4.1 Step 1 – Profile of Existing Water Supply System

Step 1 involves a thorough review of the existing water supply system, water supply reliability, system challenges and limitations, and past supply-side water efficiency activities. This supply-side assessment provides background information critical to developing effective water efficiency plans and should draw upon information obtained from other water supply planning efforts.

4.1.1 Overview of Existing Water Supply System

The main objective of this section is to provide general background and context of the provider's existing water supply system. An overview of the existing water supply system is beneficial to water efficiency planning. Background information is valuable for the general public, the CWCB when reviewing the document, and for others who may not be as familiar with "a particular entity's water resources" and the needs of the water provider.

Information that may be provided in a system-wide overview includes:

- Geographic area served and/or map of service area.
- Raw non-potable water, treated water, and reclaimed water supply sources.
- Key existing facilities. This may include brief descriptions of the following:
  - *Reservoirs* – general location, acre-feet of storage
  - *Groundwater wells* – general location of well(s), source aquifers
  - *Water treatment plant(s)* – general location, capacity, type of treatment
  - *Wastewater treatment plants(s)* – general location, capacity, type of treatment
  - *Water distribution system* – miles of pipeline, number of pressure zones

For security reasons, some of this information (e.g. the location of facilities) may be considered sensitive and it may be within the best interest of the provider's customer base to limit and simplify the information provided. Figure 1 provides an example illustration of how basic information on the water supply system can be conveyed without presenting exact facility locations.

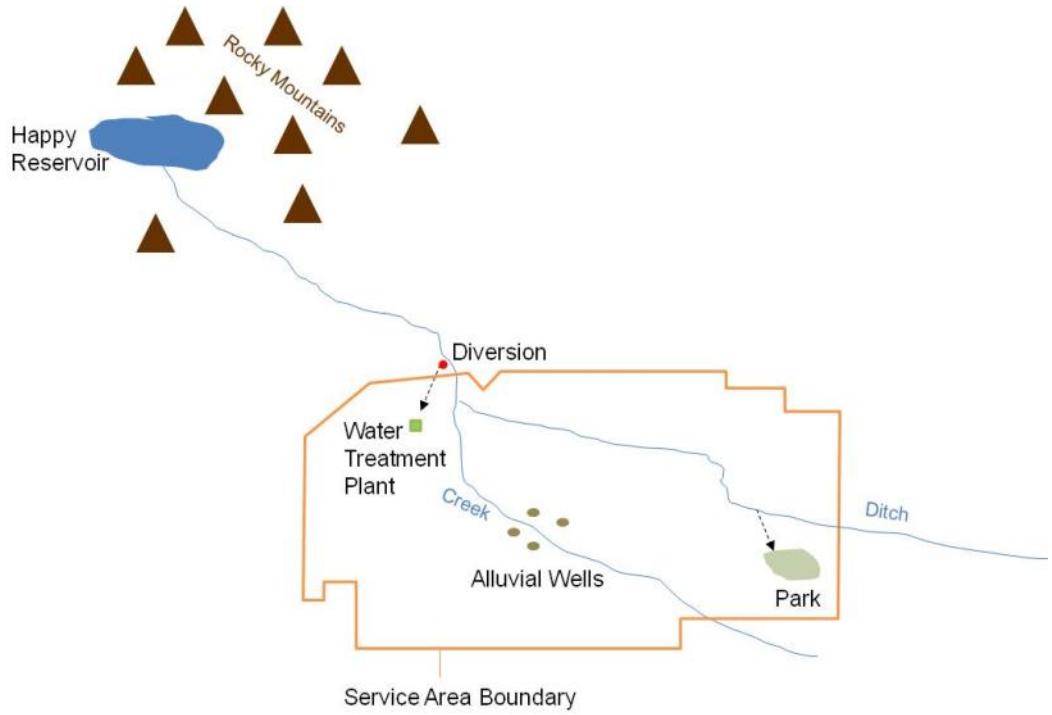

Figure 4 Example Illustration of a Provider's Water Supply System

4.1.2 Water Supply Reliability

Water savings achieved through improved water efficiency can impact water supply reliability. For instance, supply systems located in areas designated by the Statewide Water Supply Initiative (SWSI), or by other regional studies as currently water short or projected to be water short in the future, could benefit from an increase in water efficiency efforts. It is important to have a thorough understanding of the reliability of the provider's water supply system and a general introduction to the provider's water supply reliability provides a more comprehensive water efficiency plan.

