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1.0 INTRODUCTION TO THE MUNICIPAL WATER EFFICIENCY GUIDANCE DOCUMENT

The Water Conservation Act of 2004 (HB 04-1365) requires all covered entities (retail water providers that sell 2,000 acre-feet (AF) or more on an annual basis) to have a State approved water efficiency plan containing certain required minimum plan elements. This Municipal Water Efficiency Plan Guidance Document (Guidance Document) is an update to the Water Conservation Plan Development Guidance Document developed in 2005.[1] It serves as a reference tool for water providers and local governments throughout the State of Colorado (State) for developing State approved local water efficiency plans. The objectives of the document are as follows:

- Provide a comprehensive background on water efficiency planning.
- Provide guidance to Colorado municipalities that are diverse due to geographic location, size, water supply sources and financial resources.
- Clearly specify the plan elements required for State approved plans per the Water Conservation Act of 2004.
- Include water efficiency planning data required under the *Act Concerning Additional Information Regarding Covered Entities' Water Efficiency Plans*, as approved under House Bill (HB) 10-1051 for annual reporting purposes to the State.
- Include the State's most recent efforts to characterize demand management by incorporating the Statewide Water Supply Initiative's (SWSI) water conservation levels framework and establishing linkages with other water efficiency tools such as the Colorado WaterWise Best Practices Guidebook.

1.1 Scope of Document

This Guidance Document provides a comprehensive overview of municipal water efficiency planning in Colorado and is intended for water provider staff and contractors who have a moderate level of experience in water efficiency and water supply planning. The document is intended to be used in conjunction with other water efficiency tools and resources for local municipal water efficiency planning. Many of these tools and resources are provided on CWCB's website, which is routinely updated to provide up-to-date information on water efficiency planning.

This document provides basic introductory-level material on municipal water supply and demands. While this material is applicable to both water efficiency and supply planning efforts, it is important to note that this document is intended solely for the purposes of water efficiency planning. Water supply planning, water reliability planning, and/or integrated water resource

[1] For purposes of this Guidance Document, water efficiency is used in place of water conservation. See Section 2.1 for additional information.

planning generally involves a much more in-depth study of water demand and supplies as well as expanded analyses of alternative water supplies and other related factors, such as economics and environmental considerations. Relevant information from these planning processes (e.g. demand data presented in Section 4.2) should be incorporated into local water efficiency plans.

Water providers throughout the State have diverse portfolios of water rights and water supply sources and face unique demand and water supply-related challenges. Water efficiency planning must be customized to the needs of each individual water provider and also fit within budgetary constraints. Water providers will find that some of the information presented in this Guidance Document is not applicable to their water supply systems or individual water efficiency planning efforts. In other cases, water providers may not have the resources or data necessary to satisfy all of the presented recommendations. However, special attention should be directed to all plan elements that are required by Colorado statute for water efficiency planning. The full evaluation of these plan elements is necessary to achieve State approval of a local water efficiency plan.

1.2 Terminology

This section provides an overview of some of the common terminology used in this document. Please note that this is not a comprehensive list of all terms and definitions. Other important terminology is reserved for discussion in the document.

Dual water supply systems – Water supply systems that use a combination of treated water to meet potable water needs and reclaimed water and/or non-treated water (i.e. untreated ditch water and groundwater) to meet non-potable water needs.

Supply-side – Water supply operations and facilities that include the diversion, extraction, storage, and transmission of untreated water. Figure 1 illustrates this concept. All components on the left-hand-side of the figure are considered supply-side.

Demand-side – The distribution and consumption of treated water supplies for domestic purposes or the delivery and use of reclaimed water or untreated raw (i.e. ditch water, groundwater) for non-potable purposes such as irrigation or industrial processes. Figure 1 illustrates this concept.

Non-revenue water – Annual non-revenue water (previously referred to as unaccounted for water) consists of unbilled authorized uses (i.e. hydrant flushing), apparent losses, and real losses.[2] Real losses consist of leaks in the water distribution system that does not reach the end user. Apparent losses consist of unauthorized consumption, customer metering inaccuracies, and data handling errors.

System water demand – Volume of water necessary to meet customer water needs within a certain period of time.[3] System water demand is typically measured at the point of discharge from the water treatment plant and includes non-revenue water. In dual water supply systems,

[2] Source: American Water Works Association. 2006. *Water Conservation Programs – A Planning Manual. Manual of Water Supply Practices M52. First Edition*.

[3] Source: Billings, R. B and Jones, C.V. 2008. *Forecasting Urban Water Demand.* American Water Works Association.

system water demand may also include the distribution and delivery of non-potable water (i.e.: reclaimed water and untreated ditch and groundwater) to meet irrigation needs.

Customer water demand – Volume of water necessary to meet customer water needs at the end point. In contrast to system water demand, customer water demand does not include non-revenue water. Customer water demand is metered at the end point.

