No/Low Regrets Action Plan

Prepared for June 5, 2013 IBCC Meeting

Introduction

Based on the dialogue and direction at the November 2012 and March 2013 Interbasin Compact Committee (IBCC) meetings, Colorado Water Conservation Board (CWCB) staff and the IBCC table moderators have developed a revised draft of the No/Low Regrets Action Plan. The No/Low Regrets Action Plan currently outlines near-term action items pertaining to agricultural transfers and new supply development. As a reminder, the IBCC concluded that the No/Low Regrets actions should meet the following criteria:

- Actions that are needed to meet future water needs, regardless of which 2050 scenario Colorado faces
- Actions that are needed to preserve the water supply options described in the portfolios, which may be needed for one or more scenarios
- Actions that should move forward in the near-term, and can serve as the initial implementation components of adaptive management, as well as the first phase of the Colorado Water Plan and implementation of Statewide Water Supply Initiative (SWSI)
- Actions that can begin immediately
- Actions that have few or no disadvantages in terms of costs and benefits, regardless of the future

The IBCC identified the following No/Low Regret Goals:

- Minimize Statewide Acres Transferred (per Basin Goals)
- Implement Agricultural Sharing Projects
- Planning and Preserving Options for Existing and New Supply
- Low/Medium Conservation Strategies
- Implement Nonconsumptive Projects
- High Success Rate for Identified Projects and Processes (IPPs)
- Storage

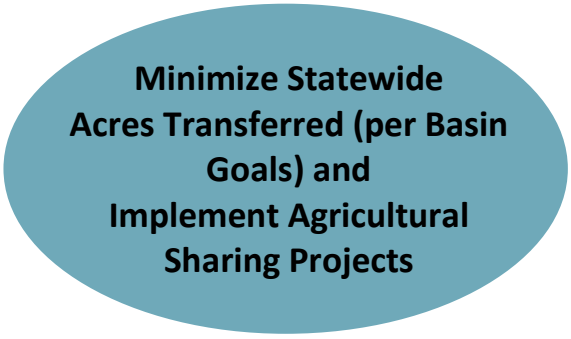
This summary discusses three of these No/Low Regrets Goals, which have been condensed into two:

- Minimize Statewide Acres Transferred (per Basin Goals) and Implement Agricultural Sharing Projects
- Planning and Preserving Options for Existing and New Supply

This No/Low Regrets Action Plan relies on information developed by the IBCC, the CWCB Board, and the basin roundtables. Each of the No/Low Regrets Goals may consist of the following information, which will be developed over time by the IBCC and CWCB. For the purposes of this document, a partial list for each action has been addressed:

- **Potential Future Action Purpose(s):** The reason or purpose for the action and what it could accomplish. This section may include a description of the action in general.
- **Potential Specific Actions:** Specific actions to accomplish the identified purpose(s). These could be considered deliverables. This is "what" needs to be done to accomplish the intended purpose(s).
- **Immediate Action Steps:** Near-term steps that should be taken to move a specific action forward. This is the "how" the specific actions can be accomplished.
- **Measurable Outcome:** How the action will help accomplish the overall goal in a quantifiable way.
- **Timeframe:** When a specific action will be completed.
- **Partners:** Who will need to be involved to implement a given action.
- **Background:** Past work, discussions, issues, and opportunities that may inform the specific action, such as:
  - ***Challenges/Barriers***
  - ***Opportunities***

Minimize Statewide Agricultural Acres Transferred (per Basin Goals) and Implement Alternative Agricultural Transfers



As Colorado's population continues to grow in the coming decades, it is likely that there will be an increased demand for the transfer of agricultural water rights to satisfy municipal and industrial (M&I) water demands. Urbanization, compact compliance (e.g., Republican River), and augmentation requirements will place further pressure on agricultural water rights in Colorado. While it is expected that Colorado's future water demands will be met through all "four legs of the stool," the SWSI 2010 report (CWCB 2011) and other analyses have found that irrigated acreage is expected to decline throughout the state in the coming decades. The CWCB has found that if the status quo development trend continues, the South Platte Basin is estimated to lose 301,000 to 424,000 acres of currently irrigated land by 2050.

Historically, agricultural-to-municipal water transfers have been implemented through a process commonly referred to as "buy-and-dry." In such transfers, a water provider—such as a municipal water utility—purchases agricultural water rights or shares in a ditch company, and the consumptive use (CU) water from those rights is changed in water court to allow M&I uses. The formerly irrigated farmland must be permanently dried up and revegetated, or converted to dryland farming practices. In cases where the transferred parcels are located near a rural/urban interface, the land may be developed and urbanized. In this manner, large tracts of Colorado's historically irrigated lands have been lost and will continue to be lost in the future.

The status quo free market system will not be able to meet basin goals for minimizing traditional agricultural dry-up. However, creative solutions such as rotational fallowing, interruptible water supply agreements (IWSAs), water banks, purchase and lease back arrangements, deficit irrigation, and changing crop types may be able to mitigate the negative impacts associated with buy-and-dry practices while providing needed water for M&I purposes. The state has encouraged these activities primarily through incentive programs (e.g., the Alternative Transfer Methods (ATM) Grant Program), pilot projects, and other types of activities. In some cases, legislative action may be needed to initiate these activities.

Completed and Ongoing Actions	Potential Future Actions
• Implement ATM Grant Program • Ongoing CWCB and IBCC support	1) Develop an incentives program a) Financial incentives b) Streamlining approval processes c) Selective and systematic considerations 2) Establish ATM pilot projects a) Overlay district or authority b) Storage and other infrastructure c) Multi-purpose objectives d) Adequate measurement and monitoring 3) Establish basin goals and track ongoing progress 4) Implement ATM program 5) Identify and implement infrastructure and storage a) Identify multi-purpose opportunities b) Further analyze infrastructure needs to store ATM water c) Further analyze infrastructure and operations to increase exchange capacity d) Maintain and improve agricultural storage and other infrastructure e) Prepare for uncertainty in hydrology and climate change f) Develop water quality treatment infrastructure

1. Develop an Incentives Program

Potential Future Action Purpose(s)

Incentives will drive alternative methods for agricultural transfers, resulting in potentially fewer acres of irrigated land being lost to traditional buy-and-dry practices. Incentives, whether they are financial or regulatory, will encourage both agricultural and municipal interests to seek creative, mutually beneficial solutions for managing and sharing limited water supplies into the future. However, such incentives will need to be selective and systematic.

