

Shoshone Water Rights Preservation Project

Upper Basin Environmental Drought Mitigation, Bucket 2 Ecosystem (“B2E”) Financial Assistance Program



Project Name: Shoshone Water Rights Preservation Project

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Application Checklist

<input checked="" type="checkbox"/>	Project Abstract Summary
<input checked="" type="checkbox"/>	SF-424: Application for Federal Assistance, Office of Management and Budget
<input checked="" type="checkbox"/>	SF-424A: Budget Information – Non-Construction Programs
<input checked="" type="checkbox"/>	SF-424B: Assurances – Non-Construction Programs
<input checked="" type="checkbox"/>	Budget Proposal & Narrative
<input checked="" type="checkbox"/>	Unique Entity Identifier (UEI): JXCRNNKCHPE5
<input checked="" type="checkbox"/>	Environmental and Cultural Resources Considerations
<input checked="" type="checkbox"/>	Conflict of Interest Disclosure Statement
<input checked="" type="checkbox"/>	SF-LLL: Disclosure of Lobbying Activities
<input checked="" type="checkbox"/>	Technical Proposal
<input checked="" type="checkbox"/>	Project Location & Project Maps
<input checked="" type="checkbox"/>	Letters of Support
<input checked="" type="checkbox"/>	Proof of Financial Commitments

Note: All required documents above are viewable by clicking on the subject title.



The Colorado River at the Shoshone Hydroelectric Power Plant

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Executive Summary

Shoshone Water Rights Preservation Project

Project Description: For over a century, the Shoshone Hydroelectric Power Plant (the “Shoshone Power Plant”), a unique “run-of-river” power plant located in Glenwood Canyon, Colorado, has harnessed Colorado River water to generate hydroelectric power by means of two of the largest, and most senior non-consumptive-use water rights in the Upper Colorado River Basin (the “Shoshone Water Rights”). The long-standing exercise of the Shoshone Water Rights has led to the creation of a historical flow regime which extends down the Upper Colorado River’s mainstem, providing vital ecosystem, habitat, recreational, agricultural, and economic benefits. The Shoshone Water Rights are fundamentally unique, because while other types of water rights deplete flows in the river, the Shoshone Water Rights maintain river flows, and they protect the river from additional junior, upstream depletions.

In December 2023, the Colorado River District signed a Purchase and Sale Agreement (the “PSA”, [Appendix 4](#)) with Public Service Company of Colorado (“PSCo”) to acquire and permanently protect the Shoshone Water Rights for \$99 million. The purpose of the Shoshone Water Rights Preservation Project (the “Project”) is to allow the water rights to be used perpetually for instream flow use¹ by the Colorado Water Conservation Board (“CWCB”) in a manner that mimics the historical use of the water rights for hydropower generation, thereby protecting critical resources for future generations across the state.

Project Need: Over the last two decades, the Shoshone Power Plant has required additional and more intensive maintenance due to the plant’s age and has been subject to a series of natural hazards which have resulted in prolonged outages in operations. When the Shoshone Power Plant is not operating, the Shoshone Water Rights cannot be exercised and water otherwise flowing in the river becomes available for diversion by upstream junior water rights—many of which are 100% consumptive to the stream system—thus adversely impacting the historical flow regime. Existing agreements which in some instances are intended to replicate the flows provided by the Shoshone Water Rights are inadequate as a long-term mechanism to protect these critical water rights. And while PSCo has no current plans to cease operations at the Shoshone Power Plant, unless the Shoshone Water Rights are acquired, changed, and made available for instream flow use, the existence of the Shoshone Water Rights would terminate if and when the Shoshone Power Plant is decommissioned, and the historical flow regime created by the exercise of the Shoshone Water Rights on the Upper Colorado River would also cease to exist.

As a result of rising temperatures, changing conditions, and more frequent periods of drought throughout the Upper Colorado River Basin, any reduction or elimination of the exercise of the Shoshone Water Rights would lead to lower flows in drought years, with negative impacts on

¹ As non-consumptive, in-channel, or in-lake use water rights, Colorado’s instream flow water rights are intended to preserve, and in some cases improve, the natural environment to a reasonable degree. C.R.S. § 37-92-102(3).

aquatic ecosystems, as well as the agricultural, municipal, environmental, and recreational uses of the river upstream and downstream of the Shoshone Power Plant.

Anticipated Results and Benefits: The Upper Colorado River watershed is a region of immense ecosystem value supported by numerous federal and state designations, including Gold Medal waters, outstanding waters, and Wild and Scenic Eligible and Suitable reaches.² When the Shoshone Water Rights are administered, nearly 380 miles of the Colorado River system from the headwaters to Lake Powell experience a benefit. This benefit is more significant during drought conditions when flows are needed to preserve aquatic habitat necessary to protect threatened and endangered fish species while also providing much-needed water security to communities across Colorado’s West Slope (*see, e.g.,* Section 2.2., below).

Project Timeline: The estimated completion date of the Project is December 2027, which is described in more detail in the Project Description and Implementation in Section 3, below.

Requested B2E Funding: \$40,000,000.00

Anticipated Budget:

Funding Partner	Funding Amount
Bureau of Reclamation	\$40 Million
Colorado River Water Conservation District (applicant) ¹	\$20 Million
State of Colorado ²	\$20 Million
Local Partners ³	\$19 Million
Total Project Cost	\$99 Million

1. In December 2023, the Colorado River District’s Board of Directors formally committed \$20 million.
2. HB24-1435, signed into law May 29, 2024, appropriated \$20 million.
3. As of the date of this application, 26 water entities, local governments, and regional partners have committed \$16 million (of the \$19 million projected). The River District anticipates securing additional commitments soon.

Following the execution of the PSA in December 2023, the Colorado River District proceeded expeditiously in completing the necessary closing conditions described in the PSA. As a result of this proactive approach, the Colorado River District is confident that the Project can be completed by December 2027, and certainly no later than September 30, 2031. As of November 2024, the Project is bolstered by formal funding commitments of over half the purchase price, strong political and local support, and numerous technical analyses, the totality of which provides a strong foundation to complete the Project within the required timelines.

² “Gold Medal” waters are high quality fisheries that consistently provide trout standing stock of at least 60 pounds per acre and produce an average of at least 12 “quality trout” per acre. “Outstanding waters” are streams with high water quality and exceptional recreational or ecological attributes. “Wild and Scenic Eligible and Suitable Reaches” include areas of river that are free-flowing and have at least one outstandingly remarkable value.

1. Introduction and Project Map

The Shoshone Power Plant is owned and operated by PSCo, a subsidiary of Xcel Energy, Inc. (“Xcel”), and produces 15 megawatts of electricity, enough to serve approximately 15,000 customers. The Shoshone Power Plant produces hydroelectric power by means of the Shoshone Water Rights, which include the 1902 senior Shoshone Water Right in the amount of 1,250 cubic feet per second (“cfs”), and the 1929 junior Shoshone Water Right in the amount of 158 cfs. *See Appendix 14.a.* The Shoshone Water Rights enable PSCo to divert water from the Colorado River on a year-round basis to operate the power plant and, because these water rights are by nature non-consumptive, all diverted water is returned to the Colorado River. *Id.*

Figure 1: Shoshone Power Plant



The Shoshone Power Plant diverts water from the Colorado River via the “Shoshone Diversion Dam” which is located upstream of the Shoshone Power Plant. Once water is diverted from the river at the Shoshone Diversion Dam, it is conveyed for approximately 2.4 miles through a tunnel in the canyon walls, before dropping 167 feet through two turbines and returning to the Colorado River via discharge outlets located just below the Shoshone Power Plant. Although this unique project is centered around the Shoshone Power Plant and

the 2.4 miles of river in the Colorado River that will directly benefit from the protections afforded by the Project, the geographic distribution of benefits from the Project are numerous and far-reaching throughout the Colorado River Basin. *See Appendix 1, Map 1.*

Recently, the Shoshone Power Plant has been subject to outages due to a series of natural hazards and the additional maintenance required to support the 115-year-old power plant. When such outages occur, the Shoshone Power Plant cannot operate or is only capable of operating at a reduced level. Under these circumstances, PSCo cannot fully exercise the Shoshone Water Rights under Colorado law. The increasing frequency and duration of outages at the Shoshone Power Plant—and the potential of a permanent decommissioning at some time in the future—places the continued existence of the Shoshone Water Rights in jeopardy of reduction or abandonment. This risk exists despite the Shoshone Outage Protocol Agreement (#13XX6C0129) dated June 27, 2016 (the “ShOP Agreement,” *Appendix 14.d.*), which acts as a temporary stop-gap measure to bring some, but not all, of the flows attributable to the Shoshone Water Rights down the river when there is a plant outage. Unlike the ShOP Agreement, which has a limited term and can be terminated at any time, the Project is designed to maintain the Shoshone Water Rights in perpetuity and, by doing so, ensure the permanent protection of the historical flow regime and the numerous ecosystem and habitat benefits attendant thereto. The inability of the ShOP Agreement to sufficiently command and protect the Shoshone flows is described below in Section 3.2.1.

Figure 2: Shoshone Diversion Dam



The Project aims to protect the historical administration of the Shoshone Water Rights (the “Shoshone Call”) through a coordinated effort with PSCo and the State of Colorado to change the water rights to include an alternate use of the water rights for instream flow purposes while maintaining their senior priorities consistent with Colorado law. The Project will preserve certainty around the administration of a series of federal laws, water court decrees, agreements, and

protocols which—unlike the ShOP Agreement—are permanent and, in some cases, are binding on the entire stream system. *See* Section 3.2.1, below; *see also, e.g., Appendix 14.c.* The practical effect is that the Project will ensure the continuation of historical stream conditions in the mainstem of the Upper Colorado River Basin regardless of whether the Shoshone Power Plant is operational, providing much-needed resiliency in the face of an uncertain water future. More simply, the continued exercise of the Shoshone Water Rights prevents significant, additional depletions from the Colorado River Basin that can automatically occur in the absence of the Shoshone Water Rights by virtue of Colorado’s prior appropriation system and without additional construction or the need for state and/or federal permits. *See Appendix 1, Map 3.*

In recognition of B2E’s purpose of providing funding for ecosystem and habitat restoration projects that provide environmental benefits, the River District is pleased to submit this application and offers the following technical proposal in support of its funding request. The Project is unique in its action and project type by offering a watershed-scale approach to restoring streams, improving water quality, and creating connectivity through an acquisition that permanently protects river flows rather than through a more traditional stream restoration or water efficiency approach. This application addresses each of the evaluation considerations outlined in the B2E Request for Applications (the “RFA”), including the requested certifications, disclosures, and other forms identified in the RFA.

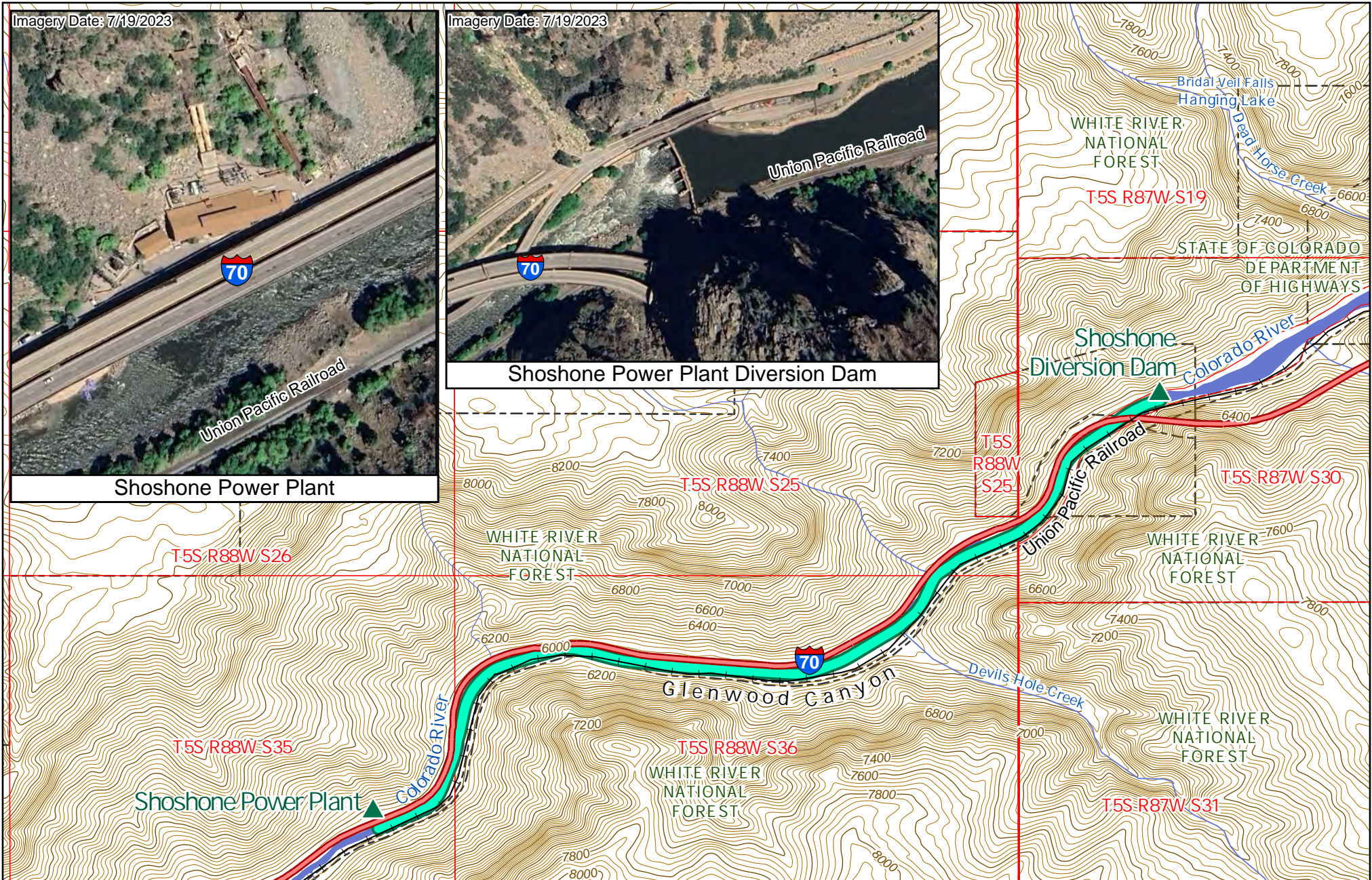


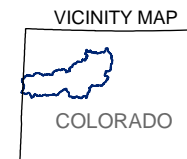
Figure 3: Shoshone Instream Flow Reach Project Map

State: Colorado

County: Garfield

Created Tuesday, November 12, 2024

Proposed Shoshone ISF Reach Project Boundary



COLORADO RIVER DISTRICT

0 1/4 1/2 1 Miles

Scale: 1:24,000

2. Key Project Priorities

The importance of the Shoshone Water Rights to the Colorado River cannot be overstated. This is because the long-standing exercise of the Shoshone Water Rights has led to the creation of a historical flow regime that provides vital ecosystem, habitat, agricultural, recreational, municipal, and other economic benefits up and down the Colorado River's mainstem and throughout the Upper Colorado River Basin. The Project is the culmination of more than a decade of collaboration between the Colorado River District, PSCo, and a coalition of Colorado's local governments, major water entities, and regional partners to secure the permanent protection of the river flow regime created by the historical exercise of the Shoshone Water Rights.

2.1 Current State of the Ecosystem - Drought and Climate Change in Western Colorado:

Even in the wettest hydrologic years, water in the Colorado River no longer reaches the Colorado River Delta. This is due in large part to an imbalance between demand and the river's long-term supply. In the State of Colorado, these demands, combined with diminished flows resulting from multi-decadal drought, have caused pronounced impacts in the Upper Colorado River watershed.

Colorado's Western Slope, where the Colorado River originates and from which it derives its most significant source of supply, is the regional epicenter for a significant and above-average rise in temperature levels and a concurrent decrease in snowmelt runoff. The decrease in annualized surface water yield is particularly problematic given that surface water contributions within the Colorado River District's territorial boundaries alone account for 65% of the Colorado River's natural flows. According to the National Oceanic and Atmospheric Administration ("NOAA"), this region has experienced an increase of more than 4°F in average annual temperatures since 1895.³ The negative impact of warmer temperatures on water supplies is readily observable and quantifiable. For every 1-degree Celsius rise in average temperature, recorded streamflow reductions range between 3% and 9%, with recent studies leaning heavily towards the 9% end of that range.⁴ The upper elevation, snowmelt dominated headwaters are projected to experience the greatest streamflow declines across the southwestern United States.⁵ Moreover, the latest scientific data confirms that this current period is the driest in over 1,200 years.⁶

The recently released third edition of the "Climate Change in Colorado" report confirms these trends. Statewide annual average temperatures increased by 2.3°F from 1980 to 2022 with further

³ See National Oceanic and Atmospheric Administration, U.S. CLIMATE DIVISIONAL DATABASE (NCLIMDIV) (2024), <https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/statewide/time-series> (detailing monthly temperature data at the national, state and county levels between 1895 and 2019 for the lower 48 states).

⁴ See P. C. D. Milly & K. A. Dunne, *Colorado River flow dwindles as warming-driven loss of reflective snow energizes evaporation*, SCIENCE, vol. 367, issue 6483, 1252–1255 (2020).

⁵ Olivia L. Miller et al., *Changing climate drives future streamflow declines and challenges in meeting water demand across the southwestern United States*, JOURNAL OF HYDROLOGY X, vol. 11 (2021), <https://www.sciencedirect.com/science/article/pii/S2589915521000018>.

⁶ See A. Park Williams et al., *Rapid intensification of the emerging southwestern North American megadrought in 2020–2021*, NATURE CLIMATE CHANGE, (2022) 12, 232–234, <https://doi.org/10.1038/s41558-022-01290-z>.

and significant warming expected in all regions of Colorado, across all seasons.⁷ According to the report, significant warming is projected to continue over the next several decades. Also, regardless of changes to precipitation, the “Climate Change in Colorado” report finds that future warming will lead to further reductions to Colorado’s spring snowpack with models predicting between 5% and 30% reduction in both streamflow volume and snow-water equivalent. The report concludes that warmer temperatures alone will contribute to more frequent and severe droughts in the future, irrespective of precipitation. Temperature increases further accelerate soil aridification which significantly compounds streamflow issues.⁸ As temperatures rise, soil moisture decreases. Evaporation increases from soils and water bodies and transpiration increases from plants, creating a soil-water debt which becomes due when snow melts, preventing snowmelt runoff from reaching rivers and streams. This significant drying process was especially evident in 2021, when the Colorado River Basin’s snowpack peaked at around 89% of average while the inflow volume to Lake Powell was 32% of average.⁹

Simply put, long-term drought has exposed multiple vulnerabilities to the ecosystems and economies that rely on the water resources of the Colorado River. With respect to the Project, the following vulnerabilities would intensify without the Shoshone Water Rights:

- In recent years, such as 2021 and 2022, low flows and high-water temperatures and associated low dissolved oxygen created critical conditions in the Colorado River headwaters from the Town of Kremmling to the City of Rifle, triggering months-long fishing closures in 2021 and in 2022¹⁰ to protect struggling species. These hot, dry, and poor habitat conditions have become the “new-normal” and create serious impacts to the Colorado River ecosystem, negatively impacting local economies that rely upon recreation and tourism.
- In 2016, Colorado Parks and Wildlife (“CPW”) removed the “Gold Medal” status for portions of the Blue River below Dillon Dam located in Summit County due to declining ecosystem health from suboptimal habitat and low flows, which negatively impact the fishery.¹¹
- Within Colorado, 154 miles of the Colorado River (from approximately 1 mile downstream of the Windy Gap Reservoir in Grand County to the confluence of the Colorado River with Rifle Creek) are listed as a high priority concern on the federal Clean Water Act’s Section 303(d) list of impaired waters for temperature exceedance for aquatic life use.¹² High water temperatures

⁷ Becky Bolinger et al., *Climate Change in Colorado, A report for the Colorado Water Conservation Board*, COLORADO STATE UNIVERSITY, 3rd ed. (2024), <https://doi.org/10.25675/10217/237323>.

⁸ *Id.*

⁹ These calculations and data are accessible via NOAA’s Colorado Basin River Forecast Center, <https://www.cbrfc.noaa.gov/lmap/lmap.php> (last visited on November 7, 2024).

¹⁰ See Travis Duncan, Colorado Parks and Wildlife, *Colorado Parks and Wildlife Enacts Voluntary Fishing Closure on Section of Colorado River*, (July 2021), <https://www.coheadwaters.org/hot-water-fish> (last visited on November 7, 2024); see also Colorado Parks and Wildlife, Fishing Closures (June 1, 2022–November 3, 2023), <https://docs.google.com/document/d/1lrbiFauulP5XqnrNvvOueKUAdbTIWNbZ1L6krfuHYhI/edit?tab=t.0> (copy on file with the River District).

¹¹ See generally Blue River Integrated Water Management Plan Phase 1 Report, Blue River Watershed Group & Trout Unlimited (August 2021), https://www.blueriverwatershed.org/uploads/9/6/3/3/9633489/brimwp_phase_1_final_report_august_2021_2.pdf.

¹² See generally Department of Public Health and Environment, Water Quality Control Commission, Regulation #93 – Colorado’s Section 303(d) List of Impaired Waters and Monitoring and Evaluation List, 5 CCR 1002-93.

are harmful to aquatic life and can lead to other serious water quality concerns, such as toxic conditions related to harmful algae blooms.

- In a 2021 written review of the 15-Mile Reach Programmatic Biological Opinion (the “PBO”), the Upper Colorado Endangered Fish Recovery Program (the “Recovery Program”) found that during the irrigation season (April–October), in years classified as “dry”, mean monthly flows in the 15-Mile Reach fell below the minimum target flows of 810 cfs 39% of the time between 1991-2019.¹³ The 2021 review also described a concerning trend that runoff in the Colorado River basin between July and October is likely to decrease as a result of climate change. This would negatively affect the Recovery Program’s ability to maintain flows to protect the aquatic habitat of federally listed endangered fishes, which in turn threatens the status of existing environmental permits and operations of dozens of federal, state, and local water projects.¹⁴

2.2 Ecosystem, Habitat and Environmental Benefits:

The exercise of the Shoshone Water Rights protects Colorado’s namesake river for the benefit of numerous and diverse water users, recreation interests, and the abundant natural habitats and ecosystems that rely on the Colorado River for survival. *See Appendix 1*, Map 4. Additionally, the State of Colorado has recognized the importance of the headwaters region and currently holds over three hundred distinct instream flow water rights upstream of the Shoshone Power Plant. The numerous instream flow water rights located in the Upper Colorado River watershed on the mainstem and tributaries upstream of the Shoshone Power Plant benefit from the seniority of the Shoshone Water Rights and their ability to command flows down the Colorado River. *See Appendix 1*, Map 5. If the flows attributable to the Shoshone Water Rights were absent from the Upper Colorado River mainstem, river levels would be significantly lower (especially in drought years and late in the irrigation season), resulting in a negative impact on the riverine ecosystems that are already stressed by prolonged drought and aridification.

2.2.1 Modeling Approach: To illustrate the ecosystem, habitat, and environmental benefits of the Shoshone Water Rights, Hydros Consulting, Inc. (“Hydros”) prepared two technical reports: (1) the Shoshone Power Plant Water Rights Yield Assessment, dated September 11, 2024 (the “Yield Assessment,” *Appendix 5*), and (2) the Addendum to September 11, 2024, Shoshone Power Plant Water Rights Yield Assessment (the “Yield Addendum,” *Appendix 6*) dated November 7, 2024. Both the Yield Assessment and the Yield Addendum examine the current and future impacts of the Shoshone Water Rights in preserving essential base flows of the Colorado River utilizing the State of Colorado’s StateMod water allocation and accounting model. Hydros first utilized the 2015 Upper Colorado River Basin Model (the “2015 UCRM”) in StateMod in the Yield Assessment as it was the most current, validated model at the time Hydros prepared this initial report. The subsequent Yield Addendum followed the CWCB’s release in September 2024 of an updated

¹³ Upper Colorado River Endangered Fish Recovery Program Director’s Office, *A Review of the Upper Colorado River Endangered Fish Recovery Program’s Recovery Actions and Endangered Species Response in the Colorado River* (November 2021), <https://coloradoriverrecovery.org/uc/wp-content/uploads/sites/2/2022/05/15-Mile-Reach-PBO-Review-and-Cover-Memo-Signed-May-2022.pdf> (including the “Reporting requirement in the U.S. Fish and Wildlife Service’s 1999 Section 7 Formal Consultation No. ES/GJ-6-CO-99-F-033 – 15 Mile Reach Programmatic Biological Opinion”).

¹⁴ *Id.*

UCRM (the “2024 UCRM”), which included overall model updates and the ability to run the model on a daily timestep. It should be noted that the CWCB’s 2024 UCRM has yet to undergo any formal calibration and/or validation unlike the 2015 UCRM which underwent extensive calibration and validation.¹⁵ Therefore, the Hydros reports and this application continue to discuss the results of the 2015 UCRM while also providing a discussion of results from the 2024 UCRM.

Hydros focused both of its reports on the upstream terminus of the 15-Mile Reach to understand the impact on the critical reach for the listed threatened and endangered species. The 15-Mile Reach is also immediately downstream of the Grand Valley Project and the suite of water rights and structures known as the “Cameo Call,” which is a conglomerate of significant irrigation rights that can divert all flow in the Colorado River in the late irrigation season.¹⁶ As detailed in the Yield Assessment and Addendum, Shoshone’s benefits at the Colorado-Utah state line are very similar in magnitude to its benefits at the 15-Mile Reach.

The Yield Assessment evaluated yields of the Shoshone Water Rights under four scenarios incorporating two basic assumptions for Colorado River demands. Demands in StateMod are the maximum amounts called for by the water rights and are distinct from the actual diversions, which will be limited to the available flow in the system at the location, time, and seniority of the water rights and are often less than the total demand. The four scenarios of modeled water demands at the Shoshone Power Plant include “Senior”, “Senior-Relax”, “Max”, and “Max-Relax” scenarios. The “Senior” scenario limits the Shoshone Water Rights’ demands to the senior 1,250 cfs water right. The “Max” scenario represents the full 1,408 cfs demand under both the senior and junior priorities. And the “Relax” scenario represents the incorporation of the Agreement Concerning Reduction of Shoshone Call (the “2007 Call Relaxation Agreement,” [Appendix 14.e.](#)) between PSCo and the City and County of Denver acting through its Board of Water Commissioners (“Denver Water”). The 2007 Call Relaxation Agreement specifies that, whenever certain specific drought conditions are met, Denver Water can cause the Shoshone Call to be relaxed to a single turbine call (i.e., from 1,408 cfs to 704 cfs) from March 14 to May 20. Modeling analyses were conducted under current basin-wide river demands as set by the CWCB in the 2015 UCRM and under future river demands where Hydros increased demands on the Colorado River to represent the anticipated 120,000 acre-feet (AF) development allowance limit in the 15-Mile Reach PBO. Future demands were estimated using contemplated demands from transmountain diversion projects and West Slope development projects. Each of the four scenarios were then compared to a scenario with the Shoshone Water Rights turned off under the respective “Current” and “Future” conditions to provide an estimated yield assessment of the Shoshone Water Rights.

¹⁵ For additional information on the 2015 UCRM calibration and validation, *see* [Appendix 7](#).

¹⁶ For purposes of this application, “Cameo Call” is a generic term that refers to the request delivered to state water officials to curtail upstream diversions of junior water rights to satisfy any or all the water rights legally divertible for irrigation and power generation purposes at the headgates for the Grand Valley Project’s Government Highline Canal located near Cameo, Colorado, and the Grand Valley Irrigation Company’s Grand Valley Canal located near Palisade, Colorado. For more information about the “Cameo Call,” please refer to [Appendix 12](#).

