STATE OF COLORADO

Colorado Water Conservation Board
Department of Natural Resources
1313 Sherman Street, Room 721
Denver, Colorado 80203
Phone: (303) 866-3441
Fax: (303) 866-4474
www.cwcb.state.co.us

TO: Colorado Water Conservation Board Members

FROM: Rebecca Mitchell, Water Supply Planning Section

DATE: January 17, 2014

SUBJECT: **Agenda Item 34, January 27-28, 2014 Board Meeting - Colorado's Water Plan Update**

Staff Recommendation: *This is an informational item only. No Board action is required.*

Background:
In May, 2013 the Colorado Water Conservation Board (CWCB) was charged, through Executive Order D 2013-005, with leading the great effort of creating Colorado's Water Plan (CWP) by the end of 2015. CWCB board and staff are aligning existing efforts in order to successfully deliver the grassroots-based CWP. This agenda item will continue to be a recurring item in future agendas.

In preparation for this effort, the CWCB has identified a variety of resources from which the agency may draw. The CWP will build upon the work of the Basin Roundtables and Interbasin Compact Committee (IBCC) as well as the findings of Statewide Water Supply Initiative (SWSI). The work of the Roundtables includes their Basin Implementation Plans and the work of the IBCC, which includes scenario planning, the No and Low Regrets Action Plan, as well as emerging discussions, which include new supply development. Several Roundtables have also expressed an interest in having the new supply development conversation. In addition, there are numerous Water Supply Reserve Account studies, the Colorado River Water Supply and Demand Study, and expertise and analysis from across the CWCB and other sister agencies that will need to be incorporated.

At the September and November, 2013 Board meetings, the Board continued to discuss the development and structure of the agency's CWP efforts and how they fit with other ongoing efforts such as the work of the IBCC and Basin Roundtable process. Emphasis was placed on coordinating these various efforts, necessary timelines for development, and associated roles and responsibilities. The framework for the CWP was reviewed in detail at both meetings, and the Board guided staff through several recommendations for how to further evolve the framework.

Discussion
Staff will give presentations on key CWP updates and will lead a discussion with the Board on the items outlined below.

CWP Framework & Annotated Framework
Based on Board feedback received at the November 2013 Board meeting, staff updated the CWP Framework and Annotated Framework for review and discussion. In addition to incorporating Board and public comments, other updates consisted of moving Section 5.4. Water Quality below Section 5.3. Watershed health/management, and adding Chapter 7. Outreach and Participation in order to document outreach efforts statewide and at the basin level and explain how the public was engaged throughout the planning process. Updated portions of the Framework and Annotated Framework are colored in red.

Staff will present drafts of the following sections of the Framework to the CWCB Board for review and comment:

- Chapter 1. Introduction and Background
- Section 5.1. Scenario planning and adaptive management and no and low regrets
- Section 5.2. Natural disaster management.

The main objective of the overall discussion is to review the draft sections of the Framework, and continue to work with the Board to ensure that staff has sufficient direction to move forward with the development of specific elements of the plan and on the timeframes and approach to draft the plan. The Framework and Annotated Framework are living documents.

Update on Colorado's Water Plan Outreach and Communications
After the September 2013 Board meeting, a draft CWP Outreach and Communications Plan was presented in order to provide a cohesive strategy and structure for all CWP communications and outreach activities. Staff also gave a presentation on elements of the CWP Outreach and Communications Plan and reviewed current and planned activities. At the November 2013 Board meeting, staff gave a presentation including the following key topics related to Colorado's Water Plan outreach and communications: Statewide Opinion-Editorials, Colorado's Water Plan Website, and a Review of Public Input Received to Date.

Staff will give a presentation including the following outreach items:

Summary of Statewide Basin Roundtable Outreach Efforts
A summary of current and planned outreach efforts within each basin statewide is included as an attachment to this Board memo.

Colorado's Water Plan – Review of Public Input Received to Date
Staff will provide an overview of public input received to date on Colorado's Water Plan and take comments from the Board regarding the process for incorporating those comments. The input received to date, including a summary spreadsheet, is included as an attachment to this Board memo. Please note that the spreadsheet includes staff responses and recommendations. Please note that staff has recommended discussion of two specific comments submitted by the Northwest Colorado Council of Governments/Water Quality Quantity Committee, specifically those related to Chapter 4 and Section 5.8.

Draft Framework

Colorado's Water Plan framework continues to evolve. Below is the updated framework based on CWCB Board feedback received during the November 2013 meeting and subsequent public comment. These items have been incorporated into the initial draft of the annotated framework below. Items that have been added due to additional input since the November Board meeting are in red. Dates for when the initial draft of each section are *grey*, and the items for consideration in January are ***bolded***.

Executive Summary

1. **Introduction and Background** *(**draft January, 2014**)*
   - 1.1. Summary of Colorado water and summary of plan
   - 1.2. Description of State, local, and Federal entities that are involved in water administration, study, planning and project permitting
   - 1.3. Description of Colorado Water Law & Administration
2. **Overview of Each Basin** *(draft March, 2014)*
3. **Water Demand by Sector** *(draft September, 2014)*
4. **Water Supply, Including Description of Historical and Projected Supply** *(draft September, 2014)*
5. **Water Management**
   - 5.1. Scenario planning and adaptive management and no and low regrets *(**draft January, 2014**)*
   - 5.2. Natural disaster management *(**draft January, 2014**)*
   - 5.3. Watershed health/management *(draft September, 2014)*
   - 5.4. Water quality *(draft May, 2014)*
   - 5.5. Meeting the consumptive and nonconsumptive gaps *(draft September, 2014)*
   - 5.6. Conservation and reuse *(draft May, 2014)*
     - 5.6.1. M&I conservation, reuse, and land use
     - 5.6.2. Agricultural conservation
     - 5.6.3. Self-supplied industrial (e.g. conservation of mining and energy water use)
     - 5.6.4. State agency conservation (e.g. Parks and Wildlife, Corrections, State Land Board, etc.)
   - 5.7. Alternative Agricultural to Urban Transfers *(draft May, 2014)*
   - 5.8. Municipal, industrial, and agricultural infrastructure projects and methods *(draft September, 2014)*
     - 5.8.1. Water supply projects and methods
     - 5.8.2. Existing water supply operation and maintenance
   - 5.9. Environmental and recreational projects and methods *(draft September, 2014)*
   - 5.10. Framework on more efficient water project permitting processes *(draft May, 2014)*
   - 5.11. Cross-basin conceptual agreements and points of consensus *(draft September, 2014)*
6. **Alignment of State Resources and Policies** *(draft September, 2014)*
   - 6.1. Funding/financing
     - 6.1.1. Analysis of the cost to fully implement the CWP
     - 6.1.2. Economic benefit of implementing the plan
     - 6.1.3. Alignment of state funding resources and analysis of other funding opportunities
   - 6.2. State water rights and alignment
   - 6.3. Alignment of other State policies and resources
7. **Outreach and Public Engagement** *(draft September, 2014)*
8. **Legislative Recommendations to Assist Fully Implementing the CWP** *(TBD based on plan's content)*
9. **Process for Plan Update** *(draft December, 2014)*

INITIAL DRAFT - Colorado's Water Plan Annotated Framework

Colorado's Water Plan Purpose: The Colorado's Water Plan (CWP) will leverage and integrate nine years of work accomplished by Colorado's Basin Roundtables, the Interbasin Compact Committee (IBCC), and Colorado Water Conservation Board (CWCB) to determine how to implement water supply planning solutions that meet Colorado's future water needs while supporting healthy watersheds and environment, robust recreation and tourism economies, vibrant and sustainable cities, and viable and productive agriculture.

Schedule: A draft water plan will be submitted by CWCB to Governor Hickenlooper by Dec. 10, 2014.

Executive Summary

1. Introduction and Background

1.1. Summary of Colorado Water and Summary of Plan

Objective: Introduce and outline the framework and structure of the CWP.

Potential Approach: Section 1.1 will discuss why the time is right for the CWP and what the CWP aims to accomplish. The section will also build upon Colorado's water values described in the executive order. As stated in the executive order, "Colorado's water policy must reflect its water values. The basin Roundtables have discussed and developed statewide and basin-specific water values and the Colorado Water Plan must incorporate the following:

- "A productive economy that supports vibrant and sustainable cities, viable and productive agriculture, and a robust skiing, recreation, and tourism industry;
- "Efficient and effective water infrastructure promoting smart land use; and
- "A strong environment that includes healthy watersheds, rivers and streams, and wildlife."

In order to incorporate Colorado's water values and set forth the goals of the CWP, this section will:

- Provide historical context for the CWP and water planning efforts in the state, including the Basin Roundtable (BRT) and IBCC processes, and the Statewide Water Supply Initiative (SWSI).
- Illustrate how the CWP was developed from grass roots efforts.
- Discuss challenges with the status quo trajectory vs. opportunities in the water plan. The CWP will seek to address the identified gaps while maintaining healthy watersheds and environment, robust skiing, recreation and tourism industries, vibrant and sustainable cities, and viable and productive agriculture.
- Information regarding other state water plans, and the need to integrate management of water quality and water quantity.
- Establish how the CWP will utilize SWSI's technical platform.
- Integrate water products.
- Identify what the CWP aims to achieve, which includes:
    - Align state funding and the state's role in water supply and management with the plan's water values;
    - Streamline the state role in the approval and regulatory process regarding water supply and management;
    - Provide background to establish an understanding of the need for state support of water supply projects, along with providing a path to state support of those water supply and water management proposals that stress conservation, innovation, collaboration and other criteria such as promoting smart land use, healthy watersheds for Colorado's rivers and streams, and

smart water conservation practices that utilize demand-management. State support will also recognize that multipurpose projects will be preferred;
- Be constructed from the bottom-up, incorporating the work of the grassroots IBCC and BRTs;
- Protect Colorado's ability to fully use its water within its interstate compacts and agreements and in light of increasing downstream water demands and changing federal requirements;
- Establish a foundation for common-sense changes to the way we manage and transfer our water; and
- Address our looming gap between supply and demand while minimizing the permanent buy-and-dry of irrigated agriculture.

Supporting Information: Executive Order, Presentation, talking points, etc.
Staff Support: CWCB Staff

1.2. Description of State, Local, and Federal Entities that Are Involved in Water Administration, Study, Planning and Project Permitting

Objective: Demonstrate that the plan will make water supply project permitting more efficient and effective.
Potential Approach: Section 1.2 will be a brief section that will indicate the importance of aligning state resources and working collaboratively with federal and local permitting agencies. In addition, the section will specify that the CWP does not create an extra permitting hurdle for water providers; rather, it will establish a path to more efficient permitting for projects that meet the water values and criteria identified in the CWP, including impacts associated with the water project.
Supporting Information: Information from State and Federal entities, 122.2, CWA Section 401, NEPA, ACTS, ESA, local regulations and permit criteria (1041 regulations; see NWCCOG's list of headwaters' local regulation document)
Staff Support: CWCB Staff and Department of Natural Resources (DNR) Executive Director's Office (EDO) staff, Colorado Department of Public Health and Environment (CDPHE) staff, Colorado Parks and Wildlife (CPW) staff

1.3. Description of Colorado Water Law & Administration

Objective: Demonstrate how the CWP will work with Colorado water law and supports the doctrine of prior appropriation.
Potential Approach: Write a short section that describes how the plan works with Colorado water law to meet Colorado's future needs. This section will reaffirm the prior appropriation doctrine.
Supporting Information: Numerous sources, including C.R.S. 37-92-101 et. Seq., Colorado Constitution Article XVI, Sections 5 and 6, Interstate Compacts
Staff Support: CWCB Staff, Attorney General's Office, and Division of Water Resources (DWR)

2. Overview of Each Basin

Objective: Demonstrate the diversity of needs and interests throughout Colorado and to highlight each basin's importance in relation to Colorado's water values.
Potential Approach: Section 2 will include a brief summary of each basin, pulling content from SWSI where appropriate. In addition, this section will include information about how CWCB has supported each basin, such as with instream flows, flood assistance, drought assistance, compacts that are important to the basin, and major funding efforts that have occurred within the basin.
Supporting Information: SWSI 1 and 2, Basin Fact sheets
Staff Support: CWCB Staff

3. Water Demand by Sector

Objective: Illustrate Colorado's significant municipal, industrial, agricultural, environmental, and recreational water needs
Potential Approach: Section 3 will be a brief section summarizing Colorado's consumptive and nonconsumptive needs.
Supporting Information: SWSI 2010, HB 1051, SWSI update, BRT work
Staff Support: CWCB Staff
Potential Stakeholder feedback: N/A
Additional Questions or needs: HB 1051.

4. Water Supply, Including Description of Historical and Projected Supply

Objective: Describe Colorado's variable water supplies and highlight where there are critical limitations and opportunities.
Potential Approach: Section 4 will be a brief section that includes content regarding Colorado's surface and groundwater water supplies and how it relates to other states. The section will refer to the BIPs and SWSI update and be consistent with the IBCC scenarios. In addition to climate change, one of the limitations and concerns for the future will be dust on snow. Conversely, one of the opportunities is weather modification. The section will not describe project specifics.
Supporting Information: Executive Order, Bureau of Reclamation (BOR) Colorado River Basin Supply and Demand Study, SWSI 2010, BRTs, Drought Plan and Task Force work, Colorado River Water Availability Study (CRWAS), Front Range Vulnerability Study, SWSI update Ch. 7 on Scenario Planning and Adaptive Management, IBCC and BRT work on scenarios, Drought Task Force, Climate Change Technical Advisory Group.
Staff Support: CWCB Staff

5. Water Management

5.1. Scenario Planning and Adaptive Management and No and Low Regrets

Objective: Ensure that the CWP prepares Colorado for a broad range of potential futures and to show how the CWP builds upon the work of the BRTs and IBCC and to identify initial strategies to meet Colorado's future water needs.
Potential Approach: Section 5.1 will include a brief and simplified narrative that indicates that the CWP is aimed at being successful regardless of what future Colorado faces. Summarize the no and low regrets. This section will frame how the other subsequent components fit into the CWP. This section will indicate where this information came from.
Supporting Information: BRT and IBCC Portfolio and scenario work, SWSI Update Ch. 7., IBCC No/Low Regrets Action Plan
Staff Support: CWCB Staff

5.2. Natural Disaster Management

Objective: To characterize and asses the impact that natural disasters such as drought, flood and wildfire have on the water systems and water availability for Colorado, both now and into the future.
Potential Approach: Utilizing previously completed studies such as the CRWAS, Drought Plan & Flood Plan, as well as the latest CMIP 5 climate change data, CWCB will examine the role that natural disasters have on the water systems and water availability for Colorado under current conditions as well as under a changing climate.
Supporting Information: 2010 & 2013 Drought Mitigation & Response Plan, 2010 & 2013 Flood Mitigation & Response Plan, CRWAS, new analysis of CMIP 5 under CRWAS phase 2 and SWSI 2016
Staff Support: CWCB Staff

5.3. Watershed Health/Management

Objective: Show how Colorado can pull together the state's consumptive and nonconsumptive interests in order to protect critical watersheds from fire and other natural hazards, such as floods, beetle kill, and drought.
Potential Approach: Section 5.3 will synthesize the BIP watershed health sections, and indicate any existing support garnered from downstream states and/or federal agencies. Based on successful examples and lessons learned, the section will make specific recommendations for how a successful partnership between local stakeholder groups, the state and federal agencies can be formed to respond in emergency situations.
Supporting Information: BIP watershed health section and the Colorado State Forest Service watershed report. Information on fire impact to downstream states, existing plans, U.S. Forest Service information. This includes incorporating the request of some local staff at federal agencies to use stewardship opportunities and management tools.
Staff Support: CWCB Staff, Colorado State Forest Service staff

5.4. Water Quality

The contents of this section will be outlined by the State's interagency water quality and quantity group and contents will rely on stakeholders statewide.

5.5. Meeting the Consumptive and Nonconsumptive Gaps

Objective: Demonstrate how the CWP rests upon the foundation of BRT work and indicate that the CWP incorporates the BIPs, which should meet most of Colorado's future water needs while maintaining the state's water values.
Potential Approach: Synthesize and summarize the BIPs showing how they will measurably meet Colorado's future water needs. While a few projects may be highlighted, the section will primarily refer to the BIPs.
Supporting Information: BIPs, especially section 6.
Staff Support: CWCB and CPW Staff

5.6. Conservation and Reuse

5.6.1 Municipal & industrial (M&I) conservation, reuse, and land use
5.6.2 Agricultural conservation
5.6.3 Self-Supplied Industrial (e.g., conservation of mining and energy water use)
5.6.4 State agency conservation

Objective: Indicate the amount of conservation that can be utilized to meet Colorado's future water needs.
Potential Approach: Section 5.6 will pull from various resources and will highlight recent BRT or legislative progress on the topic. Section 5.6.1 M&I conservation, reuse, and land use will synthesize BIP action on conservation, reuse, and land use and any legislative movements forward and summarize the pros and cons of M&I conservation. It will recognize demand hardening as a concern and will describe land use efforts related to the No and Low Regrets Action Plan. The subsection will also highlight reuse efforts, including graywater, potable reuse, and reuse for irrigation purposes. Section 5.6.2 Agricultural conservation will summarize the work of Colorado Agricultural Water Alliance. It will also recognize Colorado's unique issues with agricultural conservation related to the fact that 1) Colorado is a headwaters state and must consider interstate concerns, 2) there are limitations due to the protection of return flows for downstream users, and 3) nonconsumptive needs could be positively or negatively impacted. For section 5.6.3 Self-Supplied Industrial, summarize efforts to partner with industry, including the water savings associated with utilization of natural gas and renewable energy sources compared to coal. This section could be focused on the energy/water nexus more generally and describe recent

energy/water nexus efforts. For Section 5.6.4., State agency conservation, the section should indicate how state agencies are leading conservation efforts.
Supporting Information: SWSI 2010, Best Practices manual, Ag conservation paper, state agency water/energy conservation paper, Colorado & Yampa/White BRT energy study, nonprofit reports and memos on water/energy nexus, Letter to the Governors, information from water/energy workshops, SWSI Update (especially on industrial needs), BIPs, Colorado River Basin Supply and Demand Study and associated Next Steps Processes, and examples of local conservation plans
Staff Support: CWCB Staff, relevant staff from other state agencies

5.7. Alternative Agricultural to Urban Transfers

Objective: Showcase recent and ongoing efforts allowing for water sharing between agricultural and municipal water users.
Potential Approach: The current path Colorado is on is the continued long term permanent dry up of Colorado's irrigated agriculture. Section 5.7 will lay a path for agricultural producers and municipalities to have a greater suite of options, while not rewriting property rights. The section will discuss recent legislative efforts to allow for alternative transfer method pilots, and will further the technical information, which indicates that approximately 50,000 acre-feet of agricultural water will be needed in the Front Range. Relevant aspects of the East Slope Basin Implementation Plans and the No and Low Regrets Action Plan will be incorporated. Examples, such as conservation easements which tie water to agricultural lands while allowing for temporary leasing on fallowed lands, will be highlighted. The section will also include an identification of some of the legal constraints.
Supporting Information: H.B. 1248 and associated Guidance and lessons learned from any pilots, Colorado Agricultural Water Alliance, Ag Policy Dialogue, Alternative Transfer Method grants and report, existing law concerning water banks, interruptible supply agreements, etc., information from discussions with the Colorado Water Bar
Staff Support: CWCB Staff, DWR Staff, Colorado Department of Agriculture Staff

5.8. Municipal, Industrial, and Agricultural Infrastructure Projects and Methods

5.8.1. Water supply projects and methods
5.8.2. Existing water supply operation and maintenance

Objective: Summarize the type and amount of infrastructure projects and methods needed to meet our current and future water supply needs, to indicate how much this infrastructure will cost, and to highlight multi-purpose and regional projects and methods from the BIPs. In addition this section will draft incentive-based criteria, which can be used upon the request of a project proponent, to help a new project that may be lacking become a project that is worthy of state support. It will also include an evaluation process and actions that take place when criteria are met. Similarly, for existing water supply operation and maintenance, criteria and a rubric for CWCB financing will be included. These efforts will be utilized in the permitting and funding section of the plan.
Potential Approach: Informed by the BIPs, Section 5.8 will summarize the amount of additional infrastructure Colorado will need to meet our future consumptive needs while striving to uphold Colorado's water values. This will include measures to keep agriculture in production in the state and support environmental and recreational needs as part of multi-purpose projects. Operation and maintenance will be impacted by the flooding on the South Platte and Arkansas, and the assessments sent to FEMA will be summarized. In addition, the section will estimate how much the infrastructure will cost.
Supporting Information: Cost estimates from SWSI 2010, BIPs, SWSI Update (e.g., section 8), CWCB Strategic Framework, flood assessments
Staff Support: CWCB Staff, Colorado Department of Agriculture Staff

5.9. Environmental and Recreational Projects and Methods

Objective: Summarize the environmental and recreational projects and methods needed for protecting Colorado's environmental legacy and recreational opportunities, and to highlight important regional projects and methods.