Potential Specific Actions

a) **Financial incentives:** ATMs are very expensive, especially if a base supply is needed. In addition to continuing to fund the CWCB ATM Grant Program at current levels, other targeted funding options should be identified. These funding opportunities may come from state partnerships, the creation of a new and ongoing revenue stream (see overlay district below), and/or tax incentives. For instance, Great Outdoors Colorado (GOCO), land trusts, CWCB loan and grant programs, the conservation easement tax credit program, and municipal contributions should be explored as options for incentivizing ATM projects. These financial incentives can help to keep land and water in agriculture while allowing for municipal leases during a certain number of years. If multiple funding programs were directed towards a single effort (e.g., purchasing conservation easements on significant acreage in the South Platte and developing interruptible agreements for those lands and water), the water yield could be significant.

b) **Streamlining approval process:** Short-term leasing of agricultural water for municipal purposes can serve as an important water source for dry-year water and drought recovery. To be successful, these short-term leases must be less costly and easier than traditional buy-and-

dry practices. Currently, going to water court for temporary or partial agricultural transfers could expose a water right holder to unwanted risks. Administrative approval processes should be streamlined to allow for creative, innovative, and discretionary water administration. Certainty about non-injury must be provided for other water right holders while allowing agricultural water to be put into water banks and/or leased. Identified processes that need to be simplified are:

i) Determination of historical CU
ii) Determination of non-injury to other water right holders
iii) Consideration of the following regulatory incentives:
   (1) Disincentives for traditional buy-and-dry
   (2) Preventing penalties to farmers for decreasing CU
   (3) Facilitating agreements between M&I and agricultural interests rather than purchases

c) **Selective and systematic considerations:** There are several possible options for developing a selective and customized incentives program. For instance, there could be incentives that encourage less productive lands to enter into an ATM. This would help preserve the most highly valued agricultural lands. This could be accomplished by funding ATM projects in less productive areas at a higher level than for other ATM projects. Alternatively, incentives could focus on encouraging farmers to move from low-value crops (e.g., alfalfa) to high-value crops (e.g., vegetables and fruits). The options and relative impacts should be explored.

Immediate Next Steps

- **Education:** Education is critical to the success of ATMs. Consistent education is needed statewide to convey the message that water is not free. CWCB should conduct periodic workshops bringing together experts (e.g., ATM applicants, Division of Water Resources (DWR) staff, CWCB staff) to discuss recent findings, explore potential solutions, and identify topics for further investigation.

- **Develop criteria and guidelines for the Irrigation Water Leasing Municipal Pilot Projects Bill (House Bill (HB) 13-1248):** The bill authorizes CWCB to administer a pilot program consisting of up to 10 pilot projects, each up to 10 years in duration, to demonstrate the practice of fallowing agricultural irrigation land and leasing the associated water rights for temporary municipal use. CWCB is charged with developing criteria and guidelines in cooperation with DWR. The guidelines should be developed prior to the 2014 irrigation season.

- **Implement HB 13-1130: Reapprove Interruptible Water Supply Agreements:** Current law allows the State Engineer to approve the operation of an IWSA for three years out of a single 10-year period; once the agreement has been operated, the State Engineer cannot approve the agreement for operation in any later period. The bill allows the State Engineer to reapprove an agreement up to two additional times by following the same procedures for approval of the original agreement

- **Implement Senate Bill (SB) 13-74: Irrigation Water Right Historical Use Acreage (passed):** The bill creates a mechanism to determine the amount of acreage for an irrigation water right for which the original decree predates 1937 and is unclear about the amount of acreage that may be irrigated under the water right. This is considered a general incentive for change cases for a limited number of decrees by reducing the risk of going to water court.

- **Explore Additional Potential Legislative Action:**

  - Broaden HB 13-1248 to include additional objectives, such as pilot projects to demonstrate agricultural transfers that meet environmental or compact needs.

  - Explore legislation that would further utilize the conservation easement tax credit to incentivize coupling of conservation easements with IWSAs. This would have the potential to provide a reliable source of water and preserve agricultural productivity in perpetuity. This strategy should be researched in more detail, including an analysis of which lands and/or ditches are most amenable to the approach, identification of funding partners (e.g., GOCO, Colorado Department of Revenue/Tax Credits), and an examination of applicable terms of conservation easement deeds and IWSAs.

  - Explore legislation permitting the State Engineer's Office (SEO) to initiate basin or subbasin efforts to facilitate agricultural fallowing agreements.

  - Explore other potential legislation that reduces barriers, such as those identified in the Establish ATM Pilot Projects section below, or further incentivizes ATMs.

2. Establish ATM Pilot Projects

Potential Future Action Purpose(s)

ATM pilot projects will allow farmers, municipalities, and governmental agencies to test and explore various ATMs without committing to permanent changes in water law or policy. Pilot projects can explore and demonstrate the impacts of a number of creative approaches to ATMs, allowing agricultural, municipal, and environmental interests to identify effective methods of managing and sharing water supplies.

There is considerable support for pilot ATM projects to explore cooperative projects between agricultural and urban interests, especially in the South Platte and Arkansas Basins. There is also considerable interest from the IBCC in implementing a large pilot project. HB 13-1248 and CWCB's ATM grant program can lay the groundwork for ATM pilot projects to move forward on a larger scale. In addition, to ensure base supplies, an ATM pilot project should be able to contribute to water supply during drought. Both agricultural efficiency and agricultural conservation (decreased CU) should be supported. One important goal will be to decrease nonbeneficial CU. In addition to ATM pilot projects in the South Platte and Arkansas Basins, other basins should also be considered. This could include a West Slope Water Bank to help meet Colorado River compact needs. Pilot projects could also explore agricultural transfers to enhance other beneficial uses, such as for meeting nonconsumptive needs.

