently one flush valve for the Company's system, but no way to determine what part of the distribution system this valve may adequately flush. The distribution system must be evaluated, and improvements made to make routine flushing workable and effective. The extent of improvements necessary will be discovered with evaluation of accurate system plans and field verification of existing valves. More than one flush valve will likely be necessary. The installation of whatever flush valves are necessary to flush all the mains at 3 feet per second velocity is critical to maintaining sanitary conditions in the distribution piping. At the present time, sections of the distribution piping may contain some residue, contributing to both low pressure and low quality water to some customers.

Distribution Piping: The condition of the distribution is unknown and will be uncertain until meters are functioning and adequate flushing is undertaken. If there is considerable unaccounted-for water (greater than 15%), then leaks will need to be located and corrected. If problems of inadequate pressure remain after adequate flushing and repairs of any leaks, then those problems will also need to be addressed. Additionally, if the Water District's connection is to be used, then installing a pressure-reducing valve at that connection should be considered, particularly if the system's unaccounted-for water is greater than 10%.

Day-to-Day Operations: During at least the past four years, there has not been adequate operations. There is no Certified Operator who is licensed as a water supply and distribution operator by the Missouri Department of Natural Resources ("DNR") at this time. The application of chlorine has not been properly controlled and has resulted in excessive corrosion in the well house. A trained operator understands the proper and safe use of chlorine for the disinfection of water. Likewise, a trained operator understands flushing techniques, maintaining pressure, and well operation. Competent operations must be done on a going forward basis.

Well Condition: The existing well is 1,050 feet deep, with a pressure grouted casing greater than 400 feet deep. The water produced is of similar quality and character as the Water District's water. The casing pipe at the wellhead has sustained severe corrosion in the recent past. While

this has been improved by painting the exterior of this pipe, the interior of this pipe should also be inspected for corrosion and corrective actions taken if needed.

Standpipe Condition: The standpipe has had several leaks patched recently, and has about 30 welded patches on the bottom third of the tank. Also, the tank's anchor bolts are not tight and should be tightened immediately, as the standpipe was observed previously to be swaying on a windy day. This was brought to the attention of Mr. Burnam at the time of the inspection, and was previously brought to the attention of representatives of the Company.

For the short term, the standpipe must be inspected from the inside by someone that specializes in water tank inspection. This inspection is critical to the determination of whether this standpipe can be kept in service or should be replaced. If the standpipe is to be kept in service, the inlet pipe from the well needs to be extended to a higher elevation in the tank to provide better circulation and reduce the risk of water stagnating in the tank, and to provide proper chlorine mixing and contact time.

Of note, if a transfer of the Company's system to the Water District was imminent, or if it were to be determined that the system will be operated as a wholesale customer of the Water District, then abandonment of the tank, instead of inspection and rehabilitation, would be appropriate. (Additionally, the tank and well would need to be isolated from the system.)

Recommendations Regarding Adequate Operation of the System

Several system improvements are necessary so that the Company can provide safe and adequate service to its customers, regardless of the final disposition regarding the source of water supply or system ownership. Those improvements, and dates by which they should be made, are set out below.

1. Not later than August 31, 2007, employ/contract with an appropriate DNR-certified operator that will be onsite at least three times a week, that will ensure that the system is operated in accordance with applicable DNR safe drinking water standards, specifically including daily checks on the chlorination and distribution system residuals, that will become familiar with this particular system, and that will be physically available on short notice to respond to problems in the system.
2. Not later than August 31, 2007, establish properly operating meters for all customers, buildings or connections to ensure that all dwelling units are individually metered. Install new meters where necessary.
3. Not later than August 31, 2007, contract with a qualified tank inspector to inspect the interior and exterior of the standpipe to determine its condition and whether it can/should remain in service, with the inspection to be completed, and a report of

the inspection to be provided to the Manager of the Water & Sewer Department, by September 30, 2007.

4. Not later than October 31, 2007, provide the Manager of the Water & Sewer Department with a written plan regarding the rehabilitation or replacement of the standpipe, consistent with the findings set out in the inspection report.
5. Not later than August 31, 2007, contract with an engineering firm to produce a plan of the distribution system, as described above, with that plan to be completed and provided to the Manager of the Water & Sewer Department by October 31, 2007.
6. Not later than six months after the distribution system plan is produced, install an adequate number of flush valves to establish flushing capabilities of at least 3 feet per second in all mains, with the flushing capability to be verified in the field by DNR or PSC Staff. Once the valves are installed, system flushing should be done on a regular basis, beginning on a six-month basis.
7. Beginning with the next billing cycle, read all installed meters on a monthly basis and use those meter readings for billing purposes, and also read the system's master meter in conjunction with obtaining the customer meter readings.
8. Beginning with the September 2007 billing cycle, prepare monthly reports comparing the aggregate customer meter readings with the system's master meter readings, and provide those reports to the Manager of the Water & Sewer Department quarterly beginning in December 2007.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

AFFIDAVIT OF MARTIN HUMMEL

STATE OF MISSOURI)

) SS

CASE NO. WC-2007-0452

COUNTY OF COLE)

COMES NOW Martin Hummel, being of lawful age, and on his oath states the following: (1) that he is a Utility Regulatory Engineer in the Missouri Public Service Commission's Water & Sewer Department; (2) that he participated in the preparation of the foregoing *Staff Report of Investigation*; (3) that he has knowledge of the information presented in the foregoing *Staff Report of Investigation*; and (4) that the information presented in the foregoing *Staff Report of Investigation* is true and correct to the best of his knowledge, information and belief.



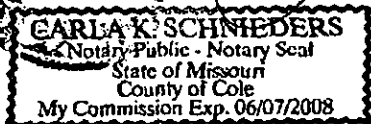
Martin Hummel

Subscribed and sworn to before me this 24th day of July 2007.


Notary Public

My Commission Expires:

June 7, 2008



BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

AFFIDAVIT OF JAMES A. MERCIEL, JR.

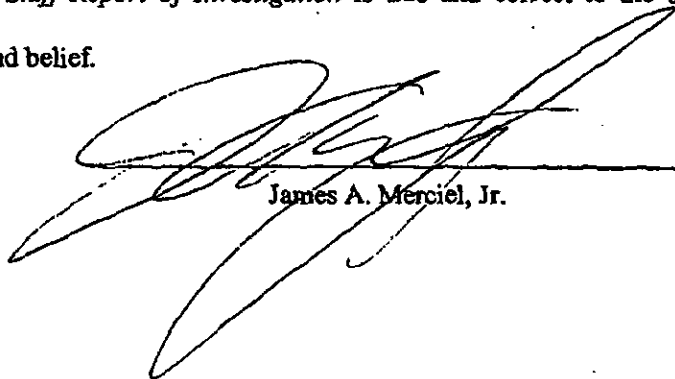
STATE OF MISSOURI)

) SS

CASE NO. WC-2007-0452

COUNTY OF COLE)

COMES NOW James A. Merciel, Jr., being of lawful age, and on his oath states the following: (1) that he is a Utility Regulatory Engineering Supervisor in the Missouri Public Service Commission's Water & Sewer Department; (2) that he participated in the preparation of the foregoing *Staff Report of Investigation*; (3) that he has knowledge of the information presented in the foregoing *Staff Report of Investigation*; and (4) that the information presented in the foregoing *Staff Report of Investigation* is true and correct to the best of his knowledge, information and belief.


James A. Merciel, Jr.

Subscribed and sworn to before me this 24th day of July 2007.


Notary Public

My Commission Expires:


June 7, 2008