In the reports prepared by Hydros, the scenarios assume a certain demand for the Shoshone Water Rights, although as results show, actual available natural flows¹⁷ (otherwise known as “administrative flow,” *see* Section 3.1.2., below) are often less than those demands.¹⁸ The Yield Addendum (Appendix 6) affirms the benefits of the Shoshone Call as reported in the Yield Assessment (Appendix 5). However, the Yield Addendum evaluated that benefit utilizing a slightly different approach. In the 2024 UCRM, the State of Colorado revised the baseline conditions of the UCRM to update river operations and demands for both the Shoshone Water Rights and for transmountain diversions. Thus, in the Yield Addendum, Hydros replaced the “Senior” scenario with the “Baseline” scenario adopted by the CWCB. Under the new “Baseline” scenario, the updated demands for the Shoshone Water Rights fluctuate based on daily historical records and represent demands ranging from 704 cfs (one turbine use under the 2007 Call Relaxation Agreement) to 1,408 cfs. The Yield Addendum utilized a similar Max-Relax scenario and future basin-wide demands as was used in the Yield Assessment.

Notably, the Yield Assessment and the Yield Addendum both confirm the benefit of yields provided by the Shoshone Water Rights to the 15-Mile Reach, with higher yields in drought years and during the critical flow period of August through October. Average annual yields for the Shoshone Water Rights are shown in Table 1 under comparable modeled scenarios. Average annual yields from the Shoshone Water Rights range from 17,800 AF to 34,900 AF while dry-year annual average yields range from 29,400 AF to 44,700 AF. As the model illustrates, these existing yields would no longer be available to the “Shoshone Reach” (*see* Section 2.2.5., below), the 15-Mile Reach, or further downstream if the Shoshone Water Rights were no longer exercised and administered. Even with increased future demands, the model shows that Shoshone Permanency will provide essential flows in the Colorado River and through the 15-Mile Reach.

Table 1: Average Annual Yields of the Shoshone Water Rights to the 15-Mile Reach.

Modeling Scenario (Values in AF)	Dry-Year Averages		Average of All Years	
	Current	Future	Current	Future
2015 Monthly Model- Senior Relax ¹	29,400	44,700	17,800	33,500
2015 Monthly Model- Max Relax ¹	34,800	44,100	24,200	34,900
2024 Daily Model- Baseline (Relax)	33,100	36,800	24,200	26,900
2024 Daily Model- Max-Relax	32,800	36,600	24,000	26,800

1. “Yield” *per the Yield Assessment is defined here as being greater than zero, because the Shoshone Call does not directly result in reduction in flow.*

¹⁷ The “natural flow(s)” means the total flow in a river or stream system without the influence of any developed infrastructure or water use or the introduction of non-native water including releases from off-channel reservoirs.

¹⁸ This modeling approach which simulates full demands aligns with historical assumptions utilized in environmental analyses conducted for projects such as the Windy Gap Firing Project and Moffat Firing Project. While these scenarios are not intended to replicate historical diversions by the Shoshone Water Rights, they are appropriate for an analysis of the benefits that these water rights provide to the Colorado River and the 15-Mile Reach. Moreover, the use of models of this type for water resource planning purposes is not atypical. For instance, the CWCB routinely relies on models (StateMod models) as predictive tools to assess demands and operations in the Colorado River Basin.

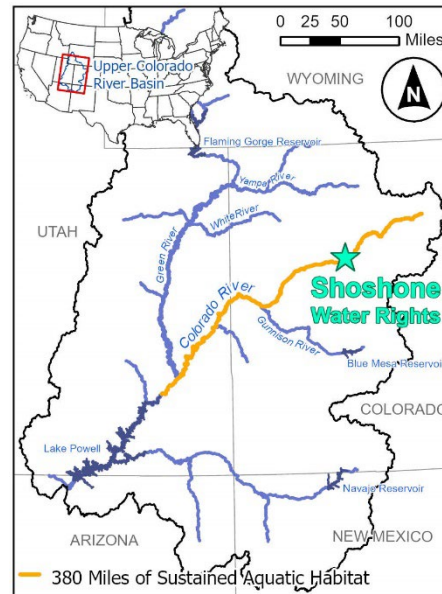
The 2024 UCRM results show yields to the 15-Mile Reach in every modeled year during the critical flow period of August through October. According to the model, the Shoshone Water Rights contribute on average 7% to 17% (14,900 AF to 20,400 AF) of the total available flow during this three-month period under variable hydrologic conditions with the most benefit occurring in dry years when the flows in the 15-Mile Reach are lowest and most critical to maintain. *See Appendix 6*, p. 6. The benefits in the 15-Mile Reach during these low flow conditions were in large part due to the Shoshone Water Rights’ ability to delay the Cameo Call by a reported 29% of the calling days on average over the period of record—with each day the Cameo Call is not in place being directly related to more water in the 15-Mile Reach. *Id.*

Table 2: Benefit of Shoshone Call on Flows Through the 15-Mile Reach by year type under the Baseline Scenario of the 2024 Model, Yield Addendum.

Hydrologic Condition	Current Demands			Future Demands		
	Average Annual Benefit (AF)	August - October Average Benefit (AF)	Aug – Oct Benefit as a % of Total Flow	Average Annual Benefit (AF)	August - October Average Benefit (AF)	Aug – Oct Benefit as a % of Total Flow
Dry	33,000	14,900	15%	36,800	15,000	17%
Average	22,600	20,000	12%	24,900	18,700	12%
Wet	18,300	19,600	7%	20,900	20,400	8%

2.2.2 Miles of Sustained Aquatic Habitat: When the Shoshone Water Rights are being exercised, nearly 380 miles of the Colorado River mainstem from the headwaters in Grand County to Lake Powell experience a benefit, particularly during critical low periods when flows are needed to preserve aquatic habitat. The benefits to the sustained miles of aquatic habitat are further discussed in Section 2, below.

Figure 4: Miles of Sustained Habitat

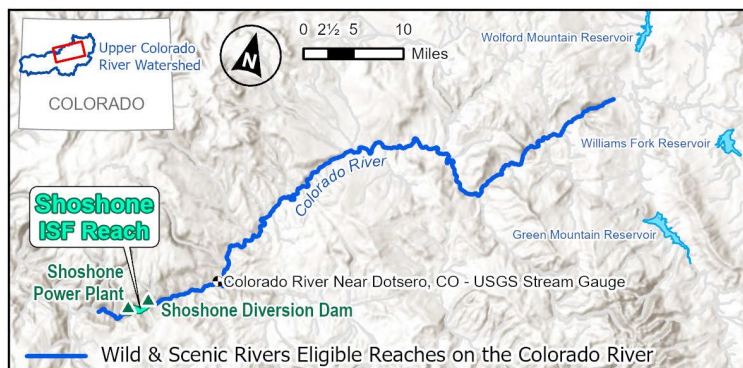


2.2.3 Maintaining Streamflow through Upper Colorado River Wild and Scenic Alternative Management Plan River Sections: The Upper Colorado Wild and Scenic Stakeholder Group (“Stakeholder Group”) was formed in 2007 following a report by the Bureau of Land Management (“BLM”) on the eligibility of rivers in the Upper Colorado River Basin for Wild and Scenic River designation. The report identified 84 miles of the Upper Colorado River from the Town of Kremmling to No Name Creek in Glenwood Canyon as having Outstanding Remarkable Values (“ORVs”) eligible for the federal designation as a Wild and Scenic River. The Stakeholder Group, which includes over 20 entities (including the River District, and the State of Colorado), developed an alternative plan to a federal wild and scenic designation with an intention to balance permanent protection of the ORVs, provide certainty for the Stakeholder Group, ensure water project yield, and provide flexibility for water users along the Upper Colorado River. The Stakeholder Group’s “Alternative Management Plan” lists the

Shoshone Water Rights as one of four identified long-term protection measures for streamflow-influenced ORVs on the Colorado River from Kremmling to No Name Creek.¹⁹ The Shoshone Water Rights provide base flows through the subject river segments that support aquatic habitat, lower water temperatures, and maintain minimum boatable flows (700 cfs above Dotsero and 1,250 cfs below Dotsero).

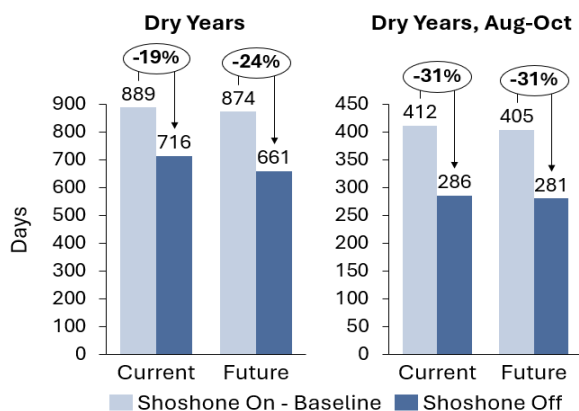
The United States Forest Service (“USFS”) and BLM released a report in September 2024 titled “Biological and Recreational Resources Dependent on Colorado River Flows Through Glenwood Canyon” (the “USFS-BLM Report,” Appendix 10). As observed by federal land managers who oversee these river sections, the USFS-BLM Report confirms the importance of the Shoshone Water Rights to the federal wild and scenic designated reaches

Figure 5: Upper Colorado River: Wild and Scenic Eligibility Segments



given that flows necessary to satisfy the Shoshone Call also support fisheries for native species, sport species, and aquatic invertebrates. See, e.g., Appendix 10, pp. 16–17. The USFS-BLM Report also identifies the foundational need for the Shoshone Water Rights to maintain wild and scenic suitability for recreation through a reach that saw approximately 150,000 boater “visitor” days in 2022. *Id.* at pp. 14, 16. The USFS-BLM Report concludes by stating “[o]peration of the [Shoshone Water Rights] supports [ORVs] in three reaches of [the] Colorado River that have been determined to be eligible for designation into the National Wild and Scenic Rivers System.” *Id.* at p. 17.

Figure 6: Colorado River Kremmling Gage Minimum Instream Flow Exceedance Days



Outputs from the 2024 UCRM Baseline scenario were evaluated to understand the Shoshone Water Rights’ benefits to the wild and scenic stretch. See Appendix 6. In dry years, if the Shoshone Water Rights are no longer exercised, approximately 28,400 AF under current conditions and 29,500 AF under future conditions would no longer reach the Colorado River USGS Kremmling gage (09058000), which is located at the top of the wild and scenic reach. As presented in Figure 6, the loss of flow translates to fewer days when the decreed minimum instream flow water right at the Kremmling gage is met. This is magnified during the dry months of August through October, when the days the instream flow is met would be

¹⁹ See Amended and Restated Upper Colorado River Wild and Scenic Stakeholder Group Management Plan (last revised July 2024), https://www.upcowildandscenic.com/uploads/1/3/5/3/135388668/amended_and_restated_sg_plan_july_2024.pdf, p. 63.

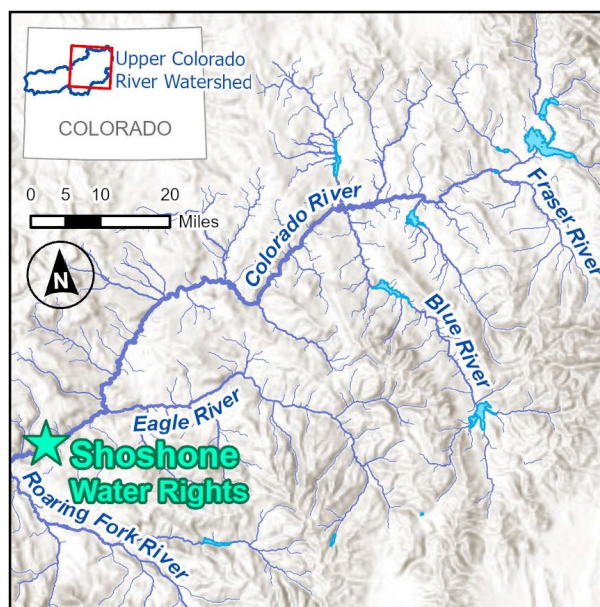
reduced by approximately 31%, equivalent to reductions of 80 cfs or 11% of the flow if the Shoshone Water Rights are not preserved.

Most of these flow reductions occur during the critical shoulder seasons when the Upper Colorado River's Wild and Scenic eligible reaches are prone to higher temperatures and lower flows, as well as during the winter months. Therefore, the utilization of the Shoshone Water Rights helps to preserve the natural baseflow and important aquatic habitat in these reaches of the Colorado River.

2.2.4 Sustaining Tributary Flows:

The exercise of the Shoshone Water Rights results in an influential “pull” of water down the Colorado River, including through significant tributaries, which maintains baseflows to the Shoshone Power Plant and further downstream. The Eagle River is one such tributary of the Colorado River upstream of the Shoshone Power Plant, which has seven decreed minimum instream flow reaches across nearly 50 miles. The 2024 UCRM Baseline scenario results show that dry year average yields from the Shoshone Water Rights in the Eagle River near the Town of Wolcott are approximately 3,400 AF to 3,900 AF under current and future conditions, respectively. Under modeled future development conditions, these results also show that the Shoshone Water Rights pull approximately 2,200 AF down the Eagle River in wet years and 4,200 AF in average years, which amounts are more significant than any existing contractable storage volumes in the Eagle River Basin. The “Eagle River Community Water Plan” identified potential future in-basin and transmountain diversions, all of which would be subject to the Shoshone Call, as high-risk factors that would negatively impact the Eagle River Basin's riverine ecosystems.²⁰ Modeling results confirm that the Shoshone Water Rights are a powerful tool to aid in the preservation of instream flows and aquatic habitat in the Eagle River Basin every year under future development conditions.

Figure 7: Colorado River Major Tributaries



Similarly, the Shoshone Water Rights also support the current flow regime on the Blue River, which begins above the Town of Breckenridge. Assuming the Project is not implemented, and the Shoshone Water Rights are not exercised in the future, the primary beneficiaries would largely be the transmountain diverters which would be able to increase their respective yields at their respective collection systems, thereby impacting various stretches of the Blue River. Under this scenario, streamflow above Dillon Reservoir would likely experience reductions with an increased

²⁰ See Eagle River Community Water Plan (revised October 2024), https://lotic.quarto.pub/community_water_plan/ (follow “Download the full Eagle River Community Water Plan document by clicking here” hyperlink), p 50.

frequency of in-priority transmountain diversions by the Continental-Hoosier Project and the Vidler Tunnel. Additionally, streamflow in the Blue River below Dillon Reservoir could remain at or below 50 cfs in the non-irrigation season for longer periods of time due to increased in-priority diversions into Dillon Reservoir and through the Roberts Tunnel, particularly in drought periods. Streamflow in the Blue River below Green Mountain Reservoir would also likely be lower in the late summer and fall. Reclamation has invested substantial resources in the health of the Blue River and recently approved a \$1.8 million grant to the “Blue River Habitat Restoration Project” through the WaterSMART Aquatic Ecosystem Restoration Program.²¹ A consistent flow regime made possible by the Shoshone Water Rights will support sediment transport and other ecosystem benefits to the Blue River.

2.2.5 Improving Habitat in Colorado’s Glenwood Canyon and the Proposed Instream Flow Reach: Freshwater Consulting, LLC (“Freshwater”), studied the Shoshone Reach, the 2.4 miles of the Colorado River between the Shoshone Diversion Dam and the Shoshone Power Plant for which the Project seeks to establish instream flow use for the Shoshone Water Rights. See [Appendix 11](#).

Figure 8: Proposed Shoshone Instream Flow Reach



Using the Instream Flow Incremental Methodology (“IFIM”) on a study area of the Shoshone Reach and habitat criteria for one native fish species and three sport fishes, Dr. William J. Miller, PhD, of Freshwater found that flows between 700 cfs and 3,000 cfs provide a benefit to the aquatic habitat for identified fish species within the Shoshone Reach. See [Appendix 11](#), p. 20. Outputs

from the 2024 UCRM Baseline scenario show that the Shoshone Water Rights can pull down approximately 31,900 AF to 35,500 AF through the Shoshone Reach in an average dry year under current and future conditions, respectively.²² Thus, protecting the Shoshone Water Rights by adding an alternate instream flow use will serve to improve the Shoshone Reach’s aquatic habitat, stabilizing flows through the reach during times when the Shoshone Power Plant is not operating to maintain the historical flow regime. During dry years and through persistent drought conditions, exercising the Shoshone Water Rights will ensure that the historical flow regime is maintained and protected, while preserving and improving the natural environment of the Shoshone Reach.

2.2.6 Supporting Critical Habitat for Threatened and Endangered Species: The exercise of the Shoshone Water Rights benefits 250 miles of critical habitat on the Colorado River beginning in

²¹ See United States Bureau of Reclamation, *Biden-Harris Administration Announces More Than \$51 Million from the President’s Investing in America Agenda to Restore and Protect Rivers and Watersheds* (December 19, 2023), <https://www.usbr.gov/newsroom/news-release/4704>.

²² These outputs derive from the State of Colorado’s 2024 UCRM baseline model, which is accessible at <https://cdss.colorado.gov/modeling-data/surface-water-statemod>.

Rifle, Colorado, and extending downstream to Lake Powell (*see Appendix 1, Map 6*). The exercise and administration of the Shoshone Water Rights supports four fish species listed under the Endangered Species Act (“ESA”): (1) Colorado pikeminnow, (2) humpback chub, (3) razorback sucker, and (4) bonytail chub. The Recovery Program was established in 1988 “to recover the four fish species listed under the ESA, while allowing water development and management activities to continue.”²³ All Colorado River water users in the State of Colorado, whether located on the eastern or western side of the Continental Divide, rely upon the continued success of the Recovery Program and continued ESA compliance for streamlined permitting processes for over 1,250 water projects located in Colorado since 1988.²⁴ This includes five Reclamation projects on the mainstem of the Colorado River, one on the Fryingpan River (the Fryingpan-Arkansas Project), along with an additional eight included in the Recovery Program area.²⁵

Colorado’s 15-Mile Reach extends from the point at which the tailrace common to the Grand Valley Power Plant and the Orchard Mesa Irrigation District pumping plant returns to the Colorado River below the Grand Valley Irrigation Company’s diversion dam, downstream to the confluence of the Colorado River and the Gunnison River.²⁶ While the 15-Mile Reach provides important habitat and connectivity for the four species under the ESA, it is often stressed by periods of low flows due to upstream diversions and is increasingly impacted by trends of reduced snowpack and runoff. As previously stated, the Recovery Program has only successfully met the 810 cfs minimum target flows in the 15-Mile Reach PBO 61% of the irrigation season during “dry” years with active Shoshone Water Rights.²⁷ However, without the Project, the Recovery Program will experience even less success in meeting the PBO’s minimum target flows.

Achieving the permanent protection of the Shoshone Water Rights represents a much-needed shift away from the historical reliance on temporary and/or voluntary water contributions towards permanent protection. In 2022, in response to the Recovery Program’s review of the 15-Mile Reach PBO, the U.S. Fish and Wildlife Service (“FWS”) commended the Recovery Program’s “commitment to developing partnerships to augment flows” but expressed concern “with the reliance on voluntary water contributions because of the uncertainty that these augmentations will be available in the future.”²⁸ The Recovery Program cites additional uncertainties, including increases in the demand for water in the upper Colorado River basin and climate induced changes to hydrology as barriers to the Recovery Program’s ability to maintain and improve the future water supply for the 15-Mile Reach and has stressed the “need to develop strategies for long-term

²³ *See* Upper Colorado River Endangered Fish Recovery Program, 2024-2024 Highlights Briefing Summary, <https://coloradoriverrecovery.org/uc/wp-content/uploads/sites/2/2024/03/2023-24-Briefing-Book-Final.pdf>, p. 8.

²⁴ *Id.* (detailing 1,272 projects in Colorado that have benefited from ESA Section 7 Consultations from 1988-2023).

²⁵ Mainstem projects include the Collbran Project, Colorado-Big Thompson, Grand Valley Unit, Grand Valley Project, and the Silt Project. Additional Recovery Program area projects include the Bostwick Park Project, the Lower Gunnison Project, the Meeker Dome Project, the Dallas Creek Project, the Fruitgrowers Dam Project, the Paonia Project, the Uncompahgre Project, and the Smith Fork Project.

²⁶ *See supra* note 13; *see also Appendix 12* (summarizing the water court decree entered in Case No. 91CW247, Water Division No. 5).

²⁷ *See supra* note 13.

²⁸ *Id.*

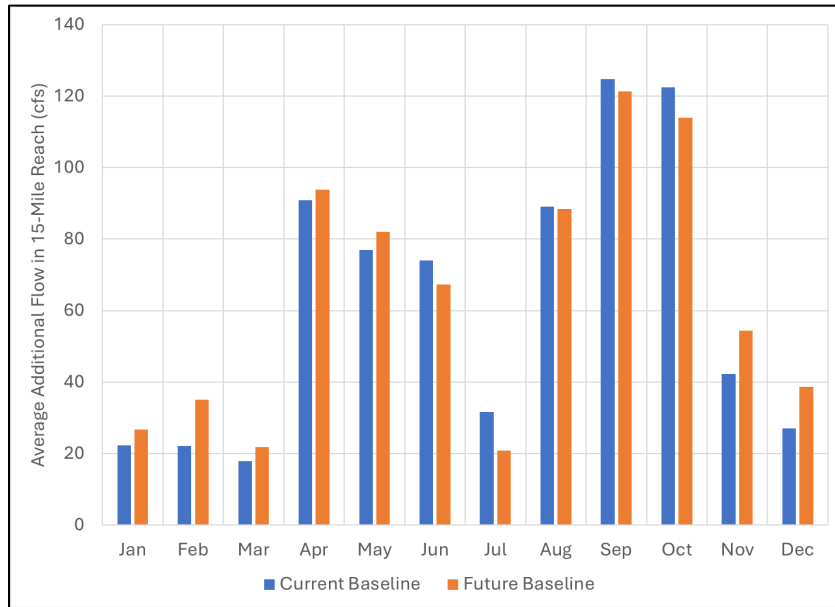
flow protection throughout the upper Colorado River basin.”²⁹ If the river flows provided by the historical exercise of the Shoshone Water Rights are lost, it will be significantly more difficult for the Recovery Program to reach the minimum target flows in the 15-Mile Reach. If the FWS determined that the Recovery Program was not making sufficient progress, any future and/or existing Colorado River water projects would be at risk and could face mitigation requirements for ESA compliance, a costly and timely process.

The results of the Yield Assessment and Yield Addendum at the 15-Mile Reach were evaluated on an annual, monthly, and daily basis using hydrology from 1988-2013. *Compare Appendix 5 with Appendix 6.* Hydros found in the Yield Addendum that on average in dry years, the Shoshone Water Rights contribute approximately 33,100 AF to 36,800 AF to the 15-Mile Reach under the Baseline Current and Future scenarios, respectively, of which approximately half (15,000 AF) is contributed during August, September, and October when flows are needed to meet the PBO’s minimum target flows. *See Appendix 6, Table 5, p. 8.* These contributing flows represent approximately 15-17% of the total flows in the 15-Mile Reach during the late irrigation months of August through October. *Id.* In the Yield Assessment, annual dry year contributing flows were shown to be as high as 41,000 AF under the current Senior scenario and up to 86,000 AF under the future Max-Relax scenario. *See Appendix 5, p. 13.*

The benefits to the 15-Mile Reach provided by the Shoshone Water Rights are not limited to drought conditions. Increased flows to the 15-Mile Reach occur in all years, particularly during the critical late irrigation season. Under the average and wet conditions, the yields ranged from 18,300 AF to 22,600 AF under the 2024 UCRM Baseline current scenario. *See Appendix 6, Table 5, p. 8.* These results show that the seniority and non-consumptive nature of the Shoshone Water Rights are incredibly helpful in maintaining river flows and habitat in the 15-Mile Reach in all years beyond the larger yields under drought conditions. The Shoshone Water Rights benefits were found to occur in all months, particularly in the spring and late irrigation season months.

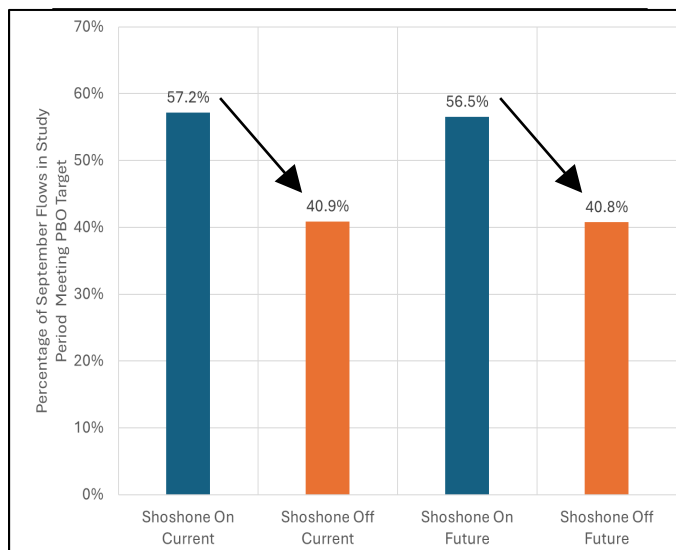
²⁹ Clinton Riley, Regional Director, Region 6, United States Fish and Wildlife Service, *2021-2022 Assessment of Sufficient Progress for the Upper Colorado River Endangered Fish Recovery Program in the upper Colorado River basin* (February 9, 2023), https://coloradoriverrecovery.org/uc/wp-content/uploads/sites/2/2023/02/feb-2021-Jan-2022-UCRRP-Suff-Prog_Acting-RD-signature.pdf.

Figure 9: Average Monthly Yield Magnitude Patterns - Current and Future Baseline Scenarios (see Appendix 6, Figure 2, p. 10)



Further, per the Yields Assessment and Addendum, in months when the average monthly flow was less than 810 cfs (the lowest PBO minimum target flow), Shoshone Water Rights were responsible for contributing 18% to 26% (see Appendix 5, Table 7, p. 12) of the total flow during months when the minimum target flow was not met under the 2015 UCRM. This is re-affirmed under the 2024 UCRM, indicating that the Shoshone Water Rights contribute an average of 15% to 17% of total flow in dry years (see Appendix 6, Table 5, p. 8). And this can be shown more specifically by looking at the number of days in September that exceed the minimum flow target of 810 cfs with and without the Shoshone Water Rights as presented in Figure 10:

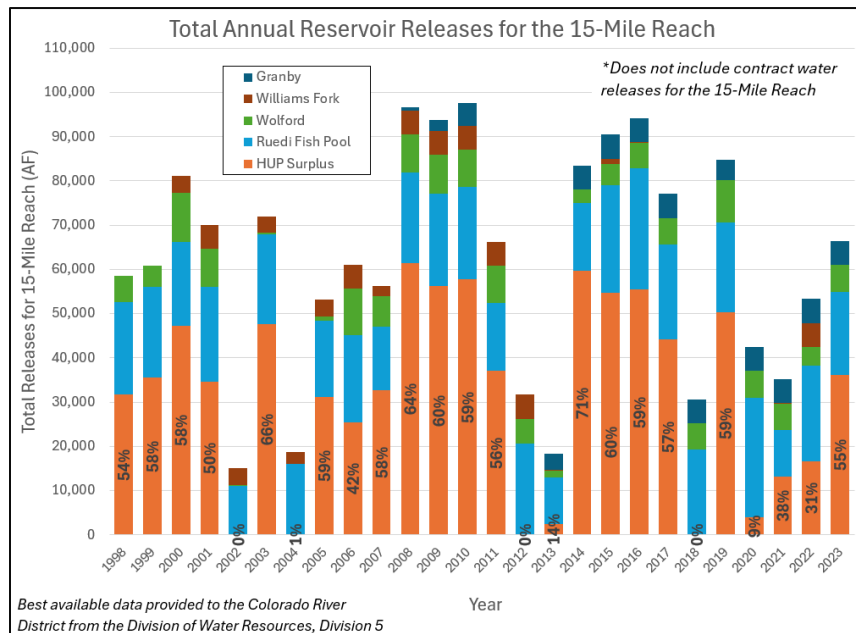
Figure 10: Frequency of September Flows Meeting the 15-Mile Reach PBO Minimum Flow Target of 810 cfs under the 2024 UCRM Baseline Scenario (see Appendix 6, Figure 3, p. 10)



Preserving the administration and exercise of the Shoshone Water Rights supports the ability for a “Surplus” to be declared to allow excess water from the 66,000-AF pool within Green Mountain Reservoir (the “Historic Users Pool” or the “HUP”) to be delivered to the 15-Mile Reach to help meet flow targets. *See generally Appendix 12.* Maintaining the historical flow regime created by the exercise of Shoshone Water Rights is one of three conditions stipulated to by the co-applicants (the United States, the Orchard Mesa Irrigation District (“OMID”), and the Grand Valley Water Users Association (“GVWUA”)) and certain of the opposers in Case No. 91CW247 (the “Check Case”). *Id.* at p. 3. If all stipulated conditions are met, HUP Surplus water may be released from Green Mountain Reservoir and used for non-consumptive purposes (e.g., by the Vinelands Power Plant), with all return flows resulting from such uses made available to the 15-Mile Reach. *Id.*

To the extent that HUP Surplus water has been made available pursuant to the Check Case, such water typically doubles the available supplies to the Recovery Program and is provided free of charge. *See Figure 11.* Historically, the HUP Surplus water provides, on average, 32,000 AF annually to the 15-Mile Reach, a significant addition to the other sources available to the Recovery Program—which total approximately 27,000 AF (in the upstream “fish pools” located in Ruedi, Wolford Mountain, and Granby Reservoirs). However, if the Shoshone Water Rights were lost or abandoned to the stream, one of the three stipulated Check Case conditions would be unmet, and the HUP Surplus could not be relied on as the single largest source of stored water available to supplement low flows in the 15-Mile Reach.³⁰ Importantly, Hydros evaluated impacts to the “fish pools” which are upstream of the Shoshone Power Plant and release water for the benefit of the Recovery Program by comparing the 2024 UCRM Baseline with the Max-Relax scenario under Current Conditions. *See Appendix 6, Figure 1, p. 6.* As detailed in the Yield Addendum, there are minimal differences between average storage levels in the fish pools with a range less than 10 AF.