Potential Specific Actions

a) **Overlay district or authority:** A new authority or overlay district that can broker ATM deals or operate a large ATM project is needed in the South Platte Basin, and perhaps other basins as well. This approach could create a stable revenue stream for ATM projects. A pilot project to explore the challenges and opportunities of a new authority or overlay district should draw from the experiences of the San Luis Valley subdistricting effort. This pilot project could examine the use of a "flex market" approach, in which farmers retain ownership of their water rights while ensuring supply for municipalities through an agreement. Alternatively, a large pilot project could explore an approach in which the ATM process is owned and/or operated by an entity or authority that includes both municipal and agricultural interests.

b) **Storage and other infrastructure:** Storage and other infrastructure will be needed for augmentation, timing, conveyance, and drought-year supplies. Specifically, an ATM pilot project will most likely require piping and pumps, advance water quality treatment facilities, recharge ponds, storage, and optimization of current storage.

c) **Multi-purpose objectives:** In addition to sharing agricultural water with municipalities, an ATM pilot project could also support environmental and recreational needs and be in compliance with or support interstate compacts and agreements (e.g., the three-states agreement, the South Platte River Compact, the Colorado River Compact). Conservation easements could also be explored in a multi-purpose pilot project as a mechanism to preserve high-value agricultural lands and systems along with environmental values (see "Financial incentives" in Section 1 above). A pilot project could also incorporate nonconsumptive streamflows, which are currently being studied in the Yampa/White Basin. Finally, a pilot project could examine groundwater issues and ways to appropriately handle any brine generated by water treatment.

d) **Adequate measurement and monitoring:** Pilot projects will need to include measures that determine their impacts and effectiveness. This would include a baseline plot and study of return flows. Projects should occur in multiple basins, since what works in one basin may not work in another.

Immediate Next Steps

- **Basin Implementation Plans:** Because ATMs are local, they should be assessed on a basin-by-basin basis. Basin roundtables should identify goals for agricultural transfers, determine which lands are most likely to face dry-up, and act as the primary source in understanding how the selective dry-up of pending lands will likely take place. Basin Implementation Plans should assess irrigated lands, exchange points, open space, and existing infrastructure. Each roundtable should have a basin-initiated ATM program or project (e.g., the South Platte Water Bank).

- **Develop regional template and tools:** When considering an ATM pilot project, a template or set of tools should be explored to help guide CWCB, basin roundtables, and local project proponents as they move forward with ATM project implementation. This template or tool set should vary according to the individual needs of each basin. For instance, the Rio Grande Basin needs to reduce demands on its aquifer, the South Platte Basin needs to reduce stress from "buy-and-dry," and the lower South Platte depends on pumping deep percolation water from upstream diversions while other basins may want to reduce deep percolation through ditch linings to keep water in the stream. The regional template or tool set could include a framework for the "flex market" approach, terms and conditions, a checklist of considerations, or administrative tools, such as those being developed for the Upper Arkansas Basin.

- **Explore and address administrative obstacles:** Pilot projects should explore and address the administrative obstacles identified in the challenges/barriers section below.

- **Additional study:**
  - Determine if there is "new" or additional water to be developed from agriculture for both base and drought supplies.
  - Encourage and fund research and development for both agricultural efficiency and conservation (e.g., deficit irrigation, canal lining, removal of phreatophytes, drip irrigation, and mulching).
  - Test economic factors for ATMs (e.g., willingness/ability to pay for water, whether incentives for drip irrigation are necessary, whether the free market is sufficient).
  - Analyze exchange/return flow.
  - Further explore both agricultural and municipal interest in participating in ATM projects in the South Platte Basin. This effort could build upon the Farmers Reservoir and Irrigation Company (FRICO) system participation interest study.

Partners

ATM pilot projects will need to involve the agricultural community, especially to help ensure non-injury. In addition to municipalities, other partners include GOCO, Ducks Unlimited (DU), and CWCB. The Colorado Water Institute could be helpful with additional needed research.

Background

Challenges/Barriers

Political Support:

Additional political support will be needed, perhaps in the form of CWCB and IBCC endorsement of projects. The IBCC can work to encourage other state agencies and departments to support pilot projects as well.

Administrative Obstacles:

- Potentially high transaction costs associated with water right transfers
- Water right administration uncertainties and water right accounting questions
- Certainty of long-term supply and desire for water providers to have permanent long-term supplies
- Infrastructure needs and water quality issues

Additional Issues Identified by the Agricultural Fallowing Policy Dialogue:

- Difficulty of developing statewide solutions due to the many differences in hydrology and the way water is used and administered in different basins throughout the state
- Restrictions to IWSAs
- Excessive terms and conditions on agricultural fallowing agreements

- Because it is so risky to open up a water right in water court, there is reluctance by farmers to go to water court for a water transfer (this is especially so after the precedent set by the FRICO case)
- Farmers' concerns about losing ownership of water rights
- Potential injury to downstream water users
- How fallowed land will be used

Additional Concerns Identified by the West Slope Water Bank Study

- It may not be practical to fallow meadow grasses
- It may be difficult to get sufficient levels of participation in Colorado

Opportunities

State Land Board lands could be used for ATM pilot projects, which would have the advantage of not involving as many competing interests. Other potential locations for ATM pilot projects are the Poudre River Basin, Lower South Platte Cooperative, and the Arkansas Valley Super Ditch.

3. Establish Basin Goals and Track Ongoing Progress

Potential Future Action Purpose(s)

Establishing basin goals and tracking progress towards these goals will be important in developing an effective plan for minimizing the transfer of agricultural land to M&I uses. Clear goals and measurable progress towards those goals will be necessary in each basin to preserve the agricultural economy and to keep agriculture viable on a statewide basis.

