

## **EXECUTIVE SUMMARY**

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### **Background**

The Basin Implementation Plan (BIP) developed by the Yampa/White/Green (YWG) Basin Roundtable (BRT) addresses key issues regarding our most important natural resource - water. These issues are discussed from a policy viewpoint; the complex issues of water law and specific environmental concerns will be addressed in greater detail as individual projects and processes are implemented to meet the objectives outlined in this document. In this BIP, the BRT recognizes the significant role of the Yampa and White Rivers in meeting Colorado's compact obligations in the greater Colorado River Basin. In addition, the BIP recognizes 1) the need to retain a share of native flows for existing uses and future development, 2) the need to preserve the natural hydrology for environmental and recreational use; 3) the need for appropriately located, sized, and operated projects to protect water uses and the environment, particularly during drought; and finally, 4) the need to consider and to address all of these within the roundtable process.

The YWG River Basin has an excellent opportunity to achieve the vision of the Governor's Executive Order which seeks to balance future consumptive needs while meeting recreational and environmental needs. By respecting this balance, the State of Colorado (State) will remain true to the founding concept of the Colorado River Compact, which secured water for basins experiencing slower economic growth as others grew more swiftly.

The BIP represents the outcome of considerable dialogue on the complexities of water use and management. Much consideration is given to the importance of the Yampa, White and Green Rivers to our region and our communities as we face impending water shortages not only in Colorado, but in the entire American West.

### **Basin Facts, Needs and Vision**

While the hope is that this BIP will provide the foundation for future policies, processes and projects that can be implemented, it should not be interpreted as an end point; rather it serves as a new beginning. Additional effort and continued dedication will be required to carry on this work. The YWG BRT process offers local communities the opportunity to have a strong voice in how water will be managed now and into the future. This unique grassroots process does not exist in other states where water planning is more commonly conducted exclusively at the state agency level.

The YWG BRT recognizes that all water development, whether categorized as an Identified Project and Process (IPP) or not, will involve complex and nuanced tradeoffs. Each project will present its own specific set of opportunities and constraints, and will likely reveal that what is a constraint for one project might be an opportunity for another. Consequently, at this time, the YWG BRT believes it is not possible to develop a comprehensive list of opportunities and constraints. Instead, this BIP sets out planning "considerations" that will serve to guide the future development and evaluation of water supply and resource projects. Although extensive, the modeling to date for this BIP is still being developed thus all results remain preliminary and do not constitute official findings by the YWG BRT.

The YWG drainages are relatively undeveloped and have limited existing storage compared to other basins in Colorado. The majority of the existing storage is for industrial and municipal use, although there are some agricultural storage supplies particularly in the upper Yampa valley. Supplies on smaller tributary streams where no storage exists are typically inadequate in the late season.

Administration has only occurred on the mainstem of the Yampa and White Rivers under special circumstances, such as protecting reservoir releases under dry conditions. This historical lack of administration speaks to the slower pace of development in this region, and a culture of neighborly consideration to share shortages voluntarily.

Constraints on water development and water management to protect flows for endangered fish species are in place in the Green and Yampa River Basins; similar constraints are being developed for the White River Basin. Consequently, this BIP calls for collaborative solutions to meet water supply challenges in order to maintain a balanced and diverse economic base.



How the YWG Basin fits into meeting Colorado’s compact obligations within and beyond the state is a principal concern. The YWG Basin is part of Colorado River Basin, and is caught between the needs of the downstream states, the needs of the urbanized east slope of Colorado, and its own in-basin needs. The YWG BRT must consider these competing needs in its water planning effort. In this regard, the YWG BRT also recognizes that the overdevelopment of water in the Colorado River and its tributaries poses a serious risk that would impact all users of Colorado River Basin water.

The YWG BRT seeks through its BIP to make certain that existing consumptive, environmental and recreational uses are met, even during anticipated drought periods. This includes drought periods similar to those in the reconstructed paleo-hydrologic record and which may be exacerbated by climate change. While population growth will drive additional municipal needs and additional irrigated agricultural areas have been identified in State-funded studies, the energy sector has the potential to create the greatest additional consumptive water demands in the YWG Basin. Consumptive demand is expected to increase from 282,000<sup>1</sup> to 361,000 acre-feet per year by the year 2050 under a dry hydrology scenario. Non-consumptive needs including flows for endangered species, riparian plant communities, sport fisheries, white-water boating, and ecological integrity are also expected to expand.