Figure 11: Total Annual Releases to the 15-Mile Reach



³⁰ For a more detailed explanation of the relationship between the Shoshone Water Rights, the Check Case, and HUP Surplus releases to the 15-Mile Reach, please refer to [Appendix 12](#).

Thus, the Shoshone Water Rights not only directly support the 15-Mile Reach by providing an annual average of 18,500 AF during the critical late irrigation season months but also are a vital condition to allow HUP Surplus to be delivered to the 15-Mile Reach. In fact, the Yield Addendum (Appendix 6, p. 7) reports that Shoshone flows provide approximately 100 cfs of water to the 15-Mile Reach in the low flow months of August, September, and October (which is more than 12% of the 15-Mile Reach PBO’s minimum target flow of 810 cfs during those months).³¹

2.2.7 Federal Land Benefits: The Upper Colorado River watershed encompasses a substantial portfolio of federal lands managed by BLM, USFS, and the National Park Service (“NPS”) (*see Appendix 1*, Map 8). The USFS-BLM Report (Appendix 10) reflects the growing partnership between land management and water management agencies in the Upper Colorado River and underscores the dependence of the natural environment and recreation on federal lands on the historical flow regime created by the exercise of the Shoshone Water Rights. The USFS-BLM Report highlights the importance of the Project as an essential and foundational means of achieving restoration efforts that are in harmony with the secretarial priority to restore and conserve at least 30% of our lands and water by 2030. *See Appendix 10*, pp. 16–17. Additionally, the National Park Service recognizes the benefits of maintaining Colorado River flows downstream to Canyonlands National Park (*see Appendix 2*, pp.12).

2.3 Additional Water Quality, Recreation, and Economic Benefits

In addition to the significant ecosystem benefits described above, the Shoshone Water Rights provide critical water supplies that improve drinking water quality, drive recreational economies, and increase agricultural productivity.

2.3.1 Water Quality Improvements: Communities that rely on the mainstem of the Colorado River for their drinking water supplies, such as Silt, Rifle, Parachute, Battlement Mesa, DeBeque, and Clifton, benefit from the enhanced water quality provided by the exercise of the Shoshone Water Rights because the flows attributable to the Shoshone Water Rights dilute salinity and sediment. These communities can experience high treatment costs during low flow conditions when concentrations of Total Dissolved Solids (“TDS”) become elevated. Taste, odor, and color are affected when flows decrease due to the potential loss of the Shoshone Call. Without the higher flows of clean and cold headwater-sourced supplies provided by the Shoshone Call, a higher concentration of salinity and other water quality constituents creates increased costs for municipal drinking and wastewater treatment. Both Clifton and the City of Rifle are identified as disadvantaged communities using the Council on Environmental Quality’s (“CEQ’s”) Climate and Economic Justice Screening Tool.³² The importance of the Shoshone Water Rights to these drinking water systems is discussed in further detail later in Section 2.5. Further, the “Middle Colorado Integrated Water Management Plan” identifies the permanent protection of the Shoshone

³¹ Hydros’ modeling efforts are based on the operation of Colorado’s UCRMs (the 2015 and 2024 versions). However, the actual future benefits of the Project are dependent upon the historical use determination which will be made by the state water court. The likely outcome of the water court’s quantification of the historical use of the Shoshone Water Rights is discussed in Section 3.1.2.

³² The Climate and Economic Justice Screening Tool is accessible here: <https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>.

Water Rights as a critical action item to mitigate the impact of upstream water diversions that alter both the natural flow patterns and overall runoff of the Middle Colorado River watershed.³³

2.3.2 Recreation Economy: Shoshone’s flows benefit Colorado communities both upstream and downstream of the Shoshone Power Plant. Colorado’s robust recreational economy relies heavily on the Colorado River mainstem, with Shoshone flows strengthening the state’s iconic river recreation industry throughout Grand, Summit, Eagle, Garfield, and Mesa Counties. River recreation in Colorado is estimated to contribute \$18.8 billion annually to the state’s gross domestic product, with approximately \$4 billion coming directly from the Colorado River Basin on the West Slope (see [Appendix 1](#), Map 7).³⁴ As temperatures rise and streams diminish, the Project provides security for this industry, protecting the recreational fishing and boating that sustain local businesses and attract water-based tourism.

According to the Shoshone Outfitter Partnership, the Colorado River through Glenwood Canyon experiences over 70,000 commercial customer trips and an estimated 80,000 private boaters who launch from the Grizzly Creek and Shoshone boat ramps.³⁵ River recreation drives the summer economy of the City of Glenwood Springs, which sustains local businesses and a foundational tax base for the city through its recreational and tourism-based economies. The Project provides certainty and security for outfitters, the hospitality industry, and all local businesses that rely on resident and non-resident tourists and qualified employees. In 2022, the Colorado River Outfitters Association estimated that commercial river rafting through Glenwood Canyon created an economic impact of \$23.5 million.³⁶

Additionally, the USFS-BLM Report estimated that in 2022 approximately 150,000 commercial and private boat recreationalists used the Colorado River between Kremmling and into Glenwood Canyon during the summer months with interest in river recreation growing each year. See [Appendix 10](#), pp. 14, 16. The USFS-BLM Report goes even further to report on how flows impact recreational experiences, which shows the importance of protecting the Shoshone Water Rights that ensure higher flows are available for recreationalists above and below the Shoshone Reach: “*These flow-dependent activities rely heavily on the amount of water in this stretch of the river. Based on input from the outfitters and experience, these commercial operations typically cease when river flows drop below 1,200 cfs. The floating visitor experience diminishes drastically once flows drop below this level.*” *Id.* at p. 16 (emphasis added). The USFS-BLM Report also reported that outdoor recreation on BLM-administered lands in the Kremmling Field Office and Colorado River Valley Field Office contributes \$145.7 million and over 1,100 jobs annually. *Id.* at p. 14.

³³ See Middle Colorado Watershed Council, *Middle Colorado River Integrated Water Management Plan, A Joint Project of the Middle Colorado Watershed Council and the Mt. Sopris, Bookcliff, and Southside Conservation Districts* (February 2021), <https://www.coloradosmp.org/wp-content/uploads/2021/03/IWMP-Report-February-2021.pdf>.

³⁴ See Business for Water Stewardship, *Economic Contributions of Water-related Outdoor Recreation in Colorado*, https://businessforwater.org/wp-content/uploads/2020/05/SA_BWS_FactSheet_Digital_CO_1PG.pdf.

³⁵ The Shoshone Outfitter Partnership represents the 16 licensed commercial operators who provide safe and accessible river recreation on the Colorado River through Glenwood Canyon. See also Colorado River District, *City of Glenwood Springs Pledges \$2 Million for Shoshone Water Right Preservation Campaign* (Friday, May 17, 2024), <https://www.coloradoriverdistrict.org/press-release-city-of-glenwood-springs-pledges-2-million-for-shoshone-water-right-preservation-campaign/>.

³⁶ Colorado River Outfitters Association, *2022 Year End Report: Commercial River Use in the State of Colorado 1988-2022*, <https://www.croa.org/wp-content/uploads/2023/06/2022-CROA-Commercial-Rafting-Use-Report.pdf>.

2.3.3 Agricultural Benefits: Shoshone flows support Colorado’s agricultural economy (responsible for generating nearly \$12 billion of Colorado’s GDP in 2019)³⁷ in several important ways. First, water security for West Slope agriculture is intimately linked to the Recovery Program where continued cooperative water management allows for continued development and diversion of water resources while maintaining compliance with the ESA. Second, if the Shoshone Water Rights were not exercised, irrigators would be directly impacted by a likely increase in the frequency and duration of the Cameo Call to supply major irrigation water rights in the Grand Valley. *See Appendix 6; see also Appendix 16.* The resulting impact would trigger less opportunity for upstream agricultural diversions, a greater frequency of river administration in the month of April, and insufficient replacement supplies for some West Slope augmentation plans. Additionally, irrigators in the Roaring Fork Valley could experience increased instances where their water rights are out-of-priority due to a more frequent Cameo Call, resulting in an expensive and time-consuming process to produce additional augmentation supplies. *See Appendix 16.*

Furthermore, the historical flow regime created by the Shoshone Call protects and improves water quality especially in low flow periods for water users up and down the Colorado River mainstem. Agricultural producers benefit significantly from improved water quality, bringing greater agricultural production to the West Slope. High salinity levels in the Colorado River, which are expressed by the concentration of TDS, can negatively impact water use and crop yields, especially for salt-sensitive cash crops, such as fruits and vegetables by up to 25%.³⁸ This is further documented by the United States Department of Agriculture and Reclamation via implementation actions and studies published by the Colorado River Basin Salinity Control Program.³⁹ Reclamation invests millions of dollars every year for salinity control measures that enhance and protect the quality of water available in the Colorado River.⁴⁰

2.4 Community Impact and Partnerships

The Shoshone Water Rights Preservation Coalition (the “Coalition”) has raised \$56 million in formal commitments towards the purchase price of the Shoshone Water Rights, underscoring the significance of this resource to the region. The Coalition encompasses the most populous regions on Colorado’s West Slope with diverse interests across the environmental, recreational, municipal, and agricultural sectors. In December 2023, the River District committed \$20 million with the

³⁷ See Colorado Office of Economic Development & International Trade, *Food and Agriculture*, <https://choosecolorado.com/key-industries/food-agriculture/>, (last visited on November 5, 2024).

³⁸ See Colorado State University Extension, Master Gardener, *CMG GardenNotes #224 Saline Soils* (revised October 2015), <https://cmg.extension.colostate.edu/Gardennotes/224.pdfm>, p. 224-1; *see also* United States Geological Survey, *State News Release: New study demonstrates how climate and irrigation influence salinity of waters in the Upper Colorado River Basin* (February 8, 2024), <https://www.usgs.gov/news/state-news-release/new-study-demonstrates-how-climate-and-irrigation-influence-salinity-waters#:~:text=High%20salinity%20levels%20in%20the,to%20infrastructure%20and%20crop%20production>.

³⁹ See, e.g., Natural Resources Conservation Service, Colorado River Basin Salinity Project, <https://www.nrcs.usda.gov/programs-initiatives/colorado-river-basin-salinity-project>, (last visited on November 10, 2024).

⁴⁰ U.S. Bureau of Reclamation, Colorado River Basin Salinity Control Program, <https://www.usbr.gov/uc/progact/salinity/>, (last visited on November 10, 2024) (noting that Reclamation awarded funding totaling \$23,567,002 to projects in Colorado and Utah that implement salinity control measures).

signing of the PSA. On January 29, 2024, the CWCB voted unanimously to recommend a \$20 million investment in support of the Project. Colorado’s General Assembly subsequently approved the CWCB’s contribution through the 2024 Water Projects Bill (HB24-1435) with broad bipartisan support. As of the date of this application, 26 water entities, local governments, and regional partners have formally committed \$16 million to the Project. *See generally* Appendices 2 and 3 (containing summaries of formal financial commitments and letters of support).

Notably, Colorado’s state and federal elected officials and representatives overwhelmingly support this application. Appendix 2 includes 58 unique letters of support that articulate the benefits of the Shoshone Water Rights to their communities. By way of example and not limitation, Appendix 2 includes letters of support from Governor Polis, Senator Bennet, Senator Hickenlooper, the Colorado Speaker of the House, federal and state legislators from throughout the State of Colorado and numerous other state dignitaries. These letters emphasize the importance of the Project and the importance of a healthy Colorado River to local communities and economies.

2.5 Disadvantaged Communities

CEQ’s Climate and Economic Justice Screening Tool identifies eight census tracts as disadvantaged that include overburdened and underserved communities along the Colorado River in the West Slope that directly benefit from the Shoshone Water Rights.⁴¹ The eight tracts include portions of the City of Rifle, the City of Grand Junction, and Clifton, which have each made financial commitments to the Project. The City of Rifle committed \$100,000, Clifton Water District committed \$250,000, and the City of Grand Junction committed \$1 million. The census tracts are also included within Garfield and Mesa Counties, which have committed \$3 million and \$1 million, respectively, highlighting the importance of the Project to these communities.

Clifton, the City of Rifle, and the Towns of DeBeque, Silt, Parachute, and Battlement Mesa are all West Slope communities which draw and treat water directly from the Colorado River as their primary domestic water supply. The Project will sustain critical flows and water levels in the Colorado River on a year-round basis, especially in dry years, thereby maintaining water quality through the dilution of pollutants and sediment naturally present in the river. The presence of sediment is of particular concern for a stretch of 103 river miles from the Colorado River’s confluence with the Roaring Fork River to the confluence with the Gunnison River on the “Monitoring & Evaluation List” within Colorado’s Section 303(d) List of Water-Quality-Limited Segments Requiring Total Maximum Daily Loads.⁴² While this reach is not listed for impairment, the “Monitoring & Evaluation” classification signifies there is “reason to suspect water quality problems”. *See supra* note 12.

The City of Rifle, located in western Garfield County, relies on surface water from the Colorado River as its primary source for drinking water. Colorado River water is diverted and conveyed through a pre-sedimentation pond where it is then pumped up to the Rifle Regional Water

⁴¹ *See supra* note 32 (The identified disadvantaged tracts include Tracts Nos. 08045952001, 08077001705, 08077001706, 08077000602, 08077000700, 08077000200, 08077000500, 08077000300.)

⁴² *See supra* note 12.

Purification Facility.⁴³ Similarly, the Clifton Water District, which provides water service to over 13,700 residential and commercial units just to the east of the City of Grand Junction, relies on two different points of diversion from the Colorado River. Clifton’s water treatment system includes ultra- and micro-membrane filtration systems that are prone to increased operational costs when turbidity increases, or other factors decrease the water quality. Sustained, year-round river levels, supported by the Shoshone Call, allow for higher water quality and reduce consumer costs by diluting difficult-to-remove pollutants and sediment.

Additionally, the City of Grand Junction and the nearby Ute Water Conservancy District (“Ute Water”) both rely on the Colorado River as a secondary source of drinking water and as a key economic driver for the broader Grand Junction community. The City of Grand Junction, home to over 68,000 residents, currently holds conditional water rights on the Colorado River. Similarly, Ute Water, the largest drinking water provider between Denver and Salt Lake City, relies on the Colorado River as a backup supply under severe drought conditions. In 2021, for the first time, Ute Water diverted Colorado River water to meet its peak summer demands in response to exceptional and extreme drought conditions across Ute Water’s service area.⁴⁴ Across the American West, redundant drinking water sources are becoming critical for municipalities like Grand Junction which continue to experience increased pressures from the impacts of a warming climate including wildfires, drought, and diminished water quality from lower flows. The Shoshone Call also supports recreation on the Colorado River, an important driver for Grand Junction’s economy. The recently constructed side channels and amenities at Las Colonias Park in Grand Junction benefit from sustained flows and offer high-quality recreation experiences for residents and visitors.

2.6 Benefits to Federal Projects

The Project enhances existing federal projects and facilities within the State of Colorado. Specific benefits are described below in addition to benefits to federal projects discussed earlier in this proposal regarding the Upper Colorado River Wild and Scenic Alternative Management Plan and the Recovery Program efforts in the 15-Mile Reach.

Colorado-Big Thompson Project and Green Mountain Beneficiaries:

Senate Document 80: The operation of Green Mountain Reservoir is governed by the “Manner of Operation of Project Facilities and Auxiliary Features” provisions of Senate Document 80 “SD-80” (Act of August 9, 1937, 50 Stat. 564) (*see Appendix 14.b.*), which was a project feasibility study prepared by Reclamation that was submitted to the United States Congress in 1937 to support the congressional authorization of the Colorado-Big Thompson Project (“C-BT Project”). The Project is consistent with the express purposes of SD-80. Under SD-80—and consistent with the

⁴³ City of Rifle, Garfield County, Colorado, DRAFT April 2019 Water Efficiency Plan, <https://www.rifleco.org/308/Water-Efficiency> (last visited on November 6, 2024).

⁴⁴ Michael Booth, *Drought forces Grand Junction to dip into Colorado River for drinking water supplies for the first time in more than 50 years*, THE COLORADO SUN (July 2, 2021, 4:20 AM), <https://coloradosun.com/2021/07/02/ute-water-colorado-river-drought/>.

1984 Green Mountain Reservoir Operating Policy—Green Mountain Reservoir was constructed as a replacement reservoir to provide water to the Colorado River when senior West Slope demands are exercising their senior priorities under Colorado’s prior appropriation system and as compensatory storage for future West Slope water use development. *Id.*

Another key provision of SD-80 provides that, from April 15 through October 15, water from Green Mountain Reservoir’s 100,000-acre-foot compensatory storage pool (the “Power Pool”) will be released to provide a natural flow of at least 1,250 cfs at the location of the Shoshone Diversion Dam. *Id.* The purpose of this provision is to maintain at least 1,250 cfs at the Shoshone Diversion Dam during the irrigation season, which together with releases from Green Mountain Reservoir during the non-irrigation season for power production, provide the necessary surety to downstream West Slope water users on the Colorado River that they can divert and use water free of senior calls from transmountain diverters. (Note that the preserved flows at Shoshone Diversion Dam identified in SD-80 were limited to 1,250 cfs, as the junior 158 cfs water right had not been adjudicated when SD-80 was drafted.) In addition to the Power Pool, Green Mountain Reservoir also holds a 52,000-acre-foot “Replacement Pool” designed to adequately augment out-of-priority diversions from the East Slope components of the C-BT Project facilities.

The Project aims to maintain the historical administration of the Colorado River and operation of the C-BT Project by ensuring the Shoshone Water Rights continue to operate into the future. Hydros evaluated operations of the C-BT Project in the Yield Addendum under the daily 2024 UCRM with respect to the Project. *See Appendix 6.* Hydros concluded that no significant change in reservoir yield would occur to the East Slope or West Slope components of the C-BT Project between current conditions in the Baseline and Max-Relax scenarios. *See id.* at p. 3 (Table 1). The model results indicate that even year-round demands attributable to the Shoshone Water Rights at 1,408 cfs do not impact project yields at Adams Tunnel, nor do they disrupt storage levels at Granby Reservoir or Green Mountain Reservoir. These three facilities (and appurtenant structures) are significant components of the C-BT Project. *Id.* at pp. 3–4 (Tables 1 and 2). Additionally, Hydros found that minimum and maximum storage levels in Granby Reservoir and Green Mountain Reservoir were identical in the Baseline and Max-Relax scenarios while average storage levels had insignificant changes. *Id.* at p. 3 (Table 1). In other words, the model results demonstrate that permanently protecting the Shoshone Water Rights will not adversely impact the transmountain or in-basin components of the C-BT Project.

Upper Colorado River Wild and Scenic Alternative Management Plan: As discussed in Section 2.2.3, the Shoshone Water Rights protect significant amounts of river flow during dry periods, contributing to lower water temperatures through key segments of the Upper Colorado River mainstem, with recreational fishing and wildlife habitat identified as ORVs in these segments.

Reclamation’s Obligations under the ShOP Agreement: The Project would eliminate the need for continued operations under the ShOP Agreement (Appendix 14.d.), and Reclamation’s obligations therein would also terminate. The Project is consistent with SD-80 and would achieve the goals of Shoshone permanency much more dependably and effectively than the ShOP Agreement because

the benefits of operating the Shoshone Water Rights would no longer be dependent on the voluntary participation of the ShOP signatories, which is not permanent. See [Appendix 13](#), p. 4, ¶ 4. A thorough analysis of the limitations of the ShOP Agreement is set forth in Section 3.2.1., below.

Fryingpan-Arkansas Project: According to the Yield Addendum, the Shoshone Water Rights contribute flows that hold off the Cameo Call, which otherwise would call earlier and would remain on the river for longer durations, adding approximately 29% more calling days. The potential increased frequency and duration of a Cameo Call places additional stress on junior water rights along the Roaring Fork River and in the tributaries above the confluence of the Roaring Fork and Fryingpan Rivers, which includes water rights associated with the Fry-Ark Project. Further, the Yield Addendum found no impact to the Fry-Ark Project between Baseline and Max-Relax scenarios under increased demands from the Shoshone Water Rights. See [Appendix 6](#), page 3. Instead, the Yield Addendum observed increased yields to the Fry-Ark Project (i.e., to Ruedi Reservoir and Boustead Tunnel) when compared to the scenario without demands under the Shoshone Water Rights. *Id.*⁴⁵

Without the Shoshone Water Rights benefiting the 15-Mile Reach, water users would be increasingly reliant on releases from Ruedi Reservoir to provide a replacement and/or augmentation supply for junior uses and to support baseflow targets for the Recovery Program. This would increase stress on recreational fishing and potentially exacerbate conflict with the local recreational fishing economy downstream of Ruedi Reservoir as well as recreational boating at Ruedi due to the need for higher storage releases and further drawdowns of the reservoir.

Silt Project: The Silt Project, located on the West Slope near the Towns of Rifle and Silt, is one of the initial projects authorized by the Colorado River Storage Projects Act. It is operated by the Silt Water Conservancy District and uses stored water and water pumped out of the Colorado River to serve the irrigation needs of nearly 7,000 acres of land located in the region. The Silt Project facilities include the Rifle Gap Dam, Reservoir, and Silt Pumping Plant, which pumps water out of the Colorado River using a designated 5,000-AF storage pool in Green Mountain Reservoir.

In addition to important ESA compliance and dilution flows (which reduce the impacts of sediment/salinity) for 7,000 acres of irrigated land, the exercise of the Shoshone Water Rights maintains the hydraulic head on the Silt Project's primary headgate on the Colorado River which is necessary to operate the pump canal. Maintaining the Shoshone Water Rights during the irrigation season delays the Cameo Call, and, in turn, preserves the Silt Project's storage pool.

⁴⁵ Similarly, results were found by BBA Water Consultants, Inc. ("BBA"), in its draft October 12, 2023, memorandum titled, "Shoshone Impact on Cameo Call and Roaring Fork Basin Analysis", in which BBA concluded that the Fry-Ark Project is out-of-priority nearly every time the Cameo Call is active. See [Appendix 16](#). Therefore, permanently protecting the Shoshone Water Rights is directly related to protecting Fry-Ark Project yields. According to BBA, the average annual benefit provided by the Shoshone Water Rights to the Fry-Ark Project ranges from 800 to 2,400 AF.

Grand Valley Project: The Shoshone Water Rights provide stable flows and the necessary hydraulic head to maintain diversions at the Grand Valley Project Diversion Dam (a/k/a the “Roller Dam”) and the subsequent lateral diversion by OMID and the Vineland Power Plant down-ditch of the Roller Dam. *See Appendix 12.* The Grand Valley Project supports over 40,000 acres of irrigated agriculture in the most densely populated area on Colorado’s West Slope,⁴⁶ which benefits from the increased certainty provided by the Shoshone Call and the water quality benefits fostered by the exercise of the Shoshone Water Rights. These effects are essential to maintaining the Grand Valley’s robust and productive agriculture economy. Additionally, the non-consumptive operations which occur at the Vinelands Power Plant and the OMID Pumping Plant benefit from reduced operations of the OMID “Check” structure, as facilitated by the Shoshone Water Rights, because such operations typically result in reduced power generation and pumping efficiency due to increased tailwater elevations caused by the Check. *See Appendix 12.*

In addition, the 15-Mile Reach rests between Cameo’s agricultural diversions and the confluence of the Colorado River with the Gunnison River at the mouth of the Grand Valley. Given the proximity, Grand Valley Project beneficiaries are acutely aware of the need to support baseflows in the 15-Mile Reach and recognize that the Shoshone Water Rights provide flows which are critically necessary to meet the Recovery Program’s flow targets during the spring, late irrigation season months, and through the winter season. *See Appendix 6, pp. 8–9; see also Appendix 2* (GVWUA’s September 4, 2024, “Letter of Support: Shoshone Water Rights Preservation”).

Lastly, the Project would provide security in permanently fulfilling the pertinent conditions set forth in the “Stipulation and Agreement” executed as part of the Check Case (Case No. 91CW247), which requires that the Shoshone Water Rights continue to be exercised in a manner consistent with historical operations for hydropower production at the Shoshone Power Plant. If the Shoshone Water Rights are not exercised in a manner consistent with historical practice, a potential breakdown in the Check Case’s Stipulation and Agreement would ensue that could increase the Cameo Call to 2,260 cfs (versus the stipulated 1,950 cfs), disrupt the availability of HUP Surplus water to the 15-Mile Reach, and potentially lead to protracted litigation involving the parties to the Check Case. For additional details regarding the relationship between the Shoshone Water Rights and the Check Case Decree and Stipulation, please refer to Appendix 12.

2.7 Economic Value to the Federal Government

The values and benefits afforded by the Project also culminate in a significant economic benefit to the federal government. Consultants at BBC Research and Consulting (“BBC”) examined the economic value provided by the Project to the federal government through the recovery of threatened and endangered aquatic fish species, reduction in salinity concentrations, and avoidance of further reductions in Colorado River flows by providing essential flows that stabilize water supply during periods of scarcity. To review BBC’s report, the “Benefits from the Shoshone Water Rights to the Federal Government,” please refer to Appendix 9.

⁴⁶ Joe Simonds, Bureau of Reclamation, *Grand Valley Project* (1994), <https://usbr.gov/projects/pdf.php?id=122>, p. 18.

Using historic water lease rates for the Recovery Program, BBC determined significant monetary benefits resulting from the exercise of the Shoshone Water Rights by avoiding the need to find and lease equivalent water volumes. *See Appendix 9*, p. 5. For example, the annual benefit is estimated between \$1.07-1.45 million, increasing to nearly \$2 million annually in dry years. Further, BBC concluded that by diluting salinity in the Colorado River, the exercise of the Shoshone Water Rights results in an equivalent effect of salinity control for 16,896 tons of salt in average years which increases significantly in dry years to 23,109 tons. *Id.* at p. 8. Using the weighted average cost per ton of salinity control projects funded by Reclamation in 2023, this translates to an average financial benefit of \$1.3 million - \$1.8 million depending on an average or dry year. Finally, BBC's report considers the financial benefit of the Shoshone Water Rights during periods of scarcity, when replacing flows through reductions in consumptive use would be difficult and costly. Using the most recent payment rate for the 2023 System Conservation Pilot Program ("SCPP"), the annual benefit is estimated to be \$16.9 million under current demands in dry years, growing to \$18.7 million under future demands. *Id.* at p. 11.

