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MEMO

From: Michael Mathis, P.E.
Re: Engineering Report
Leak Detection Update
Holiday Island, AR

April 22, 2010

Project: Leak Detection Pilot Study

In August 2009 the District began location mapping and documentation of existing valves within the Island water distribution network. Bids were sent out and in October nightly testing by a contractor was performed throughout the Island for the next 5 months. Weather was a significant delay during the hard winter months because of excessive temperatures and rainfall.

Results were significant. The attached table indicates a to-date leak fix of 32 gallons per minute and about that much more which has been isolated for future improvement. A major benefit not attributed to water savings was the installation of a mainline 8" isolation valve at the Rocky Top Tank that will allow for all future leak monitoring, which will be based on the existing results of this study. This valve will also help with emergency isolation of the tank and/or future maintenance of the tank itself.

Perhaps one of the most significant savings was the discovery of a leaky check valve, which was allowing the recirculation of 45 gallons per minute in and out of the Rocky Top Tank. Fixing this valve has saved about 65,000 gallons per day of pumping from the Island well, which correlates to decreasing the well and booster pump run time by almost half, or 2 less hours per pumping cycle for the well. It also, very significantly, results in a nearly 65% increase in retained (usable) storage volume within the Rocky Top Tank. This could be a major factor during emergency water conditions.

The entire Island distribution valve network has been mapped. Some valves that were historically left closed, possibly due to emergency leak repair, were reopened. This will result in "looping" of several lines thereby significantly increasing the emergency water flow through the lines. Others, including some preventing looped flow, are being investigated to clarify any reason for maintaining their "closed" status.

All Pressure Reducing Valves have been identified and detailed for existing installation needs. Pressures have been recorded for each pressure reducing valve setting and future needs can be planned based on the maps established.

**ISLAND 2009 - 2010
PILOT LEAK DETECTION STUDY**

Address	Description	Leakage (gpm)	Leakage (gpd)
63 Sailboat Dr.	Service Line - Fixed	8	11,520
20 Wedgewood Dr	Service Line - Fixed	4	5,760
6 Wedgewood Dr	Service Line - Fixed		
8 Wedgewood Dr	Service Line - Fixed		
2 Ironwood Ln	Meter Loop - Fixed	2	2,880
7 White River Cove	Service Line - Fixed	6	8,640
B2 L21 Deer Run Drive	Service Line - Fixed	6	8,640
Shields Dr GV-115, 115A, 113	Service Line - Fixed	5	7,200
TOTAL		31	44,640

Losses Between Valves:	Description	Leakage (gpm)	Leakage (gpd)
GV-176 & 155, Beaver Dr	Main Line - Pending	8	11,520
GV-173 & 187, Beaver Dr	Main Line - Pending	3	4,320
GV-162 & 163, Narrows Dr	Main Line - Pending	4	5,760
GV-168 & 170, Deer Run Dr	Main Line - Pending	3	4,320
GV-187 & 170, Deer Run Dr	Main Line - Pending	6	8,640
GV-130 & 145, Lakeside Dr	Main Line - Pending	3	4,320
GV-140, 141 & 142, Bandy Dr	Valve - Pending	5	7,200
TOTAL		32	46,080

Valve Issues:

GV-130 & 140	Closed and prevented looped flow. Now opened.
GV-133	Closed and Broken
GV-136	Will not open or close.

Additional Findings:

Nine Hole Booster Pump Check Valve:
Replaced check valve to fix 45 gpm feed back from Rocky Top Tank.