Asset Management Plan ... Your Blueprint to Success
By Timothy Stinson, P.E.*
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Abstract

Water utilities are similar in nature to many production facilities. The water utility produces a product, clean potable water, distributes it to its’ customers and receives compensation for its’ efforts. Similar to any production facility, a water supply operation requires staffing, equipment, maintenance, growth planning and financial planning.

One tool that can help a water utility manager is an asset management plan. The asset management plan provides a look at current and future projected conditions so that utility managers can maintain and grow their system in a sound, financial manner.

This paper will look at what an asset management plan provides and how you can gain the maximum benefit from it. We will also look at the need to update the plan on a regular basis and to work with local media and citizens by providing information about your water system operation and plans.

What is an Asset Management Plan?

An asset management plan examines present system conditions and needs and develops projected conditions so that utility managers and governing boards can maintain and grow their water system in a technically responsible and sound, financial manner.

An asset management plan typically takes a long-term look at a water system’s projected needs and costs. A typical planning period is 20-years. The plan also identifies needed improvements, maintenance requirements and regulatory issues which will impact the water utility in the future. Along with identifying the various issues, an asset management plan also provides financial cost projection data.

What Will a Plan Provide Me?

An asset management plan allows you to plan the growth of a water system over a long term period. Typically, plans project out for 20-year periods. However, as with most projections, the further you project out from present time, the less accurate the predictions become. Plan projections are more accurate in the shorter term of the upcoming 5-year period. A detailed proposed improvement plan should be prepared for years 1-5 of the report. Additional proposed improvements for 5-year interval periods should also be included in the report.

An asset management plan will provide detailed analysis of population and consumption values. It will look at expected or available areas of growth in your community or services area and possible methods to provide water supply to the locations in question.

Physical water system improvements, based on projected expansion of service areas or population

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*Project Manager (Retired), Kleinfelder, Cambridge, MA
need to be investigated. Typical improvements include new supply sources, storage tank and supply siting issues, treatment needs, distribution extensions and system upgrades.

Potential restrictions by regulatory agencies, water management acts and other regulatory issues impacting your system also need to be identified.

It is also important to coordinate proposed sewer/road and community development projects planned by your community with proposed water system improvements. This will result in cost savings and minimize delays resulting from potential construction moratoriums on newly constructed roadways. Proposed residential and commercial developments also need to be determined since they will impact water supply, storage and distribution needs.

Why Do I Need a Plan?

Municipal departments are much like private corporations or industries. You produce a product, water, deliver it to your customers and collect a fee for your efforts. Like a private industry, you have fixed costs – electricity, labor, chemicals, maintenance, repairs, etc.

Your infrastructure – pumping stations, distribution mains, storage tanks, treatment facilities—all need periodic, scheduled maintenance and updating. In order to efficiently maintain your system, you need a planned program which allows you to identify those needs in order to operate your system in an orderly fashion.

Like a private manufacturing facility, you do not want to have to “react” to various emergencies as they occur. Similarly with growth. You need to be able to identify potential areas of system expansion and needed upgrades.

By having a well-defined plan, you can avoid system “emergencies”. With such a plan, obtaining financing and funding becomes an easier task. Both the public and regulatory boards look favorably upon requests for funding when the facts are presented in a logical manner and fashion. Grant program administrators look favorably upon systems which have a thorough and planned approach for upcoming projects.

Plan Input

Each community or system is unique. Because of this uniqueness, each plan will vary depending on needs of the system in question. Typical items in a Management Plan include:

Description of the Existing System

- Information on water supplies
  - Groundwater sources
  - Surface supplies
  - Intermunicipal connection supplies
- Water storage tank information
- Water aging issues
- Distribution system information/pipe age/materials
- Water quality data
- Main break data
- Water meter information/meter types and ages/calibration
- SCADA system information
- Security information
- Rate structure information
- Staffing information

Water Use Data

- Water demands and consumption
  - Domestic/commercial/industrial
  - Institutional/municipal/unaccounted
- Average day/Maximum day/Peak hour demands
- Fire demands
- Projected water demands
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Community Development Projections