Overall, the combined annual benefits range from \$14.7 to 16.7 million, depending on current vs future demands and during dry years, these benefits increase in range to between \$20.1 and \$22.9 million per year. *Id.* at p. 14. The annual benefits to the federal government correspond to a net present value of \$547.7 million under current conditions and increasing to \$608.8 million with growing demands. *Id.* at p. 17.

3. Project Description and Implementation

3.1 Acquisition of Shoshone Water Rights

As set forth above, the Project seeks to permanently protect a critical historical flow regime in the mainstem of the Upper Colorado River Basin. Securing permanent protection of the river flows attributable to the Shoshone Call will foster improved resilience during future drought conditions while preserving important riverine ecosystems across the mainstem of the Upper Colorado River. The Project location is the Shoshone Reach in Glenwood Canyon, spanning approximately 2.4 miles from the upstream point at the Shoshone Diversion to the downstream point at the discharge outlets below the Shoshone Power Plant. The Project is a collaborative effort between the River District, PSCo, the Coalition,⁴⁷ and the CWCB. Unlike many federally funded projects, the Project does not involve any construction activities such as trenching, excavation, or on-site demolition in the Shoshone Reach. Instead, the Project is an iterative process governed by the laws and administrative procedures of the State of Colorado.

The steps necessary to complete the Project are presented as a series of actionable closing conditions in the PSA between PSCo and the River District. *See Appendix 4*. Pursuant to the PSA, to close the transaction and authorize the expenditure of public funds for the acquisition of the Shoshone Water Rights, the PSA contains four closing conditions that must be met by December 31, 2027, unless that deadline is extended by agreement between the River District and PSCo. The four mandatory closing conditions described in the PSA include the following:

⁴⁷ See Section 2.4, Table 3 above; *see also Appendix 2* (letters of support).

- (1) Negotiate an agreement between PSCo, the River District, and the CWCB to enable the Shoshone Water Rights to be used for instream flow purposes when they are not being used for power generation purposes.
- (2) Obtain a change of water rights decree in state water court to add instream flow use as an alternate decreed beneficial use for the Shoshone Water Rights.
- (3) Confirm approval of the sale of the Shoshone Water Rights by obtaining any necessary approvals and decisions from the Colorado Public Utilities Commission.
- (4) Secure funding for the closing payment to acquire the Shoshone Water Rights.

Each of the four conditions ([Appendix 4](#), p. 5, ¶ 4.4) summarized above is discussed below.

3.1.1 Instream Flow Acquisition Agreement

The PSA between the River District and PSCo contemplates that the parties will negotiate with the CWCB for an agreement (“ISF Agreement”) authorizing the CWCB to use the Shoshone Water Rights for instream flow purposes when the rights are not being used to generate power. The River District’s conversations with the CWCB’s Instream Flow Program staff have been positive.

Section 37-92-102(3) of the Colorado Revised Statutes specifically authorizes the CWCB to acquire water rights “in such amounts as the board determines is appropriate for stream flows [] to preserve or improve the natural environment to a reasonable degree.”⁴⁸ The CWCB has 120 days to determine what terms and conditions it will accept in an acquisition agreement for water, water rights, or interests in water to preserve or improve the natural environment. C.R.S. § 37-92-102(3). Pursuant to the CWCB’s rules (the “ISF Rule(s),” 2 CCR 408-2), at least two CWCB board meetings must be held to allow for public input prior to the CWCB taking final action on a proposed acquisition. *See generally* ISF Rules 6a.–6b, 6e., 6i., and 6m.–6n. If no hearing is requested, the CWCB may take final action on the proposal after the expiration of 120 days. Negotiations with the CWCB, PSCo, and the River District staff concerning the instream flow agreement have been underway since February 2024. The River District anticipates that, once formally initiated, the acquisition process will take between 4 to 6 months.

Once the CWCB’s administrative process is completed and the CWCB approves the acquisition (*see* ISF Rule 6n.) of the exclusive right to use the Shoshone Water Rights for instream flow purposes when they are not used for power generation purposes, the ISF Rules dictate that the CWCB—together with the River District and PSCo—shall file a change of water right application to obtain a decreed right to use the Shoshone Water Rights for instream flow purposes. To ensure that the Shoshone Water Rights will be perpetually used to protect and improve the natural environment, the Colorado River District has proposed language in the proposed ISF Agreement and proposed change of water rights decree that prohibits any additional, future change of the Shoshone Water Right without the mutual consent of the CWCB and the Colorado River District. To protect the requested financial contribution by the United States, the Colorado River District

⁴⁸ Under statute, the CWCB will make a determination of appropriateness related to the amount of water needed to improve the natural environment before acquiring an interest in a water right for that purpose. Then, the process to add an instream flow use as a decreed beneficial use of the Shoshone Water Rights will proceed to state water court. Once in water court, the CWCB’s determination(s) are accorded deference under the Colorado State Administrative Procedure Act. *See* C.R.S. §§ 37-92-102(4)(c), (8)(f)(I)(A), and 37-92-305(13)(a).

will support similar binding language in the proposed water court decree that will prohibit any further change in use of the water rights absent the consent of the United States.

- *Anticipated Timeline:* Negotiations with the CWCB, PSCo, and the River District staff concerning the instream flow agreement have been underway since February 2024. The River District anticipates that, once formally initiated, the acquisition process will take between 4 and 6 months.

3.1.2 Water Court Approval

Each water division in the State of Colorado includes a water court which is presided over by a water judge. C.R.S. § 37-92-201. The water judge for each division is appointed by the Colorado Supreme Court and has exclusive jurisdiction in the determination of water rights, the use and administration of water, and all other water matters within the water division. *See generally* C.R.S. § 37-92-203. The water court process is generally initiated by the filing of an application. That application is published in a monthly water court resume and as legal notice in one or more papers of general circulation within the applicable water division. Interested parties may file a statement of opposition to the application setting forth the reasons why the application should not be granted or granted on certain conditions. C.R.S. § 37-92-302(1)(b). The Project will require a joint water court application by the CWCB, PSCo, and the Colorado River District to change the use of the water rights to add instream flow use by the CWCB as an alternate beneficial use when the rights are not being used to generate hydropower. C.R.S. § 37-92-203. Colorado law provides that an alternate use decreed to an existing water right through a change of water rights proceeding, as is contemplated in this transaction, will maintain the priority of the original water right. *See* §§ 37-92-102(3), 37-92-103(5)(a).

Pursuant to statute, the water judge shall approve the application for a change of water right if the requested change will not cause injury to other water users. C.R.S. § 37-92-305(3)(a). If it is determined that any proposed ruling would have an injurious effect, any party may propose terms and conditions to prevent such an injurious effect. *Id.* Because it is the intent of the Colorado River District to maintain the historic flow regime associated with the Shoshone Water Rights, no injury will occur to any other water rights. Thus, the anticipated end-result of the water court process will be a decree that confirms the additional use of the Shoshone Water Rights for instream flow purposes without resulting in any change of the Colorado River stream system that would adversely affect other water rights.

- *Anticipated Timeline:* The River District anticipates that the water court process will take approximately 1.5 years from the filing of this application to receiving a change of water rights decree approved by the water court. While it is difficult to predict the length of a change of water rights proceeding in water court, the PSA includes a condition (*see Appendix 4, ¶ 4.4(b)*) requiring the Colorado River District to engage in substantive negotiations with potential water court objectors to address and ideally eliminate objections that could be raised during the water court process. Long before the PSA was executed, the River District negotiated with several operators of transmountain diversion systems and procured their contractual support for the River District's acquisition of these water rights and in some instances express agreement to not oppose the addition of an alternate instream flow use for the 1,250 cfs available under the

senior Shoshone Water Right. See [Appendix 13](#) (summarizing the pertinent agreements with TMD operators, including excerpts of relevant contractual provisions). Since the execution of the PSA, the River District has expended considerable effort in negotiating with potential objectors. While those negotiations have been productive to date, they are still ongoing. Furthermore, the PSA provides that, if necessary, the closing date may be extended by mutual agreement of the River District and PSCo if, for instance, the water court process takes longer than anticipated. That said, the River District confidently maintains that the Project will meet the B2E requirement for complete expenditure of funds by September 30, 2031.

Historical Use of the Shoshone Water Rights

Figure 12: Shoshone Power Plant, Library of Congress



The overarching purpose of a change proceeding in water court is to ensure that use of the water right for the changed purpose is limited to mimic the actual historical beneficial use of the subject water right over a period of time. Confirming the historical use of the changed water right helps to ensure that other water users on the same stream system are protected from injury by preventing enlarged use of the subject water right. The “historical use” of the subject water right is calculated based on the pattern of historic diversions and beneficial use of a decreed water right for its decreed purposes over the representative period. Notably, there is no uniform approach to quantifying the historical use of a water

right; instead, it is necessary only that historical use is quantified “in some fashion and to some degree of precision[.]” *State Eng’r v. Bradley*, 53 P.3d 1165, 1171 (Colo. 2002). Furthermore, it is not necessary for the water court to calculate historical use with “mathematical certainty” provided that the vested rights of junior water users are protected. *Southeastern Colo. Water Conservancy Dist. v. Fort Lyon Canal Co.*, 720 P.2d 133, 147 (Colo. 1986). And finally, Colorado water law “does not rigidly require that every year a water owner does not use a water right must be counted as a nonuse year [in a historical use analysis].” *Wolfe v. Sedalia Water & Sanitation Dist.*, 343 P.3d 16, 28 (Colo. 2015).

Considering the legal standards governing a change of water right proceeding as summarized above, the Colorado River District retained BBA Water Consultants, Inc. (“BBA”) to prepare a preliminary assessment of the historical exercise of the Shoshone Water Rights for purposes of this B2E Application. A copy of BBA’s November 8, 2024, Draft Preliminary Shoshone Yield Assessment (the “Preliminary HU Assessment”) is attached to this application as [Appendix 8](#).

In the Preliminary HU Assessment, BBA utilized a 29-year study period from 1975 to 2003 to show the historical exercise of the Shoshone Water Rights. See [Appendix 8](#), pp. 8–9. The 1975-2003 study period does not include years after 2003, when the Shoshone Power Plant experienced significant outages totaling 1,466 days over 19 years, as opposed to 89 days of full outage during the selected 29-year study period. See *id.* at p. 5, Table 2. Instead, the selected study period is

representative of the “actual” historical use of the Shoshone Water Rights over a sufficiently long period of time when these rights were consistently used for their decreed purposes, and includes a representative cross-section of wet, dry, and average year types. BBA’s approach and findings are consistent with the standards for a change of water rights case as specified under applicable Colorado law, including C.R.S. § 37-92-305(3)(d) which provides as follows:

“Quantification of the historical consumptive use of a water right must be based on an analysis of the actual historical use of the water right for its decreed purposes during a representative study period that includes wet years, dry years, and average years. The representative study period:

- (I) Must not include undecreed use of the subject water right; and
- (II) Need not include every year of the entire history of the subject water right.”

BBA characterized the historical use of the Shoshone Water Rights utilizing the “administrative flow” (i.e., total gaged flow less shepherded releases for downstream water users) in the Colorado River recorded at the USGS stream gage located near Dotsero, Colorado (USGS Gage 09070500, the “Dotsero Gage”). *Id.* at pp. 7–11. BBA’s approach vis-à-vis the administrative flow recorded at the Dotsero Gage is consistent with and replicates the current and historical administration the Shoshone Water Rights by the Division Engineer for Water Division 5. *Id.* Furthermore, relying on the recorded administrative flow for purposes of BBA’s preliminary analysis leads to a more accurate quantification of the historical use of the Shoshone Water Rights and the impact on historical stream patterns upstream and downstream of the Shoshone Power Plant because the administrative flow encompasses all diversions and water uses required to operate the Shoshone Power Plant including, but not limited to, tunnel sediment flushing and other historical operations.

BBA’s approach with respect to administrative flow limited the available flow to the Shoshone Water Rights based on several reasonable assumptions. *Id.* at p. 10 (listing reasonable adjustments and assumptions). For instance, daily flows included in BBA’s assessment were limited to the lesser of the administrative flow or the total 1,408 cfs available to the Shoshone Water Rights. BBA proceeded with an understanding that the Shoshone Power Plant continually operated unless the plant was shut down to address routine maintenance or to conduct repairs. The reasonable assumptions described in the Preliminary HU Assessment are defensible under Colorado law, supported by PSCo records, and provide the most-accurate description of the specific historical use and the impact of the Shoshone Water Rights to upstream and downstream water users.

BBA’s Preliminary HU Assessment calculated the 29-year average historical use of the Shoshone Water Rights was 844,644 AF and recommended that this value to be applied against the rights as a 29-year running average volumetric limit to maintain the historical exercise of the water rights in a manner that also replicates historical stream conditions downstream of the Shoshone Power Plant (i.e., return flows). *Id.* at p. 10. The Preliminary HU Assessment also found that the Shoshone Water Rights historically diverted 1,408 cfs at some point in each month throughout the entire study period, confirming that usage of the full decreed rate for the two water rights was intended

at the time of their respective appropriations. Thus, BBA recommended that the full 1,408 cfs diversion rates be continued for the changed use for instream flow purposes so long as the 29-year rolling average volumetric limit is applied as a term and condition to prevent enlarged use.⁴⁹ Given the River District’s analysis of all historical records available to date and our understanding of applicable laws, standards, and customs which govern proceedings in Colorado water court, the River District has determined that the water court change case is likely to result in a quantification of actual historical use of the Shoshone Rights which may vary by 10% (plus or minus) in relation to the 29-year historical use of the Shoshone Water Rights identified above.

The values presented in the Preliminary HU Assessment are reasonable and are consistent with the 2024 UCRM daily modeled results from the state developed Baseline conditions, where the Shoshone Water Rights demands and diversions bracket and were within 10% of the 29-year rolling average volumetric limit proposed by BBA. *Compare Appendix 6 with Appendix 8.* For these reasons, it is unlikely that the actual historical use of the Shoshone Water Rights, once quantified by the water court, would vary substantially from the values presented in the Preliminary HU Assessment.

3.1.3 Colorado Public Utilities Commission (“PUC”) Approval Process

The PUC regulates public utilities within the State of Colorado, including PSCo. PSCo will need to seek approval of the sale of its water rights assets from the PUC. The PUC will consider the sale pursuant to C.R.S. § 40-5-105.

- *Anticipated Timeline:* It is anticipated that PUC approval will take between 6 months to 1 year.

3.1.4 Financing for Acquisition of Shoshone Water Rights

Prior to PSCo’s commencement of the PUC proceeding, the River District will need to confirm the commitment of sufficient funds to make the closing payment to PSCo for the negotiated purchase price of \$99,000,000. The funding commitments secured by the River District to-date are more particularly described above in Section 2.4.

- *Anticipated Timeline:* Written commitments from funding partners sufficient to meet this condition will be provided to PSCo within 30 days of the conclusion of the water court process.

3.2 Alternative Analysis and Considerations

The need for the Project is to make permanent a time-tested solution for combatting drought conditions in the mainstem of the Upper Colorado River Basin while ensuring the continuation of a reliable and clean water supply for ecosystem, agricultural, municipal, and recreation uses on the Colorado River above and below the Shoshone Power Plant. The purposes of the Project include:

⁴⁹ Appendix 8 is a summary of actual historical use of the Shoshone Water Rights over a representative period and is subject to revision based on continuing analysis of historical data and feedback from interested stakeholders. The actual historical use of the Shoshone Water Rights will ultimately be determined by a state water judge as part of the water court process. Therefore, BBA’s report (and the analysis set forth in this application) may be updated as more information and data become available.

- (1) To permanently maintain the Shoshone Water Rights and the historical flow regime in a manner that provides vital ecosystem, habitat, agricultural, recreational, municipal and other economic benefits created by the historical exercise of the Shoshone Water Rights
- (2) To eliminate the risk of abandonment or reduction of the Shoshone Water Rights due to plant decommissioning or failure.
- (3) To provide for the instream flow use of the Shoshone Water Rights by the CWCB in a manner that preserves and improves the natural environment to a reasonable degree.

Given the purposes of and need for the Project, the River District believes that it will be helpful to provide an analysis of potential alternatives to the Project. While the River District asserts that an evaluation of the Project under the National Environmental Policy Act (“NEPA”) is unnecessary given the nature of the Project and Reclamation’s involvement thereto, the River District is providing the following alternatives analysis to assist in the evaluation of this application.

Over the past two decades, the Colorado River District and the Coalition have considered numerous alternatives to protect the Shoshone Water Rights on a permanent basis. While the proposed acquisition of the Shoshone Water Rights requires a significant investment, the Project is contemplated under Colorado law and would result in the legal protections necessary to ensure the historical Shoshone Call is maintained in perpetuity. Moreover, the concept of the CWCB’s acquisition of the right to use the Shoshone Water Rights for instream flow purposes was built into the heavily negotiated 2013 agreement known as the Colorado River Cooperative Agreement (“CRCA”) between the River District, numerous West Slope governments, and Denver Water. *See Appendix 14.c.*, Art. VI.C.3. (“The Signatories agree to use their best efforts to . . . devise and implement a mechanism or [] mechanisms that will permanently preserve the Shoshone Call[.]”).

Aside from the Project, other potential alternatives evaluated by the River District and the Coalition—in addition to alternatives proposed by East Slope interests—either fail to provide sufficient protection of the historical flow regime or are impractical and in some cases unlawful in light of the legal standards which govern water rights in the State of Colorado. Nevertheless, to clarify the overall feasibility of the Project and to better frame this analysis, the River District offers the following analysis of alternatives including: (1) the no action alternative; (2) the permanent ShOP agreement alternative; (3) the new instream flow appropriation alternative; and finally (4) the preferred alternative (i.e., the Project).

3.2.1 No Action Alternative: Applying a NEPA lens to the Project traditionally requires consideration of “no action” with respect to purpose and need. Here, the “No Action Alternative” considers a future scenario under which no action is taken to permanently protect the exercise and administration of the Shoshone Water Rights. In other words, the Project is not implemented. The No Action Alternative is untenable for two primary reasons. First, the ever-present risk of outages at the Shoshone Power Plant due to aging infrastructure, the potential for decommissioning the plant at some future date, natural disasters, and related safety concerns jeopardize the continued existence of the Shoshone Water Rights and the critical flows protected by the Shoshone Call. And second, the existing ShOP Agreement is a temporary agreement that does not have the force and

effect of law (unlike a state water court decree) and includes numerous exceptions for participation by the signatories. As more particularly described below, the No Action Alternative does not meet the purposes of and need for the Project because it would not protect river flows during temporary plant outages, and it would likely eventually result in the discontinued exercise and administration of the Shoshone Water Rights and thereby reduce or even eliminate the critical and historic flow regime created by the Shoshone Call. Simply put, permanent protection of the Shoshone Water Rights would not be realized under the No Action Alternative.

The ShOP Agreement is a temporary agreement that lacks the force and effect of a state water court decree and should not be considered in the No Action Alternative.

Under the ShOP Agreement, the River District, Denver Water, the Middle Park Water Conservancy District, the Municipal Subdistrict of Northern Water, the Colorado State Engineer, and Reclamation agreed to an approach under which the signatories (not including Reclamation or the State Engineer) agree to release or bypass water from their systems during certain conditions when the Shoshone Water Rights would normally place a call but cannot because of an outage.⁵⁰

The ShOP Agreement is an important agreement that, when implemented, ensures the partial continuation of flows attributable to the senior Shoshone Water Right that helps to protect river conditions for certain periods of the year. However, the ShOP Agreement has a limited term and falls short of permanently protecting the Shoshone flows in several significant respects, as follows:

- The ShOP Agreement expressly states that it shall not be construed or interpreted as “Shoshone Permanency” as defined in Article VI.C. of the CRCA. *See Appendix 14.d.*, at p. 15, § VIII.
- The ShOP Agreement is limited to a 40-year term (32 years remaining) and cannot be made permanent without formal agreement between the signatories. *Id.* at p. 5, § III.A. Furthermore, under the ShOP Agreement, Reclamation may terminate its participation in the agreement at any time by providing notice to the parties. *Id.* at § III.D.
- The ShOP Agreement does not provide permanent protection of the historical flow regime created by the exercise of the Shoshone Water Rights. By its terms, the ShOP Agreement is limited to the protection of a target flow of 1,250 cfs attributable to the senior Shoshone Water Right during the irrigation season, and the protection of only 900 cfs during the non-irrigation season, which is a reduction from what the plant can legally divert and use. *Id.* at p. 5, § IV.A.2.
- The ShOP Agreement does not provide the legal force and effect of a state water court decree and is vulnerable to changes in state administrative interpretations. Although the Colorado State Engineer is a party to the ShOP Agreement, the ShOP Agreement specifically concedes that the ShOP obligations of the State Engineer must necessarily yield to the State Engineer’s

⁵⁰ *See Appendix 14.d.* While not parties to the ShOP Agreement, Aurora Water and Colorado Springs-Utilities also participate in a roughly identical ShOP arrangement through separate agreements. *See Appendix 13* (including excerpts thereto).

statutory obligations (§ 37-92-304(8), C.R.S.) to regulate the distribution of water in accordance with the judgments and decrees of state water courts. *See id.* at p. 16, § X.

- The obligations and rights of the signatories in the ShOP Agreement are not uniformly applied. For instance, the ShOP Agreement outlines several exclusions for when each signatory is excused from participating in ShOP operations during dry year conditions, which means that ShOP is either not implemented or is implemented at a reduced level when the Shoshone flows would otherwise provide the most benefit to the river. Additionally, some signatories reserved the right to terminate participation in ShOP under certain circumstances.
- The ShOP Agreement is enforceable only amongst the signatories who have agreed to voluntarily participate. While a new upstream junior water right would be subject to curtailment by the Shoshone Water Rights, the new junior would not be subject to ShOP. This means that not only would the new junior not be required to participate in ShOP but that the junior could intercept the water contributions of ShOP's participants, including ShOP releases from Green Mountain Reservoir. The ShOP Agreement does not—and cannot—be enforced against other water users that are not parties to ShOP. Furthermore, PSCo, the current owner of the Shoshone Water Rights, is not a party to the ShOP Agreement and is not subject to its terms and conditions with respect to operations at the Shoshone Power Plant.
- Under the express terms of the ShOP Agreement, the Replacement Pool in Green Mountain Reservoir is not available for Reclamation's participation in ShOP. *See id.* at p. 10, § IV.D. Thus, even in wet years like 2023, Green Mountain Reservoir's ability to participate in ShOP operations is limited and insufficient to meet even the limited ShOP goals of 1,250 cfs during the summer season and 900 cfs during the non-irrigation season if the river is forced to rely upon ShOP year-round. Furthermore, if the Shoshone Call is not preserved and the Shoshone Power Plant is permanently decommissioned, this will result in changes to the operation of Green Mountain Reservoir that would be inconsistent with a key purpose of SD-80.
- And finally, while the ShOP Agreement is intended to maintain the historical flow regime influenced by the operation of the Shoshone Power Plant when the plant is offline, the agreement does not contemplate a future scenario under which the plant is permanently decommissioned and/or the Shoshone Water Rights are lost to the stream. Thus, if the Shoshone Power Plant is permanently decommissioned, and/or the Shoshone Water Rights are abandoned, the premise of the ShOP Agreement would be frustrated. From an operational standpoint, this could result in a *de facto* termination of the obligations of the ShOP signatories to participate in ShOP operations to protect the flows provided by the Shoshone Call.

Current and long-term operations of the Shoshone Power Plant face significant risks and uncertainties due to the plant's age, location, and susceptibility to natural hazards.

Construction of the Shoshone Power Plant began in 1906, and it first operated in 1909. While the plant has consistently operated over its 115-year history (and continues to do so today), the risk of

future outages remains, including the likelihood of potentially irreparable damage caused by natural disasters that could lead to a decommissioning of the plant. For instance, the ability of the Shoshone Power Plant to generate power has been frustrated since 2004 due to increased maintenance and repair needs resulting from unforeseen natural phenomena. By way of example, in 2007, the plant experienced a penstock failure and consequent damage to the down-gradient powerhouse that required the plant to be offline for nearly a year.

Figure 13: 2007 Shoshone Power Plant Penstock Failure (photos courtesy of PSCo)



More recently, in 2020, Glenwood Canyon experienced significant natural disasters caused by the Grizzly Creek Fire, which burned over 30,000 acres of land, destroying transmission lines and threatening the Shoshone Power Plant and its associated infrastructure. Subsequently, in 2021, Glenwood Canyon experienced repeated flooding and debris flow events carrying mud, rocks, and woody materials into the drainage basins of the canyon. These natural phenomena caused the Shoshone Power Plant to go offline for the majority of 2021 due to rock debris and other impacts from the debris flows.⁵¹ Additionally, the plant was offline for more than 15 consecutive months in 2023 and 2024 due to a combination of maintenance problems and geologic hazard mitigation. As articulated above, recent climate projections anticipate that wildfires and extreme weather events will be amplified into the future due to ongoing drought and impacts from climate change.

3.2.2 Alternative 1 - Permanent Shoshone Outage Protocol Agreement: All of the limitations of the ShOP Agreement summarized above (apart from the temporary nature of ShOP) would continue to apply to any effort to convert this into a permanent agreement. The River District discussed the potential of making ShOP permanent with the highest levels within Reclamation in 2019 and was informed that Reclamation viewed ShOP as a water supply contract and that Reclamation was therefore prohibited from entering a perpetual contract under applicable law. Additionally, the Colorado River District previously approached Front Range water entities to propose a discussion of a permanent ShOP agreement. This discussion did not move forward due to a refusal by the Front Range signatories to engage in such discussions. Moreover, as discussed above under the No Action Alternative, the current ShOP Agreement only offers limited protection to the senior Shoshone Water Right up to 1,250 cfs during the summer season and 900 cfs during

⁵¹ United States Geological Survey, *Glenwood Canyon Flooding and Debris Flows*, <https://landslides.usgs.gov/storymap/grizzlycreek/> (last visited November 7, 2024).

the non-irrigation season when the plant is offline. The ShOP protections do not extend to the 158 cfs junior Shoshone Water Right.

3.2.3 Alternative 2 - Junior Instream Flow Appropriation: This alternative—which has been proposed by a transmountain diverter—considers whether a new instream flow appropriation could protect the historical flow regime created by the historical exercise and administration of the Shoshone Water Rights. As discussed, the tremendous value of the Shoshone Water Rights in maintaining flows in the mainstem of the Upper Colorado River is entirely dependent on permanently protecting the senior priorities of the Shoshone Water Rights. This is because, under Colorado law, the value of a water right is primarily informed by its priority relative to other water rights. Thus, the proposal for a new instream flow appropriation would not result in any of the protections afforded by the Project because a new instream flow water right cannot lawfully inherit the senior priorities of the Shoshone Water Rights. At best, a new instream flow appropriation would protect against only new junior post-2024 appropriations. In contrast, the Project’s proposed change of water right would secure the existing senior priorities of the Shoshone Water Rights for instream flow use. The natural consequence of a new junior instream flow proposal would be that junior water rights upstream of the Shoshone Power Plant—including major transmountain diverters—would be in-priority more often and divert increased yields that would inevitably lead to reduced flows in the Colorado River. In other words, this proposal (couched as an “alternative” by one transmountain diverter) would result in an interruption of historical stream conditions upstream and downstream of the Shoshone Reach (and consequently a reduction in return flows) thereby injuring downstream junior appropriators and the health of the Colorado River ecosystem, especially during extended drought periods while providing allowing upstream junior water rights, including rights held by transmountain diverters, to further deplete the river of its natural flows.

3.2.4 Preferred Alternative – The Project: On balance, the Colorado River District and the Coalition determined that while the cost to acquire the Shoshone Water Rights is significant, the public benefits that will be secured in perpetuity justify the expense. This is particularly true when weighed against the range of impractical alternatives summarized above, which would not meet the goals of permanently protecting the historical flow regime in a manner that provides vital ecosystem, habitat, agricultural, recreational, municipal and other economic benefits down the Colorado River’s mainstem and throughout the Upper Colorado River Basin. In addition, the CWCB’s acquisition of an interest in water rights and the subsequent change of such rights to include a decreed instream flow use is specifically contemplated under Colorado law (unlike Alternative 2) and is supported by precedent.