Potential Approach: Informed by the BIPs, Section 5.9 will summarize the amount of additional projects and methods that will be needed to maintain and, in some cases, enhance Colorado's environmental and recreational attributes, while maintaining Colorado's water values, including the support of local economies. The section will describe how multi-purpose projects can benefit the environment and recreation and how agricultural uses can add value to these nonconsumptive uses as well. In addition, the section will estimate how much the projects and methods will cost. The section will indicate the total number of projects, amount of protected or restored habitat, amount of protected or restored stream miles, and the expected benefit to nonconsumptive attributes.

Supporting Information: SWSI 2010, SWSI Update, BIPs, nonconsumptive database and Identified Projects and Processes (IPPs), Nonconsumptive toolbox, "Water and its Relationship to the Economies of the Headwaters Counties" study, December, 2011

Staff Support: CWCB and CPW Staff

5.10. Framework on More Efficient Water Project Permitting Processes

Objective: Show how the CWP will help make the water supply project permitting processes more integrated, effective and efficient, especially for those projects that meet Colorado's water values and fit within the CWP framework.

Potential Approach: This section will summarize the work of local, state and federal permitting entities to accomplish the recommendations in the no and low regrets action plan that builds on the collaborative partnership that the State of Colorado already has with its federal partners. The draft indicates two main actions:

- **Streamline state permitting processes for IPPs that meet values of the CWP:** The Executive Order directs the CWP to help expedite permitting at the state level. The state should develop an approach to permitting IPPs that efficiently moves projects through the process and toward an outcome, whether positive or not, while ensuring sufficient protection of nonconsumptive and other values. Public engagement and community outreach regarding water supply needs and potential impacts of water supply projects may need to increase in affected communities and needs to occur as early as possible in the project planning process to facilitate an efficient permitting process.
- **Improve state coordination with local and federal permitting entities:** The state should continue to meet with federal agencies and local governments and look for opportunities, including entering into MOUs, to make NEPA and permitting processes more efficient and coordinated, especially for projects that meet the values of the CWP and are needed across multiple scenarios. Efficiency would not dictate whether the outcome is positive or not.

If there are pertinent aspects of the BIP's, those will be included as well. In addition, the CWP will consider any recommendations from the Quality and Quantity Workgroup recommendations on how quality and quantity policies should be linked, and seek to build off other successes, such as those in the endangered species recovery programs.

Supporting Information: CWCB Strategic Framework, No/Low Regrets Action Plan, any results from coordination meetings between state and federal permitting entities, ES white paper, Letter to the Governors, Mark Pifher Letter, nutrient rules, applicable law, Quality and Quantity Workgroup, information from local, state and federal permitting entities, information from project proponents, local governments, nonprofits, and other stakeholders on the permitting process, and information from the nutrients standards process, the work of CDPHE, list of land use plans and 1041 regulations from the

Northwest Colorado Council of Governments, the Colorado Water Quality Forum, nonconsumptive workshop comments at the 2013 Watersheds Conference, and the combined joint review process
Staff Support: CWCB Staff, EDO Staff, CPW Staff

5.11. Cross-basin Conceptual Agreements and Points of Consensus

Objective: Highlight water management agreements achieved across basins and provide support to these agreements by virtue of incorporating them into the CWP.
Potential Approach: Section 5.11 will summarize existing agreements and discuss the importance of additional agreements. It will also detail any new agreements developed as part of the process and discuss any agreements that are underway. As part of this work, the section will explore criteria for a good new supply project or package of projects.
Supporting Information: Basin Roundtable Project Exploration Committee, No/Low Regrets Action Plan, Letter to the Governors, new supply subcommittee chairs letter, West Slope Caucus, East Slope white paper, existing agreements that may serve as models for potential conceptual agreements to resolve permitting issues, water rights disputes, or other issues in the basin of origin (e.g., Colorado River Cooperative Agreement, Windy Gap Firming Agreement), Basin Roundtable and IBCC discussions.
Staff Support: CWCB Staff

6. Alignment of State Resources and Policies

6.1. Funding/Financing

6.1.1. Analysis of the cost to fully implement the CWP
6.1.2. Economic benefit of implementing the plan
6.1.3. Alignment of state funding resources and analysis of other funding opportunities

Objective: Indicate how the CWP can be implemented from a funding perspective and demonstrate that doing so would be beneficial for the vibrancy of the state. If additional funds beyond current resources are needed, it will demonstrate how such funds could be acquired.
Potential Approach: Drawing from SWSI and other resources, this section will briefly discuss the costs and economic benefits of implementing the plan and then discuss in greater detail how the CWP could be funded. This will include existing funding options such as CWCB loan and grant programs, Water and Power Authority loans, water provider / customer oriented funding, as well as private and federal options. If additional funds are needed, it will recommend a funding approach. Section 6.1.3 will indicate how state funding can be aligned with meeting the priorities set forth in the CWP.
Supporting Information: No/Low Regrets Action Plan Appendix B, SWSI 2010. SWSI Update, information from various funders (e.g., Water and Power Authority, Bureau of Reclamation, private funding entities), information from the Water Infrastructure Finance and Innovation Authority (WIFIA) and the Water Infrastructure Network (WIN), CWCB Strategic Framework
Staff Support: CWCB and CPW Staff

6.2. State Water Rights and Alignment

Objective: Indicate how the State of Colorado is utilizing its water rights to the best benefit of the state, in accordance with the CWP water values and goals.
Potential Approach: Section 6.2 will summarize how Colorado's state agencies are aligning their water rights to meet the water values and goals of Colorado's Water Plan. This section will include recommendations on how to move forward any critical water projects and methods that have not been achieved by the time the water plan is published. Specifically, water rights should be aligned to have multiple benefits, for instance to agriculture and the environment. Water sharing agreements could also be explored. Water rights and potential water projects should be reviewed so that they can best meet the

nonconsumptive and consumptive measurable objectives in the BIPs. Model examples that, such as the Rio Grande Cooperative Projects, will be described.
Supporting Information: Instream flows, Colorado Parks and Wildlife water rights database, State Land Board water rights documents and recommendations, feedback from various state agencies that have water rights.
Staff Support: CWCB, EDO, and CPW Staff

6.3. Alignment of other State Policies and Resources

Objective: To ensure that state policies and procedures across agencies are aligned.
Potential Approach: This section allows state agencies to examine policies and resources related to water at a high level. The section will summarize how the State of Colorado has aligned its policies and resources to meet the water values and goals of the CWP based off interagency meetings and information. For instance, the instream flows have been used as a way to align CPW interests with CWCB's instream flow program.
Supporting Information: Relevant policies from state agencies, Feedback from state agencies with water related policies.
Staff Support: CWCB Staff, EDO Staff, Attorney General's office, DWR, Colorado Parks and Wildlife, Colorado Department of Health and Environment, etc.

7. Outreach and Public Engagement

Objective: To document outreach efforts statewide and at the basin level and explain how the public was engaged throughout the planning process.
Potential Approach: This section will pull from the Basin Implementation Plans Section 4.1 Education, Outreach, and Participation in order to summarize outreach and public engagement efforts at the local level. It will also summarize statewide efforts to increase broad participation and generate input.
Supporting Information: Public Education, Participation, and Outreach (PEPO) Workgroup documentation, Basin Implementation Plans Section 4.1 Education, Outreach and Participation, CWCB Outreach and Communications Plan
Staff Support: CWCB Staff, PEPO Education Liaisons, CFWE Staff

8. Legislative Recommendations to Assist Fully Implementing the CWP

Objective: To highlight recent legislative accomplishments and show grassroots support for any additional legislative action that is needed.
Potential Approach: This section should pull from the No/Low Regrets Action Plan's legislative recommendations and summary. It will discuss recent legislation in support of CWP water values and goals. In addition, it will highlight the level of support for new legislative concepts and from where the concepts emerged. Every recommendation should come from BRT, IBCC, and stakeholder involvement.
Supporting Information: No/Low Regrets Document, Basin Implementation Plans, BRT agriculture policy document, information from the Interim Water Committee, Colorado Water Congress, and the Colorado Water Bar
Staff Support: CWCB Staff, EDO Staff

9. Process for Plan Update

Objective: Indicate that the CWP is a living document that will need periodic updates.
Potential Approach: Write a brief section describing the process for and timing of future updates.
Supporting Information: Executive Order, CWP presentations

coloradowaterplan.com
cowaterplan@state.co.us
Direct 303-866-3441

1. **INITIAL DRAFT** Introduction & Background

1.1. Summary of Colorado Water and Summary of Plan

NOTE: This draft section will be modified and supplemented upon receipt of the draft Basin Implementation Plans from the Basin Roundtables and additional work completed by the IBCC.

Colorado has long been on the leading edge of water innovation and solutions. We are the home of the "Colorado Doctrine" of prior appropriation, the birthplace of the interstate water compact, of which we have nine, and the initiator of vital water engineering advances. We are a headwater state – rivers and streams critical to the United States begin here, provide water for Colorado uses, and exit the state to provide water to 18 downstream states as well as the United Mexican States. Colorado has benefited much from its water and has taken seriously its responsibilities as a headwater state. The creation of Colorado's Water Plan is in keeping with Colorado's water heritage and continued responsibility.

Plato said, "necessity is the mother of… invention," and our "necessity" is derived from confluence of a rapidly-increasing population and a high, arid climate where drought can be persistent and sustained. Colorado's response to water scarcity is collaboration: the idea that we're stronger together than we are divided. We also favor grassroots processes where a basin's local stakeholders set the priorities for their basin. Hence, the nine Basin Roundtables and the Interbasin Compact Committee were created nine years ago. The Basin Roundtables are made up of a wide array of stakeholders, including representatives of local government, environment, recreation, industry, water providers, and agriculture. Their charge is to first understand the water needs of communities, industry, agriculture, the environment, and recreational activities in their basin. Secondly, they are asked to determine the necessary projects and methods to meet those needs. As part of this work, all of the Basin Roundtable completed their needs assessments in 2011 and their Basin Implementation Plans in 2014.

Colorado's Water Plan is a culmination and summary of the last decade of work and is an expression of the grassroots efforts led by hundreds of volunteer Coloradans and supported by many more who have provided their input. Despite the impressive scale of this effort, our list of water challenges is long and demands a united response:

A. The gap between our municipal water supply and water demand is real and looming. The Statewide Water Supply Initiative forecasts that this gap could exceed 500,000 acre feet by 2050, leaving as many as 2.5 million people without sufficient water supplies.

Moreover, our largest regional gap is set to occur in the South Platte Basin, our most populous as well as our largest agriculture-producing basin (CWCB 2010).

B. Environmental and recreational needs continue to gain importance for Coloradans and Colorado's economy, and yet, Colorado has a growing list of imperiled species and habitats and Colorado's increasing population crowds recreational areas.
C. Coloradans find that the current rate at which irrigated agriculture is being permanently lost by the purchase and permanent transfer of agricultural water rights to municipalities is unacceptable. We have witnessed the economic and environmental impacts on rural communities when water is sold and removed from an agricultural area. For example, projected permanent loss of irrigated acreage in the South Platte Basin alone is currently estimated to be 35% of all the agricultural lands under production in that basin unless viable alternatives are developed (CWCB 2010). Similarly, the Colorado Basin could lose 20% of its irrigated agricultural lands (CWCB 2010).
D. Highly variable precipitation and natural disasters such as floods, droughts, and wildfires exacerbate Colorado's water challenges. Drought conditions alone threaten to hasten the impact of the water supply gap. Indeed, the past two decades have been Colorado's warmest on record, dating back to the 1890s (BOR 2013).
E. Colorado's water quantity and quality have historically been addressed separately, although each heavily impacts the other.
F. Permitting a water project takes substantial time at considerable cost. Even upon reaching the end of over a decade of procedure, a water project may still fail to adequately address the concerns of stakeholders. This process must become more agile and effective if we are to sufficiently respond to Colorado's water challenges. Furthermore, the current permitting process discourages cooperation and innovation among stakeholders.
G. As a headwater state with nine interstate compacts and two equitable apportionment decrees, Colorado's water is coveted by downstream states facing their own water supply imbalances.

Colorado's Water Plan begins the work of addressing these challenges by identifying Colorado's water values, forged in over 800 meetings and conversations over the last decade between individuals, groups, and interests:

- A productive economy that supports
    - Vibrant and sustainable cities,
    - Viable and productive agriculture, and
    - A robust skiing, recreation, and tourism industry
- Efficient and effective water infrastructure that promotes cooperation, conservation, reuse, and smart land use; and
- A strong environment that includes healthy watersheds, rivers and streams, and wildlife.

Colorado's Water Plan reflects these values by:

- Harnessing the work of the grassroots Basin Roundtables and Interbasin Compact Committee to address looming gaps between water supply and demand while minimizing the permanent buy-and-dry of irrigated agriculture;
- Integrating water products and information from across Colorado's water stakeholders and agencies;
- Aligning state funding and the state's role in water supply and management with our water values;
- Analyzing Colorado's roles in permitting processes in order to effect greater efficiency and effectiveness;
- Providing a path to state support of those water supply and water management proposals that stress conservation, innovation, collaboration, multiple benefits, and other criteria such as promoting smart land use, and healthy watersheds for Colorado's rivers and streams;
- Protecting Colorado's ability to fully use its water within its interstate compacts and agreements and in light of increasing downstream water demands and changing federal requirements;
- Establishing a foundation for common-sense changes to the way we manage and transfer our water; and
- Providing the mechanism for Colorado to respond and adapt to meet our future water challenges.

Because we cannot fully know what issues we will face in the future, Colorado's Water Plan will be updated periodically and is a living document.

1.2. Description of State, Local, and Federal Entities that Are Involved in Water Administration, Study, Planning and Project Permitting

Introduction

In order for a water project to be implemented in Colorado a number of local, state, and federal entities are needed. These partnerships are critical to ensuring the right checks and balances are in place for a project to move forward. Traditionally, these organizations include the entities listed below.

Federal Entities:

- *Environmental Protection Agency (EPA):* The federal agency responsible for oversight of the National Environmental Policy Act (NEPA) and permitting related to wetland mitigation, described under section 404 of the Clean Water Act.
- *U.S. Army Corps of Engineers:* A federal agency that could be responsible for being the federal lead for NEPA and 404 permitting.
- *U.S. Forest Service:* The manager of forests of the United States. This agency is could be responsible for being the federal agency lead for NEPA and 404 permitting. In addition, the agency is responsible for Federal Energy Regulatory Commission (FERC) Licensing when a water project on federally owned forests produces hydropower.

- *U.S. Fish and Wildlife Service:* The federal agency that manages threatened and endangered species recovery programs. This agency is responsible for determining if a project exceeds the bounds of any programmatic opinions regarding further water development. In addition, under the Fish and Wildlife Coordination Act, federal agencies responsible for coordinating NEP must consult with the Fish and Wildlife Service regarding to the projects potential impacts to fish and wildlife species.
- *Bureau of Reclamation (BOR):* The federal agency which built and manages several water projects, such as Blue Mesa Reservoir and the Fry-Ark project. The BOR is responsible for contracting water out of these federal projects. In addition, the BOR could be responsible for being the federal agency lead for NEPA and 404 permitting.

State Entities:

- *Colorado Water Quality Control Division:* A division within the Colorado Department of Public Health and Environment. The agency reviews water quality certifications under Section 401 of the federal Clean Water Act.
- *Colorado Parks and Wildlife (CPW):* A division within the Colorado Department of Natural Resources. CPW reviews state wildlife mitigation plans under Colorado's state statutes known as 122.2 plans.
- *Colorado Water Conservation Board (CWCB):* A division within the Colorado Department of Natural Resources. CWCB sets water policy and planning in Colorado and reviews state wildlife mitigation plans under Colorado's state statutes known as 122.2 plans.
- *Colorado Division of Water Resources (DWR):* A division within the Colorado Department of Natural Resources that is responsible for water administration. DWR ensures that a project can be administered. New water rights and well permits must be filed with DWR.
- *Colorado Attorney General's Office:* The legal authority regarding matters of law, including whether or not a particular project or agreement is legal under Colorado's law. The Attorney General's Office is involved in projects through other state agencies.

Local Entities

- *Project Proponents:* A wide array of water users and water providers may be a project proponent. These include, but are not limited to, local governments that run a utility, private water companies that act as a local utility, special districts, ditch companies, or regional water conservancy and conservation districts that sell water to local water providers. These entities are responsible for working with state and federal permitting entities in order to successfully be able to permit their water project.
- *Local Governments:* If a water project passes through an entity with local land use authority, that local jurisdiction has the power to request mitigation of any impacts. This is known as 1041 powers, which can be held by counties and municipalities.
- *Cooperating Agencies:* Any entity interested in a water project can request becoming a cooperating agency under the NEPA process.

Water planning is an important component of understanding what types of water projects are needed in the future and how much water will be needed to service Colorado's future population. This in turn can help inform the permitting process. The Colorado Water Conservation Board is the

primary state agency responsible for statewide water planning. Since 2005, CWCB has relied on the Basin Roundtables, which are described above, and the Interbasin Compact Committee to assist with these efforts.

The Interbasin Compact Committee is made up of two representatives from each Basin Roundtable, six governor appointees, and two appointees from the state legislature. Their charge is to develop agreements between basins and to brainstorm statewide policy issues.

Both the Basin Roundtables and the Interbasin Compact Committee provide critical input not only to Colorado's Water Plan, but also to the Statewide Water Supply Initiative (SWSI). SWSI creates the technical foundation and a common technical platform that the stakeholders and Colorado's Water Plan relies and builds upon. The report is periodically updated with the latest technical information and tracks Colorado's changing water related needs.

