

# Update to the Statewide Water Supply Initiative

## DRAFT Descriptive Outline

**Background and Purpose:** The Colorado Water Conservation Board (CWCB) officially approved the Statewide Water Supply Initiative (SWSI) 2010 Report in January 2011. Like the original SWSI study completed in 2004, the purpose of SWSI 2010 was to provide a comprehensive statewide analysis of water supply, demand, and resulting gaps. In addition, SWSI 2010 continued the inventory of local solutions to meet water supply gaps. At the completion of SWSI 2010 the Board recommended a six year planning cycle for updating SWSI. These periodic updates are important so that SWSI can continue to provide the basis for tracking demands, supplies and other drivers that inform which future scenario Colorado is entering and therefore which water strategies should be implemented.

Since 2010 the Governor has requested that a Colorado Water Plan (CWP) be completed by the end of 2015. This outline for the SWSI Update has been developed to accommodate this timeline and articulate how the each chapter of the SWSI Update will incorporate and inform the CWP, Basin Implementation Plans, Colorado River Water Availability Study Continuation (CRWAS Continuation), and other efforts. Each of the chapters outlined below will be submitted for Board review as they are completed.

In addition to incorporating the basin implementation plans and the CRWAS, new aspects of this SWSI update will include:

- Incorporation of scenario planning and adaptive management
- Incorporation of climate change into demand and supply analyses
- Hydrologic variability (examine droughts and floods in addition to average conditions)
- Agricultural gap
- Nonconsumptive gap

**Relation to Other Pieces:** It is envisioned that the SWSI Update will serve as the primary technical basis for the development of the CWP, which in turn will focus on addressing key policy issues. The update will build off information from the previous SWSI reports and other efforts completed in the interim, such as the adaptive management and scenario planning work of the IBCC and basin roundtables (BRT's).

In addition, the update will incorporate the forthcoming Basin Implementation Plans which will serve as primary inputs to a number of its chapters. The Basin Implementation Plans will focus on projects and methods recommended by the roundtables to address their consumptive and nonconsumptive needs. As such, they are intended to help basins proactively meet water needs, with currently planned projects, re-prioritized projects, and new projects, operational agreements, flow protections, or other methods. The Basin Implementation Plans will also likely include more detailed modeling analysis done via the CRWAS Continuation or WSRA-funded studies in basins outside of the CRWAS area. Other aspects of the CRWAS Continuation, such as its comprehensive review of similar ongoing water studies, will be referenced as well.

## **Executive Summary**

*Scheduled CWCB Review: March 2015*

*Content:* The executive summary will focus on capturing the conclusion and recommendations. In addition it will concisely articulate how the report incorporates and informs the CWP, Basin Implementation Plans, Colorado River Water Availability Study Continuation (CRWAS Continuation), and other efforts. An 8 to 12 page fact sheet summary for broader public distribution will also be developed.

## **Chapter 1: Introduction**

*Scheduled Draft for CWCB Review: September 2013*

*Content:* This chapter will describe the update's purpose, CWCB's history and mission, historical information about SWSI, the Water for the 21st Century Act and its stakeholder process, background on Colorado's water resources, and state and federal water institutions.

### **1.1 Purpose of the Statewide Water Supply Initiative Update**

This section will articulate how the SWSI Update will serve as the technical basis for the Colorado Water Plan, while incorporating basin-specific data and recommendations developed via the Basin Implementation Plans. In addition, it will compile important aspects of numerous planning efforts such as the adaptive management and scenario planning work of the IBCC and basin roundtables (BRT's), and CRWAS. Like previous SWSI studies, this update will refine statewide water supply and demand projections, inventory projects and methods planned to meet forecasted needs, and detail resulting water supply gaps. To build previous efforts this update will include more information and emphasis on implementable projects and methods recommended by the roundtables to meet their consumptive and nonconsumptive water supply gaps.

### **1.2 History of the Statewide Water Supply Initiative**

Summary of the SWSI process to date including: legislation, funding, timelines, BRT involvement, nature of analysis, etc. This section will emphasize the evolution of SWSI from an inaugural supply and demand study with a final chapter on "Implementation" to the 2010 update with projections extended to 2050, and finally to the current focus on "implementation" via the Basin Implementation Plans and CWP.

### **1.3 CWCB History and Mission**

This section will provide a concise summary of the CWCB's history and mission, updated from SWSI 1 and SWSI 2010, perhaps with reference to the "Defend and Develop" book.