Potential Specific Actions

- Work with the IBCC and basin roundtables to develop basin goals. SWSI 2010 and the Portfolio Analysis and Trade-off Tool identified future agricultural transfers that may occur due to IPPs and urbanization. These documents could be a starting point for the goal-setting process.
- Determine if incentives or regulations are necessary to accomplish the goals. Previous IBCC discussions have indicated that the free market system will not likely fully accommodate basin goals.
- Once the goals are established, utilize the CWCB's periodic irrigated lands assessment and the Basin Needs Decision Support System (BNDSS) to track planned agricultural transfers.

Immediate Action Step

Utilize Basin Implementation Plans to establish goals, measurable outcomes, and an approach for meeting them.

Timeframe

Analysis of potential agricultural transfer areas identified in SWSI 2010 and the Portfolio Analysis and Trade-off Tool could be completed during 2013.

Partners

CWCB, the IBCC, basin roundtables, and water right holders can work together to establish basin goals for minimizing agricultural transfers.

Background:

Challenges/Barriers

Information beyond what was summarized in SWSI 2010 is often not public information and data is limited.

Opportunities

SWSI 2010 and the Portfolio Analysis and Trade-Off Tool identified future agricultural transfers that may occur due to IPPs and urbanization. These amounts of agricultural transfers could be the starting point for the goal-setting process.

4. Implement ATM Program

Potential Future Action Purpose(s)

A CWCB program that provides financial and technical assistance is needed to make sure that particular ATM yields are met as part of the state planning process. An ATM program can support the development of incentives and pilot projects and help ensure that these efforts integrate with each other in a mutually supportive way.

Potential Specific Actions

The CWCB ATM program has been in place since 2007 and is tasked with finding and facilitating viable alternatives to buy-and-dry agricultural water transfers. This program will continue to be funded and implemented with a focus on the following action items, drawn from the CWCB's November 2012 Technical Memorandum: Alternative Agricultural Water Transfer Methods Grant Program Summary and Status Update (CWCB 2012).

- Recognizing that each municipal water system and each ditch company is unique, the CWCB should continue to promote and facilitate agreements between irrigators and municipal water providers.
- CWCB will continue to support demonstration/pilot projects to determine the feasibility of new concepts or techniques as needed through the ATM Grant Program.
- CWCB should continue its support of coupling conservation easements with IWSAs (see above).
- CWCB will advance the Colorado River Compact Water Banking study and its focus on rotational fallowing by integration using the results from the Aspinall Water Bank study and the Yampa/White Basin ATM study.
- CWCB will continue to support the Yampa/White Basin ATM study to determine its acceptability among ranchers and the concurrent benefits to fish habitat. These identified lands and associated water can also be used for the Compact Water Banking project and should be integrated.
- CWCB will support roundtable efforts in basin planning.

Partners

Agricultural water right holders and municipalities need to work together with help from the state to overcome the identified challenges.

Background

Opportunities

CWCB's efforts through the ATM program have made significant progress in creating ATMs that are viable options for municipalities. Partnerships between the cities, farmers, land conservancies, funding partners, and environmentalists have been created through this program and appear to have great potential for success.

Basin roundtables recognize the need to focus on basin-level planning and look for ways to increase flexibility within the system through alternative transfers, cooperative agreements, drought plans, and additional infrastructure, while respecting Colorado water law and individual property rights.

5. Identify and Implement Infrastructure and Storage

Potential Future Action Purpose(s)

Identifying opportunities and implementation strategies for existing and planned infrastructure and storage will be necessary to firm up agricultural and M&I water supplies. This action will also provide added flexibility for agricultural transfers, reduced pinch points, increased agricultural acreage, preparation for uncertain hydrologic futures, and enhanced opportunities for water quality treatment. This section may be incorporated into the storage No/Low Regrets Actions at a later date.

Potential Specific Actions

a) **Identify multi-purpose opportunities:** Analyze existing and planned infrastructure, including storage, to determine if there are multi-purpose opportunities that benefit agriculture along with municipal, industrial, compact, and/or nonconsumptive needs.

b) **Further analyze infrastructure needs to store ATM water:** Existing or planned storage and infrastructure can be used to deliver water from ATM projects. In the South Platte and Arkansas Basins, where exchange potential is limited (especially during irrigation season), the infrastructure and storage could serve to move water to Front Range municipalities for both base and drought supplies. Infrastructure and/or storage will also be needed to move water from areas where there may be unappropriated water, usually in the lower part of a river basin (e.g., the South Platte, Yampa/White, and Colorado Basins).

c) **Further analyze infrastructure and operations to increase exchange capacity:** Infrastructure can be leveraged to increase exchange capacity or address nonconsumptive needs in river systems such as the South Platte.

d) **Maintain and improve agricultural storage and other infrastructure:** Storage and other infrastructure should be rehabilitated and maintained to avoid losing more agriculture. In addition, infrastructure should be increased in areas that have been identified as needing additional agriculture, such as in the Yampa and North Platte Basins. This includes needed augmentation.

e) **Prepare for uncertainty in hydrology and climate change:** Determine increased storage and infrastructure needs for future climate change scenarios to ensure the ability to meet current

agricultural needs. This analysis could include carry-over storage for drought conditions or capturing a shorter run-off period.

f) **Develop water quality treatment infrastructure:** Agricultural transfers usually require significant water treatment, whether through reverse osmosis or through a purification system like Prairie Waters. More treatment infrastructure will be needed to handle increased agricultural transfers. There will also need to be significant efforts to mitigate the brine and other potential water quality impacts from additional treatment.

Immediate Action Step

Basin Implementation Plans should identify storage and infrastructure opportunities in each basin.

Background

Challenges/Barriers

There are numerous challenges associated with the development of new storage, including funding and permitting.