In addition, the Basin Roundtables and CWCB have developed a forum from which project proponents seek not only technical and financial support, but also support for understanding issues and stakeholder concerns regarding a new water project. This collaborative approach will likely help the entities traditionally involved in project permitting be able to understand the issues sooner.

In order to better understand how several of the entities involved in permitting interact, the following sections describe many of the important permitting processes.

Section 122.2

37-60-122.2 (C.R.S.), known as the Fish and Wildlife Resources Fund and Authorization, declares that fish and wildlife resources are a matter of statewide concern and that impacts on such resources should be reasonably mitigated by applicants proposing water diversion, delivery, or storage projects. Applicants must submit a mitigation proposal to the wildlife commission (now CPW commission) for review and approval. Once there is mutual agreement on the plan by the applicant and the commission, it shall be forwarded to the CWCB for board adoption as the official state position on the plan. A plan is generally required when an applicant seeks a permit or license from the federal government for the specified types of water projects, with some exceptions as noted in the statute. Grants can be made available to applicants to help implement the mitigation plans, and criteria have been established for such grants if necessary funds are available. Examples of Section 122.2 plans that are completed or in process include Southern Delivery System (SDS), Windy Gap firming project, Moffat Collection project, and Chatfield Reservoir Reallocation project. (Ref. 1)

401 Water Quality Certification

The Colorado Water Quality Control Division (WQCD), an agency under the Colorado Department of Public Health and Environment, reviews water quality certifications under Section 401 of the federal Clean Water Act (CWA) and issues permits accordingly. This applies to actions or projects that fall under the Colorado 401 Certification Regulation. A CWA 401 certification is necessary for any federal license or permit that is issued to construct or operate a facility, which may result in any fill or discharge into the navigable waters of the United States.

The certification process includes a preliminary review of proposed project, a 30-day public notice, review of public comments, and a final certification decision for the proposed project. (Ref. 2)

1041 Local Permits

In 1974, the Colorado General Assembly enacted measures to further define the authority of state and local governments in making planning decisions for matters of statewide interest. These powers are commonly referred to as "1041 powers," based on the bill number of the proposed legislation (HB 74-1041). These 1041 powers allow local governments to identify, designate, and regulate areas and activities of state interest through a local permitting process. The general intention of these powers is to allow for local governments to maintain their control over particular development projects even where the development project has statewide impacts. The statute concerning areas and activities of state interest can be found in 24-65.1-101 (C.R.S.)

Generally, development may only proceed if consistent with the environmental and developmental goals of the local communities as outlined in their 1041 regulations.

Of particular interest to many local governments are impacts from the construction and operation of large-scale water projects. The Act authorizes local governments to designate as activities of state interest the site selection and construction of major new domestic water and sewage treatment systems, major extension of existing domestic water and sewage treatment systems, site selection and development of new communities, and efficient utilization of municipal and industrial water projects. Local governments may not pass regulations that are completely prohibitive of the building of municipal water facilities and expansion of existing projects. The Act allows the locality to require a permit with designated conditions prior to construction. (Ref. 3)

Cooperating Agency Status

Federal agencies actively consider designation of cooperating agencies in the preparation of analyses and documentation required by the National Environmental Policy Act (NEPA) and they participate as cooperating agencies in other agency's NEPA processes. The CEQ regulations addressing cooperating agencies status implement the NEPA mandate that Federal agencies responsible for preparing NEPA analyses and documentation do so "in cooperation with State and local governments" and other agencies with jurisdiction by law or special expertise.

Stakeholder involvement is important in ensuring that decision makers have the environmental information necessary to make informed and timely decisions. Cooperating agency status is a major component of agency stakeholder involvement in the NEPA process. The benefits of enhanced cooperating agency participation in the preparation of NEPA analyses include: disclosing relevant information early in the analytical process; applying available technical expertise and staff support; avoiding duplication with other Federal, State, Tribal and local procedures; and establishing a mechanism for addressing intergovernmental issues, and other benefits. The State of Colorado has and continues to participate as both a non-federal project sponsor and/or as a Cooperating Technical Agency on a case-by-case basis for water projects in the state. (Ref. 4)

NEPA and Section 404 Permitting

The National Environmental Policy Act (NEPA) establishes the broad national framework for protecting the environment. NEPA's basic policy is to ensure that all branches of government give proper consideration prior to undertaking any major federal action hat significantly affects the environment. NEPA requirements are invoked when significant projects are proposed having a federal nexus. Environmental Assessments (EAs) and Environmental Impact Statements (EISs), which are assessments of the likelihood of impacts from alternative courses of action, are required from all Federal agencies and are the most visible NEPA requirements. (Ref. 5)

In 1972, Section 404 of the Clean Water Act established a program to regulate the discharge of dredged or fill material into waters of the United States. The program is jointly administered by the U.S. Army Corps of Engineers and the Environmental Protection Agency. The Corps is responsible for the day-to-day administration and permit review, and EPA provides program oversight. The fundamental rationale of the program is that no discharge of dredged or fill material should be permitted if there is a practicable alternative that would be less damaging to our aquatic resources or if significant degradation would occur to the nation's waters. Permit review and issuance follows a sequence process that encourages avoidance of impacts, followed by minimizing impacts and, finally, requiring mitigation for unavoidable impacts to the aquatic environment. (Ref. 6)

The State of Colorado is involved in both NEPA processes and 404 Permitting processes at various levels on a case-by-case basis. The role may include reviewing agency, cooperating agency, non-federal sponsor, or a combination thereof.

Moving Forward

Colorado is committed to continuing to strengthen partnerships within state government and between state government and federal and local entities. By doing so, the permitting and planning processes can become more effective and efficient. Section 5.10 of Colorado's Water Plan demonstrates recent developments between federal, state, and local partners by providing a framework for how the permitting process can be made more efficient and be more in line with Colorado's water values.

1.3. Description of Colorado Water Law and Administration

To plan for the opportunities and challenges apparent in Colorado's water future, it is important to understand the legal framework under which such opportunities and challenges must be addressed. The evolution and history of Colorado water law is as rich and complicated as the history of the West itself. From the People's Ditch of San Luis, the oldest operational water right in Colorado, to the innovations of Aurora's Prairie Waters project, the manner in which this valuable resource has been litigated and administered has formed a massive body of law, legal precedent, rules, and regulations.

Colorado must work within an extensive legal framework that includes constitutional provisions, extensive statutory provisions, the state's water court system, nine separate interstate compacts, and two U.S. Supreme Court equitable apportionment decrees. In a semi-arid climate, water users need a system that will ensure the protection of their water rights and provide for consistent

administration, while also enabling flexibility such that the value of recognized properties rights are not diminished. Through ever-evolving case law, policies established by state and local government, and laws passed by the General Assembly, Coloradans are working together to provide these protections to fellow citizens.

The Prior Appropriation System

The foundation of Colorado water law is the prior appropriation system, a framework for establishing one water user's priority for use over that of another. This legal system is shared in a pure or hybrid form with most western states. However, Colorado was the first to formalize the prior appropriation system, in a set of principles known as the "Colorado Doctrine," adopted prior to statehood.[i]

THE COLORADO DOCTRINE

- All surface and groundwater In Colorado is a public resource for beneficial use by public agencies and private persons;
- A water right is a right to use a portion of the public's water resources;
- Water rights owners may build facilities on the lands of others to divert, extract, or move water from a stream or aquifer to its place of use; and
- Water rights owners may use streams and aquifers for the transportation and storage of water.

The heart of the prior appropriation system is found in the Colorado Constitution: "The right to divert the unappropriated waters of any natural stream to beneficial uses shall never be denied. Priority of appropriation shall give the better right to between those using the water for the same purpose…"[ii] The simpler, and often repeated, distillation of this legal framework is "first in time, first in right."

After this constitutional establishment of the prior appropriation system, the Colorado legal system for the adjudication and administration of water rights was further codified in the Water Right Determination and Administration Act of 1969. This Act defined for universal use many terms that are familiar to water users today, while dedicating all water in the state for public use, subject to appropriation and administration to "maximize the beneficial use of all of the waters of the state."[iii]

Under this system, a water user who has a senior right may divert and use water from a stream before those with junior rights on the same stream. In times of water shortages, this is especially important and adds value to senior rights. By placing a "call" on a stream when in priority, the holder of a senior water right may receive its full allocation, while all of the junior water rights must be curtailed.

Water Rights and Adjudication

Colorado water law divides surface water rights into two categories: direct flow rights and storage rights. With a direct flow right, the water user applies the water from the stream directly to use for irrigation, domestic, industrial, or other uses. A storage right is typically effectuated by placing water into a vessel such as a reservoir or tank for later use. Water court decrees generally quantify direct flow water rights in terms of flow (cubic feet per second), while storage water rights are generally volumetrically measured (acre-feet).

In Colorado, a water right is appropriated when a user demonstrates intent to put water to beneficial use, and then actually applies water to beneficial use. A water user may then receive protection under the priority system by adjudicating that right through the water court process. As the prior appropriation system has evolved, in some river basins, more water rights have been adjudicated than can be satisfied in some years. When this occurs in a basin, that basin is described as over-appropriated.

"Beneficial use" is an all-important term in determination of, and administration of water rights. "Beneficial use" serves as both the measure and limit of the water right: the beneficial use of water is a level beyond which waste may occur. In the early territorial days, beneficial use extended primarily to domestic and agricultural use. However, as the state's population and values have evolved and changed, so has the definition of beneficial use. New types of water uses, such as instream flow decrees, held by the CWCB to preserve the environment to a reasonable decree, are now recognized as a beneficial use. In addition, the definition of beneficial use has been amended to recognize instream uses for recreational purposes if they meet other statutory requirements.

Administration of Water Rights

The prior appropriation system as it stands today is a product of the water court system and legislation enacted by the General Assembly. On the ground, water rights are administered by the Colorado Division of Water Resources (DWR), a division of the Department of Natural Resources. Also referred to as the State Engineer's Office, this Division evaluates well permits, inspects dams, and oversees the work of commissioners in the field who physically allocate the water and enforce water court decrees.

The State Engineer's Office is headquartered in Denver, with seven field offices spread across the state in every major river basin. Each field office has a Division Engineer, who serves as the lead, managing the administration of that particular water division. Commissioners in the field not only monitor the diversion structures to ensure compliance with the priority system, but gather important data for use in water planning studies or decision support systems.

The water commissioners also administer "calls" on the river system, under which an upstream user with a junior right may have to forego diversions of its water right to ensure that the calling downstream senior water rights holder receives the water to which it is entitled. Other duties of the Division Engineers include administering storage water rights, and plans for augmentation, exchanges, and transmountain water diversions. In conjunction with the Colorado Ground Water Commission, the DWR also oversees the well permitting process, which is how groundwater is administered.

In its management of water records statewide, DWR maintains decrees, measurements of streamflow, river conditions, and a repository of policy documents, planning material, and rules and regulations that have been promulgated.

Data collected from many years of administration was gathered into Colorado's Decision Support Systems, a water management system that analyzes and models a great deal of pertinent information for water users and organizations. The DSS can generate maps showing streamflow,

historical diversions, detailed well information, and many more resources helpful for water management organizations or other interested parties.

Changes of Water Rights

The right to use water in Colorado is usufructory and with appropriate water court approval, a water right may be exchanged within the prior appropriation system, sold to another water user, or changed in type or location of use. However, these changes are limited by two important factors: prevention of injury to existing water rights, and no expansion of use of the water right being changed.

A holder of a water right may change the type or place of use of their right if the user demonstrates to the water court that this new use will not result in the water right being enlarged beyond their historical beneficial consumptive use. The goal in this assessment of the historical beneficial consumptive use is to ensure that the amount of water removed from the stream and consumptively used remains the same after this change of water right in order to avoid injury to other water users.

Interstate and Federal Concerns

Colorado is party to nine interstate compacts and two equitable apportionment decrees, which must be taken into account when contemplating the landscape of water law in this state. Interstate water compacts are agreements between states, endorsed by Congress, that establish the signatory states' rights to use water from streams that flow through each of the signatory states. Under the compacts and decrees, some obligations are easily understood and administered, such as in the Laramie River Decree. However, in other river basins, such as the Colorado River basin, matters can be much more complicated; involving several different interstate compacts, Supreme Court decrees, federal laws, and interstate agreements.

Federal programs also affect Colorado water users, most often through permitting processes. Clean Water Act, National Environmental Policy Act, Endangered Species Act, and Corps of Engineers permitting are just some examples of processes through with the federal government, or interested stakeholders, may become involved in a water management project or process.

Moving Forward

The evolution of Colorado water law through the courtroom and the work of the General Assembly present both challenges and opportunities for Colorado's Water Plan. The formality of the prior appropriation system, the increased planning and costs associated with the "can and will" requirements, and the requirements of adjudication in water court all make for a difficult landscape. However, programs like the Alternatives to Agricultural Transfer Grant Program, and ongoing studies and processes on water banking are showing potential flexibility within the framework, and demonstrating how the system can be used to the benefit of a greater number of water users.

Recent agreements between multiple stakeholders, such as the Colorado River Cooperative Agreement between Denver Water and over two dozen West Slope entities, illustrate how

Colorado's water rights system is up to the challenge of achieving maximum use of the State's water resources for the greatest benefit.

Beyond cooperative agreements, programs encouraging temporary leasing and fallowing, or agriculture providers working more collaboratively with municipalities, opportunities may exist within the court system itself. The prior appropriation system and later, the water court system, were established to help create predictability for current and future water uses, and to protect personal usufructory property rights of water users. As opportunities for flexibility arise, these rights should be safeguarded, while planning for the future of all.

References

1.2 References:

1. Colorado Revised Statutes, 2012/2013
2. Colorado State Government, www.colorado.gov
3. Colorado Riparian Association article; Stengel, Amy, September 2009
4. U.S. Council on Environmental Quality, www.whitehouse.gov/administration/eop/ceq
5. *U.S. EPA*, www.epa.gov
6. *U.S. Fish and Wildlife Service*, www.fws.gov

1.3 References:

[i] "A Survey of Colorado Water Law" (Mortimer Stone ed.) 47 *Denv. L. J.* 177, 233 (1970).
[ii] Colo. Const. of 1876, art. XVI, § 6.
[iii] C.R.S. §37-92-102 (1)(a).

coloradowaterplan.com
cowaterplan@state.co.us
Direct 303-866-3441

Chapter 5: Water Management

INITIAL DRAFT 5.1: Scenario Planning and Developing an Adaptive Water Strategy

NOTE: This draft section will be modified and supplemented upon receipt of the draft Basin Implementation Plans from the Basin Roundtables and additional work completed by the IBCC.

In developing Colorado's Water Plan and Statewide Water Supply Initiative 2016, the Colorado Water Conservation Board (CWCB), Basin Roundtables, and the Interbasin Compact Committee adopted the scenario planning process to initiate a conversation among stakeholders about planning uncertainties and emerging water resource challenges. These groups worked together to explore how to meet increasing water needs of growing communities while balancing tradeoffs between competing water interests. Of particular concern, Colorado must contend with the significant and growing water needs of communities by 2050. Scenario planning provides a framework within which all of Colorado's water management decisions exist. Scenario planning helps answer how much water we may need in the future, how much water may be available to meet our future needs, and what types of projects future generations will support. The subsequent sections in Chapter 5 inform the detail for how we can more specifically respond to an uncertain future within the scenario planning context. This section provides an overview of what scenario planning is and how it can be used to adapt to an uncertain future.

Scenario Planning: Planning for Multiple Futures

CWCB adopted the cutting-edge approach to water planning, which is now used by many of the major water providers throughout the West: scenario planning. . Scenario planning enables planners to formulate adaptable planning strategies that can be applied in highly dynamic and uncertain planning environments (Van der Heijden, 2005). Scenario planning assumes that the future could differ widely from the past, and that it is not possible to know at this time how future conditions and events will ultimately unfold. Therefore, scenario planning focuses on providing flexibility for whatever future transpires (Schwartz, 1991). The planning emphasis is based on identifying key driving forces and critical uncertainties operating within the planning period as opposed to focusing primarily on events and trends of the past and projecting them into the future (see Figure 5.1).

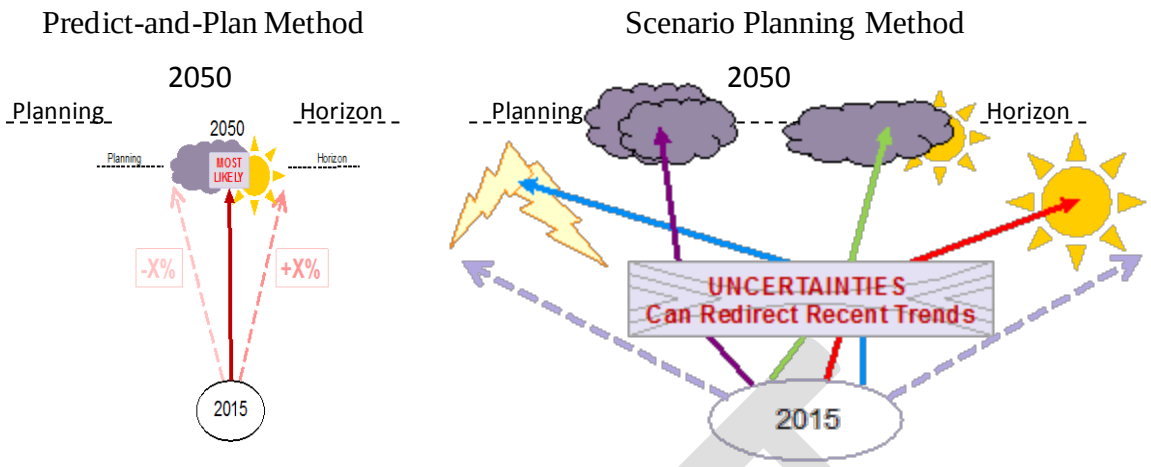

Figure 5.1: The traditional "predict-and-plan" approach compared to the scenario planning approach (adapted from Global Business Network, 2012 & Marra, 2013).

Scenario planning utilizes key driving forces to build multiple plausible futures (i.e. scenarios) instead of just the most probable one developed in the more traditional "predict-and-plan" approach. CWCB explored with stakeholders the implications of multiple plausible futures. Descriptions of each future were developed and used to identify and evaluate a prospective series of implementable projects and initiatives called portfolios. One goal of this work was to identify projects and policies that occur on multiple pathways. These are the common actions that would therefore apply to multiple futures (see Figure 5.2). By implementing successive sets of common actions over time, decision makers can have greater confidence that the policies and investments made in the near term will also be viable in the longer term. The near and longer term actions combine with the scenarios to create a forward-looking pathway of actions that both anticipate and prepare for the emerging needs of the future.