- Residential
- Commercial
- Industrial
- Municipal

Plan Improvement Recommendations

- Assessment of supply adequacy
  - Can current supply sources meet present and projected demands?
  - Drought issues
- Pumping capacity
- Storage capacity
  - Fire protection needs
  - Peak day needs
- Distribution system
  - Hydraulic model data/modeling scenarios
    - Pipeline conditions
    - Fire flow needs and deficiencies
    - Pressure issues
    - Reducing water quality/aging issues
- Recommended improvements
  - Supply improvements
  - Infrastructure improvements
  - Equipment needs and updating improvements
  - Pipeline improvements
  - Fire flow upgrades
  - Reducing water quality/aging issues
  - Meter upgrades/calibration
  - SCADA upgrades
  - Security upgrades
  - Staffing needs
- Financial information
  - Proposed improvement costs
  - Finance issues-interest rates, bonding capacity
  - Loan/grant information
  - Rate analysis

- Timeframe
  - Years 1-5:
    Annual recommendations and costs
  - Years 10, 15 and 20:
    Long range recommendations and costs

Presenting the Data

The data in an asset management plan can be complex and difficult to comprehend. Information combines engineering, financial and planning data that many are unfamiliar with both in terms of understanding the terminology and the methodology used to come to conclusions and recommendations. For this reason, an asset management plan must present the information so that those who are responsible to interpret and utilize the document can easily do so.

Information should be presented in clear, concise manner. An example of a typical table showing projected average day demand data is shown in Table 1.

From Table 1, a reader can easily follow and understand the information presented. The table lists the various categories of water consumption and how each impacts the overall average day demand. Reviewing the data, one can determine that the majority of projected consumption is in the domestic and commercial/industrial/institutional categories. It can also be determined that commercial/industrial/institutional water usage is projected to increase by more than 100% through the year 2030 versus an approximate increase of 22% in the domestic category for the same period. This would be an indicator that perhaps the commercial/industrial/institutional consumption category is where conservation measures should be identified and funded.

Once improvements are defined, a table clearly presenting the recommendations along with description of a project start date, a description of the proposed work and estimated cost gives
Table 1: Projected Average Day Demand Data

<table>
<thead>
<tr>
<th>Year</th>
<th>Domestic Water Consumption (MGY)</th>
<th>Commercial/Industrial/Institutional Water Consumption (MGY)</th>
<th>Municipal Consumption (MGY)</th>
<th>Unaccounted Water Consumption (MGY)</th>
<th>Total Water Consumption (MGY)</th>
<th>Total Water Consumption Average Day Demand (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>418.880</td>
<td>61.257</td>
<td>38.170</td>
<td>82.730</td>
<td>601.037</td>
<td>1.65</td>
</tr>
<tr>
<td>2020</td>
<td>486.552</td>
<td>116.141</td>
<td>63.250</td>
<td>73.994</td>
<td>739.939</td>
<td>2.03</td>
</tr>
<tr>
<td>2030</td>
<td>513.799</td>
<td>122.645</td>
<td>66.790</td>
<td>78.138</td>
<td>781.375</td>
<td>2.14</td>
</tr>
</tbody>
</table>

Table 2: System Improvement Priorities

<table>
<thead>
<tr>
<th></th>
<th>Suggested Project Start</th>
<th>Area</th>
<th>Description</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>1-2 Years</td>
<td>Cranberry Highway (Charlotte Furnace Rd. – Carver Rd.)</td>
<td>Replace 4,870 feet of 8-inch main with new 12-inch main.</td>
<td>$ 691,500</td>
</tr>
<tr>
<td>1b</td>
<td>1-2 Years</td>
<td>Cranberry Highway (W. Wareham Tank - Charlotte Furnace Rd.)</td>
<td>Replace 520 feet of 12-inch main with new 16-inch main.</td>
<td>$ 109,200</td>
</tr>
<tr>
<td>2</td>
<td>2-3 Years</td>
<td>Rt. 28 (Maple Springs Rd. – Meadowlark Dr.)</td>
<td>Replace 4,600 feet of 10-inch main with new 12-inch main.</td>
<td>$ 653,200</td>
</tr>
<tr>
<td>3</td>
<td>3-5 Year</td>
<td>Cromesett Road (Marion Rd – Marks Cove Road)</td>
<td>Replace approximately 7,200 feet of 8-inch main with new 12-inch main.</td>
<td>$ 1,022,400</td>
</tr>
<tr>
<td>4</td>
<td>3-5 Years</td>
<td>Mayflower Ridge Drive</td>
<td>Replace 1,020 feet of 6-inch main with new 8-inch main.</td>
<td>$ 124,400</td>
</tr>
</tbody>
</table>

the reader the information needed to make an intelligent decision. An example of such a table is shown in Table 2.

