

## **Shepherding Appropriated Water Within Colorado and to Lake Powell for Colorado River Compact Security**

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Colorado and the other states in the Upper Basin of the Colorado River - New Mexico, Utah, and Wyoming - are facing difficult water challenges. A prolonged drought beginning in 2000 has increased the risk of future curtailment of water uses in these states to meet obligations under the 1922 Colorado River Compact. A recent study attributes the significant measurable declines in water flows that the basin has already experienced to warming temperatures, and conservatively estimates that there will be 20 to 35% less water available during the remainder of the 21<sup>st</sup> century. All of the Colorado River Basin states and the Bureau of Reclamation have been conducting “Drought Contingency Planning” to explore appropriate responses to these growing challenges.

A major concern for the Upper Basin states is the uncertainty respecting future water level in Lake Powell. Natural flows reaching Lake Powell during many of the recent years of drought have not been sufficient to replace annual releases currently made to the Lower Basin plus water lost through lake evaporation. Continued declines could threaten the generation of hydroelectricity at Glen Canyon Dam. At storage levels below that necessary to generate hydropower, Glen Canyon Dam’s ability to release water is more limited, also threatening the ability of the Upper Basin states to meet downstream Compact obligations.

The 1922 Compact provides that the Upper Basin states will not cause flows at Lee Ferry (just downstream of Lake Powell) to be depleted below 75 million acre feet in any consecutive ten-year period. This provision appears to give the Upper Basin states an affirmative obligation to protect against the risk that Lake Powell will reach levels that would make it difficult or impossible to avoid depleting the flow below the amount specified in the Compact. Consequently, the Upper Basin states have been exploring mechanisms to temporarily reduce some existing consumptive uses of water, temporarily change the associated water rights if and when necessary, and move the conserved consumptive use water to Lake Powell to benefit the overall Upper Basin System and diminish the threat of curtailment of existing uses of water. Proactively placing additional water in Lake Powell is intended to avoid reaching lake elevations that would diminish or eliminate hydropower production and jeopardize the Upper Basin’s ability to comply with the Compact, potentially requiring curtailment of existing post-Compact water rights. We refer here to all such water as Compact security water.

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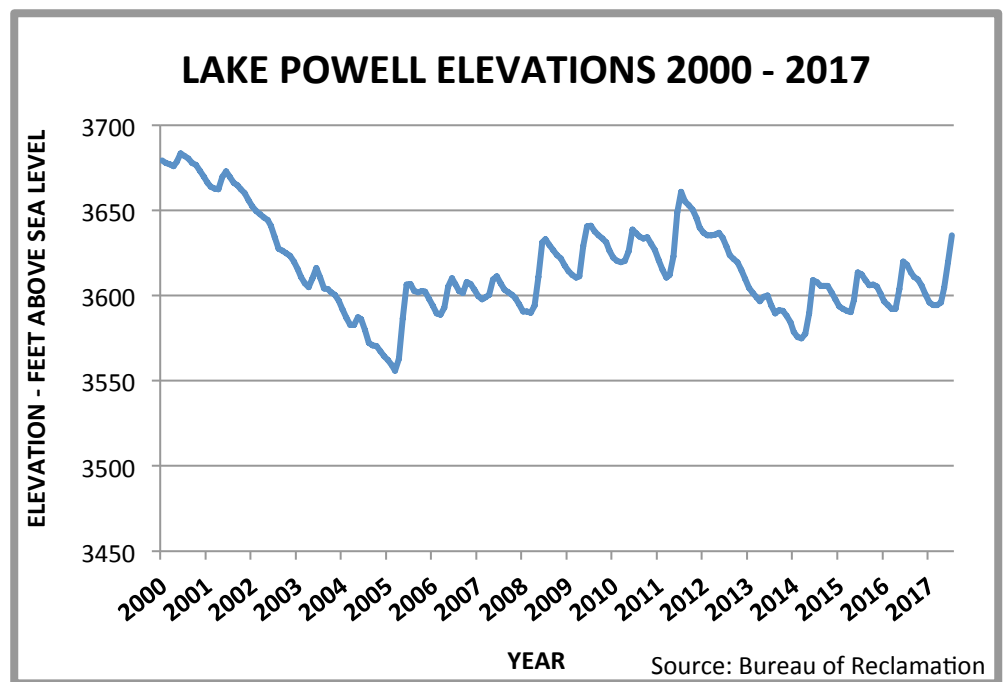
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To achieve the intended benefit to the Colorado River System, the Upper Basin, and the State of Colorado in particular, the Compact security water must actually make its way to Lake Powell. That is, the water must be moved from its existing place of use or storage and reach Lake Powell when necessary without being diminished by other water users. Absent relatively specialized circumstances, most conserved consumptive use water will require some form of administrative “shepherding” to reach the state line and Lake Powell. Water shepherding here refers to the delivery of a specified volume of conserved consumptive use water from its original place of storage or use to a downstream location without diminishment by other users.