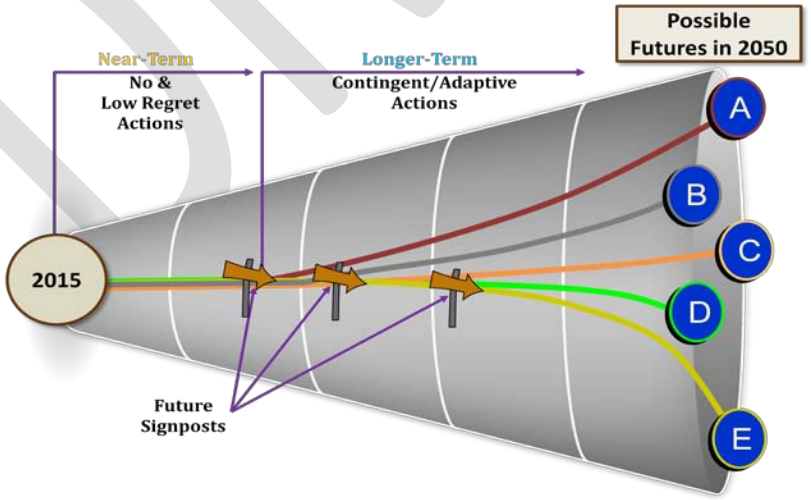

Figure 5.2: Scenario planning identifies successive sets of common actions that apply to multiple futures (adapted from Marra & Thomure, 2009).

In the near term, our way forward is to implement actions common to all or most of the envisioned futures—these are the "no and low regret" actions due to their broad applicability. In the mid to long term, the direction forward may narrow and favor a smaller set of possible futures. Planned actions and strategies would then be reconsidered and updated based on the status of predetermined "signposts" or decision points that help to reveal if past uncertainties now have more clarity. Use of scenarios enables planners to respond and adapt to still emerging issues and to explore the opportunities and challenges that each future presents without reducing options available going forward (Schwartz, 1991).

Developing Alternative Water-Supply Portfolios

The Statewide Water Supply Initiative 2010 introduced the "Status Quo Portfolio"—a set of prospective water supply actions that would likely be required if the trajectories of current trends continue. These response actions included a large transfer of water from the agricultural sector to satisfy a medium-growth projection of municipal and industrial water supply needs. This transfer would result in a significant loss of agricultural lands and could cause potential harm to the environment and Colorado's economy. The general statewide consensus is that the Status Quo Portfolio of actions, and the projected future it assumes, is not desirable for Colorado (Interbasin Compact Committee Annual Report, 2010).

Given these concerns, we initiated a multi-year stakeholder plan development process with the nine Basin Roundtables and the Interbasin Compact Committee. Each Basin Roundtable represents the water interests of a specific region within Colorado, and the Interbasin Compact Committee facilitates conversations among the Basin Roundtables and addresses broader statewide water issues. The plan development process is summarized in Figure 5.4.

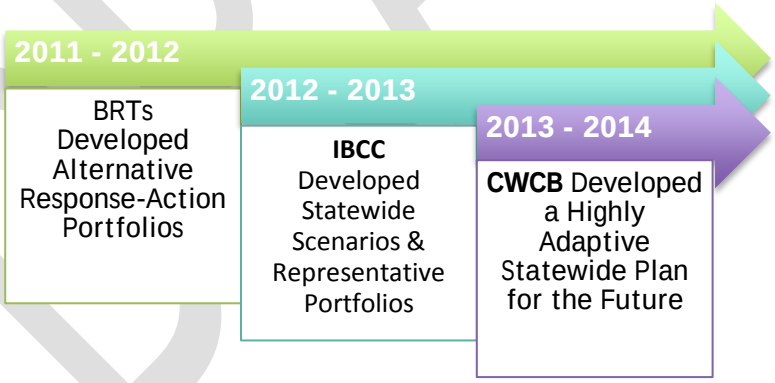

Figure 5.3: Summary of the Stakeholder and Plan Development Process

Each of the nine Basin Roundtables developed one or more statewide water-supply portfolios to address low, medium, or high projections of future water needs for communities (Interbasin Compact Committee Annual Report, 2011). Each potential response-action portfolio, generated through CWCB's interactive Water Supply Future Portfolio & Trade-Off Tool, constitutes a unique combination of possible strategies that could be used to meet a range of municipal and industrial projected water needs. The strategies included conservation, reuse, agricultural transfers, development of water projects within each basin, and trans-mountain water diversions. The tool also quantifies impacts that would result with statewide tradeoffs,

given the synergistic effects of each portfolio. This exercise reveals water supply interdependencies among the various Basin Roundtables by highlighting how choices on one water supply decision can have multiple impacts to the environment, agriculture, municipal needs, cost, and reliability across the State. Most of the 34 portfolios developed by the Basin Roundtables reduced these tradeoffs, thereby minimizing negative effects statewide and for each basin.

The IBCC subsequently synthesized and reduced the thirty four Basin Roundtable-generated portfolios into a smaller set of ten "representative" portfolios. The reduced set addressed projected low, mid-range, and high municipal and industrial water demands. The Basin Roundtables determined that the representative portfolios successfully captured the intent and character of the original thirty-four portfolios.

Formulating Plausible Scenarios

Potential changes in future municipal and industrial water demand and available water supply were among the most important drivers considered by all the Basin Roundtables when developing their portfolios. Some of the Basin Roundtables also considered changing societal values and other drivers outside the control of the water community. The Interbasin Compact Committee took these perspectives into account when it developed the list of nine high-impact drivers to factor into the scenario development process since these will strongly influence the direction of Colorado's water future:

A. Population/Economic Growth	F. Social/Environmental Values
G. Climate Change/Water Supply Availability	G. Urban Land Use/Urban Growth Patterns
H. Energy Economics/Water Demand	H. Level of Regulatory Oversight/Constraint
I. Agricultural Economics/Water Demand	I. Municipal & Industrial Water Demands
J. Availability of Water Efficient Technologies	

Using these drivers, the IBCC developed five scenarios that represent plausible futures, noted below, and matched them with five of the ten representative portfolios of solutions which best met the needs described in each scenario. The scenarios, summarized below, represent how Colorado's water future might look in 2050 even though the actual future at that time will likely contain a mixture of multiple scenarios. The descriptive names given to the scenarios portray the overall essence embodied in their respective views of the future and the descriptions further describe them.

A. Business as Usual: Recent trends continue into the future. Few unanticipated events occur. The economy goes through regular economic cycles but grows over time. By 2050 Colorado's population is close to 9 million people. Single-family homes dominate, but there is a slow increase in denser developments in large urban areas. Social values and regulations remain the same, but stream flows and water supplies show increased stress. Regulations are not well coordinated and create increasing uncertainty for local planners and water managers. Willingness to pay for social and environmental mitigation of new water development slowly increases. Municipal water conservation efforts slowly increase. Oil shale development continues to be researched as an option. Large portions of agriculture land around cities are developed by 2050. Transfer of water from agriculture to urban uses continues. Efforts to

mitigate the impacts of the transfers slowly increase. Agricultural economics continue to be viable but agricultural water use continues to decline. The climate is similar to the observed conditions of the 20th century.

B. Weak Economy: The world's economy struggles, and the state's economy is slow to improve. Population growth is lower than currently projected, slowing the conversion of agricultural land to housing. Maintaining infrastructure, including water facilities, becomes difficult. Many sectors of the state's economy begin to struggle financially, including most users of water and water-dependent businesses. There is little change in social values, levels of water conservation, urban land use patterns, and environmental regulations. Regulations are not well coordinated and create increasing uncertainty for local planners and water managers. Willingness to pay for social and environmental mitigation decreases due to economic concerns. Greenhouse gas emissions do not grow as much as currently projected and the climate is similar to the observed conditions of the 20th century.

C. Cooperative Growth: Environmental stewardship becomes the norm. Broad alliances form to provide for more integrated and efficient planning and development. Population growth occurs consistent with current forecasts. Mass transportation planning concentrates more development into urban centers and mountain resort communities, thereby slowing the loss of agricultural land and reducing the strain on natural resources compared to traditional development. Coloradans embrace water and energy conservation. New water-saving technologies emerge. Eco-tourism thrives. Water development regulations are more restrictive and require high water-use efficiency along with environmental and recreational benefits. Environmental regulations are more protective and include efforts to re-operate water supply projects to reduce impacts. Demand for more water-efficient foods reduces water use. There is a moderate warming of the climate, which results in increased water use in all sectors, impacting stream flows and supplies. This dynamic reinforces the social value of wide-spread water efficiency and increased environmental protection.

D. Adaptive Innovation: A much warmer climate causes major environmental problems globally and locally. Social attitudes shift to a shared responsibility to address problems. Technological innovation becomes the dominant solution. Strong investments in research lead to breakthrough efficiencies in the use of natural resources including water. Renewable and clean energy become dominant. Colorado is a research hub and has a strong economy. The relatively cooler weather in Colorado (due to its higher elevation) and high tech job market causes population to grow faster than currently projected. The warmer climate increases demand for irrigation water in agriculture and municipal uses, but innovative technology mitigates the increased demand. The warmer climate reduces global food production increasing the market for local agriculture and increasing food imports to the state. More food is bought locally increasing local food prices and reducing the loss of agricultural land to urban development. Higher water efficiency helps maintain stream flows even as water supplies decline. The regulations are well defined and permitting outcomes are predictable and expedited. The environment declines and shifts to warmer weather species. Droughts and floods become more extreme. More compact urban development occurs through innovation in mass transit.

E. Hot Growth: A vibrant economy fuels population growth and development throughout the state. Regulations are relaxed in favor of flexibility to promote and pursue business development. A much warmer global climate brings more people to Colorado with its relatively cooler climate. Families prefer low-density housing and many seek rural properties, ranchettes, and mountain living. Agricultural and other open lands are rapidly developed. A hotter climate decreases global food production. Worldwide demand for agricultural products rises, greatly increasing food prices. Stream flows and water supplies decline. The environment degrades and shifts to warmer weather species. Droughts and floods become more extreme. Communities struggle unilaterally to provide the services needed for the rapid business and population growth. Fossil fuel is the dominate energy source, and there is large production of shale oil, coal, natural gas, and oil in the state.

The five scenarios collectively capture a broad range of future supply-and-demand possibility and uncertainty. Of the five scenarios, "Business as Usual" is the most conventional while "Adaptive Innovation" and "Hot Growth" are the most difficult to prepare for because of the high water demands combined with the effects of climate change. The challenge is not to pick the most likely or attractive future; instead, it is to develop the capacity to be prepared for all of them.

Developing an Adaptive Water-Management Plan

In analyzing the portfolios, the IBCC identified common near-term strategies and actions which would provide baseline benefits for all five of the envisioned scenarios. Some of these strategies would provide more immediate benefits in the near term while others would serve as pre-positioned launching points for additional adaptive actions should they be needed in the mid to longer terms. These near-term commonalities are called "no and low regret" strategies and actions since they would most likely be viable no matter how the future might ultimately unfold. The recommended no and low regret actions include the following:

- **Minimize Statewide Agricultural Acres Transferred and Implement Agricultural Sharing Projects:** Limit traditional permanent dry-up of agricultural lands by supporting lower-impact alternatives for at least a quarter million people in the near future. At the same time, track the reliability of these alternatives, and plan and preserve the option of additional agricultural transfers should a future scenario necessitate this action.
- **Plan and Preserve Future Options for Developing Unallocated Waters:** Develop additional water supplies from unallocated water on the West Slope for local use to serve a minimum of 175,000 people and the associated jobs needed to support them in the near future. At the same time, plan for and preserve the option for an additional transbasin diversion, should a future scenario necessitate such a project.
- **Establish Medium Conservation Strategies:** Implement strategies to meet medium levels of conservation and apply at least half of these savings to meet future municipal and industrial needs for approximately 800,000 people and the jobs needed to support them in the near future. At the same time, track the reliability of these conservation savings, and plan for how additional conservation savings could be achieved, should a future scenario necessitate this action.

- **Implement Projects and Methods that Support the Environment and Recreation:** Implement local projects, especially those that support imperiled species and recreational areas that are important to local economies.
- **Strive for High Success Rates for Projects and Methods that Are Already Planned:** Work to support the projects that are already planned, as these already have a project proponent and are often smaller and less controversial than many of the other project options. Statewide these projects may provide enough water for 1.7 million people and the associated jobs needed to support them in the near future. Continue to track the success rate of these projects and their ability to meet future community water needs.
- **Assess and Implement Storage Projects & Other Infrastructure:** Implement storage and other infrastructure to maximize flexibility and reliability. Especially focus on options that support multiple needs, such as for communities, agriculture, and the environment.
- **Implement Water Reuse Strategies:** Implement strategies that encourage increased use of recycled water.

These baseline actions were combined to form the "No and Low Regrets Portfolio." Subsequent analysis indicated that if this portfolio were successfully implemented in the near term, it would not only provide better water-management results when compared to the "Status Quo Portfolio" but it would also be more consistent with Colorado's values as expressed by the Basin Roundtables. Successful implementation of the "No/Low Regrets Portfolio" would minimize impacts to Colorado's agricultural economy and would better support the State's environmental and recreational attributes. However, the "No and Low Regrets Portfolio" only satisfies the municipal and industrial water supply needs of the "Weak Economy" scenario and this would only be possible if the portfolio were successfully implemented in the near term. If medium or high water demands had to be met as envisioned in the other scenarios, additional portfolio actions would be needed in the mid and long term.

Building on the earlier work of the Basin Roundtables and the Interbasin Compact Committee, the CWCB developed a scenario-based adaptive water-management plan to address possible outcomes of key uncertainties. The adaptive framework (see Figure 5.5), shows action pathways that are directed toward different possible futures—futures that hinge upon how the primary drivers change over time: *Municipal & Industrial Water Demand*, *Water Supply Availability*, and *Social Values*. If these drivers exert enough impact at critical times, they could potentially tip the still evolving future toward one scenario or another. These tipping points occur at pathway junctions, which serve as water management decision points or "signposts" that can lead toward different actionable pathways and futures. By developing an adaptive water-management framework, mangers and decision makers will be more aware of approaching signposts and can anticipate the need to make timely water management decisions.

Future changes in *Municipal and Industrial Water Demands* may trend "lower" or "higher" relative to the mid-level water demand forecast used in previous Statewide Water Supply Initiative efforts. Such a change may be anticipated by tracking indicators of economic activity and demographic growth as well as other secondary factors. *Water Supply Availability* may similarly trend "lower" or "higher" depending on climate change, watershed hydrology, legal

constraints associated with Colorado's interstate compacts, and environmental regulations. Water Supply Availability will also be assessed as trending lower or higher over time as compared to earlier versions of the Statewide Water Supply Initiative. The third critical driver, *Social Values,* is a measure of statewide public sentiment; it may trend toward a more "green" orientation or it may shift toward greater "resource utilization." "Green" values will likely favor more dense, low-impact urban development, greater reliance on water use and energy efficiency, greater protection of the environment and recreational resources, and preservation of agriculture and open space. Values associated with more intensive "resource utilization" will gravitate toward full use of existing natural sources as well as the development of new ones to satisfy municipal and industrial water demands.

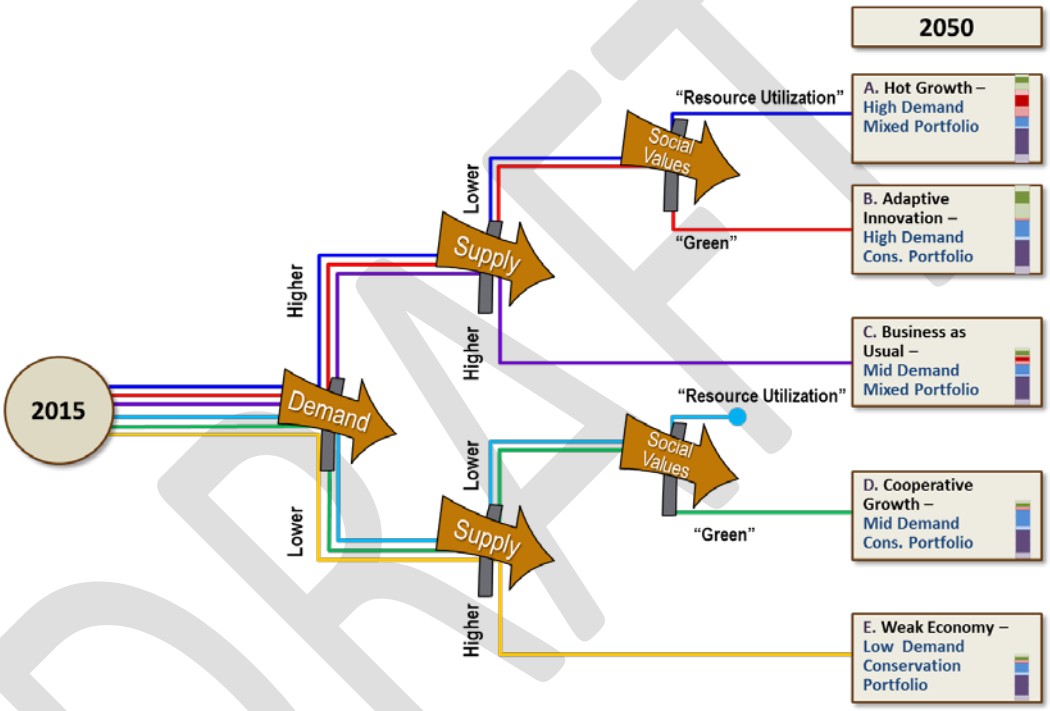

Figure 5.4: An adaptive planning framework based on the potential impact of three critical drivers.

Building upon the work of the Basin Roundtables and the Interbasin Compact Committee, CWCB developed the adaptive water-management plan (see Figure 5.7). This scenario-based framework allows for incremental implementation of future portfolio response actions beyond the "no and low regret" actions recommended in the near term. Pre-positioned portfolio actions – such as increased levels of conservation, agricultural transfers, or trans-basin diversions – can be implemented at specified key signposts. This will allow decision makers to respond adaptively to changes that cannot be predicted with certainty as the still emerging future continues to unfold. Primary examples of these uncertainties include changing water demands, water supplies, and social values.

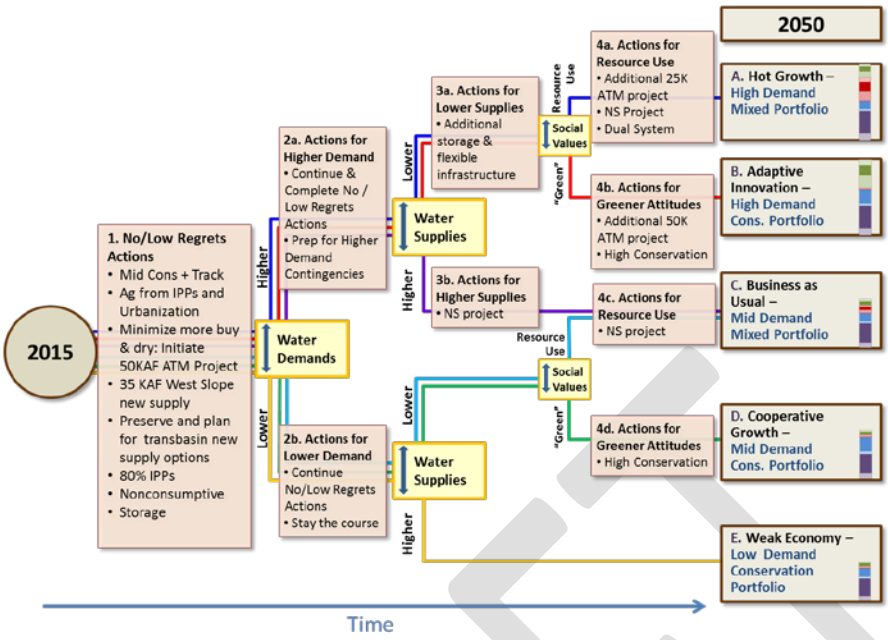

Figure 5.5: Summary of CWCB's adaptive water-management plan through 2050.