Opportunities

Basin planning efforts may provide a good venue for this activity. Storage allows for multi-purpose benefits, including environmental and recreational values, as demonstrated with the Chatfield Reallocation Project. The Arkansas Basin Roundtable is working on identifying what the agricultural gap is in that basin. The North Platte and Yampa/White Basins have already identified additional acres that could be productive. Storage and other infrastructure that meets the needs identified in these reports should be explored

Planning and Preserving Options for Existing and New Supply

Planning and Preserving Options for Existing and New Supply

Several of the portfolios developed by basin roundtables found that additional West Slope water would be needed to meet both West Slope and East Slope needs. New supply is therefore defined here as developing unappropriated water from West Slope locations. The "Reconnaissance Level Cost Estimates for Strategy Concepts" Appendix in SWSI 2010 (CWCB 2011) evaluates the following locations for new supply—Flaming Gorge, the Gunnison River near Blue Mesa, the Yampa River near Maybell, and the Colorado River near Green Mountain. Planning and preserving options for existing and new supply will be necessary to prepare for Colorado's uncertain water future.

Completed and Ongoing Actions	Potential Future Actions
• Strategies Report – cost estimates for new supply and agricultural transfers • Potential diversion locations • Risk management strategies – Water Bank – Aspinall Study – Adaptive Management – Alternative Process, i.e., Wild & Scenic	1) Address environmental and recreational needs a) Delineate critical environmental habitats and assess new supply projects b) Develop Basin Implementation Plans c) Meet environmental and recreational needs while preserving new supply options 2) Develop risk management strategies a) Develop signposts/triggers b) Develop an emergency plan c) Develop an insurance policy for new projects d) Develop strategies e) Continue existing work 3) Identify potential multi-purpose components of new supply projects a) Develop a multi-purpose "strawman" for each transbasin project b) Use "straw-man" to evaluate financial capability of state/project proponents partnerships c) Develop a cross-basin agreement or agreements 4) Identify projects and preserve options a) Planning hydrology b) Acquire water rights c) Acquire rights-of-way

1. Address Environmental and Recreational Needs

Potential Future Action Purpose(s)

The IBCC recognizes that it would be difficult to build a new supply project in an area with high value environmental and recreational attributes. Therefore, while the IBCC would prefer to see initial plans for multiple multi-purpose projects developed prior to choosing or eliminating any, it also finds that the best strategy is not to expend resources to preserve new supply development projects in such

areas. Where new supply development projects could substantially mitigate adverse high value environmental and recreational attributes, the IBCC encourages proponents of new supply projects to design such projects as "multi-purpose," delivering benefits to nonconsumptive values, too. Potential specific actions are discussed below.

Potential Specific Actions

a) **Delineate critical environmental habitats and assess new supply projects:** Utilize metrics that quantify environmental and recreational needs to determine whether specific river reaches should be on- or off-limits for a new supply project. A starting point for quantification could be attribute maps from the basin roundtables. Other quantitative metrics already developed include the Endangered Fish Recovery Program's flow recommendations, as described in the Colorado River Basin Supply and Demand Study, the Watershed Flow Evaluation Tool, and the Bureau of Reclamation's (BoR) Colorado River Supply and Demand Study for recreational boating, riparian health, and other environmental attributes. Alternatively, for a qualitative approach, the IBCC could refine the considerations laid out in the IBCC's 2010 "Letter to the Governors" (IBCC 2011) for determining nonconsumptive needs. These metrics can be used to assess a strawman for each potential new supply project (see "Develop a multi-purpose "strawman" for each transbasin project" in Section 3 below).

b) **Develop Basin Implementation Plans:** Basin Implementation Plans should draw from case studies presented in SWSI Phase 2, SWSI 2010, the CWCB Draft Nonconsumptive Toolbox, and other stakeholder input to identify projects that maintain healthy environments. Basin Implementation Plans should also identify which elements of these projects could be incorporated into a multi-purpose project. This could be done by following the lead of the Yampa/White Basin to conduct a projects and methods study that integrates and optimizes meeting consumptive and nonconsumptive needs. This work will help in developing new supply projects that they can mitigate impacts to the identified environmental needs.

c) **Meet environmental and recreational needs while preserving new supply options:** Consider utilizing existing tools that have successfully addressed environmental protection and allow for additional water development to occur in the future (e.g., the voluntary flow agreement in the Arkansas Basin, instream flows (ISFs) in Dominguez Canyon, San Miguel River, and Cascade Creek, as well as programmatic biological opinions for endangered fish flows) in those reaches that may affect a preserved new supply project option.

Timeframe

2013 to 2015

Partners

CWCB, IBCC, basin roundtables, Colorado Parks and Wildlife (CPW), U.S. Fish and Wildlife Service (USFWS), local nonconsumptive groups, and local water providers are all important partners.

Background

Challenges/Barriers

Some water right owners have concerns about the development of detailed metrics for the environmental and recreational values and how these metrics could be utilized in the future.

Opportunities

Identifying key areas where it is important to maintain or restore water-dependent environmental and recreational values will make it easier to avoid them when considering options for new supply projects. If it is not possible to avoid affecting these reaches entirely during the development of a new supply project, identification of the reaches and what is necessary to maintain or restore them will make it easier to mitigate adverse effects.

2. Develop Risk Management Strategies

Potential Future Action Purpose(s)

The "Risk Assessment Scenario for Portfolio Tool" white paper developed by the Gunnison Roundtable (Trampe and Gunnison Basin Roundtable 2013) has addressed two different risk management issues that they would like to see addressed:

- "How do we manage development and use of Colorado River water to prevent a compact curtailment, while allowing for full development of Colorado's entitlement?
- "If we fail, how do we deal with a compact curtailment under full development of Colorado's compact entitlement?"