A recent report on Alternative Transfer Methods (ATMs) addresses the issue of Colorado River Compact security and concludes that the ability to shepherd conserved or changed water to Lake Powell is essential. This report reflects the consensus opinion of many knowledgeable water users in Colorado. But existing water law in the Upper Basin states, including in Colorado, presents challenges for protecting Compact security water from diversion and use by others.

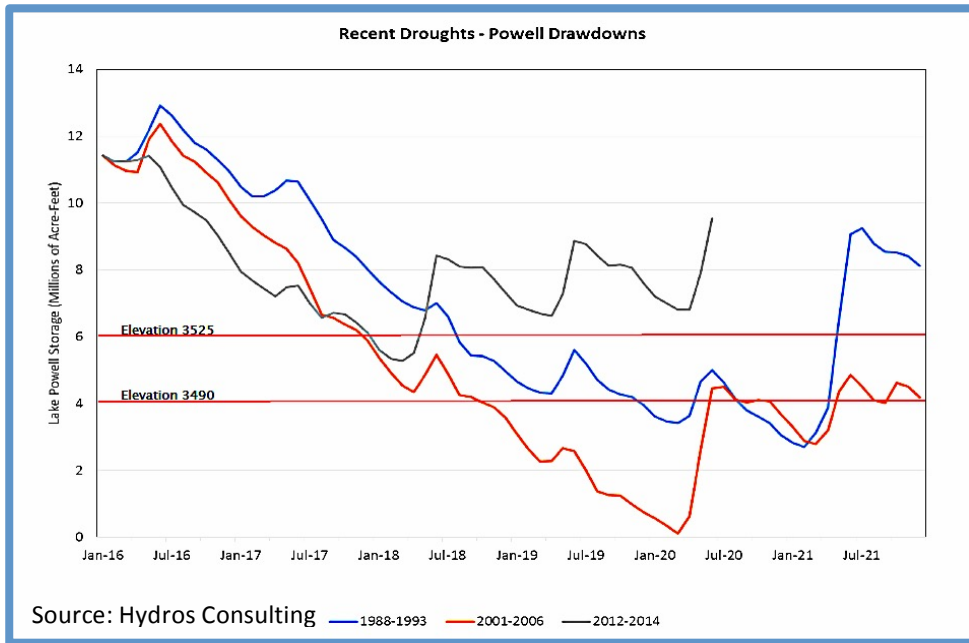
This paper explains the basis for the concern about storage levels in Lake Powell and, focusing on Colorado, discusses some of the legal and policy issues involved with moving Compact security water to the reservoir. It offers

recommendations for revisions to Colorado law. It considers interstate issues and the management of Compact security water once it reaches Lake Powell. The Technical Appendix provides a more comprehensive discussion of the legal and policy issues.



### Lake Powell Storage Levels

The chart shows the actual water elevations in Lake Powell since 2000. The rapid drop in elevation between 2000 and 2005 demonstrates how quickly storage in this reservoir can disappear. Even with better flows in several of the following years, storage remains well below capacity.



Preliminary modeling suggests that the type of hydrology experienced in the Basin during some recent very dry periods, such as 2001 – 2006), could quickly plunge Lake Powell below the elevation of the hydropower turbines (3490 feet).

In addition to the natural hydrology and downstream obligations, pressure on Lake Powell is created by increasing consumptive uses in the Upper Basin and by decreases in water levels at Lake Mead, which has experienced even steeper and deeper drops in elevation. Pursuant to the coordinated operating criteria and guidelines governing the two reservoirs, water levels are “balanced” and “equalized” under certain specified conditions. Persistent declines at Lake Powell would threaten operation of the hydroelectric power facilities at Glen Canyon Dam, which generate five billion kilowatt-hours of hydroelectric power annually for users in Colorado, Wyoming, Utah, New Mexico, Arizona, Nevada, and Nebraska and earn over \$150 million in annual revenues. These revenues fund Bureau of Reclamation project operations in the Upper Basin, repay the federal treasury for project investments, and support critical environmental programs, all of which are essential to continued use of water rights in Colorado and other Colorado River Basin states.

Moreover, sustained reductions in storage in Lake Powell would jeopardize the ability of the Upper Basin states to meet their Compact obligations respecting Lee Ferry flows and treaty obligations to Mexico. Substantial curtailment of existing uses in the Upper Basin states, and especially in Colorado, would likely be required.