### **1.4 Overview of the Water for the 21st Century Act**

This section will provide a concise summary of HB-1177, related legislation, and the process it created, with updated from information included in SWSI 2010

### **1.5 Background on Colorado's Water Resources**

This broad overview of each basin will be updated from information included in SWSI 1, SWSI 2010, and pertinent information from each of the Basin Implementation Plans.

### **1.6 State and Federal Water Institutions**

This section will provide the context of the various state and federal institutions that deal with water. It will incorporate and update information from SWSI 1. It will also include concise and pertinent updates on permitting or legislative changes.

### **1.7 Overview of Report**

For quick reference, this section will provide a brief overview of the purpose of each chapter.

### **1.8 Acknowledgements**

## **Chapter 2: Progress to Date**

*Scheduled CWCB Review:* March 2014

*Content:* This chapter will broadly identify progress since the inaugural SWSI study was commissioned. It will build off recommendations of SWSI 1, SWSI 2010, and the SWSI 2010 Work Plan.

### **2.1 Perception and Involvement**

This section will note the achievements of the 1177 process, highlighting how attitudes and communication within each basin and across basins have evolved.

### **2.2 Infrastructure Improvements and Deficits**

This section will provide summary data and key examples of completed and evolving IPP's. New and looming infrastructure needs will also be noted, along with issues that have resulted in stagnation for some water supply projects.

### **2.3 Institutional Achievements**

This section will detail the programmatic, legislative, policy, and funding success of various state and local programs, such as ATM studies, the WSRA program, etc.

## **Chapter 3: Basin Roundtable Implementation Plan Summaries**

*Scheduled CWCB Review:* March 2015

*Content:* This chapter will describe the composition and purpose of the Basin Implementation Plans (e.g. summarizing the plan guidance document, how the plans differ from the SWSI 2010 basin plans, etc). It will also articulate how the Basin Implementation Plans will be used in other sections of this SWSI update (e.g. refined needs in Chapter 4, refined availability in Chapter 5, etc.) Finally, it will include the 3-5 page summaries of each Basin Implementation Plan, noting their major issues and implementation strategies.

### **3.1 Purpose and Composition of Basin Implementation Plans**

This section will summarize the impetus for creating the Basin Implementation Plans. It will also describe the main components of the plans, the process of their creation, and which items are required or optional.

### **3.2 How Basin Implementation Plans are Used in this SWSI Update**

This section will detail where and how the components of the plans are used in the SWSI Update.

### **3.3 Basin Implementation Plan Summaries**

This section will include a three to five page summary of major issues, strategies, etc. from each Basin Roundtable's implementation plan.

## **Chapter 4: Statewide Consumptive and Nonconsumptive Needs**

*Scheduled CWCB Review: July 2014*

*Content:* This Chapter will build on previous SWSI data with updated demands. Updated population projections and water use data collected via HB 1051, may be complemented with additional surveys and input from the BRT's developed as part of the Basin Implementation Plan process. Nonconsumptive needs identified in previous SWSI efforts and refined during the Basin Implementation Plan process will also be summarized.

### **4.1 Consumptive Needs**

This section will summarize and update the consumptive needs from SWSI with new information on how these demands may vary based on climate variability. This will include data from HB 1051, updated industrial uses (recent oil and gas development, mining, etc.), and updated data on agricultural water use. Data will be compiled in the Basin Needs Decision Support System (BNDSS) for archiving and gap analysis performed in Chapter 6. In addition, this section will incorporate the municipal, industrial, and agricultural goals and measurable outcomes, as defined in the Basin Implementation Plans.

### **4.2 Nonconsumptive Needs**

This section will summarize nonconsumptive needs by updating the focus area mapping, instream flows, endangered species, and wild and scenic river programs. It will incorporate additional work by basin roundtables, such as the goals and measurable outcomes developed as part of the Basin Implementation Plans, and any work done by the basin roundtables using the Watershed Flow Evaluation Tool. Lastly, it will describe how climate variability may impact nonconsumptive needs.

## **Chapter 5: Statewide Water Supplies**

*Scheduled CWCB Review: July 2014*

*Content:* This analysis will summarize existing hydrologic information from existing data, studies, and the CRWAS Continuation. This will include information from the Basin Implementation Plans as available.

### **5.1 Surface Water**

Surface supplies will be analyzed under dry, average, and wet hydrology (including historical, climate adjusted, and paleo hydrology for each basin). In addition, an analysis of storage will be done for each basin by evaluating the basin's firm yield using a simplified modeling approach. Inputs from the adaptive management framework and modeling efforts done via the CRWAS Continuation and/or the Basin Implementation Plan process will be included as appropriate.

