

# Internal Monitoring Report

**Policy #:** O-2C Reliability  
**Frequency:** Annual

**Date:** December 18, 2012

I certify that the following information is true.

Signed  \_\_\_\_\_, General Manager

## **Policy Language:**

Madison residents will receive water which is consistent in its availability and quality.

Accordingly,

1. Residents will experience minimal unplanned service interruptions.
2. Residents will receive adequate notice of planned service interruptions.
3. Residents will receive adequate notice of planned maintenance work that would significantly reduce water flow or pressure, and/or cause water discoloration.

## **General Manager's interpretation and its justification:**

The Utility shall budget for, fund, prioritize, plan for, and construct the necessary system improvements to replace and sustain the Utility's infrastructure both now and into the future. The Utility shall build in the necessary redundancy into the system, shall maintain the system, and shall develop operational procedures to ensure a reliable water service to all points in the system. To achieve this objective, the Utility will develop, routinely update, and implement long term facility and system comprehensive plans to identify system needs and funding opportunities. The Utility's maintenance program will be proactive and preventative to maximize component reliability, efficiency, and life cycle costs within the system. The Utility shall also establish work scheduling protocols and notification procedures that will minimize the impact to consumers during maintenance and repair work.

## **Data directly addressing the General Manager's interpretation:**

1. *Residents will experience minimal unplanned service interruptions.*

Madison Water Utility customers receive water through a system of redundant pumping stations, inter-zone transfer facilities, standby power generators, and gravity storage reservoirs. Twenty two wells are linked within the water distribution system to feed the ten pressure zones. System piping crosses pressure zone boundaries which are isolated by closed valves. In the event of an emergency, these zone valves can be opened to move water from zone to zone

and maintain service. If a pump in the system has a mechanical failure and is removed from service, other pumps within the zone will provide service to the impacted area. With the exception of Pressure Zone 11, all zones have a minimum of one gravity reservoir that provides emergency supply. The Utility has access to 12 standby power generators, 9 owned by MGE and 3 owned by the Utility. A fourth Utility owned generator is being designed for Unit Well 26 and will be installed in 2013. The Utility also owns two natural gas fired engines that drive emergency pumps that would operate during a power outage. Two wells are equipped with electric transfer switches that will allow the connection of a portable generator if necessary.

Wells, booster pumping stations, and reservoirs are routinely inspected, serviced, and maintained. System operation is monitored and recorded by the Utility SCADA system and routine daily inspections by the Utility Rounders. Well pumps are scheduled for inspection every 10 years and reservoirs are inspected every 5 to 10 years. The Utility budgets over \$1.2 million annually for facility maintenance projects, planning efforts, and upgrades/additions.

The 2013 Capital Improvement budget is attached to this report. The budget indicates the planned upgrade and replacement projects over the next several years. It is the Utility's intent to continue to increase the annual capital budget to ensure long term system reliability and build in redundancy.

Historically water main breaks within the Madison system occur at an average rate of 240 per year. The aging pipe system, pipe material type, weather, and other unknown factors all contribute to main breaks. Water main breaks are difficult to control and impossible to predict. Due to an unusually mild 2011/2012 winter, the Utility experienced lower than normal main breaks with a total of 167 through the end of October. Based on the average number of breaks the calculated rate is 29.0 breaks per year per 100 miles of distribution system pipe per year. The calculated rate for 2012 is 19.7 breaks per 100 miles of distribution system per year. While no standard exists due to climate and geological differences across the country, one recommendation is that breaks per year should be below 20 per year per 100 miles of main. Each year the Utility invests over 7 million dollars in pipe replacement. The budget is increased 4 to 6 percent per year as the replacement program continually grows. Utility Engineers work closely with City Engineering to coordinate water main replacement projects with ongoing street projects. Pipe segments are selected for replacement based on their break history, hydraulic capacity, age, and material. Over 400 miles of pipe are slated for replacement throughout the system over the next 40 years.

In the event of unplanned service outages due to water main breaks, Utility repair crews notify impacted customers in person and inform them of the situation and the expected length of the outage. Utility employees work with impacted customers to the greatest extent possible to minimize the disruption and will modify the work as needed. When water service is restored, Utility crews check with area residents to make sure that there are no further complications resulting from the water outage.

In an effort to repair decaying pipe at lower cost and thus extend the impact of the annual budget, a pipe lining program has been developed and implemented by the Utility. Working closely with Wisconsin DNR engineers, the Utility successfully piloted and constructed the first water main lining project in the State of Wisconsin lining over 1,200 feet of 8-inch pipe in late 2011. A second project was completed during the fall of 2012 with the successful lining of over 2,000 feet of six inch main. The cost of this operation, which rehabilitates the main to full pressure and structural capacity, is approximately 2/3 the cost of full replacement. As the process becomes more common and competition increases, it is expected that this cost will decrease. The Utility has budgeted \$500,000 in 2013 and \$1,000,000 in 2014 for pipe lining projects.

I report compliance.

2. *Residents will receive adequate notice of planned service interruptions.*

Interruption of service to customers due to planned maintenance of well, pump station, or reservoir work is rare and generally limited to localized areas. All reasonable options to provide service to the impacted area from other facilities are investigated prior to interruption of service. If an interruption of service is unavoidable, those impacted customers are notified by post card or door hanger a minimum of 7 to 10 days in advance of the planned interruption. The Utility's electronic listserv is also used to notify area residents. Planned service interruptions are kept to no more than 4 to 8 hours in these instances. During the past year there were no planned service interruptions due to work at a well, pump station or reservoir.

For work on the piping network such as repairing or replacing a valve or cutting in a new service, prior to starting work a Water Utility employee contacts all impacted residents and explains the need for the work and the duration of the water outage. If the resident is unnecessarily inconvenienced by the planned outage, the work crew will modify the work plan to accommodate the customer to the greatest extent possible. When the work is completed, a Water Utility employee notifies the customers. During 2012 there were approximately 510 planned maintenance and repair events that interrupted service to Utility customers.

I report compliance.

3. *Residents will receive adequate notice of planned maintenance work that would significantly reduce water flow or pressure, and/or cause water discoloration.*

For planned maintenance work at a well, pump station, or reservoir that has the potential of reducing water capacity and/or pressure and poses the risk of water discoloration those impacted customers are notified by post card a minimum of 7 to 10 days in advance of the planned interruption. The Utility may also use its electronic listserv to notify area residents of an anticipated reduction in service. This only occurs after an investigation indicates that there

are no reasonable options to maintain service to the area from other facilities. During the past year there were no planned reductions in the level of service due to work at a well, pump station or reservoir.

Flushing and cleaning of the distribution system may result in temporarily reducing water flow/pressure and includes the risk of causing water discoloration. For routine flushing operations, the Utility continues to use newspaper advertisements, yard signs, phone calls and an electronic listserv to notify impacted residents. Annual flushing schedules are published and posted on the Utility web page in the spring and a detailed schedule is maintained throughout the flushing work.

I report compliance.

### *Attachments*

1. 2013 Water Utility Capital Budget