### **Drought Contingency Planning and the System Conservation Pilot Program**

The seven Colorado River Basin States and the U.S. Bureau of Reclamation have been engaged in Drought Contingency Planning to help bring the Basin’s water budget into better balance. In the Upper Basin, the states of Colorado, New Mexico, Utah, and Wyoming have been exploring, among other strategies, demand management arrangements in which interested water users are paid to temporarily reduce consumptive use of water. Increasing demand in the Upper

Basin from population growth and related new water development puts additional pressure on the system and underscores the need for this demand management.

The System Conservation Pilot Program (SCPP), based on a 2014 funding agreement among the Bureau of Reclamation and four major municipal water suppliers in the Basin, was designed to determine whether voluntary, compensated conservation measures could create “system water” that would benefit the Colorado River Basin in general. The Upper Basin component of the SCPP has now been operating for three years, and is generally believed to have been successful in demonstrating that water users in Colorado, New Mexico, Utah, and Wyoming are willing to participate in a conserved water program.

The pilot projects funded in Colorado involve changes in traditional irrigation practices to temporarily make formerly consumptively used water available to the River. The focus of the pilot projects to date has been to gauge potential interest in such demand management, evaluate the effectiveness of different approaches for producing conserved water, and understand the consequences to the irrigator and other water users of making the changes required. In one example, the conserved consumptive use water was routed through a hydropower plant under its water right to prevent the conserved water from being called and diverted by upstream water users. In other cases, the water was likely to reach Lake Powell given the proximity to the state line, current hydrology, and lack of intervening demands. Thus far, however, the delivery of the savings to Lake Powell has not been ensured. Broader authorities and mechanisms must be considered, therefore, in order to ensure that the conserved water serves its intended purpose. In addition, the Upper Basin states will need to address the management of this water once it reaches Lake Powell.

## **Compact Security Water**

The pressing challenge is how to make some amount of already appropriated water in the Upper Basin states available as needed to bolster storage levels in Lake Powell and thus reduce the risk of future Compact curtailment. Colorado’s Water Plan calls for strategies to maximize use of Colorado River Compact water while actively avoiding a Compact deficit. To minimize effects on agriculture and communities, interest has focused on implementing water use practices that minimally disrupt existing operations, such as rotational fallowing, crop switching, deficit irrigation, and split season irrigation. Willing water users have volunteered to participate in such efforts in return for compensation. For this type of demand management to have the intended result of supporting Compact security, the water made available through conservation must be administered in a manner that actually moves it to Lake Powell. It must be able to move across state lines and pass downstream to the reservoir without diminishment by diverters located along the way. Once it reaches Lake Powell, it must be managed in a manner that ensures it serves its Compact security purpose.

The legal structures and their ability to provide the type of protection needed are somewhat different in each Upper Basin state. We have examined issues raised under Colorado law and the existing statutes and mechanisms that could be used to address this problem. We offer

suggestions for helpful clarifications that might be made in the law. We discuss the need for coordination of Colorado’s shepherding and Compact security efforts with the other Upper Basin states. Finally, we address the need for procedures to manage Compact security water while it resides in Lake Powell so that the intended benefits are realized.

## **Legal Issues Under Colorado Law**

### **1. Compact Security as a Beneficial Use**

Conserved consumptive use water is water that has historically been diverted or stored and consumed in a beneficial use under a water right but which the diverter has ceased consumptively using. Normally, this unused water becomes available for use by other appropriators, both upstream and downstream, unless it has a legally protected status. To make conserved consumptive use water available for Compact security purposes, the legal status of the conserved water must ensure that the conserved water can be directed to the state line without being diminished by others and that it be allowed to pass without diminishment, except for transit losses, through downstream states so it can reach Lake Powell.

Temporarily dedicating conserved or stored water to Compact security will generally require some type of state approval. If a change of use or change of place of use is involved, state approval occurs through a change of water right proceeding in water court or, under limited defined circumstances, an administrative review. The primary purpose of either type of review is to ensure that the change in use does not harm other appropriators. The new use retains the same priority date and historical consumptive use as the original use, but other aspects of the right, such as the point of diversion, the purpose and place of use, and the divertible quantity of water, are adjusted to reflect changes associated with the new use.

In addition to the ordinary challenges associated with obtaining approval for a change of water right, allowing conserved or changed water to be dedicated to Compact security purposes raises special issues, namely, assuring that this use of water is regarded as “beneficial” under state law. Because most beneficial uses of water in Colorado involve some type of diversion of the water from the stream, the lack of diversion in the case of Compact security water may pose a problem. Compact compliance or reducing the risk of curtailment for Compact purposes (both included in the term “Compact security”) provide a clear benefit to the State of Colorado and its water users, and thus may be recognized as a beneficial use. But the traditional understanding of the kind of beneficial use sanctioned by Colorado water law has been one that generates economic benefits for the user or, in certain circumstances, improves or preserves the natural environment. Legislative language would be desirable to confirm that Compact security is an acceptable and beneficial use for a Colorado water right and that a diversion is not required under appropriately limited circumstances. A water right that allows use for Compact security can rightfully demand administration of the water past would-be diverters to the state line, that is, shepherding.