There are several other efforts underway in the state that address risk. The IBCC has identified a need to maintain a dialogue with other compact states while continuing to do parallel work on Colorado's specific interests and concerns (e.g., developing available water in wet years, storage, administrative systems). The IBCC's New Supply Subcommittee has similarly indicated that there are risks associated with both the underdevelopment of Colorado's compact entitlement and risks associated with overdevelopment. The following is a list of the activities underway that address risk:

- Water Banking
- Aspinall Water Bank
- Scenario planning and adaptive management
- Alternative processes to Wild & Scenic River designation
- Others

All of these strategies could be implemented if needed for either existing or future projects as circumstances dictate and if they meet the No/Low Regrets philosophy. The water banks may require a trigger based on hydrologic conditions and the 10-year running total at Lees Ferry to begin operation, while the remaining activities may be implemented as soon as they are operational.

The IBCC recognizes that compact curtailment is not the only risk to be considered. Risks associated with nonconsumptive needs (e.g., additional species being listed as endangered or irreversible impacts to recreation), agricultural communities, and drought are discussed in other sections of this document.

Potential Specific Actions

a) **Develop signposts/triggers:** Develop signposts/triggers that indicate risk of compact curtailment. Associated with these activities, risk management strategies should be initiated to help avoid compact curtailment. For instance, a trigger could initiate the operation of a water bank. Options for signposts/triggers that maintain flexibility while approaching an uncertain future should be explored.

b) **Develop an emergency plan:** Develop an emergency plan to decrease economic impacts if curtailment occurs.

c) **Develop an insurance policy for new projects:** Have new projects develop an insurance policy.

d) **Develop strategies:** Develop risk management strategies that are not dependent on how much water is available.

e) **Continue existing work:** Continue existing work on the Water Bank Study, Aspinall Water Bank Study, scenario planning and adaptive management, alternative processes to Wild & Scenic River designation, and other risk management work that is currently underway (see "Background" in this section for more detail).

Immediate Action Step

Further explore the BoR Colorado River Supply and Demand Study ideas.

Background

Challenges/Barriers

Colorado is discussing options with the other Upper Basin states regarding Colorado River Compact issues. It is important that Colorado's efforts allow for flexibility in these conversations.

Opportunities

Water Banking

The Water Bank Study, now underway for the Colorado River and major tributaries located in Water Divisions 4 to 7, has not reached any final conclusions regarding the feasibility of the Water Bank. The Water Bank is being evaluated to determine if senior pre-compact irrigation water rights could be used to allow critical post-compact water rights to continue to divert rather than be curtailed in the event the 10-year running total falls below 75 million acre-feet (af). The concept for the Water Bank is that willing agricultural pre-compact water right owners would temporarily remove lands from irrigation (fallow) and the historical CU from the fallowed lands would flow to the State Line to offset the depletions by the post-compact water rights that are allowed to divert out-of-priority. The senior water right owners would be compensated for the fallowing of their lands by post-compact water providers participating in the Water Bank.

Assuming that the Water Bank Study finds that the concept is feasible, then rules for operation of the bank could be finalized or promulgated depending on the final structure of the Water Bank. Once the rules are in place and contracts with pre-compact water rights owners are final, then the Water Bank could be implemented if and when an agreed upon trigger using the 10-year running total at Lees Ferry requires action.

Aspinall Water Bank Study

The Aspinall Water Bank Study is not complete and no decision has been reached on its feasibility. The concept for the Aspinall Water Bank is similar to the water bank described above in that senior pre-compact irrigation water rights would be fallowed so that the historical CU could be stored in unused space in Blue Mesa Reservoir. The water would be accumulated over a number of years in advance of a potential compact curtailment demand from the Lower Basin and then released to mitigate or offset

the need for curtailment of critical post-compact water rights. Again, the senior pre-compact irrigation water right owners would be compensated by those water providers participating in the bank.

Scenario Planning and Adaptive Management

Adaptive management strategies are also a way to address risk and uncertainty (including the risk of curtailment) and could include a number of potential actions. The IBCC is working on an adaptive management framework that will identify decisions or triggers under a variety of future conditions.

The Metro Roundtable has suggested in its "Water Supply Paper" (Metro Roundtable 2012, Draft 5-14-2012) that an adaptive management approach that allows for the full development of Colorado's Colorado River Compact entitlement be explored. This would be preferable to a limit or a cap on water development. The concept includes both an agricultural and a new supply project to be developed and operated in tandem to provide maximum flexibility and reliability given the hydrology. In some wet years, storage of water in aquifers or reservoirs is conceived, while in dry years, agricultural water and groundwater is more relied upon. The paper also suggests voluntary demand reductions be explored.

The use of IWSAs on the East Slope that would operate based upon some agreed-upon hydrologic trigger was suggested in the "Risk Assessment Scenario for Portfolio Tool" white paper developed by the Gunnison Roundtable (Trampe and Gunnison Basin Roundtable 2013) and could reduce the reliance of East Slope water providers on West Slope water. The IWSAs could be approved by the State Engineer in advance and would operate up to three years out of every 10 by fallowing senior irrigation water rights. IWSAs were enacted after the 2002 drought to allow some flexibility for water providers.

There are other adaptive management strategies that can be implemented by creative water managers on both the East and West Slopes, provided there is encouragement and support by the state through the IBCC, CWCB, and DWR.

Alternative Processes Related to Wild & Scenic River Designation

The Metro Roundtable "Water Supply Paper" (Metro Roundtable 2012, Draft 5-14-2012) recommends that an allowance for new water supply projects be included in Wild & Scenic River processes, Recreational In-Channel Diversion (RICD) water rights, and other alternative environmental protection plans. The ISFs would not be affected until a new project is actually built and the new project would be designed to minimize impacts and, where possible, enhance ISF values.

Others

There are additional efforts that address risk associated with new supply development underway that have not been specifically referenced in this document, including:

- Compact Compliance Study
- Colorado River Water Availability Study (CRWAS) – Phase 2

3. Identify Potential Multi-Purpose Components of New Supply Projects

Potential Future Action Purpose(s)

The IBCC determined that multi-purpose components in new supply projects can help in risk-sharing but will take significant financial resources. Many group members are in favor of identifying a project quickly and garnering support, because projects are occurring now while the IBCC tries to find consensus. The group also discussed how Basin Implementation Plans can be used to identify needs and opportunities for potential multi-purpose water supply projects.