This may include the following:

- *Overview of how a provider determines reliability of their water supply system* – This may include a brief description of the provider's water supply reliability modeling efforts in layman terms.

- *Firm yield* – The yield of the water supply system in a critical drought year. [7]

- *Reliability/drought criteria* – The critical drought year(s) that are used for water supply planning purposes (e.g. 1 in 50 year drought) or other reliability criteria.

[7] Water providers often base the reliability of their water system by modeling the firm yield of their water supply system assuming a critical drought year. This approach is used to determine whether the provider's water supply system can provide reliable supplies under severe drought conditions represented by a designated critical drought year. For example, a critical drought year may be a 1 in 50 year drought, which corresponds to a dry period that is likely to occur, on average, once every 50 years.

- *Safety factors* – Additional level(s) of contingency built into water supply systems for emergency situations and/or droughts that are more severe than the critical drought (e.g. storage reserves).

- *Climate change* – Some providers directly incorporate climate change into their water supply planning modeling while others monitor research on climate change, yet do not incorporate it directly into their planning efforts. Other providers do not follow climate change, due to lack of expertise and/or financial resources.

Providers that have additional supplies after meeting their municipal needs in wetter years may choose to use their "excess water" for alternative beneficial uses. These alterative uses may include agricultural leases, increased drought reserves, instream flows, etc. In some cases, the water savings achieved through an increase in water efficiency efforts could be used to increase supplies for alternative uses. If applicable, providers should identify such opportunities and whether or not they are beneficial to pursue. Depending on the sensitivity of this information, these opportunities may or may not be included in water efficiency plans.

4.1.3 Supply-Side Limitations and Future Needs

Water efficiency can assist in alleviating existing water supply system limitations and meeting future needs. During this planning process it is important to identify system limitations and future needs to determine if and how water efficiency can help alleviate these issues. Information from this process may assist in developing the Step 3 water efficiency benefits and goals. Examples of such water supply limitations and needs include the following:

- System is in a designated critical water supply shortage area.

- System is vulnerable to water shortages, emergencies and/or safe yield problems for the entire system or a portion of the system.

- System has excessive non-revenue water.

- System is experiencing high rates of population and demand growth.

- Planning substantial improvement or additions to water supply system.

- Increases to wastewater system capacity are anticipated.

- System needs additional drought reserves.

- System has or anticipates drinking water quality issues.

- System has aging infrastructure in need of repair.

- Issues with water pressure in portions of the distribution system.

- System needs permit(s) to pursue water supply projects.

State approved plans should include a list of water supply system limitations and potential challenges. Worksheet A provides a template that may be used to furnish this information.

Once the system limitations and challenges are identified, plans for new facilities/modifications, water purchases, and other actions needed to meet the identified challenges and limitations should be provided. The majority of this information may be obtained from other documents such as integrated water resource plans, capital improvement plans, raw/treated water master plans, etc. Worksheet A provides a template that may be used to furnish this information.

It is recognized that water right and infrastructure information can be sensitive and, consequently, it may not be appropriate for some providers to include details in their plans. In these cases, the challenges and limitations may be addressed in general terms to preserve confidentiality. Regardless of how this information is included, it is highly recommended that the provider go through the process of identifying system limitations and challenges in order to determine how water efficiency could be a beneficial component to future planning efforts in Step 3.