The scenario planning process highlights a critical water management vulnerability. If the recommended "no and low regret" actions are not fully implemented within the next 15 years and/or if they do not perform as well as expected, then the gap between municipal and industrial water needs and available supplies in 2050 will be greater than what has been envisioned in any of the portfolios developed by the Basin Roundtable. This outcome would likely result in the need to develop additional new water supplies that have yet to be identified. Therefore, CWCB recommends committed and timely action in the near term.

This adaptive water-management plan provides a roadmap to a still evolving future. Given the many uncertainties, the plan must be a living document. As new critical drivers arise or as decision points change over time, the scenarios and associated response-action portfolios will need to be reassessed and revised in subsequent updates to the Statewide Water Supply Initiative.

References

- Global Business Network, 2012. *Developing and Using Scenarios: Guide and Workbook*, Oakland, California, 2012.
- Marra, R.P., 2013. *Scenario Planning: An Approach to Managing Uncertainty*, Workshop presentation materials given at the Annual Convention of the Colorado Water Congress 2013; Denver, Colorado; January 30, 2013.
- Marra, R.P. and T.M. Thomure, 2009. Scenario Planning: Making Strategic Decisions in Uncertain Times, *Southwest Hydrology*, Issue: May/June 2009.
- Schwartz, P., 1991. *The Art of the Long View*, Doubleday, New York.
- Van der Heijden, K., 2005. *Scenarios: The Art of Strategic Conversation,* 2nd ed., John Wiley & Sons, New York.

coloradowaterplan.com
cowaterplan@state.co.us
Direct 303-866-3441

5. Water Management

DRAFT 5.2: Natural Disaster Management

Colorado is a state of great variability, with terrain that includes both low laying plains and high mountain peaks and everything in between. This geographical diversity also influences the variability we see in precipitation. While the statewide average annual precipitation is 16 inches, not all areas of the state receive equal amounts; the San Luis Valley receives only seven inches annually while some mountain regions receive more than 60 inches (Doesken et al. 2003). Precipitation is not only geographically variable, but also seasonally variable, and can affect how much water is available throughout the year. Too much precipitation can result in floods, while too little can lead to droughts and fires. All can have detrimental impacts to the state and its economy, and as was seen in 2011 and 2013—all can occur in a single year. All three of these naturally occurring phenomenon have affected the state since long before President Ulysses S. Grant granted statehood in 1876, and they will continue to occur well into the future.

Natural disasters such as these do not just impact those in their path, but can have serious negative effects on our water systems and influence the amount of water available to meet the needs of Coloradans. For example, in 2002, the driest single year on record (Doesken 2003), Colorado suffered a number of high-severity wildfires, the largest of which was the Hayman Fire. Studies have shown that the fire resulted in elevated levels of nitrate and turbidity in streams located in the burn area, and levels remained elevated for five years after the event concluded (Rhoades et al. 2011). The CWCB has also collected field data and published reports on substantial hillside and stream erosion that takes place following medium and high intensity wildfires (CITE). Water providers also report increased levels of debris in reservoirs (Denver Water, 2010), which affect not only water quality but also the operations of the infrastructure. Denver Water, which was heavily affected by the Hayman fire has spent $30 million in wildfire related dredging and maintenance at their Strontia Springs reservoir (Denver Water, 2010). In 2012, another year of statewide drought, Colorado Springs Utilities and the City of Fort Collins also experienced impacts and incurred costs from separate wildfires that plagued the watersheds that supply their municipal water. Further south in the Rio Grande basin, the 2013 West Fork Complex fire resulted in significant damage to watershed.

Drought, independent of wildfire, can also result in substantial impacts to the state. In 2012, it is estimated that statewide lost revenues resulting from the drought in the agricultural sector alone topped $409 million. When secondary and tertiary economic impacts are to local communities are factored in the loss increases substantially to $726 million statewide (Pritchett 2013). Drought can also result in decreased air quality, stress to water delivery infrastructure, negative impacts to: wildlife, the environment, recreation and tourism (CWCB 2013a). Drought is unique in that it can last for weeks, months or years; and the longer a drought persists the more impactful it is likely to be. For instance, a municipality may be able to weather a single-year drought by utilizing reservoir

storage and drought response measures, but if the storage is not replenished, subsequent years become increasingly more difficult to manage. In the agricultural sector the same is true; ranchers forced to cull herds in response to drought may take decades to recover their stock, or may never recover at all.

While too little precipitation carries significant consequences, too much in a short period of time can also devastate a region- as portions of Colorado saw firsthand in September of 2013. Floods can occur anytime of the year, resulting from rapid snowmelt intense precipitation events or infrastructure failure. Like drought, all regions of the state are vulnerable. Colorado has invested heavily in developing flood mitigation activities, both structural and non-structural, that can help reduce adverse impacts, but. Still floods are still a naturally occurring event and will continue to happen.

In the fall of 2013, some regions of the state received as much as 19 inches of rain in just a few days or less—equivalent to nearly a full year of precipitation—resulting in widespread flooding. As many as 88 weather stations exceeded 24 hour precipitation records and the hardest hit areas received over 600% of average precipitation for the month (Colorado Climate Center). Entire communities were inundated with water. Not only did people lose their lives, but power was knocked out, and homes, businesses, and roads were damaged or destroyed. Initial estimates of economics losses have reached $2 billion (CWCB 2013b, p. 33). Aside from the initial water damage, floods also affect water supply through damaged water delivery systems and decreased water quality. Water supply infrastructure such as diversions and headgates, were left completely disconnected from their historical source of water supplies. These impacts can take weeks, months, or years to fully repair, and some damage may be too great to repair at all.

Given that water influences nearly all sectors of Colorado's economy and that too little or too much can result in significant consequences, it is also important to understand how a changing climate may affect the frequency, duration, and intensity of these natural hazards. The Colorado Water Conservation Board has looked at how water resources will be impacted by climate change through a number of studies including: Climate Change in Colorado (Lukas 2014), The Colorado River Water Availability Study (CWCB 2012); The Joint Front Range Climate Change Vulnerability Study (Woodbury et al. 2012); the Colorado Drought Mitigation and Response Plan (CWCB 2013a); and the Colorado River Basin Water Supply and Demand Study (US Bureau of Reclamation 2012).

The most likely impact of future climate change on water supplies is a shift in the timing of runoff. Both the Colorado River Water Availability Study (CWCB 2012) and the Joint Front Range Climate Change Vulnerability Study (Woodbury et al. 2012) project that runoff timing will shift 2-3 weeks earlier by mid-century due to increased temperatures. This may affect water right holders who are only permitted to withdraw their allocation during specific timeframes or those with limited storage. It is also likely to result in decreased late summer streamflow, a consequence of both increased temperatures as well as the projection that precipitation will generally increase in the winter months and decrease in the summer months (CWCB 2012). At the same time, increased population and higher crop irrigation requirements (CWCB 2012) will further exacerbate the situation.

While precipitation trends are far less clear than temperature trends, some studies have looked into what floods and droughts might look like under an altered climate. Our paleoclimate record shows droughts that are longer lasting and more intense than what has been experienced throughout the 20th and early 21st century (Lukas, 2014). However, there is much variability across the state. For

instance, in the Yampa/White River basin, the hydrologic paleo record shows that streamflows are variable enough to capture all but the wettest projected flows under various climate change conditions. Conversely, in the Arkansas River Basin paleo flows accurately represent only one of the climate projections, and none of the driest. This, further reinforces that the past may not always be a good predictor of the future.

When flood and drought extremes are directly examined under future climate conditions, significant variability across the state remains. On the Colorado River at Cameo, the average intensity for droughts, similar in length to our observed record, was somewhat greater than the historical intensity (-24% versus -19%); while the intensity of surplus spells, similar in length to our observed record, was considerably lower than the historical surplus (27% versus 46%). When climate projections are taken into account future projected drought intensities for the same length event range from -19% to -32%; while surplus, or flood, intensities range from 17% to 38%. The frequency of such events depends on which climate projections are used (CWCB, 2012b).

The frequency and intensity of wildfire may also change under a warmer climate and will likely continue to affect watersheds and ecosystems. While it is well understood that Colorado will continue to have a variable climate with wildfire, droughts and floods long into the future, the influence that climate will have on these events is more uncertain. Utilizing scenario planning enables the State to modify and adapt planning processes as new information is available, increasing flexibility and resiliency.

Moving Forward

NOTE: This draft section will be modified and supplemented based upon receipt of the draft Basin Implementation Plans from the Basin Roundtables and additional coordination with other state, local, and federal agencies to make sure that all efforts have been captured.

As we look back at our recent history the last three years have demonstrated the extreme variability that Colorado faces. The year 2011 was historically wet, 2012 historically dry, and 2013 both historically dry and historically wet. This variability presents immense challenges related to water supply planning in Colorado.

The 2013 flood stories of damaged water infrastructure and diversion structures; facilities that were severely disconnected from the stream or river channels; streams and rivers that significantly changed their course, watershed plagued by fire then flood and thousands of acres that would not have been able to be irrigated in 2014 if the state and others had not responded quickly with grant and loan resources, tell us two things.

The first is that Coloradans know how to face and recover from disasters. Many farmers were out in the water and mud trying to assess and even repair their systems as soon as the rain stopped. People have come together to support their neighbors and there have been thousands of heroes we will never know about who made a huge impact on the lives of their neighbors and community.

Second, the fact is that even when people come together to face catastrophe, having a plan and sufficient resources makes it easier, especially when the long effort of recovery replaces the immediate swell of disaster.

As described in section *5.1 Scenario Planning and Adaptive Strategies* the future is uncertain. While Section 5.1 describes what types of projects and methods we may need on the average, this section focuses on what we may face from year to year. In any given year we need to be prepared to respond adequately to the extremes of flood, drought, and fireIn order to support local communities and prepare for the disaster that affect our water supply, the state has a number of agencies and programs working to both to prepare for, and respond to, extreme events, and will continue these efforts into the future.

Communities in Colorado have a responsibility under the State's floodplain management standards (e.g. floodplain rules and regulations that meet or exceed the FEMA minimum requirements) to foster community resiliency and wisely develop in light of flood events. CWCB works with the Colorado Office of Emergency Management and the Federal Emergency Management Agency (FEMA) to provide technical and financial support for these activities. In recent years, Colorado's flood regulations have been improved by increasing freeboard requirements for homes and businesses, with additional protection for critical infrastructure such as hospitals, fire stations, and nursing homes. The Flood Hazard Mitigation Plan for Colorado (CWCB 2013b) also helps the state and local communities better prepare for these events.

For drought, The Colorado Drought Mitigation and Response Plan (CWCB 2013a) lays out monitoring, mitigation and response actions to ensure that Colorado is adequately prepared for drought. The Water Availability Task Force brings together state, local and federal agencies to monitor conditions on a monthly basis; and once an event occurs the Drought Task Force is activated, bringing together a multitude of state agencies to collaboratively address the issues that arise. Funding and technical assistance for local communities also exists.

Technical and financial support for healthy watersheds which can help reduce the risk of catastrophic fires also exists. This is further described in *Section 5.3 Watershed Health and Management*. State agencies work closely with local and federal agencies on fire mitigation, response, and recovery, as many watersheds fall on federal lands our intergovernmental collaboration is key to protecting those resources. Additionally, as a headwaters state, our downstream neighbors have a vested interest in maintaining our healthy watersheds that in-turn produce their healthy water. Building upon these relationships may also contribute to better long term protection.

Although much preparation exists for the eventualities of flood, drought and fire, these events rarely seem to unfold in exactly in the way they were predicted. That is why flexibility is critical in fostering effective and efficient response to these disasters when they occur. Colorado Flood, drought and wildfire plans are all updated regularly and make up part of the State's overall Natural Hazard Mitigation Plan that is approved by both the Governor and FEMA. These updates incorporate lessons learned and together with the partnerships we've built enable Colorado to respond even better to future natural disasters.

References:

Colorado Climate Center. (Undated) Colorado Flood of 2013 Website. Retrieved from http://coflood2013.colostate.edu/

Colorado Water Conservation Board (CWCB) (2012). Colorado River Water Availability Study Phase I report. Retrieved from

http://cwcbweblink.state.co.us/WebLink/ElectronicFile.aspx?docid=158319&searchid=78f0eafa-0b8f-4d8a-9ff3-faf67cc82f52&dbid=0

Colorado Water Conservation Board (CWCB) (2012b). Colorado River Water Availability Study Phase I - Spell Statistics (refinement to CRWAS Phase I Task 6.7). Retrieved from http://cwcbweblink.state.co.us/WebLink/ElectronicFile.aspx?docid=158382&searchid=e42eb888-af4f-4350-a4c8-e63266c40c51&dbid=0

Colorado Water Conservation Board (CWCB) (2013a) Colorado Drought Mitigation and Response Plan. Retrieved from http://cwcb.state.co.us/water-management/drought/Pages/StateDroughtPlanning.aspx

Colorado Water Conservation Board (2013b). Flood Hazard Mitigation Plan for Colorado. Retrieved from http://cwcb.state.co.us/water-management/flood/Pages/main.aspx

Denver Water. (Undated) 2010 Comprehensive Annual Financial Report. Pg I-17. Retrieved from http://www.denverwater.org/docs/assets/6C28411A-E112-FBD9-E5A84D8D42B9A128/2010_annual_report.pdf

Doesken, N.J., R.A. Pielke, Sr. and O. A.P. Bliss (2003). Climate of Colorado. Climatography of the United States No. 60 (updated January 2003). Retrieved from http://ccc.atmos.colostate.edu/climateofcolorado.php

Pritchett, J., C. Goemans, and R. Nelson (2013). Estimating the Short and Long - term Economic & Social Impacts of the 2012 Drought in Colorado. Retrieved from http://cwcbweblink.state.co.us/WebLink/0/doc/172871/Electronic.aspx

Rhoades, C.C., D. Entwistle and D. Butler (2011). The influence of wildfire extent and severity on streamwater chemistry, sediment and temperature following the Hayman Fire, Colorado. *International Journal of Wildland Fire*, 20: 430-442

U.S. Bureau of Reclamation (2012). Colorado River Basin Water Supply and Demand Study. U.S. Department of the Interior, Bureau of Reclamation. Retrieved from http://www.usbr.gov/lc/region/programs/crbstudy/finalreport/index.html

Woodbury M. , M. Baldo, D. Yates, and L. Kaatz (2012). Joint Front Range Climate Change Vulnerability Study. Published by Water Research Foundation. Retrieved from http://cwcbweblink.state.co.us/WebLink/ElectronicFile.aspx?docid=157704&searchid=4575fc8b-6a7b-4a33-bbf8-35266b2c6742&&dbid=0

coloradowaterplan.com

cowaterplan@state.co.us

Direct 303-866-3441

Statewide Basin Roundtable Outreach Efforts

Status Update January 17, 2014

This status update was prepared by the Colorado Water Conservation Board in order to update stakeholders statewide on recent developments related to Colorado's Water Plan. Please check the Colorado's Water Plan website (www.coloradowaterplan.com) often for additional updates and email cowaterplan@state.co.us with any questions.

Summary

The Colorado Water Conservation Board (CWCB) maintains an Outreach and Communications Plan designed to provide a strategy for communications and outreach activities related to Colorado's Water Plan. The Outreach and Communications Plan heavily relies upon the work of the Basin Roundtables. In addition to regular attendance and participation at Basin Roundtable (BRT) meetings, the CWCB is working together with the BRT members to develop communications materials and messaging that they can disseminate and use in their conversations about the Basin Implementation Plans (BIPs) and Colorado's Water Plan in their communities.

Much of this work is happening through the existing Public Education, Participation, and Outreach (PEPO) Workgroup of the IBCC. PEPO Education Liaisons in each basin are working with BRT members, their BIP consultant teams, local stakeholders, the CWCB and Colorado Foundation for Water Education (CFWE) to share information regarding the Basin Implementation Plan development process, how it relates to Colorado's Water Plan, and how best to involve the public in these efforts.

New this month, PEPO has implemented an easy and transparent way for the basins to share information on BRT outreach activities. As the BRTs plan and implement education and outreach activities in their basins, the PEPO Education Liaisons will provide summary updates of activities on a regular basis. The first of these updates is included below. This and future updates will be shared at CWCB Board meetings, posted online at www.coloradowaterplan.com, sent out to the PEPO Workgroup via email, and shared at other events such as the Statewide Basin Roundtable Summit on March 6, 2014.

Arkansas River Basin – January 2014 Outreach Summary

- Arkansas River Basin Outreach Team
    - Perry Cabot, PEPO Education Liaison (through January, 2014)
    - Terry Book, PEPO Education Liaison (beginning January, 2014)
    - BIP Consultant: CDM Smith and WestWater Research
- The Arkansas Basin Roundtable (Arkansas BRT) reports several ongoing outreach tactics, along with two (2) major events held in 2013 for the purpose of educating the water-interested public. Additionally, policy-makers were a specific target audience that was focused upon in 2013.
    - Due to the interest in water-related topics by local newspapers, in particular The Pueblo Chieftain, the Arkansas BRT is fortunate to receive coverage by Chris Woodka. Mr. Woodka consistently attends roundtable meetings and reports on major decisions reached at the monthly meetings.
    - From April 23-25, 2013 several members of the Arkansas BRT membership attended the 19th annual Arkansas River Basin Water Forum (ARBWF) (www.arbwf.org), which was held in Walsenburg, CO and attended by approximately 120 people. The inclusion of Walsenburg as a new host for the ARBWF was noteworthy, in that representatives from Huerfano County developed stronger relationships with the broader Arkansas BRT membership. Each year, the ARBWF counts on the Colorado Water Conservation Board for its longstanding support of this event.
    - On October 7, 2013, the Arkansas BRT co-hosted a major event, "Valuing Colorado's Agriculture: A Workshop for Policy-Makers," along with the Colorado Ag Water Alliance. The Colorado Water Conservation Board was among the sponsors of this event, which hosted experts from the Western US to bring their expertise on topic of "valuing" water as it is used in irrigated agriculture, and the attendant benefits of economies based on agricultural water. The event was attended by over 150 people from regions across the state. The morning session of presentations is available at the Colorado Ag Water Alliance website (www.coagwater.org).
- Future Activities Planned:
    - Among the Arkansas Basin Goals and Measurable Outcomes is the goal of developing a clear vision of the Arkansas basin's water needs including the value of agriculture and recreation and take a leadership role to communicate those visions throughout the basin.
    - Additionally, the Arkansas BRT has three outreach sessions (via BIP consultant) in the planning stages, 1) Arkansas Basin Water Forum - April 2014, 2) Colorado Springs Community Outreach - June 2014, and 3) Pueblo Community Outreach - August 2014. The Roundtable has also engaged a consultant (Pikes Peak Water Authority) to work on water efficiency for the Basin Implementation Plan.