Further, the Project has been memorialized within numerous foundational agreements. *See Appendix 13.* In 2013, the Colorado River District, together with numerous other West Slope governments, entered the CRCA with Denver Water (*Appendix 14.c.*). The CRCA established a long-term partnership between Denver Water and the West Slope concerning numerous and far-ranging goals and actions, aimed at benefitting water supply, water quality, recreation, and the environment on both sides of the Continental Divide. A fundamental component of the CRCA’s goals and actions involved a consensus among the signatories as to the need for long-term

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protection of the river flow regime created by a call for 1,250 cfs attributable to the senior Shoshone Water Right.⁵²

The CRCA's clear distinction between a temporary solution to address outages at the Shoshone Power Plant (i.e., ShOP) and "Permanency of Shoshone Call Flows" has been memorialized in a series of agreements with Front Range entities that demonstrate a joint commitment to achieve the permanent management of the flow of the Colorado River created by the Shoshone Call. A summary of those agreements (including relevant excerpts) is set forth in [Appendix 13](#).

3.3 Environmental and Cultural Resources Compliance

The River District does not envision any issues surrounding environmental and cultural resources with respect to implementation of the Project. Nevertheless, to facilitate Reclamation's review of this application, the River District provides the following answers to questions listed in the RFA:

- *Has the applicant previously received federal funding for this project or a project(s) adjacent to the proposed project? If so, provide environmental compliance and permitting documentation.*

The Colorado River District has not previously received federal funding for this project or any projects adjacent to the proposed project. Thus, there are no existing environmental compliance or permitting documentation that the Colorado River District has access to.

- *Have previous environmental analyses been completed for this project? If so, attach reports or summaries of findings.*

The Colorado River District is not aware of any previous environmental analysis that has been completed other than the biological studies identified below.

- *Have biological studies, inventories, or literature searches been conducted? If so, please provide reports.*

The Colorado River District commissioned Dr. Miller of Freshwater to provide a report titled "Shoshone Reach Instream Flow Habitat Data Analysis, Habitat Simulations and Habitat Evaluation of Colorado River from the Shoshone Diversion to the Shoshone Power Plant Outfall". See [Appendix 11](#). Dr. Miller's report documents his evaluation of instream flows for aquatic resources in the Shoshone Reach of the Colorado River between the Shoshone Diversion Dam and the Shoshone Power Plant outfall. The purpose of Dr. Miller's report was to determine the current state of the aquatic habitat and ecosystem in the Shoshone Reach for purposes of determining what the anticipated changes to the aquatic habitat and ecosystem would be with the change of the Shoshone Water Rights. Additionally, the BLM/USFS Report provides a summary of the natural environment supported by Colorado River flows in Glenwood Canyon, describing the relationship of that natural environment to the Shoshone Water Rights. The BLM/USFS Report also describes

⁵² The concept of permanently protecting the Shoshone Call is expressly contemplated and defined in Article VI.C. of the CRCA ([Appendix 14.c.](#)) as "Permanency of Shoshone Call Flows."

other water-dependent values upstream and downstream from Glenwood Canyon that are dependent on consistent flows through Glenwood Canyon. See Appendix 10.

- *What measures will be taken to minimize potential for spread of invasive plant species and/or noxious weeds?*

This question is not applicable to the Project. The Project will not include any new infrastructure, nor will it modify any existing infrastructure. There will be no ground disturbing activities associated with the Project. Accordingly, there is no potential for the spread of invasive plants.

- *What measures will be taken to minimize potential for spread of aquatic invasive species?*

This question is not applicable to the Project. The continuation of the historical operations of the Shoshone Water Rights will not promote or exacerbate the spread of aquatic invasive species. With respect to the Project, no activity will take place in the Colorado River or in its riparian areas.

- *Is the project area located in/on, crosses or is adjacent to a lake, river, stream, wetland, or other waterbody? If so, describe or show on a map and describe if the project would modify or impact the waterbody in any way.*

The Project is located on the mainstem of the Colorado River in Glenwood Canyon, Colorado. As noted above there will be no construction of new facilities, no modification to existing facilities, or changes made to the Colorado River with respect to the Project.

- *Does the project contain or is it adjacent to existing facilities, buildings, or other structures? If so, please list and provide estimated age of facilities or structures if known.*

The Project is adjacent to existing facilities that are owned and operated by PSCo. These facilities include the Shoshone Diversion Dam, the tunnel, the plant complex and discharge outlets. The Shoshone Power Plant was constructed between 1906 and 1909.

- *Describe if the project would result in any modification of or changes to the existing facilities, buildings, and/or structures.*

The Project will make no modifications or changes to the existing facilities.

- *Provide a brief history, if applicable, of the facilities or structures being modified or changed and approximate age.*

Not applicable, please see above.

- *Have archaeological or cultural resources surveys been conducted yet for the project area? If so, were any concerns or sites identified?*

To the best of the Colorado River District's knowledge, no archaeological or cultural resources surveys have been conducted in the project area.

- *Is the applicant aware of any tribal concerns or interests in or near the project area?*

The Colorado River District is not aware of any tribal concerns or interests in or near the Project.

3.4 Required Permits or Approvals





Please refer to Section 3 above for a discussion of the CWCB’s administrative process for formalizing an instream flow agreement, the water court process for approval of a change of water rights, and the PUC-approval process for the sale of the Shoshone Water Rights to the River District.

The Project does not involve extensive permits or approvals for implementation beyond the state administrative, water court, and PUC processes described in Section 3. For instance, the River District does not foresee the need to secure any federal, tribal, and/or county permits or approvals for Project implementation. Nor does the Project contemplate any improvements to federal projects or facilities and, therefore, it is not expected that any necessary easements, land use authorizations, or special permits are necessary. Nevertheless, the River District acknowledges that all projects to be evaluated for B2E funding must comply with NEPA. For the reasons explained above in Section 3, the Colorado River District maintains that the preservation of the historical flows attributable to the Shoshone Water Rights will result in no change to the human environment. Thus, to the extent that any NEPA review is deemed necessary, such review should be minimal.⁵³ Furthermore, as noted in Section 3, the Project includes no ground disturbing activities, no construction of new structures, and no modification to existing structures. Additionally, there will be no modifications made to the Colorado River or to surrounding riparian vegetation because of the Project.

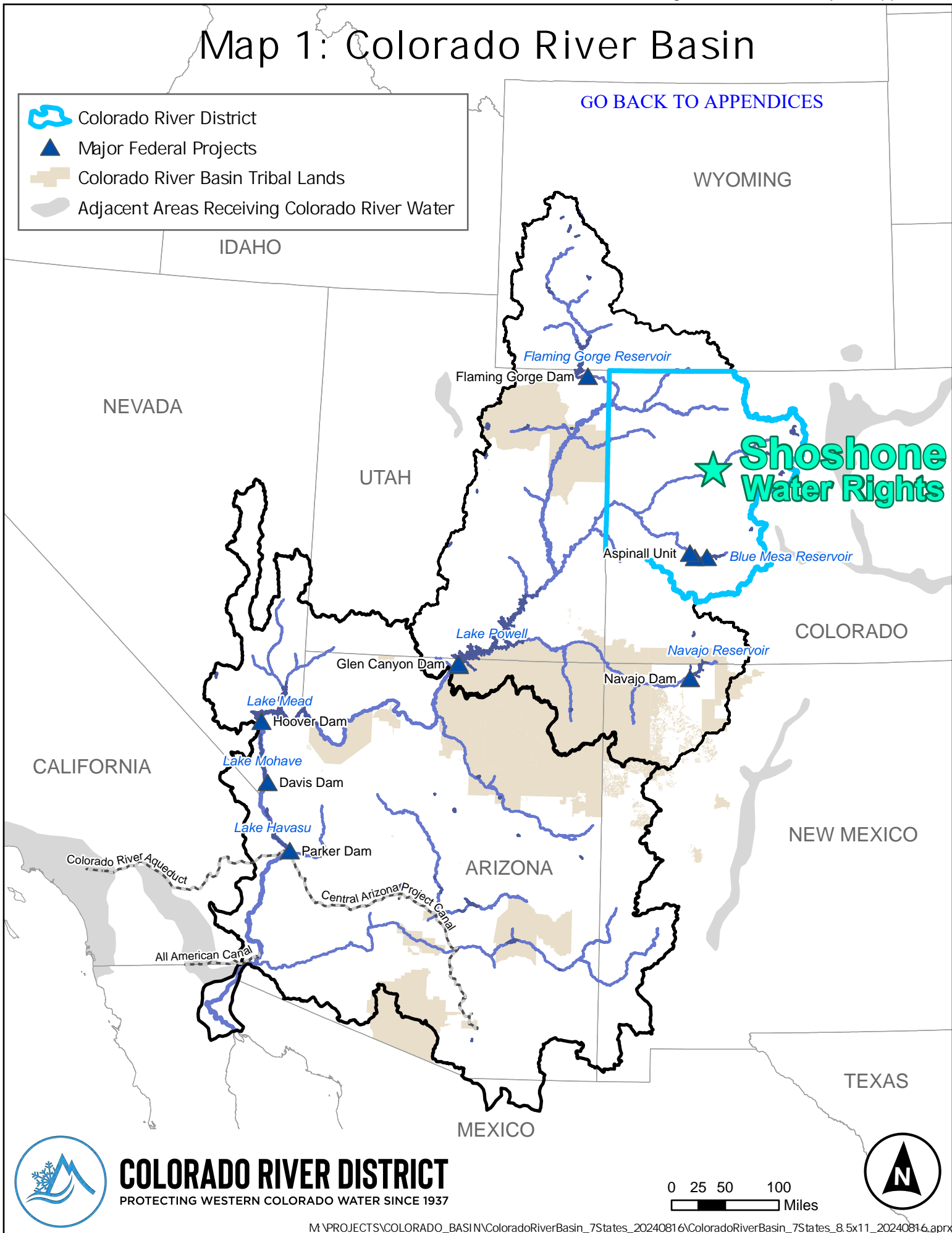
Perhaps most importantly, as identified in Section 3.1.2, the River District, PSCo, and the CWCB will need to file an application with the water court to change the use of the Shoshone Water Rights to add an alternate use for instream flow purposes by the CWCB when the water rights are not otherwise being used to generate hydropower at the Shoshone Power Plant. Pursuant to Colorado law, a change of water rights cannot be decreed by the water court if it causes injury to other water users or if the change would constitute an enlargement of historical operations and use of the water rights. Thus, by statutory design, the change of water rights process will ensure that current conditions are maintained. With respect to the Shoshone Water Rights, the water court will only enter a change decree if the change will not result in injury to vested water rights and the historical exercise of the water rights are maintained and not enlarged. In other words, the process to change the Shoshone Water Rights will ensure that no water rights are injured, including those associated with projects owned and operated by Reclamation.

⁵³ “A bureau proposed action is subject to the procedural requirements of NEPA if it would cause effects on the human environment (40 CFR 1508.14) and is subject to bureau control and responsibility (40 CFR 1508.18).” 43 CFR §46.100

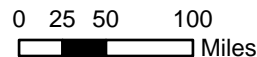
Map 1: Colorado River Basin

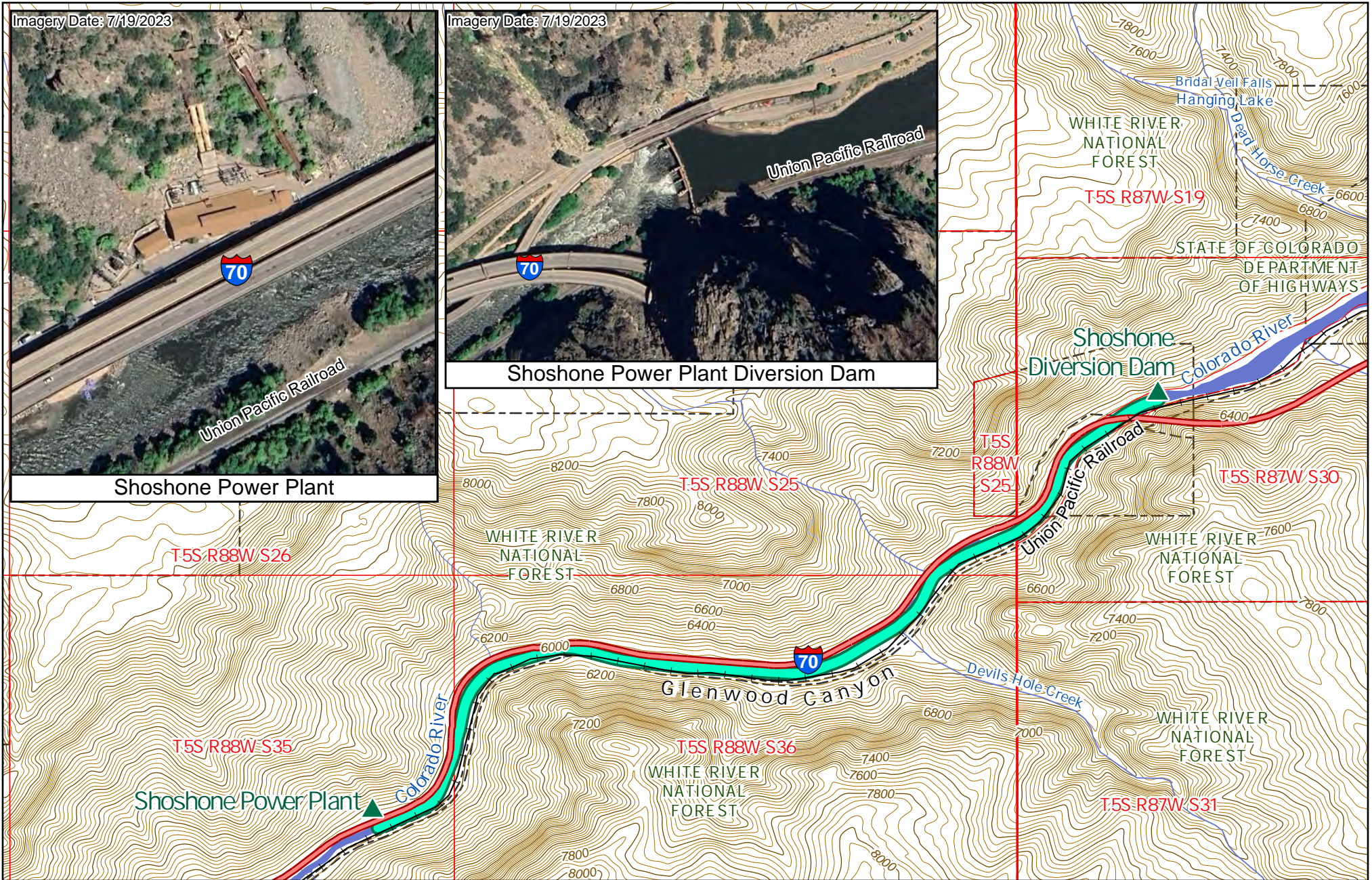
-  Colorado River District
-  Major Federal Projects
-  Colorado River Basin Tribal Lands
-  Adjacent Areas Receiving Colorado River Water

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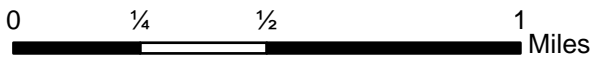


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Map 2: Shoshone Instream Flow Reach Project Map
 State: Colorado
 County: Garfield
 Created Tuesday, November 12, 2024



Proposed Shoshone ISF Reach Project Boundary

VICINITY MAP
COLORADO

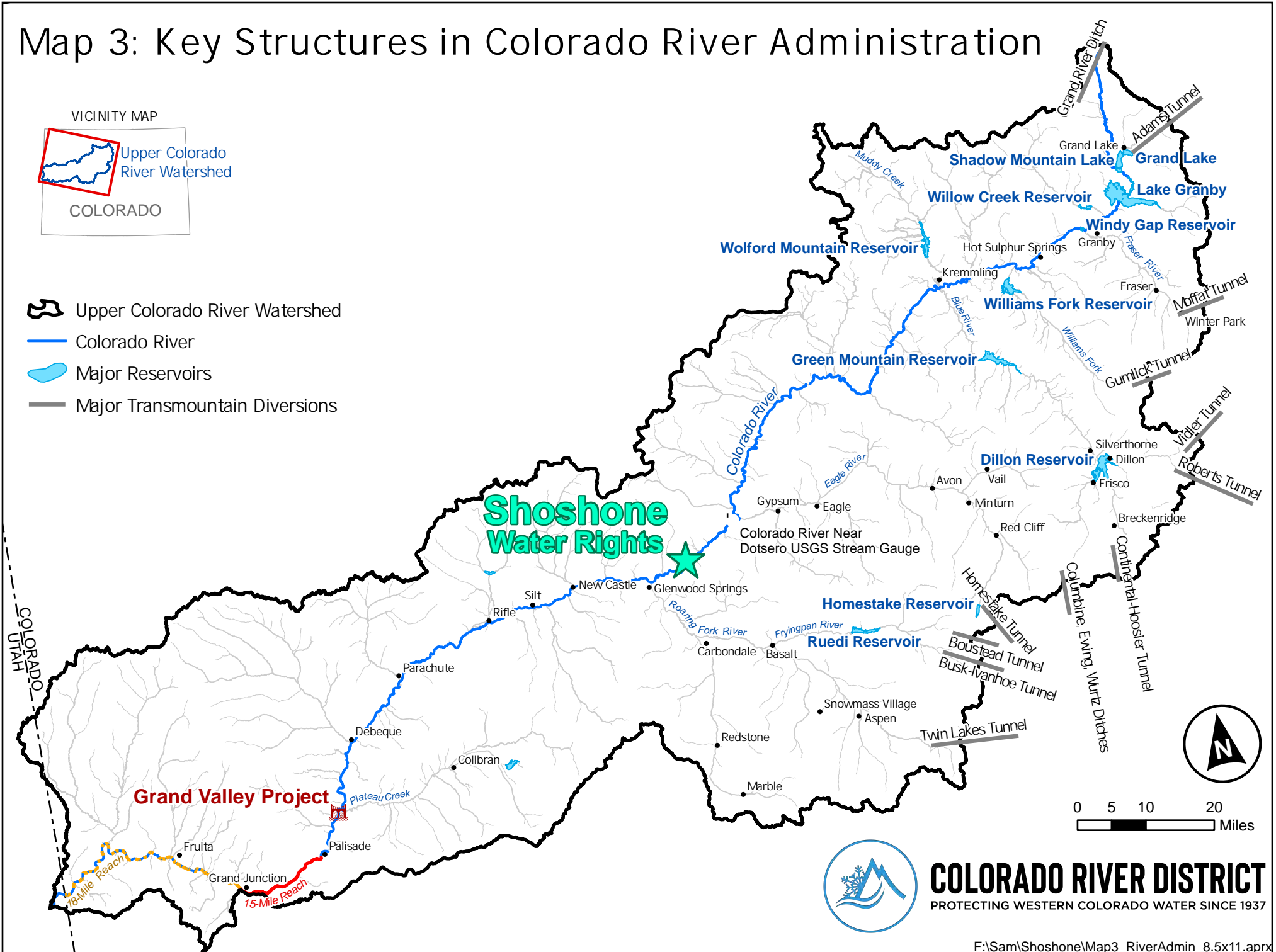
COLORADO RIVER DISTRICT

TRUE-NORTH
MAGNETIC-NORTH

Upper Colorado River Watershed

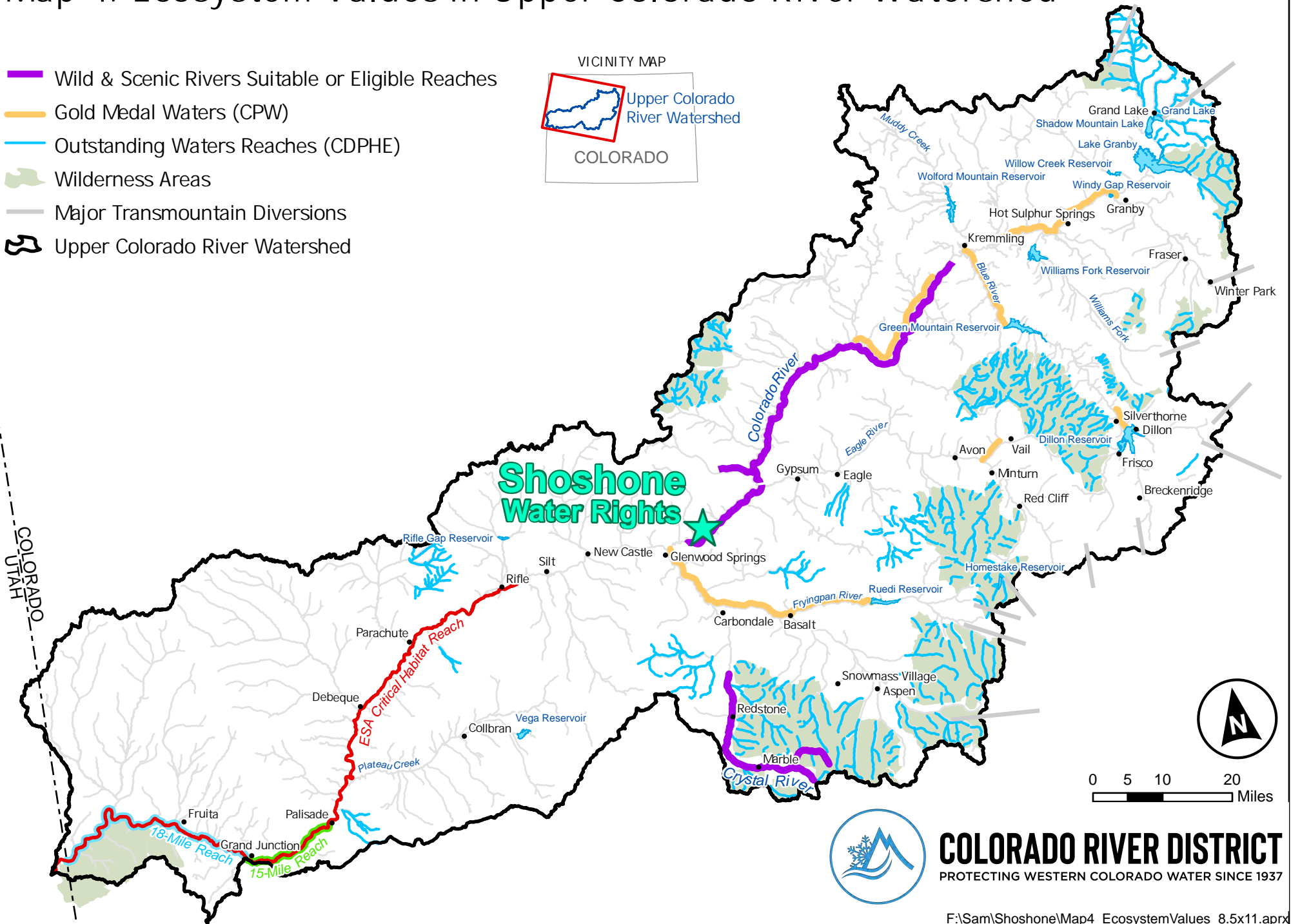
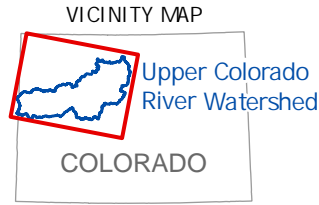
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Map 3: Key Structures in Colorado River Administration



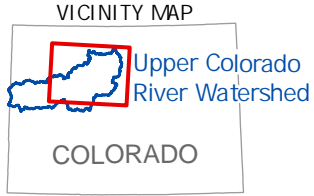
Map 4: Ecosystem Values in Upper Colorado River Watershed

- █ Wild & Scenic Rivers Suitable or Eligible Reaches
- █ Gold Medal Waters (CPW)
- █ Outstanding Waters Reaches (CDPHE)
- █ Wilderness Areas
- █ Major Transmountain Diversions
- Upper Colorado River Watershed

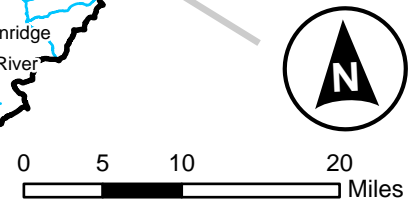
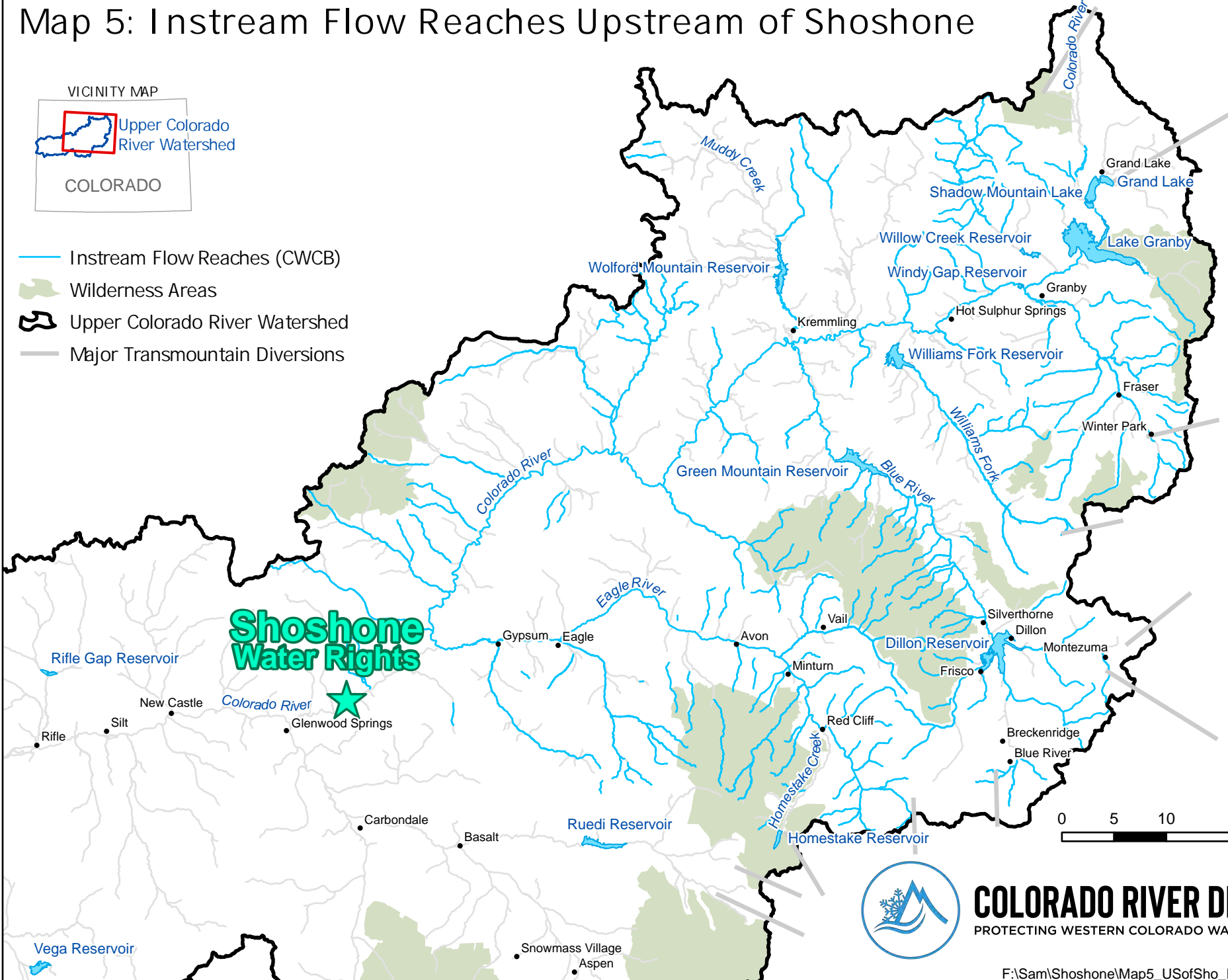