In this BIP, recreational, environmental, agricultural, municipal and industrial stakeholders have unanimously adopted eight Goals and their associated Measurable Outcomes to meet YWG Basin needs:

- Protect the YWG Basin from compact curtailment of existing decreed water uses and some increment of future uses.
- Protect and encourage agricultural uses of water in the YWG Basin within the context of private property rights.
- Improve agricultural water supplies to increase irrigated land and reduce shortages.
- Identify and address Municipal and Industrial (M&I) water shortages
- Quantify and protect non-consumptive water uses.
- Maintain and consider the existing natural range of water quality that is necessary for current and anticipated water uses.
- Restore, maintain, and modernize water storage and distribution infrastructure.
- Develop an integrated system of water use, storage, administration and delivery to reduce water shortages and meet environmental and recreational needs.

Much of the information in this BIP regarding demand and supply was developed through a series of Statewide Water Supply Initiative (SWSI) and Basin-wide studies, particularly the 2014 Project and Methods Study (P&M Study). The 2014 P&M Study is the most recent state-funded study used to inform this BIP.

Several IPPs were developed with input from the YWG BRT and other stakeholders, taking into consideration information from previously completed studies and the considerations laid out in the preceding paragraphs. The IPPs are dynamic lists reflective of the incomplete state of the planning process. These lists will continue to be updated with new Projects and Processes as the YWG BRT continues to refine the YWG Basin hydrologic models and improves its overall understanding of how operations and proposed projects might work together to meet potential shortages. Project proponents will be encouraged to consider the goals of the BIP for success in balancing demands.

### **Preliminary Model Findings**

The P&M Study model for the YWG Basin was modified as part of the BIP to refine demand at certain nodes and to improve operational and modeling assumptions. The results remain preliminary. The YWG BRT is committed to continue to improve this decision support tool.

The BIP focused on modeling the YWG Basin under a Baseline Scenario (historical conditions) and future scenarios that assume high demands and dry hydrology with or without IPPs. (Dry Future, Dry Future IPP).

Under the Baseline Scenario, no shortages exist for M&I and Self-Supported Industrial (SSI) demand nodes due to generally adequate water supply and augmentation from reservoirs. Agricultural shortages in the YWG Basin exist, as

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<sup>1</sup> Projects and Methods Study StateMod Model, 2014



do shortages to the modeled In-Stream Flow reaches. For the Steamboat Recreation In-Channel Diversion (RICD), the river flows are insufficient to meet the flow targets during the entire targeted flow period under all scenarios.

Under the Dry Future Scenario, M&I and SSI shortages develop for several nodes. Significant increases to agricultural shortages occur across the YWG Basin, but especially to the eastern and southern areas. Instream flow shortages along the majority of the modeled stream reaches also increase in this Scenario, and are especially significant for the Steamboat RICD. The risk to conforming to the Yampa River Programmatic Biological Opinion (PBO) baseflow targets is greatly increased under this scenario as well.

### Next Steps

This BIP has broken new ground by quantifying shortages to both consumptive and non-consumptive demands, while having conceptualized a suite of consumptive, non-consumptive and multi-purpose projects. A follow-up effort is being scoped which will more thoroughly examine in-basin shortages and produce specified, firmed up, and integrated projects to relieve those shortages. This effort will include greater attention to river flow management while turning concepts into shovel-ready projects, complimenting themes outlined in the 2016 SWSI.

After deliberations by its technical sub-committee and some clarification of the underlying modeling, the YWG BRT is proposing the following next steps to include:

- a) Indicators of shortages for meeting current and future in-basin consumptive and non-consumptive demands, and the basis for specific shortages;
- b) Further specification and development of the projects which will relieve those shortages, including quantification of the storage releases and new or re-allocated supplies;
- c) Indicators of consumptive and non-consumptive demands resulting from the implementation of projects to meet both needs; and,
- d) Collaboration on flow management and integrated projects to protect and augment flows, supporting the long-term health and substantial economic values therein.

These steps need to be reviewed and approved by the YWG BRT. The YWG BRT is also considering a thorough phase II of the Agriculture Water Needs Study specific to return-flow impacts from increasing irrigation efficiencies. This cumulative assessment of consumptive and non-consumptive needs, return-flows, river flow regimes and flow protection and management will go hand-in-hand with increased public engagement and education. It will also increase recognition of the significant role that the Yampa and White Rivers plays in providing water to meet Colorado's downstream compact obligations.