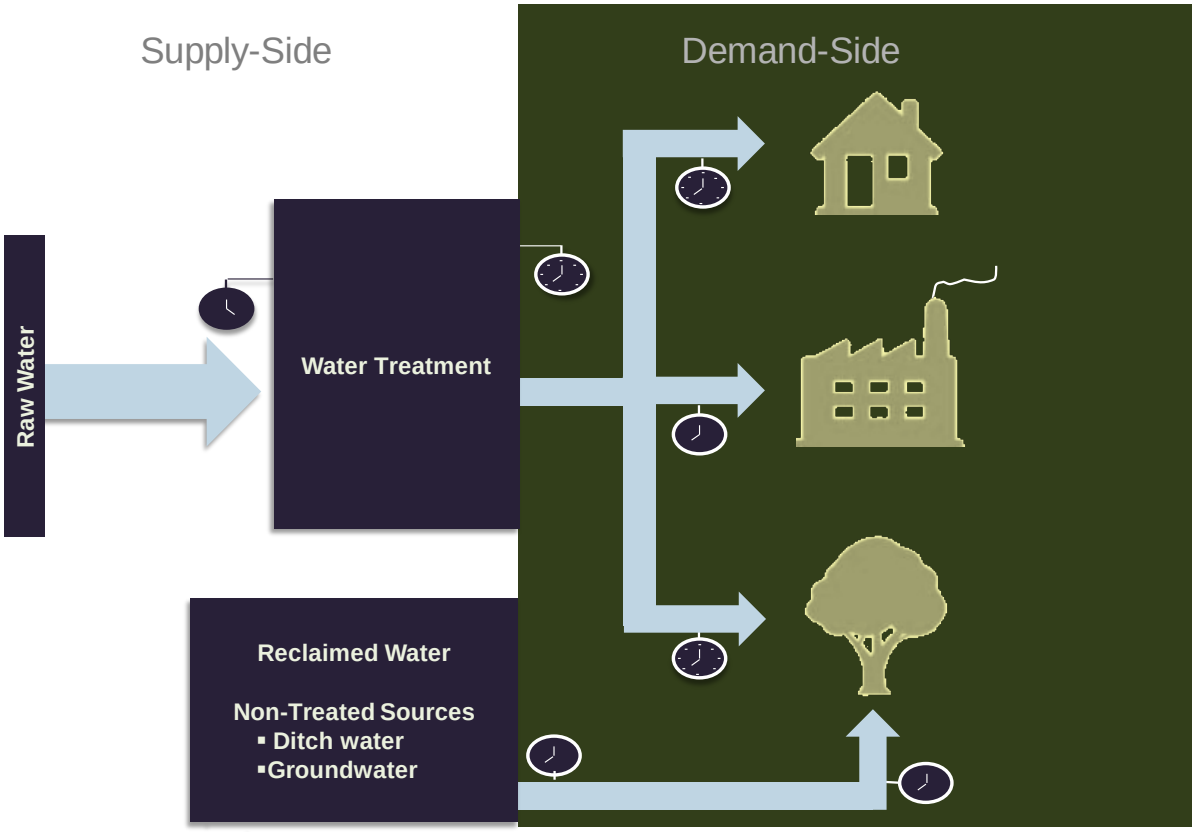

Figure 1 Supply and Demand-Side of a Dual Water Supply System

Water efficiency – Water efficiency includes the practices, techniques, and technologies that extend water supplies either directly through water savings or through substituting alternative supplies such as reuse. For purposes of this Guidance Document, water efficiency is inclusive of water conservation and is used instead of "water conservation." The term water efficiency captures the essential objective of a local plan which is to improve the efficiency of a municipal demand and water supply system. Water efficiency includes both system demands and customer water demands[4].

[4] CWCB's former 2005 Water Conservation Plan Development Guidance Document and other literature on conservation and water use efficiency distinguish supply-side and demand-side water use efficiency. These resources generally characterize demand-side as technical efficiencies (e.g. water efficient toilets) and behaviors (e.g. taking shorter showers) save water at the end use/water user level. Supply-side refers to water efficiency at the system level such as the repair of pipeline leaks and water reuse. For purposes of this Guidance Document, the distinction between these two terms does not provide an added benefit and hence in order to simplify terminology, water efficiency encompasses both supply and demand side efficiencies.

Water efficiency activities – Traditionally water efficiency activities have been referred to as water conservation measures and/or water conservation programs. For purposes of this Guidance Document, measures and programs are replaced with water efficiency activities. Water efficiency activities encompass all efforts to either save water or improve efficiencies within a water supply system.

Demand management – The implementation of water efficiency activities to reduce water deliveries (demands) and/or improve efficiencies within the distribution system. For purposes of this document, demand management refers to both system and customer water demands. Demand management is used interchangeably with water efficiency.

1.3 Document Organization

This Guidance Document is organized into the following sections:

- Section 1.0 – Details the general purpose, scope, and general organization of the document.
- Section 2.0 – Introduces water efficiency; the importance and purpose of water efficiency planning; and the importance of integrating water efficiency planning with drought management planning and water supply reliability planning.
- Section 3.0 – Addresses both the State's and CWCB's role in water efficiency planning.
- Section 4.0 – Provides an in-depth discussion on the five recommended steps for water efficiency planning. This detailed information complements the Model Template in Section 5.0.
- Section 5.0 – Introduces the benefits and concept of incorporating a stakeholder process during the development of a water efficiency plan.
- Section 6.0 – Provides a Water Efficiency Plan Model Template that corresponds with the five-step water efficiency planning process detailed in Section 4.0. Providers may use this Model Template as an organizational checklist to select plan elements for incorporation into their plans as well as to ensure that the statutory elements required for State approval are incorporated into the final plan.
- Appendix A – Provides a series of optional worksheets that providers may use as a toolkit to generate ideas, organize information, and format data for direct incorporation into their plans.
- Appendix B – Provides copies of applicable State water efficiency policy.