Colorado River Basin – January 2014 Outreach Summary

- Colorado River Basin Outreach Team
    - Caroline Bradford, PEPO Education Liaison
    - BIP Consultant: SGM, Inc.
    - Additional Consultant for Outreach: Hannah Holm, Colorado Mesa University

- The Colorado Basin Roundtable (Colorado BRT) has begun developing its Basin Implementation Plan, and this has become the focus of education efforts. The priories are to make citizens aware of the planning process and get input from them. Key activities have included the following, which have all been carried out with input from Basin Roundtable members:
    - A new, very short base PowerPoint has been developed by the Water Center at CMU for Basin Roundtable members to use in community presentations. This is available here: http://www.coloradomesa.edu/watercenter/documents/CBRT-waterplan-10-22-13.pptx
    - Colorado BRT members helped develop an extensive spreadsheet of local government and civic groups that are being contacted for help in spreading the word via presentations and/ or newsletters to their members.
    - Presentations using the PowerPoint have been given to the Middle Colorado Watershed Group in Rifle; Summit County Mayors, Managers & Commissioners; Grand County Mayors, Managers & Commissioners; and Grand Junction Daughters of the American Revolution. Presentations are also scheduled for the Water Center at CMU's annual water course in February and an Eagle County Watershed Council "Waterwise Wednesday" in February.
    - A new Colorado BIP website has been developed: http://www.sgm-inc.com/coloradobip as well as FaceBook and twitter accounts (see links on website).
    - Several of the weekly articles distributed by the Water Center at CMU have discussed the plan, and a unified series of articles will be marketed to news outlets across the basin within the next few weeks. News articles already published are archived here: http://www.coloradomesa.edu/watercenter/RoundtableEducationProject.html
    - The Basin Roundtable BIP team has developed, in addition to an overall outreach plan, a draft media plan that includes both the articles and ads to draw attention to the website and survey.

Gunnison River Basin – January 2014 Outreach Summary

- Gunnison River Basin Outreach Team
    - George Sibley, PEPO Education Liaison
    - BIP Consultant: Wilson Water Group
    - Additional Consultant for Outreach: Hannah Holm, Colorado Mesa University
- The Gunnison Basin Roundtable (Gunnison BRT) PEPO Liaison is working on the following:
- The Gunnison BRT PEPO Liaison will have the 2014 Education Action Plan completed in time to send to the Roundtable members before the February 3 meeting, so it may be considered and possibly adopted.
- The Gunnison BRT PEPO Liaison is communicating with Greg Johnson of the Wilson Water Group, consultant for the Gunnison BRT Basin Implementation Plan, on meetings, focus groups or other communications needed to initiate with stakeholder groups or other entities in the Gunnison Basin.
- The Gunnison BRT PEPO Liaison is working with Hannah Holm of the Colorado Mesa University Water Center on a general plan of disseminating BIP information and other water-related information or positions of general interest through regional media, and developing a website for responses from readers and inviting participation in an ongoing online survey.

- The Gunnison BRT PEPO Liaison is working with Jeff Sellen and other faculty in the Environmental Studies, Outdoor Recreation, and other water-relevant programs at Western State Colorado University, on ways to engage (not just "educate" but engage) young people in a great water awareness and participation in water stewardship activities, including:
    - Trying to set up high school and university assembly programs with the "Protect Our Winters" winter-sport athletes from the Upper Colorado headwaters counties, with the intent of establishing a similar program for the Gunnison Basin with Western's winter-sports teams (many of whom are enrolled in the afore-mentioned water-relevant university programs).
    - Developing two types of paid student internships (in collaboration with the Upper Gunnison River District): one, for a Western student with good communication skills, to develop a website, materials for local media and social media that will "speak" to the younger mind and point toward the ambiguous future; and the second, a "community organizer" internship for a student with good people skills and organizing ability, to put together work groups from the schools and community for labor-intensive riparian and wet-meadow restoration work.
- The Gunnison BRT PEPO Liaison is working with the Gunnison Arts Center on a project to attempt to stir up the "passion" of the general public for their water resource and the rivers from which the water comes – a "right-brain" stimulus to see if it will result in more willingness to participate in the "left-brain" analysis and evaluation necessary to develop and execute a viable water plan for the future. Activities here include:
    - Publication this summer of a "Gunnison Valley Journal," a compilation of short stories and essays, poetry, photography and drawings about our rivers and streams and our uses of their water;
    - Creation by high school students of water-related art and sculpture projects for display around the valley communities.
    - Invitation to visual arts for a juried art show this summer, with cash awards, in conjunction with the Colorado Water Workshop and the Gunnison River Festival.
    - Presentation of a series of water-related films this winter and spring.
    - Composition of short water-related songs by local musicians, to be played as PSAs by local radio stations.

North Platte River Basin – January 2014 Outreach Summary

- North Platte River Basin Outreach Team
    - Debbie Alpe, PEPO Education Liaison
    - BIP Consultant: Wilson Water Group
- The North Platte Basin Roundtable (North Platte BRT) has received a WSRA Grant to work with Wilson Water Group to complete the North Platte Basin Implementation Plan.
- The North Platte BRT met September 24, 2013 with Wilson Water Group consultant Greg Johnson to discuss BIP scope of work, timeline and for an initial discussion of goals and measurable outcomes.
- The November 12, 2013 North Platte BRT meeting included a work session with Greg Johnson to conduct a more in depth discussion identifying the BIP Goals and Measurable Objectives and Outcomes.
- During the most recent December 17, 2013 North Platte BRT meeting, consultant Greg Johnson facilitated a work session addressing one of our BIP Goals; Maintain and maximize the

consumptive use of water in the depletion allowance of the Equitable Apportionment Decree and the Three State Agreement Depletion Plan. The focus of this discussion was the North Platte Decision Support System, Consumptive Use and Agricultural Shortages.

- PEPO Education Liaison, Deb Alpe with CSU Extension, informed the North Platte BRT on PEPO's request to update our Education Action Plan. The Education Committee will convene to develop a proposed updated EAP to present to the Roundtable as soon as possible.
- Informative Brochures on the Colorado Water Plan, Frequently Asked Questions about Colorado's Water Plan and the Basin Implementation Plans have been distributed to all North Platte Basin Roundtable members, in the community, and during the December 14, 2013 North Park Stockgrowers Association meeting attended by approximately 40 people.

Rio Grande River Basin – January 2014 Outreach Summary

- Rio Grande River Basin Outreach Team
    - Judy Lopez, PEPO Education Liaison
    - BIP Consultant: DiNatale Water Consultants
- The Rio Grande Basin Roundtable (Rio Grande BRT) is "full bore" in the Basin Plan process. The Rio Grande BRT hired DiNatale Water Consultants to write its Basin Implementation Plan and as a result set up subcommittees that will address various aspects of the plan and serve as advisors to the final plan. These committees are: water management. agriculture, M&I, environmental, recreational, institutional, non-consumptive, and education and outreach.
- The Rio Grande BRT set up a comprehensive communication plan that is designed to be informative and provide a platform for input. The communication plan includes a website (http://riograndewaterplan.webs.com) and other social media, Monthly Radio Spot, Bi-weekly Newspaper article series, Press releases, Pamphlets, PowerPoint for "speakers bureau" roadshow – including information relevant to specific geographical interests such as: county commissioners, town boards, ditch companies, and civic groups.
- The Rio Grande BRT is also preparing a newsletter that will be sent to a list serve of constituents and a newsletter link will be placed on the website.
- To tie this all together Rio Grande BRT has also developed a logo that will help brand the information.

South Platte and Metro River Basins (combined outreach effort) – January 2014 Outreach Summary

- South Platte and Metro Basins Outreach Team
    - Joel Shneekloth, South Platte PEPO Education Liaison
    - Mark Shively, Metro PEPO Education Liaison
    - BIP Consultants: HDR, Inc. (consumptive), West Sage Water Consultants and The PR Company (nonconsumptive)
- The South Platte and Metro Roundtables have partnered with their BIP consultant teams for a combined outreach effort. A draft Communications Plan was created and presented to both basin roundtables for review and comment.
- The Communications Plan is a collaborative effort between HDR Inc. and West Sage Water as consultants, respectively, to the consumptive and non-consumptive portions of the Metro and South Platte BIP process. The goal is to communicate with internal and external stakeholders

and the general public, with unified messaging, information, and opportunities for input regarding the BIP process. Below is a summary of outreach efforts planned to date.

- Roundtable Collaboration:
    - Full and consistent participation of the Roundtable membership will be crucial to meeting the schedule of the BIP as well as to identify solutions for the South Platte Basin stakeholders.
    - Collaboration Tools: A very specific set of communication and collaboration tools will be used for the BRT members throughout the process. HDR is responsible for communications regarding the consumptive portion of the BIP process. West Sage Water and The PR Company are responsible for communications regarding the non-consumptive portion of the BIP process. Where possible, communication efforts will be combined to provide the most comprehensive information possible to the BRT members. However, on other occasions (such as conference calls and emails) each team will interact separately with the BRTs. The proposed collaboration tools are: Survery Monkey, ArcGIS, SharePoint, Conference Calls, and Roundtable Meetings.
- Stakeholder Groups
    - The Basin Implementation Plan may affect everyone living, working and playing in and adjacent to the Basin. The following stakeholder groups have been identified to aide in developing appropriate outreach and communication: Agriculture, Municipal/Industrial, Business, Government/Elected Officials, NGO, Public, Environment and Recreation. A contact and comment management database will be established to track outreach and participation among these groups.
- Tool Application Summary
    - The following matrix of communication and engagement tools, definitions, application to stakeholder groups, and general timeline will be used: stakeholder meetings, existing web pages, email, promotion kit, monthly briefing documents, and online open house.

Southwest Basin – January 2014 Outreach Summary

- Southwest Basin Outreach Team
    - Denise Rue-Pastin, PEPO Education Liaison
    - BIP Consultant: Harris Water Engineering
- Work on Outreach Plans with BIP Consultants
    - The Southwest Basin Roundtable (Southwest BRT) PEPO Education Liaison, Denise Rue-Pastin, met with the Basin Implementation Plan (BIP) consultants on December 19, 2013. They discussed a variety of topics to include: each of their activities and information needs, methods to share information, and how they can support respective efforts. Rue-Pastin provided the consultants with a number of information pieces that they can share with people as they continue work on the IPP list and BIP. They will share information with Rue-Pastin related to the IPP/BIP as it becomes available so that she can update not only the EAP, but handouts and talking point presentations.
- Talking Points
    - A talking points PowerPoint presentation (submitted to CWCB) was developed for the Southwest BRT in 2012 and is updated periodically. In December 2013 it was

posted to the Water Information Program (WIP) website for Southwest BRT members to access and use.

- Op-Eds or Newspaper Articles
    - Bruce Whitehead wrote an op-ed piece that ran in the Durango Herald in early November 2013. Roundtable members were encouraged to follow up by writing local pieces. In addition, Hannah Holm with the Water Center at Colorado Mesa University obtained grant funds to expand West Slope roundtables coordination and collaboration efforts. All three of the West Slope roundtables will be contributing to newspaper articles, with ten planned for 2014. Holm is coordinating these efforts.
- Distribution of Fact Sheets
    - The CWCB produced a very informative Frequently Asked Questions (FAQs) and fact sheet related to the IBCC and roundtable process. Both pieces were distributed to each of the roundtable members at the Southwest BRT meeting on November 13, 2013 and again at their January 8, 2014 meeting. They were asked to share this information with their constituents. In addition, this information is available at the WIP office in Durango and is already being used and disseminated at various public events. Moreover, the WIP website (www.waterinfo.org) homepage provides information on the IBCC/roundtable process, including links to provide public input to the Colorado Water Plan.
- Local Workshops and Public Input Opportunities
    - Kate McIntire (CWCB), Kristin Maharg (CFWE), and Rue-Pastin conducted a one hour public education and outreach workshop session prior to the December 2013 Southwest BRT meeting. The majority of Southwest BRT members were in attendance for this and it was well received. In addition, the importance of public education and outreach was discussed as an agenda item during this meeting. Additionally, information about the IBCC/roundtable process is presented annually at the Water 101 Seminar, as well as other public input opportunities throughout the year. As an example, a presentation was made to the Durango Kiwanis Club on December 12th that provided an extensive discussion of Colorado's Water Plan, including a wide variety of handouts. Handouts related to Colorado's Water Plan were also available during the three week running of the second annual Water in the West Art Show that ran from October 25th to November 16th, 2013.

Yampa / White River Basin – January 2014 Outreach Summary

- Rio Grande River Basin Outreach Team
    - Ren Martyn, PEPO Education Liaison
    - BIP Consultant: AMEC
    - Sub-consultant for Outreach: Marsha Daughenbaugh, Community Agruculture Alliance
- Proposed BIP Public Education and Outreach Efforts include:
    - Public Meetings in Rangely, Meeker, Craig and Steamboat Springs
    - Newspaper Articles and Engagement in Craig, Meeker, Hayden and Steamboat Springs
    - Radio Station Ads and Engagement in Craig, Steamboat Springs and Vernal
    - Social Media Outreach: Partner Websites and Facebook, CWCB Website

Colorado's Water Plan - Input Received between 11/07/13 and 1/15/2014

Date	Input Provided By	Method of Input Submission	Related Chapters of CWP Framework	Summary of Input	Documents Submitted for Review	Staff Responses and Recommendations
11/15/13	Linda Tillson - General Public, Agriculture Consituent Group	Online General Input Webform at www.coloradowaterplan.com	5.6.2 Agricultural conservation	Webform Comment as follows: "I would like to see agricultural areas find a way to more efficiently and equitably distribute irrigation water. Some states have replaced irrigation ditches with pressurized irrigation and have set up a system of buying and selling water shares. This seems much more progressive than the current practice in some areas where water rights have been handed down for generations which leaves some land owners with more than they can use and other's drying up."	N/A	**Staff response:** CWCB has active grant and loan programs to support irrigators to become more efficient. These programs will be reflected in Colorado's Water Plan, currently in the Annotated Framework, Section 5.6.2. Agricultural conservation.
11/29/13	Virginia Till - General Public	Online General Input Webform at www.coloradowaterplan.com	N/A	Webform Comment as follows: "Why has no one really addressed the phrase "limit growth" in this conversation? I know politically this is a sinful word, but in order for our systems, including water, to be resilient and sustainable, I think we really need to take a hard look at our plans for population/development/growth. Why not limit growth and population in the metro area and use all resources more efficiently? Concerning other areas of the state, this should also be the case, though I know that smaller metropolitan areas/towns will disagree that slow or now growth affects them in a more substantial manner How can we continue to use more and more with less and less? We cannot expect unlimted growth forever, as adaptable cycles do not function that way. Our systems are bound to fail if we continue to work toward continual growth rather than adaptability and more efficient use of resources. Just my two cents. Thanks."	N/A	**Staff response:** Colorado's Water Plan and the technical work that supports it includes 3 growth scenarios: low-growth, mid-growth, high-growth. As water planners, Colorado must prepare for any of these future possibilities as we do not have control over the state's economy and how many people are born or choose to move here. While some communities choose to limit growth, doing so on a broad statewide scale is untenable and unconstitutional.
12/11/13	Stephanie DiBetitto, General Public - Environment and Recreation Consituent Group	Online General Input Webform at www.coloradowaterplan.com	Chapter 5	Webform Comment as follows: "Mandate strict water conservation enforcement on the Front Range to prevent the need to take more water from the Western Slope. We must look at the holistic health of watersheds throughout the state and keep all habitats and instream flows at a healthy level. The need for water on the eastern slope increases with increased population, though it is important to remember that taking from other watersheds directly impacts the health of their watersheds and we should all be using only what we need."	N/A	**Staff response:** Conservation is a critical component of Colorado's Water Plan and the plan will prioritize solutions that balance healthy watersheds and the environment while meeting Colorado's future municipal water needs.
12/18/13	Douglas Rademacher, South Platte Basin Roundtable Member	Online General Input Webform at www.coloradowaterplan.com	Chapter 4	Webform Comment as follows: "I am a member on the South Platte Roundtable since 2007. My family has been in Agriculture since the early 1900's. We do not operate any wells, all senior water rights are for suface water only. My concern is we are leaving out a critical compoment of the Water Availabilty Study, which the Governor has requested. No where in this plan is Ground water mentioned. I'm confused when we have a estimated 10 million acre feet of water right underneath - why is that not inclued? In fact there are efforts to have it not included. All options should be indentified and explored."	N/A	**Staff response:** Groundwater will be included in the Chapter 4. Water Supply, Including Description of Historical and Projected Supply.
1/3/14	Charles Howe	Online General Input Webform at www.coloradowaterplan.com		Webform Comment as follows: "Federal farm policy, including the ethanol and sugar programs, will be crucial to what happens in Colorado and must be carefully analyzed-if we ever find out what it is!! Cheers!"	N/A	**Staff response:** CWCB will work with Colorado's agricultural interests for specific recommendations and will consider federal policy.
1/6/14	Community Alliance of the Yampa Valley	Email to CWCB Director, forwarded to cowaterplan@state.co.us.	N/A	Letter addressed to the Yampa/White Basin Roundtable, dated December 26, 2013	Letter addressed to the Yampa/White Basin Roundtable	**Staff recommendation:** CWCB Staff send the letter submitted by the Community Alliance of the Yampa Valley on January 6, 2014 to the Yampa/White Basin Roundtable for consideration in the Yampa/White Basin Implementation Plan.
1/7/14	David Smeltzer - General Public, Retired	Online General Input Webform at www.coloradowaterplan.com	N/A	Webform Comment as follows: "Before any serious discussion about population increase and water supplies to those populations begins the first question to ask is: if Colorado's population were to increase without restrictions into the future, would there ever come a time when our water supplies would run out? If the answer to that question is yes then why would we ever want to reach that point with it's quality of life, overcrowding, crime, pollution, infrastructure needs, and traffic congestion problems? We must have a serious, honest, and open discussion about what Colorado means to the people that live here and the quality of life they expect and depend on. Our river's in this state are already overutilized and suffering from raparian habitat losses and fish and aquatic life declines. Most people live here or come here for our natural beauty, resources, and outdoor recreation of which our streams and rivers are it's backbone and largest drawing card. We must objectively determine what our maximum population can be in order to preserve those resource qualities. To do anything else is pure folly and will lead us to an environment that will no longer be fit for our children and grandchildren to exist in. Have the guts to tackle this issue up front. Constant growth without checks and balances is a pyramid scheme with no winners and only losers. The water in this state is limited and thus should our demands for it be! To sacrifice our rivers and streams in the name of economic benefit and growth is unconscionable and immoral."	N/A	**Staff response:** Colorado's Water Plan and the technical work that supports it includes 3 growth scenarios: low-growth, mid-growth, high-growth. As water planners, Colorado must prepare for any of these future possibilities as we do not have control over the state's economy and how many people are born or choose to move here. While some communities choose to limit growth, doing so on a broad statewide scale is untenable and unconstitutional.
1/7/14	John Hendrick, Centennial Water and Sanitation District	Email to CWCB Staff, forwarded to cowaterplan@state.co.us	Chapters 1, 3, 4, 5, 7, 8 (Annotated Framework - 9/12/13 version)	John Hendrick submitted a document containing comments on specific chapters and sections of the Annotated Framework.	Comments on CWP Framework (9/12/13 version)	**Staff response:** Most of the suggested edits were accepted and are reflected in the January, 2014 Annotated Framework. Regarding Mr. Hendrick's comment on Section 1.1, the CWCB is working with the BRTs to engage stakeholders beyond BRT membership. Regarding Section 1.2, the suggested description is included in the draft of this section presented at the January, 2014 Board meeting. Regarding Section 1.3, hydrologic variability will be covered in Chapters 4 and 5.
1/15/14	Northwest Colorado Council of Governments/ Water Quality Quantity Committee	Email to cowaterplan@state.co.us	Chapters 1, 4, 5	NWCCOG/QQ Committee submitted two documents - one document is the redline changes the group suggested, and the other pulls out the group's suggested changes and includes rationale for each suggested change.	1. NWCCOG/QQ Committee Redlined version of the CWP Annotated Framework and 2. Letter to CWCB Staff Including Comments and Rational	**Staff response:** Most of the revisions suggested by the NWCCOG/QQ Group are reflected in the updated January, 2014 version of the Annotated Framework. With regard to suggested changes within Chapter 4, the language was not incorporated since in addition to relying on existing data, CWCB will use the latest climate change models. At this point, CWCB does not want to prejudge the outcome. Comments suggested for Section 5.1 were not included in the January, 2014 version of the Annotated Framework, however "land use" was added to the title of Section 5.6.1. Municipal & industrial conservation, reuse, and land use. **Staff recommendation:** For the suggestion on Chapter 4, discuss the comments regarding water availability with the CWCB Board. For the suggestion on Section 5.8, discuss with the CWCB Board whether to be proactive or reactive when considering new projects and incentive based criteria.