As listed in the CWCB Strategies Report (CWCB 2010), some potential multi-purpose components of new supply projects include:

- **Headwater enhancements:** Exchanges with current transbasin diverters for additional flows in Colorado headwaters (e.g., the Grand County Streamflow Management Plan, Blue River Flow Enhancement).
- **Conservation:** Front Range entities will need to prove extensive demand management. This could include: 1) proof of a water conservation program approved by CWCB as being in compliance, and/or 2) a conservation program designed to achieve a high level of conservation compared to average gallons per capita per day use.
- **West Slope growth:** Assurances will need to be made that the West Slope growth and needs can be met and that West Slope basins can develop at their own pace. A socio-economic compensation fund could also be an important multi-purpose component of a new supply project.
- **Endangered species:** A new supply project will need to ensure that the project does not lead to further federal action on federally threatened or endangered species or the listing of additional species. The project would need to have environmental and recreational protections, including mitigation and/or enhancements for the environmental and recreational economies.

These concepts were also explored as part of the IBCC's 2010 "Letter to the Governors," (IBCC 2011) the work of the IBCC New Supply Subcommittee, the Basin Roundtable Project Exploration Committee, and several other groups.

In addition, as part of the risk management strategies (see above), compact compliance could be a component of a multi-purpose project.

Potential Specific Actions

a) **Develop a multi-purpose "strawman" for each potential transbasin project:** Develop a "strawman" for each new supply project or package of projects to incorporate pumpbacks, pipelines, and/or innovative management techniques in a way that benefits multiple uses and mitigates or enhances environmental and recreational attributes. Utilize metrics and Basin Implementation Plans as appropriate.

b) **Use "strawman" to evaluate financial capability of state/project proponents partnerships:** In addition to the configuration of the project, a "strawman" should be utilized to consider how a potential project will be financed, managed, and implemented. This research could also include the identification of funding options and incentives. The "Strategies for Colorado's Water Supply Future" report discusses financial capabilities and can be used in this context. Funding options to be considered and further explored include:

   i) A federal/state partnership similar to the Central Arizona Project
   ii) A state water project similar to the California State Water Project
   iii) A state/local partnership in which the state facilitates the project, but the end-users finance and manage it
   iv) A public/private partnership similar to those used to build transportation projects (e.g., E-470)
   v) Enactment of a "water" mill levy (the assessed property tax rate used to raise revenue)

(1) Determine how much a one (1) mill levy would generate statewide. Total property values in Colorado were over $89 billion in 2012. A 1 mill levy, equivalent to 0.001 * total property value, would generate over $89 million dollars annually.
(2) A two (2) mill property tax on the nine largest Front Range counties would generate about $107 million/year. (Adams $9 million; Arapahoe $15.2 million; Boulder $11 million; Denver $20.2 million; Douglas $8.6 million; El Paso $11.6 million; Jefferson $14.4 million; Larimer $7.6 million; Weld $9 million). As a point of comparison, most fire districts collect an 8+ mill. An additional 2 mills might incentivize linking land use planning and water supply planning in the "Big 9."
(3) Half of the 2 mill levy (about $54 million/year) could fund rural economic development. This could be done either through a development fund as described below, or it could be divided between the West Slope counties.
(4) The other half could fund construction of the multi-purpose project.

vi) Creating state bonding authority for water projects (referred to by some members of the IBCC as "Referendum A, Version 2"). Projects could be backed by general obligation or revenue bonds. General obligation bonds are backed by the full faith, credit, and taxing powers of the state, and revenue bonds are backed by revenues other than from a statewide tax, such as revenues generated from selling or leasing water from the project. Referendum A in 2003 was for a revenue bond. Part of this work should include understanding the current bonding authority held by the state.
vii) Severance tax increases
viii) A statewide sales tax. In 2011, net taxable sales in Colorado were nearly $68 billion. A 0.01 sales tax (one penny for every dollar spent) would generate nearly $677 million statewide. A 0.02 and 0.03 sales tax would generate $1.4 and $2.0 billion, respectively.
ix) Additional funding options

c) **Develop a cross-basin agreement or agreements:** Develop an interbasin compact, using the lessons learned from the Colorado River Cooperative Agreement (CRCA), WISE partnership, and the criteria used to develop Wolford Mountain Reservoir (e.g., environment, neighbors, project purposes). This agreement could determine an amount of water to be used in both wet and dry years and differing future hydrologies. It would define qualitative goals and then send the water to a new supply project if certain conditions were met. A comprehensive framework discussion (like the one recommended by the Basin Roundtable Project Exploration Committee) should begin at the IBCC as a way to preserve future new supply options. Discussion at the March 5, 2013 IBCC meeting touched on several guidelines for potential interbasin agreements regarding new supply, which are highlighted below:

i) Risk management needs to occur first
ii) Risk should be shared between beneficiaries
iii) The partnership and the rules under which it operates should be defined
iv) Both West Slope and Front Range agriculture should be preserved
v) Consideration of the project being a "State Water Project"
vi) Include compensatory projects
vii) Include native species and other nonconsumptive considerations
viii) Dialogue should develop incremental and immediate next steps
ix) Agreements should build on the 2010 Letter to the Governors
x) The project can be part of a multi-purpose package/portfolio

xi) RICDs, Wild & Scenic River designations, and other nonconsumptive flow projects in areas where a new supply project may be built need to have an allowance for the project to proceed
xii) Implement low hanging fruit first (e.g., IPPs, ATMs, conservation)

The April 22, 2010 IBCC meeting also included discussion about interbasin agreements for new supply. West Slope representatives indicated that they would need several commitments before being supportive of this type of multi-purpose project. These included:

i) Continued viability of West Slope economies
ii) Certainty that water would be available for development in each basin
iii) A commitment from Front Range communities regarding conservation and reuse

These elements could be met through a combination of water-related benefits for the West Slope subbasins and/or socio-economic compensation.