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Map 5: Instream Flow Reaches Upstream of Shoshone

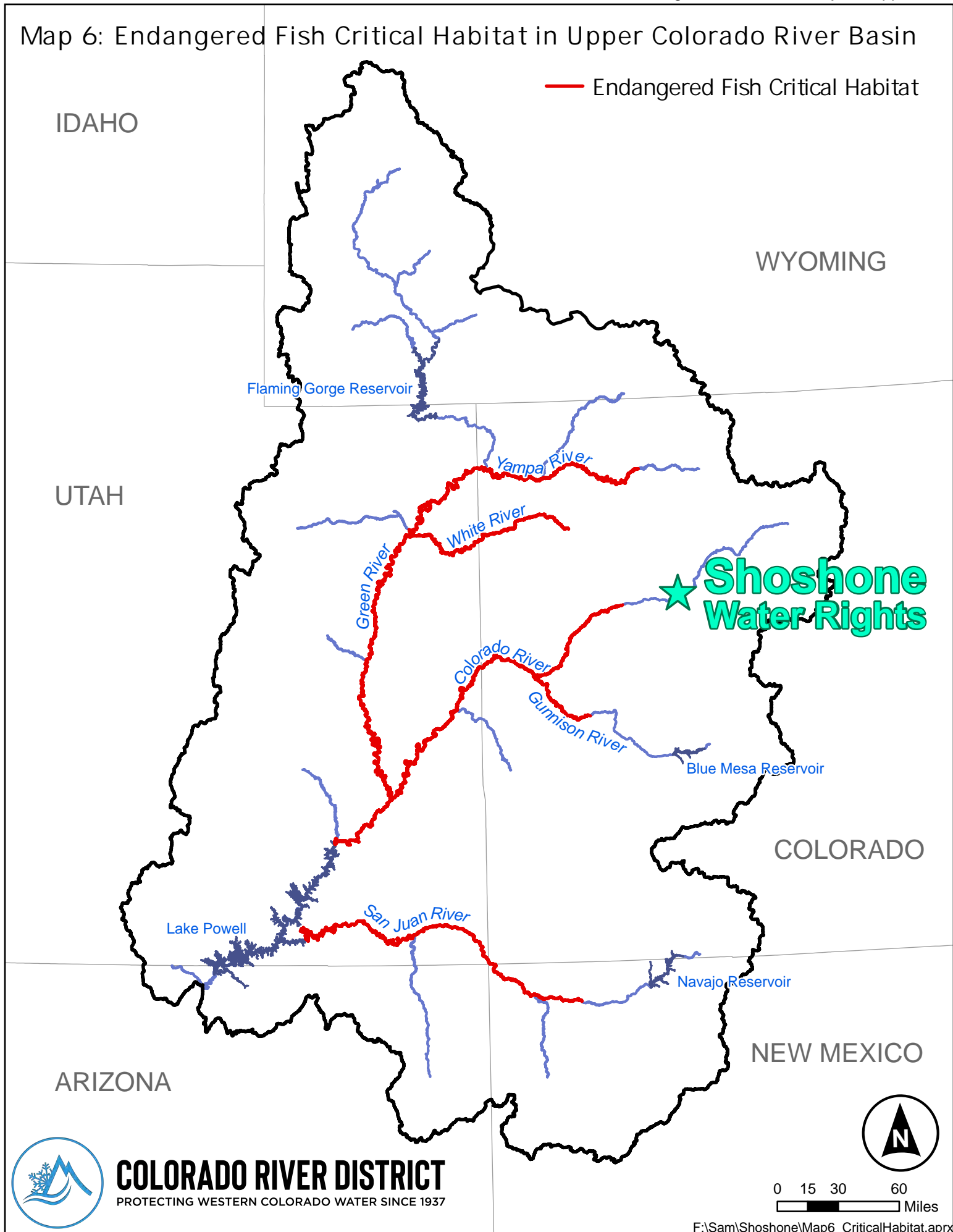


- Instream Flow Reaches (CWCB)
- Wilderness Areas
- Upper Colorado River Watershed
- Major Transmountain Diversions



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Map 6: Endangered Fish Critical Habitat in Upper Colorado River Basin



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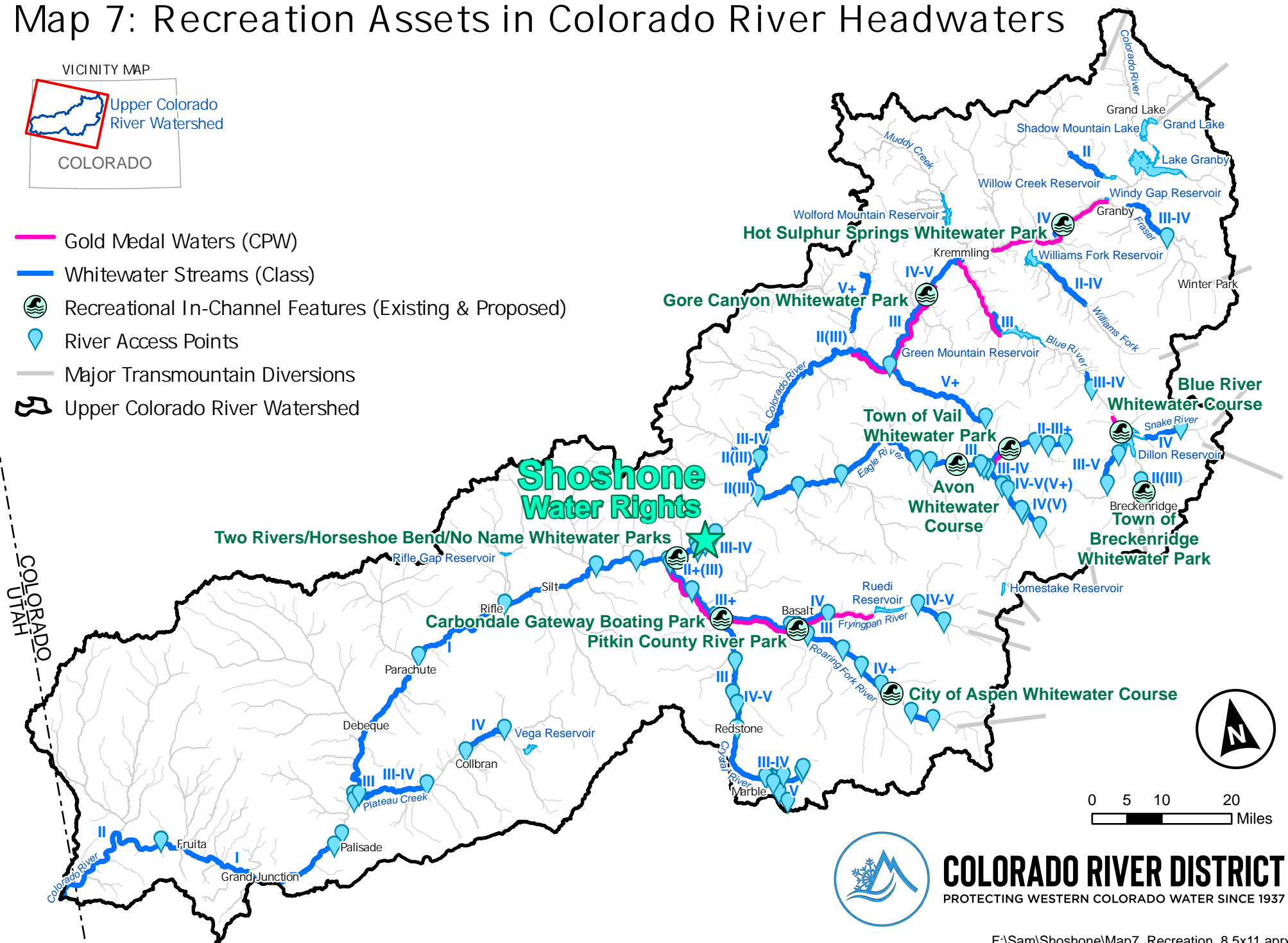
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Map 7: Recreation Assets in Colorado River Headwaters

VICINITY MAP



- Gold Medal Waters (CPW)
- Whitewater Streams (Class)
- Recreational In-Channel Features (Existing & Proposed)
- River Access Points
- Major Transmountain Diversions
- Upper Colorado River Watershed



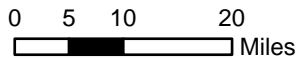
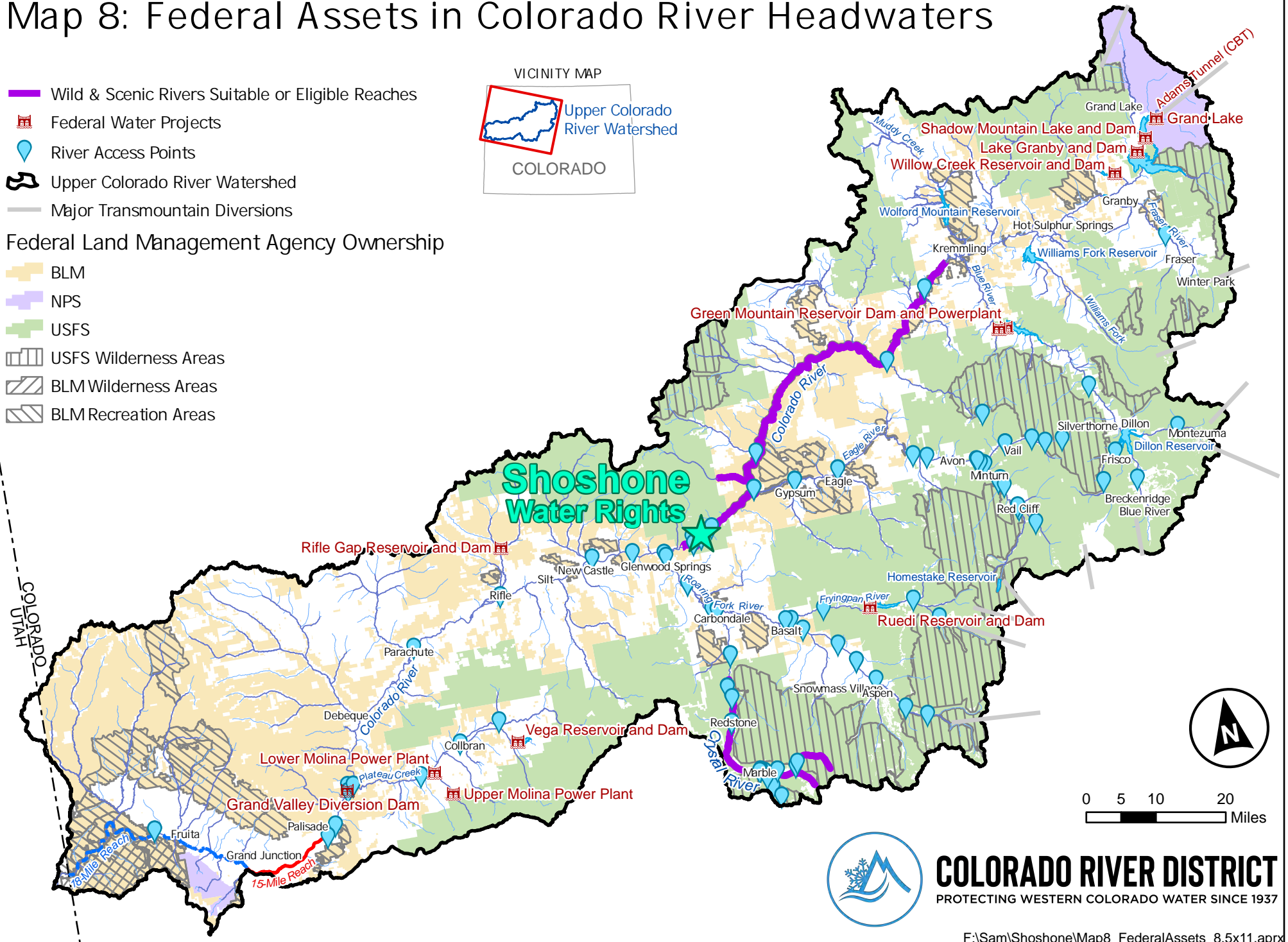
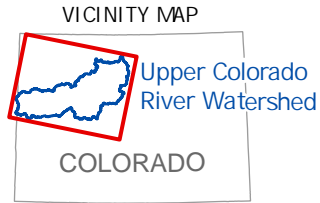
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Map 8: Federal Assets in Colorado River Headwaters

- Wild & Scenic Rivers Suitable or Eligible Reaches
- Federal Water Projects
- River Access Points
- Upper Colorado River Watershed
- Major Transmountain Diversions

Federal Land Management Agency Ownership

- BLM
- NPS
- USFS
- USFS Wilderness Areas
- BLM Wilderness Areas
- BLM Recreation Areas



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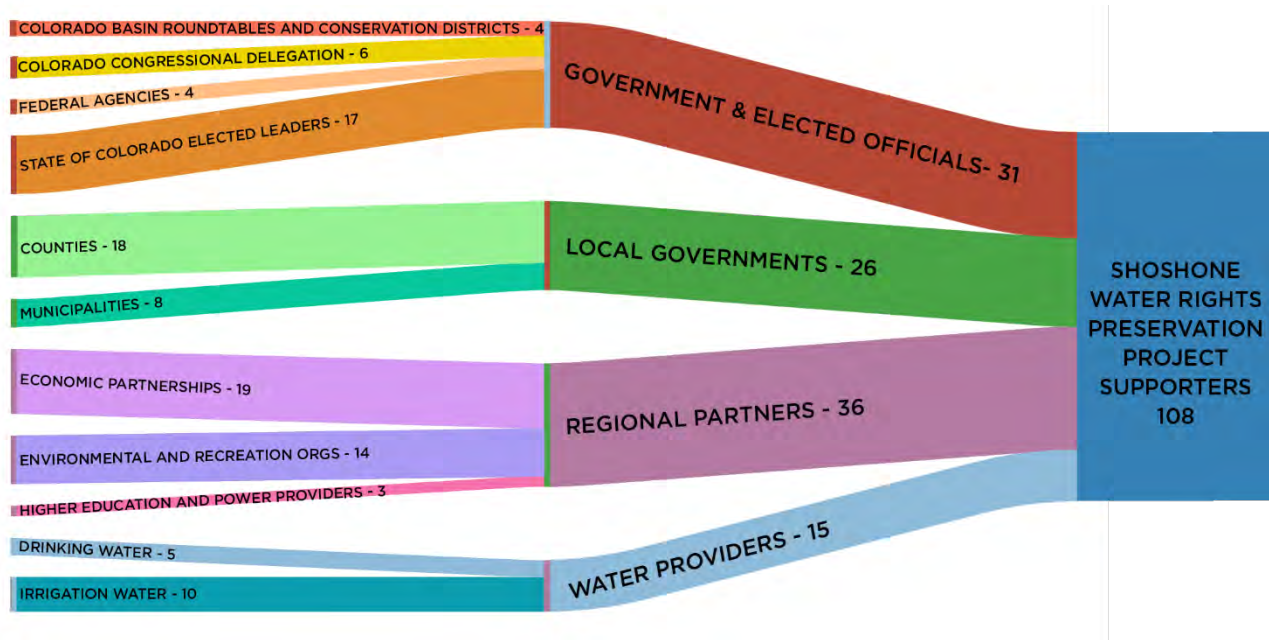
Upper Basin Environmental Drought Mitigation, Bucket 2 Ecosystem (“B2E”) Financial Assistance Program

Shoshone Water Rights Protection Project

Appendix 2 – Letters of Support

Summary — This appendix presents 58 letters of support from a diverse coalition of stakeholders representing 108 voices from organizations with broad political, cultural, and regional interests statewide. United in advocating for the permanent protection of the Shoshone water rights, these letters reflect a rare alliance of federal and state government entities, counties, cities, towns, water conservancies, NGOs, and both public and private organizations. Together, they underscore the crucial role of the Shoshone Water Rights in bolstering drought resilience, preserving ecosystems, and sustaining the economic and recreational vitality of the Colorado River.

Figure 1: Shoshone Water Rights Preservation Project Supporters



The quotes below are examples pulled directly from the following letters of support. They illustrate the wide-ranging support for securing the Shoshone Water Rights for Colorado’s environment, communities, and economy.

Colorado Governor Jared Polis — *“The project is a strong match for the innovative new program recently launched by The Bureau of Reclamation for “Bucket 2 Environmental Drought Mitigation” funding to provide environmental and ecosystem benefits that address issues directly caused by drought. The request for funding, if granted, would serve as the linchpin to a historic agreement for the Colorado River Water Conservation District to purchase the water rights associated with the Shoshone power plant. Not only will this agreement preserve the status quo of*

water rights administration on the river, but will also benefit water users and the environment at a time of unprecedented drought.”

Colorado Congressional Delegation — *“The Colorado River District has allocated \$20 million, with additional commitments from the State of Colorado and Western Slope partners, reflecting a strong local recognition of the Shoshone Water Rights' importance to the health of western Colorado's environment and economies.”*

Members of the Colorado General Assembly — *“Without the Shoshone water rights, Colorado River flows would be significantly lower (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish. These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving communities and small businesses on both sides of the Continental Divide.”*

National Park Service — *“The Colorado River District's application for Shoshone water rights would provide a clear benefit to the 15-Mile Reach, a stretch of critical habitat in Western Colorado that is heavily impacted by drought and water development, provide well-timed flows during important shoulder seasons when the river is prone to high temperatures and low flows, and preserve the natural baseflow in the river during the winter months.”*

Colorado Counties, Inc., Western District — *“The Western District of Colorado Counties, Inc. (CCI) strongly supports the Colorado River Water Conservation District's effort to acquire and permanently protect the Shoshone water rights. We are united in our conviction that this effort is crucial for our region's agricultural operations, recreational economy, and ecological sustainability.”*

Clifton Water District — *“In Clifton, our future is tied to the flows of the Colorado River because the drinking water we depend on comes directly from that river. Sustained, year-round river levels, supported by the Shoshone call, allow for higher water quality and reduce consumer costs by diluting difficult-to-remove pollutants and sediment.”*

American Rivers — *“Prolonged drought caused by climate change has increased risk for communities that depend on the Colorado River in Western Colorado. Reliable river flows are the foundation of robust recreational economies, support healthy ecosystems including federally listed species, and support vibrant family-based agriculture. The Shoshone permanence project reduces risk for people and nature for the benefit not just for the West Slope but for the entire state of Colorado.”*

Blue River Watershed Group — *“BRWG is leading the Blue River Habitat Restoration Project which will modify the river channel within a prioritized three miles of the Blue River to better function under current and future flow regimes and improved habitat. The Bureau of Reclamation recently made a significant investment into this project with a \$1.8 million funding award through the WaterSMART Aquatic Ecosystem Restoration Program. In addition to supporting flows on the*

Shoshone Water Rights Preservation Project
Appendix 2 – Letters of Support

Colorado River mainstem, the Shoshone water rights also support the many tributaries that benefit from additional water brought downstream from the Shoshone call. Healthy flows provided by the Shoshone water rights are critical to the success of the Blue River.”

City of Glenwood Springs — *“The City of Glenwood Springs is a West Slope community whose economy and way of life depends on recreation, especially on our rivers. The health of the Colorado River, which flows through the town, is directly tied to the heart of the community, quality of life for residents, and local economy.”*

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Shoshone Water Rights Preservation Project
Appendix 2 – Letters of Support

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** Note: The USFS and the BLM provided a joint report titled “Biological and Recreational Resources Dependent on Colorado River Flows Through Glenwood Canyon, published September 2024 which is included as Appendix 10 in the Technical Proposal.*

Congress of the United States
Washington, D.C. 20510

October 7, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington DC 20240-0001

Dear Commissioner Touton:

We write in support of the Colorado River Water Conservation District's (the River District) application to the U.S. Bureau of Reclamation's (USBR) Upper Colorado River Basin Environmental Drought Mitigation funding opportunity, referred to as Bucket 2E. As you know, the *Inflation Reduction Act* provided a historic \$4 billion to address issues caused by drought, including activities to support environmental benefits, and ecosystem and habitat restoration. If selected, the River District will leverage Bucket 2E funding alongside significant state and local investment to purchase two of the oldest water rights on the Colorado River mainstem in the State of Colorado – the Shoshone Water Rights – to preserve their historical flow regime in perpetuity.

The River District was established in 1937 as a local governing entity to represent water users across 15 counties in Western Colorado – including the headwaters of the Yampa, White, Gunnison, and Colorado Rivers. The Colorado River District's mission is to promote the protection, conservation, use, and development of the water resources of the Colorado River water basin for the welfare of the State of Colorado.

Now, the River District is pursuing the Shoshone Permanency Project, which aims to preserve the historical Colorado River flow regime created by the 1902 Senior Shoshone Water Right and the 1929 Junior Shoshone Water Right (the "Shoshone Water Rights"). The River District has signed an agreement to purchase the Shoshone Water Rights from Xcel Energy, which currently holds the rights for its Shoshone hydropower plant. Today, the Shoshone Water Rights are decreed as non-consumptive water rights: the water is used to generate hydropower at the Shoshone Power Plant and is returned to the stream. The Shoshone Water Rights' senior status "pulls" water to Glenwood Canyon, which ensures that water continues to flow and benefits the downstream environment. Preserving the Colorado River's historical flow regime as intended by the Shoshone Permanency Project will benefit the Colorado River ecosystem every year, and especially in dry years.

Data collection and analysis of Shoshone Water Rights' historic use is not yet completed, and ongoing—a key step for understanding the historic flow regime on the Colorado River. The Shoshone Permanency Project seeks to change the water rights to include an alternate beneficial use for instream flow purposes, a legally recognized beneficial use in Colorado, to preserve the historical Shoshone flow regime. The proposed decree associated with these flows is still under technical review by the State of Colorado. The River District is actively discussing the proposal with other water users across the state. The Colorado Water Conservation Board and the State of Colorado Water Court will conduct a formal review in the coming months. Ongoing modeling will also help quantify the environmental benefits of the Shoshone Water Rights flows. One potential benefit is to the critical habitat of four fish in the Colorado River listed under the *Endangered Species Act (ESA)*, known as the 15-Mile Reach, located near Palisade, Colorado.

The State of Colorado and our water users are making their own significant investments to ensure that the historical Shoshone flows can continue in perpetuity. The Colorado River District has allocated \$20 million, the State of Colorado has appropriated another \$20 million for the acquisition, provided the State's instream flow requirements are met, and a coalition of Western Slope water users and local governments have formally committed over \$15 million. This strong show of funding reflects the local recognition of the Shoshone Water Rights' importance to the health of western Colorado's environment and local economies.

We recognize the Shoshone Permanency Project's complex nature and ongoing technical review, but believe the opportunity to protect historical Colorado River flows deserves your attention. We encourage you to give the River District's proposal your full and fair consideration consistent with all applicable rules and regulations. Thank you for your review, and please notify our offices of any funds awarded.

Sincerely,



Michael F. Bennet
United States Senator



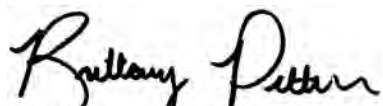
John Hickenlooper
United States Senator



Joe Neguse
Member of Congress



Jason Crow
Member of Congress



Brittany Pettersen
Member of Congress



Diana DeGette
Member of Congress

JARED POLIS
GOVERNOR



136 STATE CAPITOL
DENVER, COLORADO 80203

TEL 303-866-2471
FAX 303-866-2003

August 26, 2024

Camille Calimlim Touton
Commissioner
Bureau of Reclamation
1849 C Street NW
Washington DC 20240-0001

Letter of Support: Permanent Protection of the Shoshone Water Right

Commissioner Touton,

I am excited to write to you in support of the Colorado River Water Conservation District's (District) application for funding for Shoshone Water Right Preservation. The project is a strong match for the innovative new program recently launched by the Bureau of Reclamation for "Bucket 2 Environmental Drought Mitigation" funding to provide environmental and ecosystem benefits that address issues directly caused by drought. The request for funding, if granted, would serve as the linchpin to a historic agreement for the Colorado River Water Conservation District to purchase the water rights associated with the Shoshone power plant. Not only will this agreement preserve the status quo of water rights administration on the river, but will also benefit water users and the environment at a time of unprecedented drought.

Colorado's robust recreational economy relies heavily on the Colorado River mainstem, with Shoshone flows strengthening the state's iconic river recreation industry throughout Grand, Summit, Eagle, Garfield, and Mesa counties. River recreation in Colorado contributes \$14.6 billion annually to the state's GDP, with nearly \$4 billion coming directly from the Colorado River basin on the Western Slope. As temperatures rise and streams diminish, acquiring the Shoshone water right provides security for this economic industry, protecting the recreational fishery and boating that sustain local businesses and attract water-based recreators.

If the proposal is approved for funding, the State of Colorado will work with the District to negotiate an instream flow agreement. If approved, the two entities would then seek a change in water right decree through Colorado Water Court. The Colorado Water Conservation Board's Instream Flow Program secures instream flow water rights to protect streamflow to preserve the natural environment of streams and lakes where fish and other species live.

An award of funding from the "B2E" bucket would also be used to leverage significant investment from local partners and the State of Colorado. House Bill 24-1435 set-aside \$20 million of state funding to support this effort, contingent upon the closing conditions of the purchase and sale agreement between the District and the Public Service Company of Colorado

being met. As of this writing, another \$35 million has also been contributed by local partners, including \$20 million from the District itself and over \$15 million from West Slope water entities and local governments.

Approval of the District's funding request would contribute to a healthy environment in the face of drought, support healthy agriculture, support clean drinking water, and provide certainty to water users across Colorado. We look forward to continued work with the Colorado River Water Conservation District and the Bureau of Reclamation as this project moves closer to completion.

Thank you for your consideration.

Sincerely,

A handwritten signature in blue ink that reads "Jared Polis". The signature is written in a cursive, flowing style.

Jared Polis
Governor
State of Colorado



General Assembly State of Colorado Denver

October 1, 2024

The Honorable Michael Bennet
United States Senator
261 Russell Senate Building
Washington, DC 20510

The Honorable John Hickenlooper
United States Senator
374 Russell Senate Building
Washington, DC 20510

RE: Shoshone Water Rights Preservation

Dear Senators Bennet and Hickenlooper:

As legislators representing a diverse swath of the Centennial State, we are writing to express our support for the ongoing effort to acquire and permanently protect the Shoshone water rights on the Colorado River. For more than 20 years, a broad-based coalition of local, county, and regional governments, along with water providers that rely on the Colorado River, have sought to permanently preserve the Shoshone flows for the recreational, agricultural and environmental benefits that they provide.

During the 2024 legislative session, we passed – with near unanimous support – a \$20 million investment to this effort. We now ask that you advocate to bring the federal government to the table as a financial partner alongside the State of Colorado and many others. The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. For nearly 120 years, these rights have ensured that essential water flows down the Colorado River’s mainstem, providing vital ecosystem, habitat, and restoration benefits from the river’s headwaters in Grand County all the way to Grand Junction and beyond.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river’s flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado’s \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving communities and small businesses on both sides of the Continental Divide.

The Shoshone Water Rights Preservation Coalition represents a broad, long-standing alliance between local partners, the Colorado River District, irrigation entities, and environmental and recreation interests. Since last December, the coalition has secured formal commitments of more than \$56 million towards the \$99 million purchase price; underscoring the significant importance of this resource.

Indeed, the Colorado General Assembly has played a meaningful role in this effort to date. Upon the unanimous recommendation of the Colorado Water Conservation Board, and with broad bipartisan support, Colorado's legislature approved a \$20 million investment in Shoshone permanency through this year's water projects bill (HB24-1435). The General Assembly's funding commitment represented a key milestone in the campaign to permanently protect historic flows on the upper Colorado River for future generations – but we need your help to ensure that this rare and meaningful opportunity does not pass us by.

