Mainline Valve Spacing Policy

August 25, 2020
Background

• 4,400 Mainline valves
  • Facilitate maintenance and repairs
  • Exercised every two years
  • Replaced at end of useful life
• Installed over decades
• Prior to existence of industry standard
• Disproportionately affected areas
Background

- Identified 168 valves that need replacement.
- Perform a valve optimization assessment.
- Develop a Mainline Valve Spacing Policy
  - Equitable approach
  - Perpetual agency philosophy
Valve Spacing Policy Criteria

- AWWA great place to start
  - Residential Spacing: 800 feet
  - Commercial Spacing: 500 feet
- Level of Service:
  - Low Density Res. (LDR): 80 People
  - High Density Res. (HDR): 200 People
  - Schools: 500 feet + 3-valve
- Ts – 2 valves minimum (conditions)
- Crosses – 3 valves (conditions)
The latest GIS tools were used to evaluate the mainline valves
LDR – Example (<800 ft; < 80 population)

Pipe Segment: 513 ft
Population: ~ 43

Proposed valve for removal

Pipe Segment: 152 ft
Population: ~ 13

<table>
<thead>
<tr>
<th>Line</th>
<th>Feet</th>
<th>Pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>513</td>
<td>43</td>
</tr>
<tr>
<td>2</td>
<td>152</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>665</td>
<td>56</td>
</tr>
</tbody>
</table>

MesaWater District
LDR – Example (<800 ft; < 80 population)

Pipe Segment: 1,286 ft
Population: 89

Proposed additional valve
HDR – Example (<800 ft; <200 population)

Pipe Segment: 272 ft
Population: ~40

Pipe Segment: 95 ft
Population: ~13

Proposed valve for removal

<table>
<thead>
<tr>
<th></th>
<th>Line</th>
<th>Feet</th>
<th>Pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>272</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>95</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>367</td>
<td>53</td>
</tr>
</tbody>
</table>
HDR – Example (<800 ft; <200 population)

Pipe Segment: 133 ft
Population: ~ 26

Pipe Segment: 298 ft
Population: ~ 40

Proposed valves for removal

<table>
<thead>
<tr>
<th>Line</th>
<th>Feet</th>
<th>Pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>298</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>26</td>
</tr>
<tr>
<td>3</td>
<td>133</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td>531</td>
<td>92</td>
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</table>

MesaWater District
Commercial – Example (<500 ft)

<table>
<thead>
<tr>
<th>Line</th>
<th>Feet</th>
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<tbody>
<tr>
<td>1</td>
<td>234</td>
</tr>
<tr>
<td>2</td>
<td>102</td>
</tr>
<tr>
<td>3</td>
<td>108</td>
</tr>
<tr>
<td>Total</td>
<td>444</td>
</tr>
</tbody>
</table>

Pipe Segment: 234 ft

Pipe Segment: 102 ft

Proposed valves for removal

Pipe Segment: 108 ft
Results show 511 valves can be removed, 23 are part of CIPR program

- 23 of the 168 valves identified for replacement in CIPR can be abandoned.
Results show 511 valves can be removed, 23 are part of CIPR program

- 23 of the 168 valves identified for replacement in CIPR can be abandoned.
## Financial Impact

<table>
<thead>
<tr>
<th></th>
<th>Simple Replacement ($6,500/valve)</th>
<th>Complex Replacement ($20,000/valve)</th>
<th>Total Valves Abandoned</th>
<th>Cost Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIPR Program Valves to Abandon</td>
<td>14</td>
<td>9</td>
<td>23</td>
<td>$270,000</td>
</tr>
<tr>
<td>System-wide Valves to Abandon</td>
<td>421</td>
<td>67</td>
<td>488</td>
<td>$4,080,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>435</strong></td>
<td><strong>76</strong></td>
<td><strong>511</strong></td>
<td><strong>$4,350,000</strong></td>
</tr>
</tbody>
</table>
Policy does result in additional valves (422), but...

- Will be added over time
- New valves replaced through the Routine Operations Capital Replacement Program, or
- As pipelines reach the end of their useful life and are replaced, or
- Existing valves reach the end of their useful life
Recommendation

- Recommend that the Board of Directors adopt Resolution No. XXXX Establishing a Mainline Valve Spacing Policy.