



Integrated Water Management Planning in the Middle Colorado River

To improve security for all water uses in the Middle Colorado River by understanding and protecting existing uses, meeting shortages, and maintaining healthy riverine ecosystems in the face of increased future demand and climate uncertainty.

Advisory Committee Meeting

October 2, 2019

Meeting Summary

- I. **Introductions.** See the attached list of meeting invitees and attendees. Meetings are open to the public. Laurie Rink, IWMP Project Manager, commented on the strong attendance at the Conservation Districts sponsored dinner and presentation on the Colorado River Risk study held in Rifle on 10/1/19. There was also an update on Garfield County Community Development's updates to the County Comprehensive Planning document. The Comp Plan sections on water and agriculture have been updated significantly and draft language was presented to the Planning Commission in late September. Updated planning documents will be shared with the IWMP focus groups for review and consideration as part of identifying IWMP projects and programs.

- II. **The Analysis and Technical Updates to the Colorado Water Plan.** Russ Sands, Senior Program Manager and Greg Johnson, Section Chief, both of Water Supply Planning for the Colorado Water Conservation Board (CWCB) were joined by Kara Sobieski of Wilson Water Group in delivering the presentation. Their joint presentation can be accessed [HERE](#). The full narrative report can be found [HERE](#). Following is a brief synopsis of key points.
 - **Purpose of the Updates.** This technical body of work, initiated in 2016 and completed in July of 2019, updates the state's framework for water supply and demand analyses. It has updated future water supply gaps, evaluated environmental and recreational use needs with new tools, and created updated tools, dataset and user interfaces. As prefaced by Jim Pokrandt, the Colorado Basin Roundtable (CBRT) and other Roundtables will be updating their Basin Implementation Plans (BIPs) using outputs from and tools provided by this body of work. Any policy updates by the CWCB will follow. As a note, work generated by this IWMP process will be incorporated into the CBRT updated BIP.
 - **Major Updates.**
 - **Planning Scenarios.** Five future planning scenarios were developed for evaluation. These scenarios incorporate a number of variables including climate change projections, variable population growth, and innovation related to water use and consumption. Water supply gaps are portrayed as aggregated risks within each scenario. These scenarios include:
 - Business as Usual
 - Weak Economy
 - Cooperative Growth
 - Adaptive Innovation
 - Hot Growth
 - **Updates to Municipal Water Usage.** Water demands now reflect self-reported municipal water usage as required through House Bill 2010-1051. Gaps in supply are calculated as maximums to reflect how municipal water is planned as firm yields.

- A number of state-developed models and databases were employed to develop the technical updates – these are combined for use within what is referred to as the Colorado Decision Support System (CDSS). The hydrology model uses a monthly time-step to integrate regional-level detail that captures typical water operations in most basins. Some IWMP processes have taken the model and disaggregated it, conducted a more detailed analysis of water rights, and are providing this refined data to the state for future model updates.
 - An improved method for calculating the agricultural gap for both current and future planning scenarios now utilizes surface water modeling tools. The “total ag gap” is currently defined as the total amount of water supply that needs to be diverted or pumped to meet the full crop irrigation requirement. Applying CDSS tools to this analysis allows for an overlay of the legal and physical supply as a refinement calculation, acknowledging that the required water supply may not be met from year to year. The “incremental gap analysis” quantifies how the gap (calculated as an average) may increase with future water supply shortages beyond what has been historically experienced. Both the total and incremental gaps are calculated statewide and for each basin. Some IWMPs are prioritizing data updates related to crop type and source of supply. The state’s update generally captures the regional ag demands, but these could be refined at the local level if there is interest. The comment was made that having an overlay of dried up acreage from water court change cases would be useful.
- **Observations Regarding Model Application.**
 - Climate and Ag. The methodology assessed three levels: current climate, an “in-between” condition, and hot and dry. The resulting effects of climate change on ag varied little at the lower elevations like the Grand Valley, significantly as higher crop demand at higher elevations, and somewhere in-between in the mid-elevation like the middle section of the Colorado River.
 - Conversion of Ag. The modeling accounts for planned and likely conversion of ag to municipal use, most of this occurs in the South Platte. Even with decreases in overall irrigated acreage, irrigation water requirements increase in a warmer future climate.
 - Municipal Demands. There was less population at the 2015 starting point for the analysis than projected in the previous water supply/demand analysis. There are also higher efficiencies in current municipal use due to conservation efforts promoted by the state and front range water providers.
 - Industrial water use statewide is roughly 15% of the combined municipal and industrial demand. Oil shale water needs were incorporated into this update, but there was some question about the projects used for the middle Colorado.
 - Climate Adjusted Hydrology. Modeling for future climate change indicates a shift in peak runoff to earlier in the season which may be too early for ag to benefit and result in late season shortages. The model updates did not, however, account for a higher ag demand with an elongation of the irrigation season. This may be taken up in the next version of technical updates.
- **Model Limitations.**
 - The monthly time step may not be sufficient for certain analyses, particularly short-duration environmental flow-related triggers. This detail could be developed at the regional level with IWMPs.
 - The Division of Water Resources database is quite extensive and applicable for regional-level analysis. However, there are many ungaged tributaries and sometimes unreported diversion records on the tributaries.
 - Groundwater pumping is held constant in the model, but this should not be an issue in the Colorado River Basin.
 - Operation of transbasin diversions in Colorado are held constant for the planning scenarios. Their operations could change pursuant to future drought contingency plan implementation.