### **5.2 Groundwater**

This section will detail groundwater resources throughout the state along with an analysis of the existing and projected uses of the aquifers. The use of the Denver Basin for aquifer storage and recovery and conjunctive use will also be examined.

## **Chapter 6: Statewide Gap Analysis**

*Scheduled CWCB Review: September 2014*

*Content:* The updated water use and supply data, along with the initial hydrologic shortage analysis performed via the Basin Implementation Plans will be used to inform a traditional structural gap analysis building on previous SWSI efforts. Methodologies for the development of an agricultural gap and nonconsumptive gap will be determined by the CWCB Board with input from Basin Roundtables. The prototype BNDSS will be refined and used to perform the structural gap analysis.

### **6.1 Municipal and Industrial Gap Analysis**

### **6.2 Agricultural Gap Analysis**

### **6.3 Nonconsumptive Gap Analysis**

## **Chapter 7: Adaptive Management Framework**

*Scheduled CWCB Review: July 2013*

*Content:* This will be based on the work of the IBCC, BRT's, and the CWCB Board. It will include scenario descriptions that detail possible futures for Colorado in 2050, developed as part of the scenario planning process. The Adaptive Management framework will lay out a statewide plan with "sign posts" noting important future decision points based on factors such as changes in water demand, supply, and attitudes.

### **7.1 Challenges and Uncertainty**

This section will explore the concept that planning for the future is uncertain and that change is continuous, requiring a thoughtful consideration of uncertainty and risk. These uncertainties will be examined to allow for better tracking and enable adaptive management. This discussion will help frame the need for an adaptive management planning framework and the potential benefits it can provide.

Some of the factors that will be considered are:

- Risk and Uncertainty
- Demand Uncertainty
- Supply Uncertainty
- Natural Disasters (Flood, Drought, Wildfire, etc.)
- Climate Variability
- Political Drivers

### **7.2 Scenario Planning**

This section will summarize the scenario planning and portfolio development work of the IBCC and BRT's to employ this planning process to better inform discussions about Colorado future water supply. These previous scenario planning efforts will also be further refined.

### **7.3 Adaptive Management**

Building on the concepts of scenario planning this section will detail an adaptive management framework that provides appropriate flexibility for meeting Colorado's water supply needs in any given scenario that may arise.

## **Chapter 8: Recommendations for Implementation**

*Scheduled CWCB Review: November 2014*

*Content:* This chapter will serve as the culmination of the report and the summary of how to most effectively implement water supply solutions in Colorado. Based on the work of the CWCB, IBCC, and the Basin Roundtables, it will identify a portfolio of diverse and implementable solutions. It will examine everything from broad statewide strategies to specific projects identified by basin planning efforts. Educational and outreach components will be explored along with incentives programs, economic issues, and the costs of inaction. Finally, summary recommendations and a timeline for implementation will focus the work of the report.

### **8.1 Statewide Water Management Strategies**

This section will include a “strawman” for each of the portfolios, including a description, evaluation, and recommendation of specific water management strategies, as needed within the context of scenario planning and adaptive management.

### **8.2 Projects and Methods**

This section will inventory specific project and method recommendations from the “no/low regrets” action plan and Basin Plans. This will include an analysis of potential partnerships as appropriate.

### **8.3 Education, Participation, and Outreach**

This section will recommend detailed education, participation and outreach elements that will help achieve the report’s implementation goals.

### **8.4 Incentives Programs**

This section will include a compilation of proposed and modified state policies and programs to incentivize solutions that support SWSI and BRT goals. This will include material pulled from the “no/low regrets” action plan and may include legislative solutions as appropriate.

### **8.5 Economic Needs, Opportunities, and Costs of Inaction**

The Implementation Plan will require significant investments in an appropriate mix of water supply strategies. The cost of these strategies and projects will be determined at a reconnaissance level. Financing options from the state and other alternative sources will be explored. In addition, the economic benefits of implementation of these water supply strategies will be assessed on a statewide level as well as the impacts of inaction and financial shortfalls. Previous studies will be referenced.

### **8.6 Implementation Recommendations and Timeline**

This section will provide specific recommendations and timelines to concisely articulate the necessary steps to implement solutions to Colorado’s water supply needs.

## **Chapter 9: References**

As each chapter is completed references will be noted with each draft.