

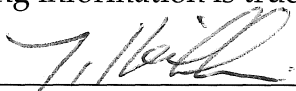
Internal Monitoring Report

Policy #: O-2A Water Quantity

Monitoring Frequency: Twice a year

Date: September 19, 2012

I certify that the following information is true.

Signed  _____, General Manager

Policy Language:

Current and future customers will receive water that meets or exceeds industry-accepted levels of service for fire protection and pressure.

This includes:

- 1. Water delivered to hydrants at proper flow rates for fire protection.*
- 2. Water delivered to the customer tap at a pressure that meets industry-accepted low, high, and emergency operation criteria.*
- 3. Water used for outdoor irrigation under drought-free conditions.*

General Manager's interpretation and its justification:

This Outcomes policy requires that the Utility budget for, fund, prioritize, plan for, and construct the necessary system improvements to provide adequate water quantity to all areas of the system. The Utility's Level of Service Memo, attached, establishes minimum standards for pressure and fire protection. These standards guide system component design. A copy of the 5 year capital improvement plan as budgeted is attached for your information and use.

System performance is measured against the established level of service guidelines. Data is obtained using the Utility's distribution system computer model and from data collected from system operations. The most recent system wide master plan update was finished in 2006 and adopted in 2008. The Utility Master Plan is reviewed and updated on a 5 or 6 year cycle. A major update of the east side water system master plan and capital improvement plan was completed as part of the East Side Water Supply project in mid 2012. An update of the west side of the system is tentatively scheduled for 2013.

Other sources of data that will be used for this monitoring report will be consumer complaints and other records maintained by the Utility.

Data directly addressing the General Manager's interpretation:

1. *Water delivered to hydrants at proper flow rates for fire protection.*

The fire flow analysis developed in the 2006 Water Master Plan, Figure 5-8, is attached to this memo for information and use. A similar computer model analysis of the fire flow capacity of the east and north sides was completed as part of the ESWS study, Figure B6. These documents provide a graphical representation of the fire flow capacity across the system.

Arbor Hills: The Arbor Hills neighborhood was identified in the 2006 Water Master Plan as having a major fire flow deficiency.

To mitigate this deficiency, Booster Pump Station (BPS) 118 was constructed and was put into operation in 2012. This project also included construction of the Cannonball pipe line. The Cannonball pipeline and BPS 118 transfer water between Pressure Zone 6 and Pressure Zone 7. The facility also has the capability to transfer water from Zone 7 to Zone 6, providing water supply flexibility to the south part of the system. With construction of the Cannonball pipeline and BPS 118, fire supply capacity at Leopold Elementary School increased from approximately 1500 gpm to an estimated 4000 gpm bringing it into compliance with Utility fire flow capacity standards. Similar increases in fire fighting capacity were realized throughout the Arbor Hills neighborhood.

The construction of the Cannonball Pipeline and BPS 118 also provides a redundant source of supply to the Arbor Hills area significantly improving reliability and operational flexibility.

Pressure Zone 4: Fire flow capacity and water supply redundancy in Zone 4 will be augmented by the construction of Well 31. The Utility identified a potential well location on Tradewinds Parkway and drilled a test well in 2011. Water quality at the test well was preliminarily deemed acceptable but well capacity was not adequate. It is suspected that a geologic fault in the Tradewinds Parkway area and a tight rock formation is limiting well capacity.

A second potential well site was identified near the intersection of Dairy Drive and Prairie Dock Drive. A second test well has been drilled in August and test pumping has commenced. Sampling and testing will be conducted in September and October. If this 2nd location meets Utility requirements for quality and quantity, the Utility will move forward with a production well. If this site is similar in projected production capacity to the Tradewinds Parkway location, an evaluation of both sites will be completed to make a decision to proceed with one of these sites or to continue the search for a suitable well location on Madison's southeast side.

Following the selection and procurement of a suitable well location, a production well will be drilled and developed in Pressure Zone 4 in the spring of 2013. Unit Well 31 will then be designed for construction in 2014. With the completion of this new supply facility, fire flow availability, reliability, and capacity of the system within Pressure Zone 4 will be greatly improved.

East Side Water Supply Analysis: Fire flow availability was evaluated for the east side during the assessment of the system for the East Side Water Supply project. Figure B6 from the report presents the results of the fire flow analysis based on 2010 maximum day demands. Figure B6 is attached for your information and use.

Figure B6 indicates fire flow deficiencies in the south end of Zone 6, around the Northport Drive reservoir, in Zone 4 south of the beltline, and in a few isolated areas around the system. Piping and facility projects are planned as noted in the Capital Improvement Plan that will address these issues over the next several years.

Hydrant Maintenance and Testing: Through the end of July 2012, 3,579 of 8,579 fire hydrants were inspected and serviced. Forty seven hydrants have been repaired, 77 new hydrants have been installed and 53 have been removed from service. 863 hydrants have been flushed as part of the Utility flushing program. Flow tests were completed at 40 fire hydrant locations. This program of hydrant maintenance and testing meets and exceeds WDNR requirements.

I report non-compliance with mitigation projects in progress and scheduled.

2. *Water delivered to the customer tap at a pressure that meets industry-accepted low, high, and emergency operation criteria.*

Pressure planning and design criteria for Madison Water Utility are established in Table 2 of the attached Level of Service Memo. A query of the system indicated that of 8,479 fire hydrants with static pressure readings, approximately 18 were below 35 psi, 334 were greater than 100 psi, and 11 were greater than 125 psi. Per Utility guidelines, the Utility pays to install pressure reducing valves for customers in areas where pressures exceed 125 psi.

As a part of the master planning process, areas identified with high pressures are evaluated as to the feasibility of moving them to a lower pressure zone or creating another pressure zone using system pressure reducing valves. Maintaining adequate fire flow in the area will remain a prime objective in considering any changes to pressure zone boundaries.

An area of chronic low pressure exists within the system around the Bunker Hill Reservoir (Reservoir 115) in the area just west of East Towne Mall. A project that will

convert this area from Pressure Zone 6 to Pressure Zone 3 has been identified in the Master Plan and is included in the Utility Capital Budget for the year 2014.

I report non-compliance with mitigation projects in progress and scheduled.

3. *Water used for outdoor irrigation under drought-free conditions*

During the 2012 reporting period, a period of severe and extended drought, Madison Water Utility was not required to and did not issue an irrigation restriction due to water supply limitations within the system.

I report compliance.

Attachments:

1. 5 year capital improvement budget
2. Level of Service Memo - January 10, 2011
3. 2006 Master Plan Fire Flow Capacity Map Figure 5-8
4. Figure B6 - 2010 East Side Maximum Day Fire Flow Availability