Water-Related Benefits for West Slope Subbasins

Even though a diversion may not occur directly in each basin, different elements could be included to distribute statewide benefits, ensure continued viability of the West Slope's economy, and provide certainty. The "Reconnaissance Level Cost Estimates for Strategy Concepts" Appendix in SWSI 2010 includes these suggested water-related benefits for individual basins.

Yampa/White

- Infrastructure for irrigation of additional acres in Moffat County (20,000 – 30,000 acres of land could be irrigated)
- Water for future municipal development particularly in Steamboat Springs and Craig
- Upper Basin interests have previously secured 60,000 acre-feet (AF) subordinations to protect future uses
- They have indicated they would want a similar subordination or component of the project

Colorado

- Exchanges with current transbasin diverters for additional flows in Colorado headwaters (Grand County Streamflow Management Plan; Blue River Flow enhancement)
- Maintenance of Dillon Reservoir levels
- Use of Wolcott Reservoir for future West Slope water demands, additional yield to the Grand Valley, some or all of the 10,825 AF obligation to the 15-mile reach
- Potential abandonment of Eagle River Rights

Gunnison

- Agricultural firming projects in the Upper Basin (Tomichi Creek, etc.) to help with current agricultural shortages

- Water quality improvements in the Uncompahgre River and Lower Gunnison (selenium)

Southwest

- Financial assistance with several of their IPPs

Socio-Economic Compensation (Development Fund)

A socio-economic compensation fund was envisioned in the "Reconnaissance Level Cost Estimates for Strategy Concepts" Appendix in SWSI 2010 and in the 2010 "Letter to the Governors" (IBCC 2011).

- Generally, the most useful form of compensation would be unrestricted monetary compensation to be used by the West Slope to compensate unprotected parties and for whatever other purposes its citizenry prefers. Rather than committing to specific projects, a development fund could be established. The money from this fund would be available to provide assistance for future water needs (see above) or other economic development on the West Slope.

- The fund could be financed by a charge placed on users of the multi-purpose project water (perhaps indexed to the current price of water in the South Platte Basin). The fund would be held by the state (CWCB) or potentially the Colorado River Water Conservation District. Expenditures would be made against the fund for projects proposed by municipalities, conservancy districts, and other public entities on the West Slope. Appropriate expenditures could be water related. Appropriate expenditures could also include economic development projects similar to the Department of Local Affairs severance tax grant program.

Background

Challenges/Barriers

- Components of the project may need to be changed (or other components added) if Colorado is in a low supply scenario. The low supply scenario does not mean "do nothing," as there will likely be challenges for meeting existing water use. This may involve more reallocation, flexibility, and reliability built into a highly variable system. There could be common elements between this multi-purpose project and one developed for the low supply scenario.

- Potential endangered fish and depletion issues downstream of the diversion would need to be analyzed.

- Multi-purpose new supply projects would require enlargement or construction of additional storage in the South Platte or Arkansas Basins. This storage could be surface water storage or underground storage.

- Large energy requirements would be required, although some renewable energy may be available, and multi-purpose projects may require less energy than the other concepts.

- Water rights administration could be complex in the event of compact compliance.

Opportunities

- Front Range municipalities could get 150,000 AF of high quality, firm yield reusable water.

- New water supply development would minimize the loss of irrigated acres in the South Platte and Arkansas Basins. Transfers of East Slope agricultural land would no longer be the dominant strategy for meeting Front Range water needs. East Slope agriculture could participate in the project and receive additional yields (either directly or through "second use" of fully consumable return flows).
- Multi-purpose components of new supply projects could result in acceptable water quality that may not require advanced water treatment.
- Multi-purpose components of new supply projects would allow for the development of new water supplies and utilization of Colorado's compact entitlements while protecting recreational and environmental flows on the West Slope, particularly in the headwaters.
- Depending upon the location of the diversion, multi-purpose new supply projects could diversify the state's M&I water supplies. The CRWAS indicates that climate change impacts are less severe in northern basins such as the Yampa and Green. Adding a more northerly water supply, or one in a basin other than the Colorado mainstem, would diversify the state's M&I water supply and could mitigate potential risks from climate change.

4. Identify Projects and Preserve Options

Potential Future Action Purpose(s)

The purpose of this action is to ensure that if a new supply project is needed in the future, it will be available. There are several actions described by the IBCC that could preserve new supply options:

a) Planning hydrology
b) Acquire water rights
c) Acquire rights-of-way

Each of these activities could be applied to one or all of the conceived new supply projects, but have financial ramifications associated with them. Some members of the IBCC are concerned that the new focus on immediate action is causing some walls to come up between members. Developing a multi-purpose "strawman" for each project, evaluating projects with regard to environmental and other considerations, and having the cross-basin dialogue described in Potential Future Action #3 will help inform which projects should have water rights and rights-of-way acquired.

Potential Specific Actions

a) **Planning hydrology:** The CRWAS Phase 1 and Phase 2, along with a range of hydrology represented in the scenarios, can provide a basis for this analysis.

b) **Acquire water rights:** Any new proposed project will need conditional water rights in order to establish an appropriation date. This will protect the water right from other projects that may develop later but could obtain a water right senior to the proposed project. These other projects could include RICD water rights or industrial water rights. One option, which could be informed by the cross-basin discussion described in Potential Future Action#3 above, could include having the state file for a water right for a new supply project, but only utilize it if it is paired with basin-of-origin protections or if the relevant terms and the conditions described in the agreement were met. The Metro Roundtable in its "Water Supply Paper" (Metro Roundtable 2012) suggests that the IBCC process be used as a starting point. The IBCC would determine where water rights may be needed to protect future supply projects, when the

water rights should be filed, how they should be filed, who should file and hold the water rights, and how the water rights would be maintained for the long-term. The "Water Supply Paper" also states that there may be a need for legislation to establish a mechanism for this type of conditional water right, which may involve multiple partners and the State of Colorado.

c) **Acquire rights-of-way:** Acquisition of rights-of-way could be performed in a similar fashion to the methods described for acquiring a water right.

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