COLORADO'S WATER PLAN

coloradowaterplan.com

cowaterplan@state.co.us

Direct 303-866-3441

Cover Sheet for Input Document Received on 1/6/14

The document listed in the table below was submitted as formal input for Colorado's Water Plan. A summary of the document, including a staff response and/or recommendation is included in the master spreadsheet included within this packet.

Date	Input Provided By	Method of Input Submission	Related Sections of CWP Framework	Summary of Input	Documents Submitted for Review	Staff Recommendation
1/6/14	Community Alliance of the Yampa Valley	Email to CWCB Director, forwarded to cowaterplan @state.co.us.	N/A	Letter addressed to the Yampa/White Basin Roundtable, dated December 26, 2013	**Letter addressed to the Yampa/White Basin Roundtable**	**Staff recommendation:** CWCB Staff send the letter submitted by the Community Alliance of the Yampa Valley on January 6, 2014 to the Yampa/White Basin Roundtable for consideration in the Yampa/White Basin Implementation Plan.

Comments on the Colorado Water Plan
Yampa River Basin Perspective
December 26, 2013

To: Yampa/White Roundtable
From: Community Alliance of the Yampa Valley

Various sources tell us that the Yampa River is under-allocated, has surplus flows and therefore is targeted by some for more development and higher utilization. This can have many meanings – some detrimental to the health of the river system. We do not agree with the idea of unmitigated higher utilization and feel that as one of the remaining free-flowing river its' natural hydrograph has value now and in the future and should remain as such. Approval of any proposed project should only be given after a rigorous analysis shows no negative impacts on existing water users or on the health of the river system. Several State documents (see below) list key values to be addressed in water plans. These include supporting agriculture and protecting healthy river systems. These values must also be key issues for the Yampa/White Roundtable.

The **"Colorado Water for the 21st Century Act"** (The Act) of 2005 states that " …. all areas of the state must cooperate to ensure an adequate supply of water to equitably meet the needs of present and future generations." It also aims to "… support Colorado's agricultural economy and rural culture, to protect Colorado's natural environment, to supply Colorado's growing populations, to cultivate the state's economic development, and to foster the beneficial use of the state's compact entitlements, …".

The **Governor's Executive Order D2013-005** directs the Colorado Water Conservation Board (CWCB) to begin work on the Colorado Water Plan and states that the Plan must incorporate the following values.

- A productive economy that supports vibrant and sustainable cities, viable and productive agriculture, and a robust skiing, recreation and tourism industry;
- Efficient and effective water infrastructure promoting smart land use; and
- A strong environment that includes healthy watersheds, rivers and streams, and wildlife.

We agree with these values. Agriculture, recreation, tourism and strong environmental values are particularly relevant to the residents of the Yampa Basin and we urge that the concept of sustainability be applied by the Yampa/White Roundtable to all of them in development of the Yampa/White River Basin Implementation Plan (BIP).

Agriculture is a prime economic driver in the Yampa River Basin and demands and controls the largest quantity of Yampa River water and as such is a major influence and vital factor in future operation of the river.

Recreation and tourism are also major economic drivers in the Yampa River Basin. It is imperative that healthy watersheds, rivers and streams, fish and wildlife are maintained to support these activities and the quality of life for basins' citizens. The Act also called out the

need to plan for future environmental and recreational uses. This extends to all of the tributaries to the Yampa River. We urge the Yampa/White Roundtable to collaborate with the CWCB and to use the CWCB's Nonconsumptive Toolbox for the Basin Implementation Plan.

In addition to the directives of the Executive Order and the Act, the Yampa/White River Basin Implementation Plan must consider;

1) If there is a Compact Administration of the Colorado River only West Slope basins supply the water needed to meet Colorado's commitment to the 1922 Colorado River Compact; at the least there would be curtailment of all Yampa River water rights junior to the compact.
2) There are requirements for water flows from the Yampa River for the protection of endangered fish species as approved in the 1999 PROGRAMATIC BIOLOGICAL OPINION of the Fish and Wildlife Service which protects the fish habitats on the Yampa River and also the fish nursery habitats on the Green River. This PBO states that there can be only an additional 50,000 acre feet of water depletions from the Yampa Basin (30,000 acre feet from the Yampa and 20,000 acre feet from the Little Snake).
3) The value for Colorado and future generations to protect the unique natural hydrograph of the Yampa River, the only remaining river in Colorado that could be considered as having historical (unimpeded) annual flows.
4) The annual quantity of water production from a basin can, and will, vary greatly depending on year to year variability in precipitation; The BIP must acknowledge this variance and the maximum limit which in turn limits the total demand that can be satisfied.
5) Continual increasing demands cannot be met by a limited and highly variable water supply - there is a limit to how much development this limited and highly variable resource can ultimately support.

We realize the import of your task and thank you for considering CAYV's comments.

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Comments on CWP Draft Framework 9/12/13 version

John Hendrick, 1/7/14

1.1 First bullet – focus seems exclusively on the state and overlooks individual providers or communities who actually hold the water rights and develop supply projects. The IBCC and RT's include many such entities, but more have not been included, so "grassroots" is somewhat overstated.

1.2 A description of the permitting process and steps a project proponent faces would make this clearer to "outsiders." Local zoning and 1041 approvals should be included.

1.3 Including an overview of basic hydrologic variability and how yields fluctuate during low runoff years creating shortages for junior rights would be a good supplement to mere water law. The **Objective** discussion might be more appropriate with "how" rather than "that" (since this is not yet spelled out) and CWP "will" work, and not the present tense, "works."

3. Will demands be updated, described by basin or geographic areas?

4. A contrast of demands against supplies over time would be valuable in this section. Link the variable water supplies with the hydrology discussion that should be added to 1.3.

5.1 add to the Objective sentence – "…to identify supply opportunities" assuming that is the objective of the CWP. If that's not it then it has limited value.

5.2 BIP's don't seem to focus on sufficient detail to support specific solutions as the section suggests.

5.3 This section is vague, and it's hard to envision how water supply development protects against beetle kill for example.

5.5 Why is the word "showcase" used? It sounds like a level of exaggeration is desired may not sit well with many water providers or the public.

5.6 Cost estimates for future water development may not be developed to a significant level in the BIP's. How can this potential information gap be narrowed?

5.9 "showcase" – same comment as earlier. The referenced approach summary is not mentioned in Sec. 5.8

7. "Showcase" again

8. To be a viable "Plan" this last section should tie it together and include an action plan and several suggested implementation steps. Even though the CWP will not be in final form, it could provide guidance for a path forward, rather than a mere update.

Thanks for the opportunity to comment on this very ambitious project!

COLORADO'S WATER PLAN

coloradowaterplan.com

cowaterplan@state.co.us

Direct 303-866-3441

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WATER QUALITY / QUANTITY COMMITTEE (QQ)

P.O. Box 2308 ● Silverthorne, Colorado 80498
970-468-0295 ● Fax 970-468-1208 ● email: qqwater@nwccog.org

January 14, 2014

Colorado Water Conservation Board
Attn: James Eklund, Becky Mitchell and Jacob Bornstein
1313 Sherman St.
Denver, CO 80203

Dear CWCB Staff,

Following are NWCCOG's Water Quality/ Quantity Committee (QQ) proposed changes to the Draft Framework for Colorado's Water Plan, dated 11/07/13, along with the rationale behind the suggested changes.
We have provided redline changes into the draft framework document as a separate document.

Section 1.1

Identify what the CWP aims to achieve, which includes:
- o Align state funding and the state's role in water supply and management with the plan's water values;
- o Streamline the state role in the approval and regulatory process regarding water supply and management;
- o Provide background to establish an understanding of the need for state support of water supply projects, along with providing a path to state support of those water supply and water management proposals that stress conservation, innovation, collaboration and other criteria such as promoting smart land use, healthy watersheds for Colorado's rivers and streams, and smart water conservation practices that utilize demand-management. State support will also recognize that multipurpose projects will be preferred;

> **Rationale:** This discussion calls for a clear definition of what state support would look like in a project, especially because the state's role is generally fairly limited in development approval process (401 certification and CWCB/CPW Wildlife Mitigation Plan)

Section 1.2.

Potential Approach: Section 1.2 will be a brief section that will indicate the importance of aligning state resources and working collaboratively with federal and local permitting agencies.

Rationale: We appreciate you listening to our earlier comments and including local entities in the title of section 1.2. However, this section still focuses on aligning state resources and working collaboratively with federal permitting agencies on water supply projects, yet makes no mention of local government permitting of those projects. Examples of 1041 permit regulations within the NWCCOG area were sent to the CWCB in November, 2013. Local permit requirements go to the heart of the socioeconomic and environmental impacts and have resulted in agreements between the affected communities and water project proponents, such as those for Wolford Mountain Reservoir and Windy Gap Firming Project.

Working collaboratively with local government permit agencies is essential to successful water development projects because addressing the impacts of water projects at the local level lays the foundation for cooperative agreements and resolves many of the issues that would arise later in the process.

Section 1.2, continued

In addition, the section will specify that the CWP does not create an extra permitting hurdle for water providers; rather, it will establish a path to more efficient permitting for projects that meet the water values and criteria identified in the CWP, and based on the intensity of the impacts associated with the water project.

Rationale: The scope of permit review and requirements should correspond to the intensity of the impacts associated with a water project. The requirements imposed by local, state and federal permit processes mark the only time that impacts of the project are addressed and mitigation is proposed.

Section 4

Potential Approach: Section 4 will be a brief section that includes content regarding Colorado's surface and groundwater water supplies and how it relates to other states. The section will refer to the BIPs and SWSI update and be consistent with the IBCC scenarios. Utilizing existing data, this section will address projected water availability in different river basins in Colorado, acknowledging that additional or "new" water supplies may not be available in the future. In addition to climate change, one of the limitations and concerns for the future will be dust on snow. Conversely, one of the opportunities is weather modification. The section will not describe project specifics.

Rationale: This section should discuss that there may not be water available in the future for new supply development. For example, the Colorado River Basin Water Supply and Demand Study conducted by the U.S. Bureau of Reclamation over the entire seven-state Colorado River Basin identified an average *shortage* of 3.2 million acre feet of water by 2060. Estimates of available water for "new supply" vary from zero to one million acre feet.

Section 5.1

Objective: Ensure that the CWP prepares Colorado for a broad range of potential futures and to show how the CWP builds upon the work of the BRTs and IBCC. Along with the No and Low Regrets strategies, this section will also examine how local land use controls and regulations (along with state incentives for responsible land use) could control growth and reduce the gap.

Rationale: This section should include linkage to local land use planning that could control population growth based on available water and reduce the demand for water through clustering, small lot regulations, and other techniques.

Counties and cities have regulated growth by establishing a set number of development permits available on a competitive basis, a set number of water and sewer taps distributed to proposed developments on an as-available basis, or a set rate of growth that limits the number of development permits issued per year.

Section 5.3

Supporting Information: BIP watershed health section~~, list of land use plans from the Northwest Colorado Council of Governments~~, and the Colorado State Forest Service watershed report.

Rationale: The documents submitted by NWCCOG do not pertain to watershed health. The point of these documents is to show that basin roundtables on the front range should be aware of not only their own land use plans, but also those directing the future of headwaters' counties and municipalities because local long range planning efforts are based on the availability of water for both consumptive and non-consumptive use. Without this information, front range basin implementation plans could interfere with headwaters' plans that have been implemented through extensive public processes over the course of many years.

Section 5.7

Objective: Summarize the type and amount of infrastructure projects and methods needed to meet our current and future water supply needs, to indicate how much this infrastructure will cost, and to highlight multi-purpose and regional projects and methods from the BIPs. In addition this section will draft incentive-based criteria to evaluate new projects to determine whether a project is worthy of state support. It will also include an evaluation process and actions that take place when criteria are met. Similarly, for existing water supply operation and maintenance, criteria and a rubric for CWCB financing will be included. These efforts will be utilized in the permitting and funding section of the plan.

Rationale: The GOAL should not be to help boost any and all projects, even if they are marginal but meet state criteria The Plan should focus on more well-rounded end result for all stakeholders, not just building in a "yes" where one would not otherwise exist.

Section 5.9

Potential Approach: This section will summarize the work of local, state and federal permitting entities to accomplish the recommendations in the no and low regrets action plan that builds on the collaborative partnership that the State of Colorado already has with its federal partners. The draft indicates two main actions:

- **Streamline state permitting processes for IPPs that meet values of the CWP:** The Executive Order directs the CWP to help expedite permitting at the state level. The state should develop an approach to permitting IPPs that efficiently moves projects through the process and

toward an outcome, whether positive or not, while ensuring sufficient protection of nonconsumptive and other values. Public engagement and community outreach regarding water supply needs and impacts of water supply projects may need to increase in affected communities and needs to occur as early as possible in the project planning process to facilitate an efficient permitting process.

- **Improve state coordination with local and federal permitting entities:** The state should continue to meet with federal agencies and local governments to look for opportunities, including entering into MOUs, to make NEPA and permitting processes more efficient and coordinated, especially for projects that meet the values of the CWP and are needed across multiple scenarios. Efficiency would not dictate whether the outcome is positive or not.

> **Rationale:** Local government permitting is a VERY important piece that is missing from this entire section. Many local governments regulate water projects under their local authority. The NWCCOG Headwaters document list links to applicable 1041 regulations in the NWCCOG region.

Section 5.10

Supporting Information: Basin Roundtable Project Exploration Committee, No/Low Regrets Action Plan, Letter to the Governors, new supply subcommittee chairs letter, West Slope Caucus, East Slope white paper, existing agreements that may serve as models for potential conceptual agreements to resolve permitting issues, water rights disputes, or other issues in the basin of origin (e.g., Colorado River Cooperative Agreement, Windy Gap Firming Agreement), Basin Roundtable and IBCC discussions.

> **Rationale:** The examples provided as "conceptual agreements" for water projects are not, in fact, water project agreements. The Colorado River Cooperative Agreement settles long-standing water rights disputes between Denver Water and the West Slope, and provides enhancements for existing problems caused by Denver Water diversions. The parties to the CRCA agreed not to oppose the Moffat expansion project, but it does not set the ground rules for the Moffat Project or describe mitigation for the Moffat project. Likewise, Windy Gap IGA does not address impacts of the WGFP; those are addressed in the 1041 permit issued by Grand County. These should not be used as examples of water project agreements.

Section 5.11

The contents of this section will be outlined by the State's interagency water quality and quantity group and other diverse stakeholders statewide.

> **Rationale:** Discussions on the issue of water quality/ quantity should include a more diverse set of stakeholders than just state agencies. At this time, early drafts of this section cast the issue of water quality as a barrier to water development, rather than a reflection of important concerns about reductions in water quality associated with water diversion projects. Water quality is of the upmost importance to headwaters communities and the environment, and impacts to water quality through project development must be addressed rather than viewed as a barrier.

Thank you for your consideration of these comments. Please let us know if you have further questions or need further assistance. We look forward to continued work with the CWCB on the Colorado Water Plan process.

Best regards,

Torie Jarvis, Barbara Green, and Lane Wyatt on behalf of NWCCOG/QQ
P.O. Box 2308
Silverthorne, CO 80498
970-596-5039
qqwater@nwccog.org

11/07/13

WATER QUALITY / QUANTITY COMMITTEE (QQ)

Following are NWCCOG/QQ's Redline comments.

Draft Framework
Colorado's Water Plan

INITIAL DRAFT - Colorado's Water Plan Annotated Framework

Colorado's Water Plan Purpose: The Colorado's Water Plan (CWP) will leverage and integrate nine years of work accomplished by Colorado's Basin Roundtables, the Interbasin Compact Committee (IBCC), and Colorado Water Conservation Board (CWCB) to determine how to implement water supply planning solutions that meet Colorado's future water needs while supporting healthy watersheds and environment, robust recreation and tourism economies, vibrant and sustainable cities, and viable and productive agriculture.

Schedule: A draft water plan will be submitted by CWCB to Governor Hickenlooper by Dec. 10, 2014.

Executive Summary

1. Introduction and Background

1.1. Summary of Colorado Water and Summary of Plan

Objective: Introduce and outline the framework and structure of the CWP.

Potential Approach: Section 1.1 will discuss why the time is right for the CWP and what the CWP aims to accomplish. The section will also build upon Colorado's water values described in the executive order. As stated in the executive order, "Colorado's water policy must reflect its water values. The basin Roundtables have discussed and developed statewide and basin-specific water values and the Colorado Water Plan must incorporate the following:

- "A productive economy that supports vibrant and sustainable cities, viable and productive agriculture, and a robust skiing, recreation, and tourism industry;
- "Efficient and effective water infrastructure promoting smart land use; and
- "A strong environment that includes healthy watersheds, rivers and streams, and wildlife."

In order to incorporate Colorado's water values and set forth the goals of the CWP, this section will:

- Provide historical context for the CWP and water planning efforts in the state, including the Basin Roundtable (BRT) and IBCC processes, and the Statewide Water Supply Initiative (SWSI).
- Illustrate how the CWP was developed from grass roots efforts.
- Discuss challenges with the status quo trajectory vs. opportunities in the water plan. The CWP will seek to address the identified gaps while maintaining healthy watersheds and environment, robust skiing, recreation and tourism industries, vibrant and sustainable cities, and viable and productive agriculture.

- Information regarding other state water plans, and the need to integrate management of water quality and water quantity.
- Establish how the CWP will utilize ~~SWI's~~ SWSI's technical platform.
- Integrate water products.
- Identify what the CWP aims to achieve, which includes:
  - Align state funding and the state's role in water supply and management with the plan's water values;
  - Streamline the state role in the approval and regulatory process regarding water supply and management;
  - Provide background to establish an understanding of the need for state support of water supply projects, along with providing a path to state support of those water supply and water management proposals that stress conservation, innovation, collaboration and other criteria such as promoting smart land use, healthy watersheds for Colorado's rivers and streams, and smart water conservation practices that utilize demand-management. State support will also recognize that multipurpose projects will be preferred
  - Be constructed from the bottom-up, incorporating the work of the grassroots IBCC and BRTs;
  - Protect Colorado's ability to fully use its water within its interstate compacts and agreements and in light of increasing downstream water demands and changing federal requirements;
  - Establish a foundation for common-sense changes to the way we manage and transfer our water; and
  - Address our looming gap between supply and demand while minimizing the permanent buy-and-dry of irrigated agriculture.