Thanks to your leadership, federal dollars are being steered toward durable and sustainable solutions on the Colorado River through the Bipartisan Infrastructure Law and the Inflation Reduction Act. We are calling on you to advocate for this project and to encourage federal investment in the permanent protection of the Shoshone water rights. In addition to regional and statewide benefits, the federal government benefits greatly, both economically and hydrologically, from the preservation of the historic flows associated with the Shoshone water rights.

In conclusion, the Shoshone water right preservation effort is a blueprint for multi-generational solutions that protect our rivers along with the communities, economies and ecosystems that depend on them. We thank you for your leadership on Colorado River matters and we look forward to working with you to move this important project forward.

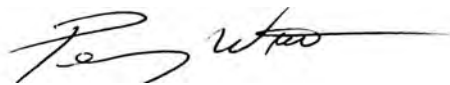
Sincerely,



Senator Dylan Roberts
Senate District 8



Speaker Julie McCluskie
House District 13



Senator Perry Will
Senate District 5



Senator Cleave Simpson
Senate District 6



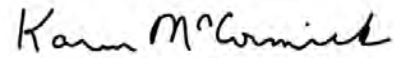
Senator Janice Rich
Senate District 7



Senator Janice Marchman
Senate District 15



Senator Jeff Bridges
Senate District 26



Representative Karen McCormick
House District 11



Representative Meghan Lukens
House District 26



Representative Matt Soper
House District 54



Representative Rick Taggart
House District 55



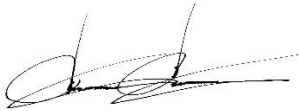
Representative Elizabeth Velasco
House District 57



Representative Marc Catlin
House District 58



Representative Barbara McLachlan
House District 59



Representative Matthew Martinez
House District 62



Representative Mike Lynch
House District 65

CC: Governor Jared Polis
U.S. Representative Joe Neguse
U.S. Representative Lauren Boebert
Dan Gibbs, Executive Director, Colorado Department of Natural Resources



United States Department of the Interior

NATIONAL PARK SERVICE
INTERMOUNTAIN REGION
12795 West Alameda Parkway
P.O. Box 25287
Denver, Colorado 80225-0287



IN REPLY REFER TO:
IMRO-RSS-COR (1241)

VIA ELECTRONIC MAIL: NO HARD COPY TO FOLLOW

November 15, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

Letter Regarding the Colorado River District B2E Proposal: Continued Water Flow into the 15 Mile Reach of Colorado River

Dear Commissioner Touton:

The National Park Service Colorado River Steering Committee believes the NPS will benefit from the Colorado River Water Conservation District's (Colorado River District's) application for, and efforts to, acquire Shoshone water rights in Western Colorado for the purposes of maintaining and continuing water flow into the Colorado River downstream to Canyonlands National Park and for the protection of four listed Colorado River fish.

The National Park Service is a member of the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) with participation in Implementation, Management, Biology, and other technical committees. As a partner in the Recovery Program, we have supported recovery actions designed to improve habitat conditions and provide recommended flows for the federally listed fishes covered by the Recovery Program. The Shoshone water rights will continue to provide water for critical habitat and are important in supporting the recommended flows in this reach of the Colorado River. The preservation of this river flow will provide water downstream as habitat for the listed fishes in the 15- Mile Reach near Grand Junction, and bolster habitat for native and listed fish farther downstream in Canyonlands National Park.

Higher temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and climate science indicates we should anticipate and plan for continued increases in temperature and further significant reductions in annual average flows. Without the Shoshone


water rights, Colorado River flows would be further diverted away from the basin, causing flows in the river to be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support critical habitat for native, threatened, and endangered fish.

The Colorado River District's application for Shoshone water rights would provide a clear benefit to the 15-Mile Reach, a stretch of critical habitat in Western Colorado that is heavily impacted by drought and water development, provide well-timed flows during important shoulder seasons when the river is prone to high temperatures and low flows, and preserve the natural baseflow in the river during the winter months.

The National Park Service Colorado River Committee believes the NPS will benefit from the Colorado River District's application for Bucket 2E funding to help ensure water continues to flow in the 15-mile Reach at the appropriate times to protect endangered fish and other native species.

Sincerely,

**KATHARINE
HAMMOND**

 Digitally signed by KATHARINE
HAMMOND
Date: 2024.11.13 22:26:03 -07'00'

Kate Hammond,
Regional Director NPS Interior Regions 6, 7, & 8
National Park Service



United States Department of the Interior

FISH AND WILDLIFE SERVICE
P.O. Box 25486-DFC
Denver, Colorado 80225



In Reply Refer to:
FWS/R6/CRRP

Bureau of Reclamation
Attn: Acquisition Management Division
Wallace F. Bennett Federal Building
125 South State Street
Salt Lake City, UT 84138-1102

Date: October 30, 2024

Re: Shoshone Permanency Project

To Whom It May Concern:

The threatened and endangered species managed by the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) can benefit from multiple opportunities submitted to the Bureau of Reclamation's Upper Basin Environmental Drought Mitigation funding opportunity. The work of the Recovery Program and partners is essential to supporting the recovery efforts of the four fish species in the Colorado River basin listed as threatened and endangered under the Endangered Species Act (ESA): Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), bonytail (*Gila elegans*) and humpback chub (*Gila cypha*). In recent years, persistent drought has increased pressures on the Colorado River ecosystem, increasing temperatures, affecting hydrology, and presenting new challenges.

The Recovery Program provides ESA compliance for over 2200 federal, non-federal, and tribal water projects in the upper Colorado River basin. The program is widely supported by water users, federal and state governmental agencies, environmental groups, and tribal nations. The Recovery Program has long demonstrated an ability to collaborate effectively amongst a diverse group of interests and successfully implement basinwide projects that have contributed to the recovery of these native species.

The Recovery Program conducts recovery actions across the Green and Colorado river basins, including large tributary systems like the White, Yampa, Duchesne, Gunnison, and Dolores rivers. Areas of emphasis include instream flows, habitat management, nonnative fish management, propagation and augmentation of populations, outreach and education, and research and monitoring. Projects in these areas that focus on recovery actions, water

management, or construction of in-river or off channel habitat for the ESA listed species could assist the Recovery Program in meeting its goals in recovering the species. We submit this letter of support for projects that have expressed direct ties to these four threatened or endangered species, emphasizing the importance of the upper Colorado River basin to the recovery of these species.

Thank you for your consideration of applications with benefits to these species.

Sincerely,

A handwritten signature in black ink that reads "Julie Stahl". The signature is written in a cursive style with a large initial "J" and a long, sweeping underline.

Julie Stahl
Director, Upper Colorado River Endangered Fish Recovery Program



Robert S. Kenney
President, Xcel Energy - Colorado
1800 Larimer Street, Suite 1100
Denver, CO 80202

November 12, 2024

Camille Calimlim Touton
Commissioner
Bureau of Reclamation
1849 C Street NW
Washington, DC 20240-0001

RE: Permanent Protection of the Shoshone Water Rights

Commissioner Touton,

Public Service Company of Colorado ("PSCo") and its predecessors have proudly operated the Shoshone Generating Station in Glenwood Springs, Colorado for over one hundred years, making the plant one of the oldest hydroelectric plants in western Colorado.

We appreciate this opportunity to indicate our support of the Colorado River Water Conservation District's ("District") application for funding for the Shoshone Water Right Preservation.

The Shoshone Generating Station is considered a run-of-the-river plant, using water from the flow of the Colorado River and replacing that water into the river downstream of the plant without consuming water in the process. Because the process to generate power at the plant does not consume water, in addition to the age of the plant and the priority of the call of the water rights, water users in Colorado depend upon the call of the water rights associated with the Shoshone Generating Station to support the flow of water in the Colorado River and balance the needs of water users across the state.

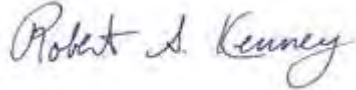
At the end of 2023, the District and PSCo came to a historic agreement to partner with the State of Colorado to preserve the status quo of water rights administration on the Colorado River in Colorado by adding an instream flow right to the existing Shoshone hydropower water right.

The partnership between the State of Colorado, the District, and PSCo will ensure the flows provided by the call of the water rights for hydrogenation are guaranteed by the instream flow right, even if the Shoshone Generating Station is decommissioned in the future. As it was true when the plant commenced operations at the turn of the 20th Century, so it is true today: water is crucial to life in the western United States.

With the changing and drier conditions that the west faces in the coming years, the efforts of the partnership between State of Colorado, the District, and PSCo to preserve the flows in the Colorado River provided by the Shoshone Water Rights through an instream flow right are essential to the environment, agriculture, and water users across Colorado and the western United States.

PSCo is pleased to join with the State and the District and privileged to be a part of such an important endeavor and supports the district's funding efforts.

Sincerely,

A handwritten signature in cursive script that reads "Robert A. Kenney". The signature is written in black ink and is positioned below the word "Sincerely,".

Robert Kenney
President, Public Service Company of Colorado
Xcel Energy



Grand County BOARD OF COMMISSIONERS

Colorado

308 Byers Ave., P.O. Box 264 | Hot Sulphur Springs, CO 80451 | 970-725-3347

Richard D. Cimino

District 1, Fraser 80442

Merrit S. Linke

District 2, Granby 80446

Randal F. George

District 3, Kremmling 80459

Email: grndcty1@co.grand.co.us

Phone: 970-725-3100

Fax: 970-725-0565

Edward Moyer, County Manager

Maxine LaBarre-Krostue, County Attorney

September 18, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Support for Shoshone Water Rights Preservation

Dear Commissioner Touton:

Grand County strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, Grand County has financially committed \$1 million through its Open Lands, Rivers and Trails grant fund toward this effort.

As the headwaters of the Colorado River with the majority of transmountain diversions, Grand County benefits greatly from preserving the Shoshone water right. Keeping water in the Colorado River helps protect Grand County's tourism-, recreation-, and agriculture-driven economies. Without the long-term security provided by the Shoshone call, additional transmountain diversion yield and limited reservoir replacement flows would have a drastic impact on Colorado River aquatic health and fisheries, recreation and agriculture in our county.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water

quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

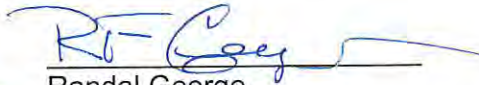
The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over 20 water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

Grand County resolutely endorses the Colorado River District's efforts to permanently secure the Shoshone water rights, and we urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations. There are no other water rights that could be acquired that would have a greater impact and benefit on our rivers in Grand County than the Shoshone water rights.

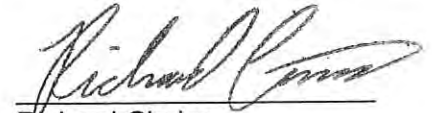
Sincerely,



Merrit Linke
Commissioner Chair



Randal George
Commissioner



Richard Cimino
Commissioner



BOARD OF COUNTY COMMISSIONERS

970 453 3414 ph | 970 453 3535 f
summitcountyco.gov

208 East Lincoln Ave. | PO Box 68
Breckenridge, Colorado 80424

September 16, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

Summit County, Colo., strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect historic Shoshone water rights in Western Colorado. In addition to its full support, Summit County has financially committed \$1 million toward this effort.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's main stem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

As a headwaters county impacted by multiple trans-basin diversions, the Shoshone call and associated flow regime is critical to aquatic health, fisheries and drought resilience in Summit County's rivers. Further, commercial river outfitters and recreationalists using the river need these flows to keep local economies afloat and maintain recreation as a central economic driver for the state.

High temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and science tells us to anticipate and plan for further significant reduction. Without the Shoshone water rights, Colorado River flows would be pointedly lower, especially in drought years, diminishing over 250 miles of connected ecosystems that rely on the river's flows to support critical habitat for native, threatened, and endangered fish.

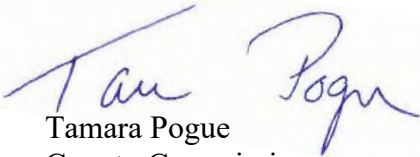
These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

Since signing the Purchase and Sale Agreement last December, the Shoshone Water Rights Preservation Coalition has raised over \$55 million toward the \$99 million purchase price, underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

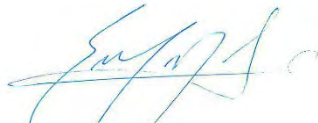
Summit County strongly supports the Colorado River District's efforts to permanently secure the

Shoshone water rights. We urge you to approve this application and support a rare opportunity to protect Colorado River flows for future generations.


Sincerely,
The Summit County Board of Commissioners



Tamara Pogue
County Commissioner



Eric Mamula
County Commissioner



Nina Waters
County Commissioner

CC:
Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse



Board of County Commissioners

970-328-8605

970-328-8629(f)

eagleadmin@eaglecounty.us

www.eaglecounty.us

September 9, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

Eagle County strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, Eagle County has financially committed \$2 million toward this effort.

As a headwaters county that is impacted by significant trans-basin diversions, the Shoshone call and associated flow regime is critical to Eagle County. Without the long-term security provided by the Shoshone call, additional transmountain diversion yield and limited reservoir replacement flows would have a drastic impact on aquatic health and fisheries in both the Colorado and Eagle Rivers.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior non-consumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.



Board of County Commissioners

970-328-8605

970-328-8629(f)

eagleadmin@eaglecounty.us

www.eaglecounty.us

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

Eagle County strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generations opportunity to protect Colorado River flows for future generations.

Sincerely,

Matt Scherr
Chair

Jeanne McQueeney
Commissioner

Kathy Chandler-Henry
Commissioner

Tom Jankovsky, Chair Pro Tem
District 1

John Martin, Chair
District 2

Mike Samson
District 3



September 10, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

Garfield County strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

In addition to our full support, Garfield County has financially committed \$3 million toward this effort. This funding commitment furthers the current effort to permanently protect the historic, non-consumptive Shoshone water rights on the upper Colorado River for future generations, an outcome long sought by over 20 Western Slope water entities and local governments.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

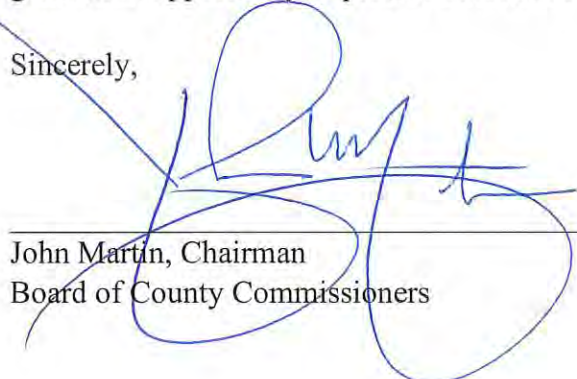
Persistent drought conditions over the course of more than two decades have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

Garfield County strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



John Martin, Chairman
Board of County Commissioners

CC:
Garfield County Board of County Commissioners
Fred A. Jarman, Garfield County Manager
Heather Beattie, Garfield County Attorney
Senator Michael Bennet
Senator John Hickenlooper



**MESA
COUNTY**

Administration

P.O. Box 20000 544 Rood Avenue Grand Junction, CO 81502-5001 FAX (970) 244-1639

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

Mesa County strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, Mesa County has financially committed \$1 million toward this effort.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

In addition to environmental and ecosystem benefits, Colorado River water users benefit greatly from Shoshone's flows, and they are motivated to protect these benefits in perpetuity. If approved, U.S. Bureau of Reclamation funding will play a critical role in providing permanent water security and drought resilience for the Upper Colorado River Basin.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows

improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

Mesa County strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generations opportunity to protect Colorado River flows for future generations.

Sincerely,

A handwritten signature in cursive script that reads "Peter M. Baier".

Peter M. Baier, P.E., M.P.A.
County Administrator
Mesa County

CC:

Senator Michael Bennet
Senator John Hickenlooper



MICHELLE NAUER

LYNN PADGETT

JAKE NIECE

BOARD OF COUNTY COMMISSIONERS

541 4th Street • P.O. Box C • Ouray, Colorado 81427 • 970-325-7320 • FAX: 970-325-0452

May 21, 2024

Via electronic mail

Senator Michael Bennet
261 Russell Senate Building
Washington, DC 20510

Senator John Hickenlooper
261 Russell Senate Building
Washington, DC 20510

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Senators Bennet and Hickenlooper:

Ouray County Board of County Commissioners strongly supports the Colorado River Water Conservation District's (Colorado River District's) effort to acquire and permanently protect the Shoshone water rights. For more than 20 years, the Colorado River District and a growing coalition of western Colorado governments and water entities have been working together to permanently preserve the Shoshone flows. The Shoshone Hydro Plant, a unique run of the river hydroelectric power plant, sits alongside the Colorado River in Glenwood Canyon and produces 15 megawatts of electricity. Importantly, Shoshone also holds a very senior (1902), nonconsumptive water right on the Colorado River, returning the flows it uses to the river after a short trip through the hydropower plant's penstocks and turbines.

The broad-based West Slope coalition is now on the cusp of the unprecedented alignment of multiple factors that presents a real opportunity to finalize this long-standing goal. On December 19, 2023, Xcel Energy and the Colorado River District signed a Purchase & Sale Agreement to transfer ownership of the historic Shoshone water rights to the Colorado River District for \$99 million. The historic agreement marks a first step towards permanent protection of the historic flows and the resulting economic benefits provided by the Shoshone water rights.

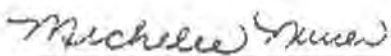
Permanent protection of the Shoshone flows will secure multiple benefits to Colorado River water users on the West Slope and across the state such as:

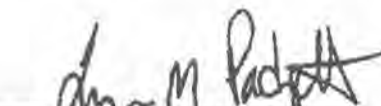
- Maintaining Colorado's foundational \$11.9 billion agricultural economy and \$14.6 billion recreation economy
- Water quality improvements for agriculture & drinking water
- Ecosystem benefits and stream flow to support Endangered Species Act compliance via a successful Upper Colorado River Endangered Fish Recovery Program and healthy 15-Mile Reach
- Maintaining stream flow through Upper Colorado River Wild & Scenic Alternative Management Plan river sections

During the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important. If the power plant were to cease operation without permanent protection of the water right through an instream flow, the negative economic and environmental impacts to Western Colorado and to the State of Colorado would be immediate and profound.

Ouray County Board of County Commissioners strongly supports the Colorado River District's efforts to complete the conditions necessary to execute the purchase and sale of the Shoshone water rights.

Sincerely,


Michelle Nauer, Chair


Lynn M. Padgett, Vice-Chair


Jake Niece, Member

September 24, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

Routt County strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

Routt County voters have consistently shown strong support for the County's investment in, and support of, the Colorado River District and its focus on preserving and protecting the Colorado River. In 2020, 76% of County voters said yes to a tax increase to provide ongoing financial support to The River District and the important efforts the organization undertakes to fulfil its mission to:

“Lead in the protection, conservation, use, and development of the water resources of the Colorado River basin for the welfare of the District, and to safeguard for Colorado all waters of the Colorado River to which the state is entitled.”

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows

improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

Routt County strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Timothy V. Corrigan', is written over a light blue horizontal line.

Timothy V. Corrigan, Chair
Board of County Commissioners

CC:

Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse



August 6, 2024

Senator Michael Bennet
261 Russell Senate Building
Washington, DC 20510

Senator John Hickenlooper
261 Russell Senate Building
Washington, DC 20510

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Senators Bennet and Hickenlooper:

The Western District¹ of Colorado Counties, Inc. (CCI) strongly supports the Colorado River Water Conservation District's (Colorado River District's) effort to acquire and permanently protect the Shoshone water rights. For more than 20 years, the Colorado River District and a growing coalition of western Colorado governments and water entities have been working together to permanently preserve the Shoshone flows. The Shoshone Hydro Plant, a unique run of the river hydroelectric power plant, sits alongside the Colorado River in Glenwood Canyon and produces 15 megawatts of electricity. Importantly, Shoshone also holds a very senior (1902), nonconsumptive water right on the Colorado River, returning the flows it uses to the river after a short trip through the hydropower plant's penstocks and turbines.

The broad-based West Slope coalition is now on the cusp of the unprecedented alignment of multiple factors that presents a real opportunity to finalize this long-standing goal. On December 19, 2023, Xcel Energy and the Colorado River District signed a Purchase & Sale Agreement to transfer ownership of the historic Shoshone water rights to the Colorado River District for \$99 million. The historic agreement marks a first step towards permanent protection of the historic flows and the resulting economic benefits provided by the Shoshone water rights.

Permanent protection of the Shoshone flows will secure multiple benefits to Colorado River water users on the West Slope and across the state such as:

- Maintaining Colorado's foundational \$11.9 billion agricultural economy and \$14.6 billion recreation economy;
- Water quality improvements for agriculture & drinking water;

¹ CCI's Western District is made up of 16 counties on the Western Slope: Archuleta, Delta, Dolores, Garfield, Gunnison, Hinsdale, La Plata, Mesa, Moffat, Montezuma, Montrose, Ouray, Rio Blanco, Routt, San Juan, and San Miguel.

- Ecosystem benefits and stream flow to support Endangered Species Act compliance via a successful Upper Colorado River Endangered Fish Recovery Program and healthy 15-Mile Reach; and
- Maintaining stream flow through Upper Colorado River Wild & Scenic Alternative Management Plan river sections.

During the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important. If the power plant were to cease operation without permanent protection of the water right through an instream flow, the negative economic and environmental impacts to Western Colorado and to the State of Colorado would be immediate and profound.

CCI's Western District strongly supports the Colorado River District's efforts to complete the conditions necessary to execute the purchase and sale of the Shoshone water rights. We are united in our conviction that this effort is crucial for our region's agricultural operations, recreational economy, and ecological sustainability.

Sincerely,

Sue Hansen
*CCI Western District President &
 Montrose County Commissioner*

Veronica Medina
*CCI Western District Vice President &
 Archuleta County Commissioner*

Ronnie Maez
*Archuleta County
 Commissioner*

Warren Brown
*Archuleta County
 Commissioner*

Veronica Medina
*Archuleta County
 Commissioner*

Laura Puckett Daniels
*Gunnison County
 Commissioner*

Jonathan Houck
*Gunnison County
 Commissioner*

Liz Smith
*Gunnison County
 Commissioner*

Kristine Borchers
*Hinsdale County
 Commissioner*

Gregory Levine
*Hinsdale County
 Commissioner*

Robert Hurd
*Hinsdale County
 Commissioner*

Marsha Porter-Norton
*La Plata County
 Commissioner*

Bobbie Daniel
*Mesa County
 Commissioner*

Janet Rowland
*Mesa County
 Commissioner*

Cody Davis
Mesa County
Commissioner

Gerald Koppenhafer
Montezuma County
Commissioner

Jim Candelaria
Montezuma County
Commissioner

Kent Lindsay
Montezuma County
Commissioner

Keith Caddy
Montrose County
Commissioner

Roger Rash
Montrose County
Commissioner

Sue Hansen
Montrose County
Commissioner

Michelle Nauer
Ouray County
Commissioner

Lynn M. Padgett
Ouray County
Commissioner

Jake Niece
Ouray County
Commissioner

Tim Corrigan
Routt County
Commissioner

Sonja Macys
Routt County
Commissioner

Tim Redmond
Routt County
Commissioner

Anne Brown
San Miguel County
Commissioner

Kris Holstrom
San Miguel County
Commissioner

Lance Waring
San Miguel County
Commissioner

September 4, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Grand Valley Water Users Association (GVWUA) strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, On January 4, 2024, GVWUA's Board of Directors made a formal financial commitment of \$100,000 toward this effort.

Located on the mainstem of the Colorado River in Mesa County, GVWUA operates the federal Grand Valley Project, which includes the historic Cameo Diversion Dam, the 55-mile-long Government Highline Canal, and 150 miles of piped laterals, delivering irrigation water to over 22,000 acres within our boundaries and 42,000 acres in the Grand Valley with our carriage partners. The permanent acquisition of the Shoshone water rights is of utmost importance as it provides water security and the peace of mind that our growers need to keep our fertile valley producing the crops that make agriculture our number one industry. The vitality of our economy and way of life relies on the health and sustainability of the Colorado River. Not only for crops, but for human enrichment, recreation, and the natural environment. We are proud to offer support and a financial commitment to this monumental endeavor.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish. For example, the Shoshone water rights provide a clear benefit to the 15-Mile Reach, a stretch of critical habitat in Western Colorado that is heavily impacted by drought and water development. The Shoshone water rights provide well-timed flows during important shoulder seasons when the

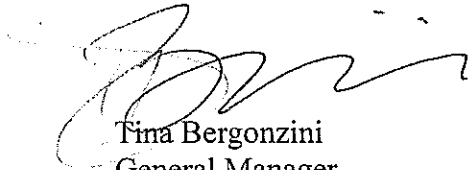
river is prone to high temperatures and low flows, as well as during the winter months, preserving the natural baseflow in the river.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, supporting thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The Grand Valley Water Users Association strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



Tina Bergonzini
General Manager

CC:

Senator Michael Bennet
Senator John Hickenlooper



ORCHARD MESA IRRIGATION DISTRICT

September 9, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

Orchard Mesa Irrigation District (OMID) strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, OMID has financially committed \$100,000 toward this effort.

Orchard Mesa Irrigation District is supplied with water from the Colorado River as part of the Grand Valley Project in the western Colorado portion of the Colorado River Basin. The district has made possible a diverse agricultural economy, where favorable conditions allow growers to produce orchards, vineyards, vegetables, alfalfa and small grains on 9,219 acres.

Shoshone water rights are integral to Colorado River operations in the Grand Valley. Without the Shoshone water rights, certain existing OMID agreements and contracts could be in jeopardy. This would not necessarily be caused by the loss of wet water in all circumstances. Our Cameo Call remains senior, but we are not immune from the potential changes to river operations, including operations of the Orchard Mesa check and the Historic Users Pool in Green Mountain Reservoir.

Ensuring the protection of the Shoshone water rights is a critical step forward for the long-term health of the Colorado River system and the security of our irrigation water supply. The Shoshone water is essential to the health and survival of our Western Slope ecosystems and water users. The value of securing these flows on a permanent basis for our water users is immense.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights

ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

Orchard Mesa Irrigation District strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



Jackie Fisher, District Manager
Orchard Mesa Irrigation District

CC:

Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse

September 30, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Collbran Conservancy District strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

Located in Mesa County, Collbran Conservancy District (CCD) provides irrigation water for over 19,000 irrigated acres and operates Vega Reservoir and the Southside Canal which is owned by the Bureau of Reclamation as part of the Collbran Project. CCD recognizes the importance of the Shoshone water rights to the security and viability of Colorado's Western Slope and its agricultural industries that are dependent on a healthy, flowing Colorado River.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

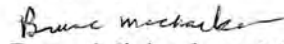
Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The Collbran Conservancy District strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely, ~


Bruce Michaelson, Manager
Collbran Conservancy District

CC:
Senator Michael Bennet
Senator John Hickenlooper

October 1, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Silt Water Conservancy District strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

The Silt Water Conservancy District was created to conserve and develop land and water resources on approximately 7,000 acres through the operation of the Silt Project, one of the initial participating projects authorized under the Colorado River Storage Project (CRSP) in the Act of April 11, 1956. The Silt Water Conservancy District utilizes pumped water from the Colorado River and Rifle Creek to supply irrigation water to approximately 7,000 acres of land between Rifle and Silt. The Shoshone Hydro Plant is located upstream of the Silt Project pump intake on the Colorado River, benefitting the Project in multiple ways. The permanent acquisition and operation of the Shoshone water rights call is vital to the Silt Project operations, the community, and the health and sustainability of the Colorado River.

The Silt Project relies on the increased flows in the Colorado River from the administration of the Shoshone water rights that not only can be used directly by the Silt Project but also help to keep the Silt Project water rights in priority particularly in dry years. The Shoshone rights, in turn, preserves the Silt Project's 5,000 AF pool in Green Mountain Reservoir, which otherwise would be relied on more frequently and would limit the irrigation season in dry years. Further, the Shoshone flows are a critical dilution source for our water supplies by improving water quality and reducing additional treatment and infrastructure costs.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish. These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The Silt Water Conservancy District strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

A handwritten signature in black ink, appearing to read "Charlie P. Terrell", written in a cursive style.