- Results from this update should not be compared directly with output from previous iterations since different methods of analysis were employed.
- This exercise did not include any modeling of future projects that may lessen the gap. IWMPs and BIP updates are welcome to do this type of analysis.
- **Model Results (highlights)**
 - Municipal and industrial projected water supply gaps range from 245 to 740 KAF (thousand acre-feet). Most occur in the South Platte River Basin. There is no gap currently, but gaps occur with projected population growth and climate change. Some of the gap could be filled through additional conservation efforts. Overall per capita use has decreased statewide by about 5% over the last decade.
 - The Ag gap ranges from 2,213 to 3,379 KAF principally due to changes in climate-induced hydrology (18 to 43% over baseline). The incremental ag gap ranges from 23 to 1,053 KAF. The gaps are less when innovation is factored into the analysis.
 - Reservoir storage statewide goes almost to zero in the extreme scenario of hot growth.
 - Peak streamflows and annual volumes passing the Cameo diversion are diminished for most planning scenarios when compared to current, with peaks occurring about a month earlier. Drier conditions are most evident in late summer.
- **Environmental Flow Tool**

The Environmental Flow Tool was improved for use by IWMPs and Roundtables. It groups 58 environmental and recreational (E&R) attributes into 6 macroattributes. The risk to the 6 macroattributes can be calculated for particular stream “nodes” through application of the planning scenarios. Nodes relevant to the middle Colorado River are located at Dotsero and Cameo gages. Chapter 4, Section 4 of the full technical report provides a detailed description of the impacts, including those that accrue to the 15-mile reach for T&E fish species.

 - Question – does the Environmental Flow Tool include an analysis like boatable days? Answer – the IBCC decided to not try and quantify the gaps for E&R uses. This current approach is incremental and allows for a comparison of current to future.
 - Question – how difficult is it to breakdown nodes to shorted stream segments? Answer – just an issue of time and money.
- **Update Results Specific to Middle Colorado River.**
 - Agriculture. 36,000 irrigated acres. Gap by 2050 projected to range from 26,000 to 45,000 AF. Incremental gap is 5,200 to 19,400 AF as an average; could also look at maximum gap for local IWMP planning purposes.
 - Municipal/Industrial. Projected 550 to 2,240 AF gap.
 - Reservoir storage future projections included Harvey Gap, Rifle Gap, Parachute and Roan Reservoirs.
 - See the streamflow future conditions for Dotsero and Cameo gages.
- **How the Technical Updates Could be Used for Middle Colorado IWMP**
 - Could change basic model constructs to fit our local planning objectives then run the state planning scenarios or other scenarios we construct.
 - Could rerun the 2050 projections with any of our own data.
 - Provide the state with refined data for future Water Plan technical updates.

III. **Update on Consumptive Use Analysis.** Wendy Ryan, as technical consultant for the Conservation Districts, reported nearly 100 attendees at the Conservation District dinner and presentation on the Colorado River Risk Study the previous evening. The Conservation Districts applied for a Water Plan grant to provide supplemental funding for their efforts and it appears that the funding is being strongly considered. They will know in mid-November whether funding is forthcoming.

IV. **Update from Lotic Hydrological.** Seth reported on their intended efforts to dive into the workings of the state modelling work as presented today. The IWMP process, including stakeholder input, will examine whether the models need updating for our local planning purposes and, if so, whether we have the time and resources to do the updates or if that becomes a recommendation in the IWMP report. We intend to use the same five planning scenarios that the state used. Our analysis needs to be conducted at a daily timestep rather than monthly in order to understand E&R uses more accurately. The number of location at which this level of analysis occurs is under evaluation.

V. **Future Meetings**

Next Meeting December 4th, 1:00 to 3:30 PM, Rifle Library
Meeting schedule for 2020 TBD

Links to Important IWMP Resources

[Past Meeting Minutes and Notes](#)

[IWMP Fact Sheet](#)

[Water Education Colorado Headwater Magazine on Stream Management Plans \(SMPs\)](#)

[Chapter in Water Plan on SMPs](#)

[Colorado Basin Roundtable Table Basin Implementation Plan](#)

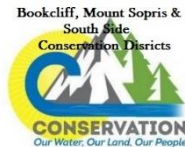
[MCWC IWMP Scope of Work](#)

[Mount Sopris, Bookcliff and South Side Conservation Districts IWMP Scope of Work](#)

[IWMP Community Engagement Plan](#)

[Lotic Hydrological Work Plan and Timeline](#)

[Colorado Mesa University Website for IWMP Framework Project](#)



**Middle Colorado Integrated Water Management Plan
Advisory Committee - Invited Participants**

Last updated 10-23-19

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