Supporting Information: Executive Order, Presentation, talking points, etc.
Staff Support: CWCB Staff

1.2. Description of State, Local, and Federal Entities that Are Involved in Water Administration, Study, Planning and Project Permitting

Objective: Demonstrate that the plan will make water supply project permitting more efficient and effective.
Potential Approach: Section 1.2 will be a brief section that will indicate the importance of aligning state resources and working collaboratively with federal and local permitting agencies.
In addition, the section will specify that the CWP does not create an extra permitting hurdle for water providers; rather, it will establish a path to ~~quicker (not more hurried)~~more efficient permitting for projects that meet the water values and criteria identified in the CWP, and based on the intensity of the impacts associated with the water project.
Supporting Information: Information from State and Federal entities, 122.2, CWA Section 401, NEPA, ACTS, ESA, local regulations and permit criteria (1041 regulations; *see* NWCCOG's list of headwaters' local regulation document)
Staff Support: CWCB Staff and Department of Natural Resources (DNR) Executive Director's Office (EDO) staff, Colorado Department of Public Health and Environment (CDPHE) staff, Colorado Parks and Wildlife (CPW) staff

1.3. Description of Colorado Water Law & Administration

Objective: Demonstrate that the CWP works with Colorado water law and supports the doctrine of prior appropriation.
Potential Approach: Write a short section that describes how the plan works with Colorado water law to meet Colorado's future needs. This section will reaffirm the prior appropriation doctrine.

Supporting Information: Numerous sources, including C.R.S. 37-92-101 et. Seq., Colorado Constitution Article XVI, Sections 5 and 6, Interstate Compacts
Staff Support: CWCB Staff, Attorney General's Office, and Division of Water Resources (DWR)

2. Overview of Each Basin

Objective: Demonstrate the diversity of needs and interests throughout Colorado and to highlight each basin's importance in relation to Colorado's water values.
Potential Approach: Section 2 will include a brief summary of each basin, pulling content from SWSI where appropriate. In addition, this section will include information about how CWCB has supported each basin, such as with instream flows, flood assistance, drought assistance, compacts that are important to the basin, and major funding efforts that have occurred within the basin.
Supporting Information: SWSI 1 and 2, Basin Fact sheets
Staff Support: CWCB Staff

3. Water Demand by Sector

Objective: Illustrate Colorado's significant municipal, industrial, agricultural, environmental, and recreational water needs
Potential Approach: Section 3 will be a brief section summarizing Colorado's consumptive and nonconsumptive needs.
Supporting Information: SWSI 2010, HB 1051, SWSI update, BRT work
Staff Support: CWCB Staff
Potential Stakeholder feedback: N/A
Additional Questions or needs: HB 1051.

4. Water Supply, Including Description of Historical and Projected Supply

Objective: Describe Colorado's variable water supplies and highlight where there are critical limitations and opportunities.
Potential Approach: Section 4 will be a brief section that includes content regarding Colorado's surface and groundwater water supplies and how it relates to other states. The section will refer to the BIPs and SWSI update and be consistent with the IBCC scenarios. Utilizing existing data, this section will address projected water availability in different river basins in Colorado, acknowledging that additional or "new" water supplies may not be available in the future. In addition to climate change, one of the limitations and concerns for the future will be dust on snow. Conversely, one of the opportunities is weather modification. The section will not describe project specifics.
Supporting Information: Executive Order, Bureau of Reclamation (BOR) Colorado River Basin Supply and Demand Study, SWSI 2010, BRTs, Drought Plan and Task Force work, Colorado River Water Availability Study (CRWAS), Front Range Vulnerability Study, SWSI update Ch. 7 on Scenario Planning and Adaptive Management, IBCC and BRT work on scenarios, Drought Task Force, Climate Change Technical Advisory Group.
Staff Support: CWCB Staff

5. Water Management

5.1. Scenario Planning and Adaptive Management and No and Low Regrets

Objective: Ensure that the CWP prepares Colorado for a broad range of potential futures and to show how the CWP builds upon the work of the BRTs and IBCC. Along with the No and Low Regrets strategies, this section will also examine how local land use controls and regulations (along with state incentives for responsible land use) could control growth and reduce the gap.

Potential Approach: Section 5.1 will include a brief and simplified narrative that indicates that the CWP is aimed at being successful regardless of what future Colorado faces. Summarize the no and low regrets. This section will frame how the other subsequent components fit into the CWP. This section will indicate where this information came from.
Supporting Information: BRT and IBCC Portfolio and scenario work, SWSI Update Ch. 7., IBCC No/Low Regrets Action Plan
Staff Support: CWCB Staff

5.2. Natural Disaster Management

Objective: To characterize and asses the impact that natural disasters such as drought, flood and wildfire have on the water systems and water availability for Colorado, both now and into the future.
Potential Approach: Utilizing previously completed studies such as the CRWAS, Drought Plan & Flood Plan, as well as the latest CMIP 5 climate change data, CWCB will examine the role that natural disasters have on the water systems and water availability for Colorado under current conditions as well as under a changing climate.
Supporting Information: 2010 & 2013 Drought Mitigation & Response Plan, 2010 & 2013 Flood Mitigation & Response Plan, CRWAS, new analysis of CMIP 5 under CRWAS phase 2 and SWSI 2016
Staff Support: CWCB Staff

5.3. Watershed Health/Management

Objective: Show how Colorado can pull together the state's consumptive and nonconsumptive interests in order to protect critical watersheds from fire and other natural hazards, such as floods, beetle kill, and drought.
Potential Approach: Section 5.3 will synthesize the BIP watershed health sections, and indicate any existing support garnered from downstream states and/or federal agencies. Based on successful examples and lessons learned, the section will make specific recommendations for how a successful partnership between local stakeholder groups, the state and federal agencies can be formed to respond in emergency situations.
Supporting Information: BIP watershed health section~~, list of land use plans from the Northwest Colorado Council of Governments~~, and the Colorado State Forest Service watershed report. Information on fire impact to downstream states, existing plans, U.S. Forest Service information. This includes incorporating the request of some local staff at federal agencies to use stewardship opportunities and management tools.
Staff Support: CWCB Staff, Colorado State Forest Service staff

5.4. Meeting the Consumptive and Nonconsumptive Gaps

Objective: Demonstrate how the CWP rests upon the foundation of BRT work and indicate that the CWP incorporates the BIPs, which should meet most of Colorado's future water needs while maintaining the state's water values.
Potential Approach: Synthesize and summarize the BIPs showing how they will measurably meet Colorado's future water needs. While a few projects may be highlighted, the section will primarily refer to the BIPs.
Supporting Information: BIPs, especially section 6.
Staff Support: CWCB and CPW Staff

5.5. Conservation and Reuse

1.1.1. Municipal & industrial (M&I) conservation and reuse
1.1.2. Agricultural conservation
1.1.3. Self-Supplied Industrial (e.g., conservation of mining and energy water use)
1.1.4. State agency conservation

Objective: Indicate the amount of conservation that can be utilized to meet Colorado's future water needs.
Potential Approach: Section 5.4 will pull from various resources and will highlight recent BRT or legislative progress on the topic. Section 2.4.1 M&I Conservation and Reuse will synthesize BIP action on conservation and reuse and any legislative movements forward and summarize the pros and cons of M&I conservation. It will recognize demand hardening as a concern and will describe land use efforts related to the No and Low Regrets Action Plan. The subsection will also highlight reuse efforts, including graywater, potable reuse, and reuse for irrigation purposes. Section 2.4.2 Agricultural conservation will summarize the work of Colorado Agricultural Water Alliance. It will also recognize Colorado's unique issues with agricultural conservation related to the fact that 1) Colorado is a headwaters state and must consider interstate concerns, 2) there are limitations due to the protection of return flows for downstream users, and 3) nonconsumptive needs could be positively or negatively impacted. For section 2.4.3 Self-Supplied Industrial, summarize efforts to partner with industry, including the water savings associated with utilization of natural gas and renewable energy sources compared to coal. This section could be focused on the energy/water nexus more generally and showcase recent energy/water nexus efforts. For Section 5.4.4., State agency conservation, the section should indicate how state agencies are leading conservation efforts.
Supporting Information: SWSI 2010, Best Practices manual, Ag conservation paper, state agency water/energy conservation paper, Colorado & Yampa/White BRT energy study, nonprofit reports and memos on water/energy nexus, Letter to the Governors, information from water/energy workshops, SWSI Update (especially on industrial needs), BIPs, Colorado River Basin Supply and Demand Study and associated Next Steps Processes and examples of local government conservation plans.
Staff Support: CWCB Staff, relevant staff from other state agencies

5.6. Alternative Agricultural to Urban Transfers

Objective: Showcase recent and ongoing efforts allowing for water sharing between agricultural and municipal water users.
Potential Approach: The current path Colorado is on is the continued long term permanent dry up of Colorado's irrigated agriculture. Section 5.5 will lay a path for agricultural producers and municipalities to have a greater suite of options, while not rewriting property rights. The section will discuss recent legislative efforts to allow for alternative transfer method pilots, and will further the technical information, which indicates that approximately 50,000 acre-feet of agricultural water will be needed in the Front Range. Relevant aspects of the East Slope Basin Implementation Plans and the No and Low Regrets Action Plan will be incorporated. Examples, such as conservation easements which tie water to agricultural lands while allowing for temporary leasing on fallowed lands, will be highlighted. The section will also include an identification of some of the legal constraints.
Supporting Information: H.B. 1248 and associated Guidance and lessons learned from any pilots, Colorado Agricultural Water Alliance, Ag Policy Dialogue, Alternative Transfer Method grants and report, existing law concerning water banks, interruptible supply agreements, etc., information from discussions with the Colorado Water Bar
Staff Support: CWCB Staff, DWR Staff, Colorado Department of Agriculture Staff

5.7. Municipal, Industrial, and Agricultural Infrastructure Projects and Methods

5.7.1. Water supply projects and methods
5.7.2. Existing water supply operation and maintenance

Objective: Summarize the type and amount of infrastructure projects and methods needed to meet our current and future water supply needs, to indicate how much this infrastructure will cost, and to highlight multi-purpose and regional projects and methods from the BIPs. In addition this section will draft incentive-based criteria to ~~help~~ evaluate new projects ~~that may be lacking become~~ to determine whether a

project ~~that~~ is worthy of state support. It will also include an evaluation process and actions that take place when criteria are met. Similarly, for existing water supply operation and maintenance, criteria and a rubric for CWCB financing will be included. These efforts will be utilized in the permitting and funding section of the plan.

Potential Approach: Informed by the BIPs, Section 5.6 will summarize the amount of additional infrastructure Colorado will need to meet our future consumptive needs while striving to uphold Colorado's water values. This will include measures to keep agriculture in production in the state and support environmental and recreational needs as part of multi-purpose projects. Operation and maintenance will be impacted by the flooding on the South Platte and Arkansas, and the assessments sent to FEMA will be summarized. In addition, the section will estimate how much the infrastructure will cost.

Supporting Information: Cost estimates from SWSI 2010, BIPs, SWSI Update (e.g., section 8), CWCB Strategic Framework, flood assessments, list of land use plans from the Northwest Colorado Council of Governments.

Staff Support: CWCB Staff, Colorado Department of Agriculture Staff

5.8. Environmental and Recreational Projects and Methods

Objective: Summarize the needed environmental and recreational projects and methods needed for protecting Colorado's environmental legacy and economic and recreational opportunities, and to highlight important regional projects and methods

Potential Approach: Informed by the BIPs, Section 5.6 will summarize the amount of additional projects and methods that will be needed to maintain and, in some cases, enhance Colorado's environmental and recreational attributes, while maintaining Colorado's water values. The section will describe how multi-purpose projects can benefit the environment and recreation and how agricultural uses can add value to these nonconsumptive uses as well. In addition, the section will estimate how much the projects and methods will cost. The section will indicate the total number of projects, amount of protected or restored habitat, amount of protected or restored stream miles, and the expected benefit to nonconsumptive attributes.

Supporting Information: SWSI 2010, SWSI Update, BIPs, nonconsumptive database and Identified Projects and Processes (IPPs), Nonconsumptive toolbox, "Water and its Relationship to the Economies of the Headwaters Counties" study, December 2011, <http://nwccog.org/docs/qq/QQStudy_Outreach%20Summary%20Jan%202012.pdf>.

Staff Support: CWCB and CPW Staff

5.9. Framework on More Efficient Water Project Permitting Processes

Objective: Show how the CWP will help make the water supply project permitting processes more integrated, effective and efficient, especially for those projects that meet Colorado's water values and fit within the CWP framework.

Potential Approach: This section will summarize the work of local, state and federal permitting entities to accomplish the recommendations in the no and low regrets action plan that builds on the collaborative partnership that the State of Colorado already has with its federal partners. The draft indicates two main actions:

- **Streamline state permitting processes for IPPs that meet values of the CWP:** The Executive Order directs the CWP to help expedite permitting at the state level. The state should develop an approach to permitting IPPs that efficiently moves projects through the process and toward an outcome, whether positive or not, while ensuring sufficient protection of nonconsumptive and other values. Public engagement and community outreach regarding water supply needs and impacts of water supply projects may need to increase in affected communities and needs to occur as early as possible in the

project planning process ~~as early as possible project planning~~ to facilitate ~~an~~an efficient permitting process.

- **Improve state coordination with ~~the~~ local and federal permitting entities:** The state should continue to meet with federal agencies and local governments to ~~and local governments to~~ look for opportunities, including entering into MOUs, to make NEPA and permitting processes more efficient and coordinated, especially for projects that meet the values of the CWP and are needed across multiple scenarios. Efficiency would not dictate whether the outcome is positive or not.

If there are pertinent aspects of the BIP's, those will be included as well. In addition, the CWP will consider any recommendations from the Quality and Quantity Workgroup recommendations on how quality and quantity policies should be linked, and seek to build off other successes, such as those in the endangered species recovery programs.

Supporting Information: CWCB Strategic Framework, No/Low Regrets Action Plan, any results from coordination meetings between state and federal permitting entities, ES white paper, Letter to the Governors, Mark Pifher Letter, nutrient rules, applicable law, Quality and Quantity Workgroup, information from local, state and federal permitting entities, information from project proponents, local governments, nonprofits, and other stakeholders on the permitting process, and information from the nutrients standards process, the work of CDPHE, list of land use plans and 1041 regulations from the Northwest Colorado Council of Governments, the Colorado Water Quality Forum, nonconsumptive workshop comments at the 2013 Watersheds Conference, and the combined joint review process

Staff Support: CWCB Staff, EDO Staff, CPW Staff

5.10. Cross-basin Conceptual Agreements and Points of Consensus

Objective: Showcase water management agreements achieved across basins and provide support to these agreements by virtue of incorporating them into the CWP.

Potential Approach: Section 5.8 will summarize existing agreements and discuss the importance of additional agreements. It will also detail any new agreements developed as part of the process and discuss any agreements that are underway. As part of this work, the section will explore criteria for a good new supply project or package of projects.

Supporting Information: Basin Roundtable Project Exploration Committee, No/Low Regrets Action Plan, Letter to the Governors, new supply subcommittee chairs letter, West Slope Caucus, East Slope white paper, existing agreements that may serve as models for potential conceptual agreements to resolve permitting issues, water rights disputes, or other issues in the basin of origin (e.g., Colorado River Cooperative Agreement, Windy Gap Firming Agreement), Basin Roundtable and IBCC discussions.

Staff Support: CWCB Staff

5.11. Water Quality

The contents of this section will be outlined by the State's interagency water quality and quantity group and other diverse stakeholders statewide.

6. Alignment of State Resources and Policies

6.1. Funding/Financing

1.1.5. Analysis of the cost to fully implement the CWP

1.1.6. Economic benefit of implementing the plan

1.1.7. Alignment of state funding resources and analysis of other funding opportunities

Objective: Indicate how the CWP can be implemented from a funding perspective and demonstrate that doing so would be beneficial for the vibrancy of the state. If additional funds beyond current resources are needed, it will demonstrate how such funds could be acquired.
Potential Approach: Drawing from SWSI and other resources, this section will briefly discuss the costs and economic benefits of implementing the plan and then discuss in greater detail how the CWP could be funded. This will include existing funding options such as CWCB loan and grant programs, Water and Power Authority loans, water provider / customer oriented funding, as well as private and federal options. If additional funds are needed, it will recommend a funding approach. Section 6.1.3 will indicate how state funding can be aligned with meeting the priorities set forth in the CWP.
Supporting Information: No/Low Regrets Action Plan Appendix B, SWSI 2010. SWSI Update, information from various funders (e.g., Water and Power Authority, Bureau of Reclamation, private funding entities), information from the Water Infrastructure Finance and Innovation Authority (WIFIA) and the Water Infrastructure Network (WIN), CWCB Strategic Framework
Staff Support: CWCB and CPW Staff

6.2. State Water Rights and Alignment

Objective: Indicate how the State of Colorado is utilizing its water rights to the best benefit of the state, in accordance with the CWP water values and goals.
Potential Approach: Section 6.2 will summarize how Colorado's state agencies are aligning their water rights to meet the water values and goals of Colorado's Water Plan. This section will include recommendations on how to move forward any critical water projects and methods that have not been achieved by the time the water plan is published. Specifically, water rights should be aligned to have multiple benefits, for instance to agriculture and the environment. Water sharing agreements could also be explored. Water rights and potential water projects should be reviewed so that they can best meet the nonconsumptive and consumptive measurable objectives in the BIPs. Model examples that, such as the Rio Grande Cooperative Projects, will be described.
Supporting Information: Instream flows, Colorado Parks and Wildlife water rights database, State Land Board water rights documents and recommendations, feedback from various state agencies that have water rights.
Staff Support: CWCB, EDO, and CPW Staff

6.3. Alignment of other State Policies and Resources

Objective: To ensure that state policies and procedures across agencies are aligned.
Potential Approach: This section allows state agencies to examine policies and resources related to water at a high level. The section will summarize how the State of Colorado has aligned its policies and resources to meet the water values and goals of the CWP based off interagency meetings and information. For instance, the instream flows have been used as a way to align CPW interests with CWCB's instream flow program.
Supporting Information: Relevant policies from state agencies, Feedback from state agencies with water related policies.
Staff Support: CWCB Staff, EDO Staff, Attorney General's office, DWR, Colorado Parks and Wildlife, Colorado Department of Health and Environment, etc.

7. Legislative Recommendations to Assist Fully Implementing the CWP

Objective: To showcase recent legislative accomplishments and show grassroots support for any additional legislative action that is needed.
Potential Approach: This section should pull from the No/Low Regrets Action Plan's legislative recommendations and summary. It will discuss recent legislation in support of CWP water values and

goals. In addition, it will highlight the level of support for new legislative concepts and from where the concepts emerged. Every recommendation should come from BRT, IBCC, and stakeholder involvement.
Supporting Information: No/Low Regrets Document, Basin Implementation Plans, BRT agriculture policy document, information from the Interim Water Committee, Colorado Water Congress, and the Colorado Water Bar
Staff Support: CWCB Staff, EDO Staff

8. Process for Plan Update

Objective: Indicate that the CWP is a living document that will need periodic updates.
Potential Approach: Write a brief section describing the process for and timing of future updates.
Supporting Information: Executive Order, CWP presentations