Table 2 shows proposed improvements and description for a 5-year planning window, provides suggested project start dates so that the actual construction work can be managed to minimize community impacts such as traffic issues, and lists the estimated costs for the proposed work.

Asset Cost Information

Asset cost information is another area in which an asset management plan can assist utility managers in formulating future budgets and rate structures.

Water systems are equipment and asset-intensive operations. Items include, but are not limited to, pumps and motors, meters, disinfection and chemical feed equipment, computers, storage tanks and pipelines.
Each item of equipment has an estimated or expected life. It should be noted that the estimated life does not mean that a particular piece of equipment will suddenly fail or need replacing upon that anniversary date. It is an indicator that an item is probably going to be in need of additional care and maintenance, including possible replacement. By knowing the expected life, one can monitor the item in question and plan a budget reserve to handle the “unexpected” failure and need to purchase a replacement item.

Typical asset lives are given in Table 3.

Table 3: Estimated Asset Life Spans

<table>
<thead>
<tr>
<th>Item of Equipment</th>
<th>Estimate Life Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumps and motors</td>
<td>10 - 15 years</td>
</tr>
<tr>
<td>Water meters</td>
<td>10 - 12 years</td>
</tr>
<tr>
<td>Disinfection/Chemical feed equipment</td>
<td>10-years</td>
</tr>
<tr>
<td>Computers</td>
<td>5 - 8 years</td>
</tr>
<tr>
<td>Pipelines</td>
<td>60 - 90 years</td>
</tr>
<tr>
<td>Storage tanks</td>
<td>50 – 75 years</td>
</tr>
</tbody>
</table>

Knowing the estimated life span of an asset such as a pump, a utility manager can determine how much of a reserve should be on hand to allow for major repair or replacement of an item. An example of asset replacement cost follows.

Pump–Typical future replacement cost=$10-15,000
Lifespan – 10-15 years
Annual reserve - $1,000/year

By setting aside this amount, sufficient funds will be available when the repairs or replacement are required.

Using the Plan

Many asset management plans are like cookbooks. They look nice, have great photographs, but are seldom used. A plan serves no value if it is not reviewed and bought into by all parties having a stake in your water utility operation.

Why Do I Need to Use It?

A well-prepared asset management plan allows you to avoid the sudden need for emergency repairs, improvements or funding catastrophes. By holding public meetings to discuss the plan and its’ findings and recommendations, you gain the trust and confidence of your customers. A well-documented plan will simplify your job of “selling” the public and political bodies on improvement needs, expansion programs or funding.

Working with the Plan

One method of utilizing the asset management plan is to review it on a semi-annual basis. This allows you to refamiliarize yourself with the recommendations and also allows you to track the items that are underway or completed. Depending upon your utility’s actual situation, you may even revise the proposed improvements and schedules.

Use the plan as your blueprint for the future. When planning boards, town meetings or council hearings are scheduled, presenting the information will allow you to successfully insure that your input is heard and taken seriously. By having and presenting the facts, you are in a much better position to influence the decision makers whether they are a political body, the media or the general public. Remember, facts are hard to argue against.

Working closely with the media in your community is very useful tool for your utility. Sadly, many water departments work in a public relations vacuum. They do not pursue distributing clear and concise operation and planning information to the media and the public. Many water utilities feel that distributing regulatory-required notifications and reports, many of which are not easily understood by the average lay person, is sufficient. By having an asset
management plan and being intimately familiar with the details, recommendations and cost data, a manager or board can present their case to the local news media and cable outlets. By being open and presenting the facts, you gain the trust of your customers and the public and this will make your job of running an efficient operation much easier.

**Plan Updating**

Asset management plans are not “static” documents; they are “living” documents. As improvements are made in your system, or as a community develops new commercial or residential areas, such impacts can alter some of the original recommendations.

Outside forces (regulatory issues, community development, etc.) can also alter the original recommendations. Other impacts can be economic from which proposed improvement costs have increased due to inflationary issues.

It is recommended that the asset management plan be reviewed and updated with an abridged version approximately every 5-years. This will ensure the plan is current and remains accurate.

**Conclusion**

A well-prepared asset management plan will assist the management of a water utility by providing a clear and concise report that allows for future capital improvements, financing and expansion programs.

An asset management plan will reduce “emergency” situations by eliminating unknown future needs of a utility. The plan’s recommendations will allow for financial planning. It will provide a priority listing of needed improvements, expansion issues and regulatory updates.

Proper use of the asset management plan will allow you to gain the confidence of your customers along with funding and regulatory officials.