### **2. Out-of-State Export Statute**

A second concern is that the water conserved for Compact security purposes would be stored in Lake Powell, located in Utah and Arizona. Colorado law governs out-of-state transport of Colorado water rights under special rules that require detailed findings, including that such water will be credited as a delivery to the downstream state for use under its compact apportionment. In addition, a fee of \$50 per acre-foot is assessed against such exports.

Compact security water generated in Colorado would be clearly intended for the benefit of the State of Colorado and its water users and thus, may not trigger the export statute. Recent decisions in the Republican River Basin support this view, but the precise question of Colorado River Compact deliveries has not been addressed. Because, however, the ultimate destination for Compact security water is out-of-state in Lake Powell, it could be governed by the out-of-state export statute.

It may also be argued that the provisions of the Upper Colorado River Compact addressing Colorado River Compact compliance override the out-of-state export statute and, therefore, the provisions of the export statute would not apply to Compact security water. While we see merit in this view, we are concerned about potential uncertainties of interpretation and the delay in implementation that could be caused by litigation over conflicting views. Because of the statewide benefit from Compact security water, it would be appropriate in our view to treat such exports differently than other types of out-of-state deliveries. Legislative clarification on this point would be prudent, narrowly drawn to avoid unintended consequences.

### **3. Control and Administration of Compact Security Water**

A third consideration is the control and administration of a water right used for Compact security purposes. Given the public purpose for which the water is to be used, public entities with missions related to safeguarding Colorado's compact entitlements, including the Colorado Water Conservation Board (CWCB), the Colorado River Water Conservation District (CRWCD), and the Southwestern Water Conservation District (SWCD), probably should take an active role. Several options could be considered, including involvement by the CWCB, CRWCD, or SWCD in Compact security water transactions by taking a lease or contract interest in such water. Alternatively, the CWCB—in consultation with the State Engineer—could establish criteria that each Compact security transaction would meet. These options are explored in more detail in the Technical Appendix.

While we believe legislative authorization for Compact security water would be desirable, there is a possible pathway that may not require such legislation. Upon request by the four Upper Division states, the Upper Colorado River Commission could make a finding that additional water is needed in Lake Powell to avoid future curtailment. Such a finding could provide the basis for the State Engineer to use the compact rule power to establish procedures for shepherding Compact security water to the state line. This option also is more fully discussed in the Appendix.

## **Legal Considerations Outside of Colorado**

Water conserved or changed in Colorado and intended for storage in Lake Powell must pass through Utah. Depending on the location of the existing water use within Colorado, the Compact security water may also need to pass first through New Mexico or Wyoming. Just as in Colorado, the water must be legally protectable in the other states to ensure that it is not consumed by their appropriators. The State of Colorado, as well as the other upstream states, will want to be certain that any additional water transported downstream for Compact security purposes receives recognition and protection in the other states. Moreover, the State will want to ensure that Compact security water stored in Lake Powell accomplishes the objectives for which it was intended. The Upper Colorado River Commission has helpful authorities for this purpose that could greatly facilitate the management of Compact security water if the Upper Basin states agree to the use of these authorities. Alternatively or in addition, an interstate agreement among all the Upper Basin states could be developed to facilitate the management of Compact security water, the quantity of water required, and the share attributable to each state. Special rules governing the use and storage of this water in Lake Powell will be needed to allow the Compact security water to remain in the reservoir until needed. These rules will require the consent and support of all seven Basin states and the Bureau of Reclamation.

## **Recommendations for Colorado**

In our view the preferable and more prudent approach is to enact legislation specifically confirming the use of appropriated water for Colorado River Compact security purposes as beneficial. We further suggest that such uses be exempted from the Colorado water export statute if necessary and that the CWCB and the State Engineer be directed to establish criteria governing the use of Compact security water and rules for its shepherding to the state line. If such use of water for Compact security involves a temporary change of use, we suggest it should go through an administrative review, preferably an expanded water bank. Logical candidates to administer such a bank would be the CRWCD and the SWCD. Determination of the need for, and transport of, Compact security water in the various states and storage in Lake Powell should be coordinated through the Upper Colorado River Commission under interstate agreement.

## **Conclusion**

As the Colorado River Basin states adjust to changing hydrology in the Colorado River Basin, adaptations of existing water uses as well as of related laws and procedures will be necessary. The Upper Basin states are now responding to foreseeable challenges as storage levels in Lake Powell fluctuate and decline. Colorado is examining options for making additional water available to maintain safe water levels in Lake Powell, including demand management within the state. We offer here our recommendations for a legal structure that will help to facilitate the purpose of demand management transactions and operations, and urge their prompt consideration.

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