Charlie Terrell
Silt Water Conservancy District Board President

CC:

Senator Michael Bennet

Senator John Hickenlooper



September 30, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Water for Colorado Coalition, a group of nine NGOs operating in Colorado and dedicated to ensuring a resilient future for the Colorado River, writes today to provide strong support for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

With over 35 million people reliant on its waters, the Colorado River is not just a vital resource but a lifeline. Yet the river is facing drought conditions more extreme than any seen in the last 1,200 years. River flows are declining, causing impacts ranging from the spread of invasive species, to worsening water quality, to the degradation of endangered fish habitat.

The scale of the crisis is historic and requires an equally historic response. An important part of this response is \$450 million in federal funding earmarked for water conservation, environmental benefits, and ecosystem and habitat restoration in areas impacted by drought in the Upper Colorado River Basin. This timely support is an important step toward building resilience to a warming climate in the Mountain West and Southwest.

The crisis on the Colorado River has been building over the last century and cannot be solved with just short-term fixes. The Bureau of Reclamation must *also* deploy funds where they can yield the greatest long-term benefits for people and nature.

One such opportunity is the ongoing effort to acquire and permanently protect the Shoshone water rights on Colorado's Western Slope. The Shoshone hydroelectric power plant is an unassuming brown building off I-70 in Glenwood Canyon that plays an outsized role in the health of the upper Colorado River. The plant holds some of the largest and most senior water rights on the river, the oldest of which dates back to 1902. The Shoshone plant diverts water into its turbines to produce energy and releases that water back into the river where it flows downstream to benefit over 290 miles of critical river habitat for endangered fish found only in the Colorado River Basin and nowhere else on Earth.

But the Shoshone plant is over 100 years old. Its water could be diverted for other purposes if it were to permanently cease operations, leaving Colorado River flows in jeopardy along with the fish, wildlife, communities, farms and ranches that depend on them. We have a chance right now to purchase the Shoshone water rights to preserve its status quo and ensure that this water stays in the river where it can benefit Colorado's communities, the environment and the Basin as a whole for generations to come.

To complete the purchase, the Shoshone Water Right Preservation Coalition must raise \$99 million. This price tag might seem steep, but the cost of water will only continue to grow in a changing climate while the value water brings to the environment and our communities will remain priceless.

Seeing the project's immense value, local governments, water users, state agencies, and the Colorado General Assembly have pulled together to get us more than halfway there – raising over \$55 million toward the purchase. This showing of support speaks to just how important this effort is to Colorado communities, water users, and the environment in the upper Colorado River Basin.

The Shoshone project stands as a beacon of what's achievable. It demonstrates how strategic investments can yield enduring benefits for natural systems and the millions who depend on them. It is imperative that the Bureau support Shoshone in conjunction with the other important projects that will provide lasting benefits for the environment and our communities in the Upper Colorado River Basin. As with any large project, there are implementation details that need to be worked out. We are confident that the appropriate water authorities in Colorado will employ the necessary leadership skills to finalize the details in a timely manner.

Preserving the Shoshone water rights is more than a conservation effort; it has the potential to be a blueprint for multi-generational stewardship. This project will help to mitigate stress on fish and protect water quality all while supporting outdoor recreation, farming, and ranching and sustaining the economies supported by the Colorado River throughout the Upper Basin.

By investing in projects like Shoshone, we're ensuring that the Colorado River will remain a lifeline for generations to come. Thank you for your consideration and the opportunity to express our strong support of this grant application.

Sincerely,

The Water For Colorado Coalition





October 3, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

American Rivers is thrilled to support the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

American Rivers has long supported efforts to protect and make Shoshone flows permanent. American Rivers works closely with recreational, environmental and agricultural interests on Colorado's West Slope from the headwaters to the state line. We are pressed to point to a project that would have greater benefit to the environment and give more certainty to all water users and communities that depend on the Colorado River than the Shoshone permanence project. American Rivers believes that the project fits squarely in the purpose and intent of the Upper Basin Environmental Drought Mitigation Program.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

Prolonged drought caused by climate change has increased risk for communities that depend on the Colorado River in Western Colorado. Reliable river flows are the foundation of robust recreational economies, support healthy ecosystems including federally listed species, and support vibrant family-based agriculture. The Shoshone permanence project reduces risk for people and nature for the benefit not just for the West Slope but for the entire state of Colorado.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

American Rivers strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

Matt Rice
Senior Director, Southwest Region
American Rivers
mrice@americanrivers.org

CC:

Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse



November 11, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

American Whitewater strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

American Whitewater is a national non-profit 501(c)(3) river conservation organization founded in 1954 with approximately 85,000 supporters, 7,000 dues-paying members, and 80 local-based affiliate clubs, representing whitewater enthusiasts across the nation. American Whitewater's mission is to protect and restore America's whitewater rivers and to enhance opportunities to enjoy them safely. The organization is the primary advocate for the preservation and protection of whitewater rivers throughout the United States, and connects the interests of human-powered recreational river users with ecological and science-based data to achieve the goals within its mission. Our vision is that our nation's remaining wild and free-flowing rivers stay that way, our developed rivers are restored to function and flourish, that the public has access to rivers for recreation, and that river enthusiasts are active and effective river advocates. Our supporters recreate on the sections of the Colorado River affected by the Shoshone water rights in the hundreds of thousands of visits. Our support of permanency for these water rights is an exciting opportunity for American Whitewater to work towards fulfilling our mission.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without

the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

Colorado River water users, including and especially the recreational users and the natural environment, benefit greatly from Shoshone's flows, and we are motivated to protect those benefits in perpetuity. The senior right at Shoshone provides important predictability for river outfitters from Kremmling to Glenwood Springs. According to the Colorado River Outfitters Association this commercial activity provided \$14M in direct expenditures and \$36M in economic impact to the state in 2022.¹ The recreation economy of the upper Colorado River is second in the state only to the Arkansas river which sees the highest commercial rafting use of any river in the country. The Shoshone Power Plant call creates boatable stream flows for these critical reaches throughout much of the summer tourist season. In addition to the important commercial outfitter use of these sections of the Colorado River, the river has seen drastic increase in use from Coloradans seeking accessible family friendly adventures.

As flows on the mainstem of the Colorado River decrease, recreationalists depend on these flows for critical temperature suppression to keep local economies afloat and recreation a central economic driver for the state. High water temperature events have closed many sections of the Colorado almost annually over the past five years. Losing the flow protection provided by the Shoshone call would almost assure more extreme closures and threaten recreation-based businesses and economies.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

American Whitewater strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generations opportunity to protect Colorado River flows for future generations.

Sincerely,

Hattie Johnson
Southern Rockies Restoration Director
American Whitewater

¹ Colorado River Outfitters Association. Commercial Rafting Use Report in the State of Colorado 1988-2022. <https://www.croa.org/wp-content/uploads/2023/06/2022-CROA-Commercial-Rafting-Use-Report.pdf>



September 5, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

Blue River Watershed Group (BRWG) strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

The Blue River Watershed Group is a non-profit organization based in Summit County, Colorado with a mission is to promote, protect, and restore the Blue River Watershed. Through scientifically backed methods, BRWG ensures the Blue River will remain a valuable and enjoyable resource for our community and a haven for wildlife. Since 2019, BRWG has led a coalition to study aquatic ecosystem function of the Blue River through the Blue River Integrated Water Management Plan. Following a three-year sampling and surveying effort, the coalition determined that ecosystem function is detrimentally impacted by numerous variables including temperature challenges resulting from the Dillon Dam's bottom release outlet, restricted flows, and lack of habitat.

As a result, BRWG is leading the Blue River Habitat Restoration Project which will modify the river channel within a prioritized three miles of the Blue River to better function under current and future flow regimes and improved habitat. The Bureau of Reclamation recently made a significant investment into this project with a \$1.8 million funding award through the WaterSMART Aquatic Ecosystem Restoration Program. In addition to supporting flows on the Colorado River mainstem, the Shoshone water rights also support the many tributaries that benefit from additional water brought downstream from the Shoshone call, such as the current flow regime on the Blue River. Healthy flows provided by the Shoshone water rights are critical to the success of the Blue River. If the Shoshone water rights are not permanently protected, the Blue River is at risk of running at legally set minimum environmental flows almost indefinitely. Though the Habitat Restoration Project and other collective efforts are set forth to support the health of the Blue River, a variable flow regime is needed to transport sediment and support the ecosystem. Calls from the Shoshone will ensure our tributary, the Blue River, supplies water downstream and therefore must increase flows out of the Dillon Dam highly benefiting the river system.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows and many of its tributaries would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

Blue River Watershed Group strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

A handwritten signature in blue ink that reads "Kendra Tully". The signature is written in a cursive, flowing style.

Kendra Tully
Project Director – Blue River Watershed Group

CC:

Senator Michael Bennet
Senator John Hickenlooper



EAGLE RIVER COALITION

Protecting Our Local Watersheds

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support - Shoshone Water Rights Preservation

9/13/2024

Dear Commissioner Touton:

The Eagle River Coalition strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

Colorado River water users in Eagle County and beyond benefit greatly from Shoshone's flows, which supports vital environmental, economic, and community needs both upstream and downstream from the hydroelectric plant.

Eagle County's robust recreational economy relies heavily on the Colorado River mainstem, with Shoshone flows strengthening our local and iconic river recreation industry. River recreation in Colorado contributes \$14.6 billion annually to the state's GDP, with nearly \$4 billion coming directly from the Colorado River basin on the Western Slope. As temperatures rise and streams diminish, Shoshone permanency provides security for this economic industry, protecting the recreational fishery and boating that sustain local businesses and attract water-based recreators.

During the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important. If the power plant were to cease operation without permanent protection of the water right through an instream flow, the negative economic and environmental impacts to Western Colorado and to the State of Colorado would be immediate and profound. Given the importance of securing this water right to benefit the environment in perpetuity, this project is listed on the Colorado Basin Roundtable Basin Implementation List and the Eagle River Community Water Plan Project List.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

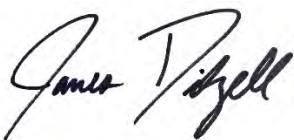
Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The Eagle River Coalition strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



James Dilzell

Executive Director, Eagle River Coalition

CC: Senator Michael Bennet; Senator John Hickenlooper; Representative Joe Neguse





Middle Colorado Watershed Council

Sept. 17, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Middle Colorado Watershed Council (MCWC) strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

The Middle Colorado Watershed Council finalized its Integrated Water Management Plan (IWMP) in the Spring of 2021 with a goal 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 and agriculture in the face of increased future demand and climate uncertainty.

The Shoshone Hydro Generating Station in Glenwood Canyon has a senior 1902 non-consumptive water right that provides baseline flows of 1,250 cfs (less if the hydrology is dry) in the Middle Colorado River, which is important in late summer and winter to this region. These flows serve irrigation, recreational, environmental, and municipal interests. The Integrated Water Management Plan identified that protecting these flows against the eventuality of the plant ever shutting down permanently making the water rights moot would damage Western Slope interests who depend on these flows. Securing Shoshone flows is a top planning priority for MCWC.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to the Utah border.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.



Middle Colorado Watershed Council

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The Middle Colorado Watershed Council strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

Paula Stepp, Executive Director
Middle Colorado Watershed Council

CC:

Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse



9/30/2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

RiversEdge West strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

Founded in 2002, RiversEdge West's mission is to restore riverside (riparian) ecosystems through education, collaboration, and technical assistance. We focus on riparian forest and floodplain health in the Western U.S., which plays an integral role in improving fish and wildlife habitat and enhancing the agricultural, economic, cultural, and recreational opportunities for the communities where we work. The Shoshone water rights are foundational to the ecosystems, recreation, and agricultural production that rely on the Colorado River. Permanently protecting the Shoshone flows is essential to ensuring a network of healthy riverside ecosystems in the Colorado River headwaters.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

FEIN 27-0007315

www.RiversEdgeWest.org

P.O. Box 1907 | Grand Junction, CO 81502

Advancing the restoration of riparian lands through collaboration, education, and technical assistance.



These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Twenty-five water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

RiversEdge West strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



Rusty Lloyd
Executive Director

CC:

Senator Michael Bennet
Senator John Hickenlooper

FEIN 27-0007315

www.RiversEdgeWest.org

P.O. Box 1907 | Grand Junction, CO 81502

Advancing the restoration of riparian lands through collaboration, education, and technical assistance.



September 10, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

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RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

Roaring Fork Conservancy (RFC) strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

As one of the largest watershed organizations in Colorado, RFC serves residents and visitors throughout the Roaring Fork Valley through school and community-based Watershed Education programs and Watershed Science and Policy projects including regional watershed planning, water resource policy initiatives, stream management and restoration.

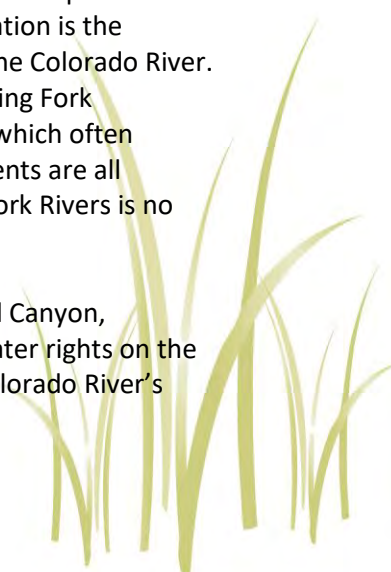
PROGRAM STAFF

Rick Lofaro
Executive Director
Heather Lewin
Science & Policy Director
Christina Medved
Director of Community Outreach
Elliott Audette
Business Manager
Megan Dean
Director of Education
Jayla Brown
Watershed Educator
Chad Rudow
Water Quality Program Manager
Sheryl Sabandal
Development Director
Andrea Tupy
Ecologist
Matthew Anderson
Water Quality Technician

Communities large and small along the Colorado River mainstem benefit from the enhanced water quality Shoshone flows provide, diluting salinity in the source drinking water for towns like New Castle, Rifle, Palisade, Clifton, and the greater Grand Junction area served by Ute Water Conservancy District. Without the higher flows of clean and cold headwater sourced supplies provided by the Shoshone call, a higher concentration of salinity and other water quality impairments creates increased costs for municipal drinking and wastewater treatment.

The Colorado River is home to multiple species of native fish, all of which depend on water quality protected by consistent flows. The focus for our organization is the watershed of the Roaring Fork River, one of the largest tributaries to the Colorado River. Our mission is to inspire people to explore, value and protect the Roaring Fork Watershed. RFC also works to maintain the health of that watershed, which often involves recognizing that the systems which sustain healthy environments are all interconnected. The relationship between the Colorado and Roaring Fork Rivers is no different. The health of one affects the other.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's



mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

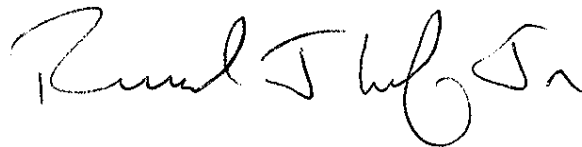
Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

Roaring Fork Conservancy strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

A handwritten signature in black ink, appearing to read "Rick Lofaro". The signature is fluid and cursive, with a large initial "R" and a stylized "L".

Rick Lofaro
Executive Director

CC:
Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse



Mike Zellner, CEO, Sonoran Institute
5049 E Broadway Blvd., Suite 127 | Tucson, AZ 85711
520-290-0828 | mzellner@sonoraninstitute.org

Sept. 6, 2024

Via electronic mail

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Sonoran Institute is pleased to support the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. Founded in 1990, Sonoran Institute inspires a positive future by connecting people and communities with the natural resources that nourish and sustain them. We promote collaboration to ensure there is water for flowing rivers, healthy landscapes, and thriving communities throughout the Colorado River Basin. Over the past 8 years, we have worked through our Growing Water Smart program with 65 local governments and their water providers across the State of Colorado to develop and implement plans and policies that support community and regional water resilience.

We understand that the Shoshone water rights are essential to Colorado communities. Colorado River water users rely on the stream flows associated with the Shoshone water rights for agriculture, water-based recreation and snowmaking, water and wastewater facilities, endangered species, recreation, and other water uses essential to the environment and the economy of Colorado. Local government land use planning and water supply planning in Colorado take into account the stream flows associated with the Shoshone water right. As part of federal, state, and local permitting, Denver Water's Gross Reservoir Expansion and Northern Water Conservancy District's Windy Gap Firming Project relied on flow projections that were based on the Shoshone

water right to assess the impact of those projects to the Colorado River system for compliance with the Endangered Species Act and other federal, state, and local laws. At least 1200 other water projects in Colorado currently benefit from the Shoshone flows.

The benefit of the Shoshone call to the flow of the river has become even more evident after years of drought. If the power plant were to cease operation without permanent protection of the water right through an instream flow, the negative economic and environmental impacts to Colorado would be enormous. Consistent with the Colorado Water Plan, the Sonoran Institute believes that protecting the Shoshone Water right as an instream flow is vital to maintaining and nourishing resilient communities and watersheds.

Thank you for your consideration.

Sincerely,

A handwritten signature in blue ink, appearing to read "Mike Zellner", with a long horizontal flourish extending to the right.

Mike Zellner
CEO
Sonoran Institute

CC:
Senator Michael Bennet
Senator John Hickenlooper



October 11, 2024

The Honorable Camille Touton, Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support from The Nature Conservancy and Western Resource Advocates for Bucket 2 E funding for Shoshone Water Rights Preservation

Dear Commissioner Touton:

Summary: The Nature Conservancy and Western Resource Advocates strongly support funding through the Upper Basin Environmental Drought Mitigation (B2E) program to enable the Colorado River Water Conservation District to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

Context: Our organizations are long-time partners in the Upper Colorado River Endangered Fish Recovery Program. The Program has many key elements, including protecting river flows in several Colorado River tributaries. Maintaining flows in the mainstem Colorado River is an essential piece of the puzzle, as those flows support federally listed fish in hundreds of miles of native habitat, including the so-called 15 Mile Reach of the Colorado, above its confluence with the Gunnison River in Grand Junction.

We are grateful to the Bureau for managing the \$450 million in federal funding earmarked for water conservation, environmental benefits, and ecosystem and habitat restoration in areas impacted by drought in the Upper Colorado River Basin. This timely support is an important step toward building resilience to a warming climate in the Mountain West and Southwest. The Bureau of Reclamation must deploy funds where they can yield the greatest long-term benefits for people and nature.

We believe preserving the Shoshone water right is a project worthy of financial support from B2E, as it would have substantial and long-term benefits to help support river flows in the 15 Mile Reach. The Shoshone hydroelectric power plant in Glenwood Canyon plays an outsized role in the health of the upper Colorado River. The plant holds some of the largest and most senior water rights on the river, the oldest of which dates back to 1902. The Shoshone plant diverts water into its turbines to produce energy and releases that water back into the river where it flows downstream to benefit over 290 miles of critical river habitat for endangered fish found only in the Colorado River Basin and nowhere else on Earth.

But the Shoshone plant is over 100 years old. Its water could be diverted for other purposes if it were to permanently cease operations, leaving Colorado River flows in jeopardy along with the fish, wildlife, communities, farms and ranches that depend on them. We have a chance right now to purchase the Shoshone water rights to preserve its status quo and ensure that this water stays in the river where it can benefit Colorado's communities, the environment and the Basin as a whole for generations to come.

To complete the purchase, the Shoshone Water Right Preservation Coalition must raise \$99 million. This price tag might seem steep, but the cost of water will only continue to grow in a changing climate while the value water brings to the environment and our communities will remain priceless.

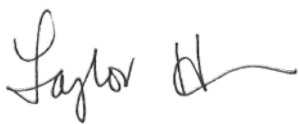
Seeing the project's immense value, local governments, water users, state agencies, and the Colorado General Assembly have pulled together to get us more than halfway there – raising over \$55 million toward the purchase. This showing of support speaks to just how important this effort is to Colorado communities, water users, and the environment in the upper Colorado River Basin.

The Shoshone project stands as a beacon of what's achievable. It demonstrates how strategic investments can yield enduring benefits for natural systems and the millions who depend on them. It is imperative that the Bureau support Shoshone in conjunction with the other important projects that will provide lasting benefits for the environment and our communities in the Upper Colorado River Basin. As with any large project, there are implementation details that need to be worked out. We are confident that the appropriate water authorities in Colorado will employ the necessary leadership skills to finalize the details in a timely manner.

Preserving the Shoshone water rights is more than a conservation effort; it has the potential to be a blueprint for multi-generational stewardship. This project will help to mitigate stress on fish and protect water quality all while supporting outdoor recreation, farming, and ranching and sustaining the economies supported by the Colorado River throughout the Upper Basin.

By investing in projects like Shoshone, we're ensuring that the Colorado River will remain a lifeline for generations to come. Thank you for your consideration and the opportunity to express our strong support of this grant application.

Sincerely,



Taylor Hawes
Colorado River Program Director
The Nature Conservancy



Bart Miller
Healthy Rivers Director
Western Resource Advocates



September 22, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

Dear Commissioner Touton,

Eagle River Water & Sanitation District (ERWSD) and Upper Eagle Regional Water Authority (UERWA) strongly support the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, ERWSD and UERWA have financially committed a joint \$1 million toward this effort.

Combined, ERWSD and UERWA are the second largest water provider on Colorado's Western Slope, operating the public water system that serves the mountain resort communities of Vail, Beaver Creek, Avon, Eagle-Vail, and Edwards in the Eagle River Valley. Both organizations, along with Eagle County and Eagle Park Reservoir Company, were among the 17 original West Slope signatories to sign the historic Colorado River Cooperative Agreement, which is foundational to Shoshone permanency. Water users throughout our service area greatly benefit from Shoshone's flows, and we are motivated to protect those flows in perpetuity.

This long-term project is a permanent investment in the health of our rivers. Continuing the historic flow regime associated with the Shoshone water rights ensures that our community's rivers keep flowing and can provide us with water for recreational, environmental, and domestic uses.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. More than twenty water entities, local governments,

Clean Water. Quality Life.™

846 Forest Road Vail, Colorado 81657 Tel (970) 476-7480 Fax (970) 476-4089 erwsd.org

and regional partners have contributed more than \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

ERWSD and UERWA strongly support the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



Dick Cleveland
Chair, Eagle River Water & Sanitation District



George Gregory
Chair, Upper Eagle Regional Water Authority

CC:

Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse

September 5, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

Ute Water Conservancy District (“Ute Water”) strongly supports the Colorado River Water Conservation District’s (Colorado River District’s) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, Ute Water has financially committed \$2 million toward this effort.

Ute Water was organized in 1956 by Grand Valley farmers to provide clean, potable water service to rural areas of the Grand Valley outside of the Town of Palisade, City of Grand Junction, and Town of Fruita. Today, Ute Water is the largest domestic water provider between Denver and Salt Lake City and provides water service to 90,000 Grand Valley customers which now include the entire Town of Fruita and a significant portion of the City of Grand Junction. Ute Water has long been a partner in the Shoshone permanency effort as one of the 17 West Slope signatories to the 2013 Colorado River Cooperative Agreement (CRCA), and our source water portfolio relies heavily on protecting these historic Colorado River flows to provide safe drinking water to our customers. Our organization understands the importance, significance, and historical opportunity that is currently presented through the Shoshone Water Right Preservation. By committing \$2 million to the preservation efforts, we are supporting West Slope water quality improvement, ecosystem benefits that positively impact the endangered fish species, as well as our local recreation and agriculture partners by keeping base flows adequate in dry years.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River’s mainstem, providing vital ecosystem, habitat, and restoration benefits from the river’s headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in

drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

Ute Water strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



Larry Clever
General Manager

CC:

Senator Michael Bennet
Senator John Hickenlooper



September 3, 2024

818 Taughenbaugh Blvd., Suite 101 P.O. Box 1478
Rifle, Colorado 81650-1478
Tel: (970) 625-5461
Web: www.wdwdc.org Email: water@wdwdc.org

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

West Divide Water Conservancy District (West Divide) strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, West Divide has financially committed \$50,000 toward this effort in February 2024.

West Divide, including its constituents, is a beneficiary of the river conditions resulting from the Shoshone water rights administration and desires that it remain a controlling water right on the mainstem of the Colorado River. In the absence of a Shoshone call, West Divide's available supplies could be depleted more quickly due to the increased downstream call at Cameo resulting in higher augmentation requirements. West Divide recognizes the many years of effort to permanently protect the Shoshone flows as it has been a priority project in the Colorado River Basin and reiterated in the Colorado Basin Implementation Plan. The Shoshone water rights ensure flows are available for agriculture, municipalities, recreationists, environmental flows, and overall aesthetics of the river corridor that we call home.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish. For example, the Shoshone water rights provide a clear benefit to the 15-Mile Reach, a stretch of critical habitat in Western Colorado that is heavily impacted by drought and water development. The Shoshone water rights provide well-timed flows during important shoulder seasons when the

river is prone to high temperatures and low flows, as well as during the winter months, preserving the natural baseflow in the river.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, supporting thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

West Divide strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



Samuel B. Potter
West Divide Board President

CC:

Senator Michael Bennet
Senator John Hickenlooper



CLIFTON WATER DISTRICT

510 34 Road
Clifton, Colorado 81520
Office (970) 434-7328
Fax (970) 434-7338

September 18, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner, Touton:

Clifton Water District strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, Clifton Water District has financially committed \$250,000 toward this effort.

Clifton Water District provides drinking water for nearly 13,000 domestic taps in the Grand Valley near Grand Junction. The District relies on two different points of diversion from the Colorado River itself. The winter diversion is within the endangered and threatened fish habitat known as the 15-Mile Reach, while the summer diversion coordinates with the Grand Valley Irrigation Canal system which diverts in Palisade.

Clifton Water District is proud to contribute a quarter of a million dollars towards the Shoshone permanency effort because the health of the Colorado River ensures the health of our families and neighbors for generations to come. In Clifton, our future is tied to the flows of the Colorado River because the drinking water we depend on comes directly from that river. Sustained, year-round river levels, supported by the Shoshone call, allow for higher water quality and reduce consumer costs by diluting difficult-to-remove pollutants and sediment.

Clifton is one of the six West Slope communities which draw and treat water directly from the Colorado River for their primary drinking water source. The others are DeBeque, Silt, Parachute, Battlement Mesa and Rifle.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

Clifton Water District strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



Ty Jones
District Manager

CC:

Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse

THE GRAND VALLEY IRRIGATION COMPANY

688 - 26 Road
Grand Junction, Colorado
81506

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

DATE: 09/04/2024

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Grand Valley Irrigation Company (GVIC) strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, GVIC has financially committed \$250,000 toward this effort in March 2024.

Established in 1894, the GVIC owns and operates the Grand Valley Canal, a system of canals stretching nearly 100 miles in length. This system has provided irrigation water for approximately 40,000 acres of the Grand Valley, delivered through over 950 delivery points and laterals since 1882 from Palisade to Mack. With a long growing season and large valley of fertile land, Colorado's Grand Valley continues a long tradition of agricultural production, a primary economic driver in this region. Preserving the Shoshone Water Rights is a once-in-lifetime opportunity to support the security of our irrigation supply, and the communities and economies linked to the Colorado River.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish. For example, the Shoshone water rights provide a clear benefit to the 15-Mile Reach, a stretch of critical habitat in Western Colorado that is heavily impacted by drought and water development. The Shoshone water rights provide well-timed flows during important

shoulder seasons when the river is prone to high temperatures and low flows, as well as during the winter months, preserving the natural baseflow in the river.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, supporting thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The Grand Valley Irrigation Company strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



Sean Norris
President
Grand Valley Irrigation Company

CC:
Senator Michael Bennet
Senator John Hickenlooper



September 23 2024

The Honorable Camille Touton

U.S. Bureau of Reclamation

1849 C Street NW

Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Mesa County Irrigation District (MCID) strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, we have financially committed \$50,000 toward this effort in April 2024.

Formed in 1906, MCID serves approximately 1,700 landowners and 900 acres of irrigated land through water diverted from the Colorado River at the Cameo Diversion Dam, and then carried through the Government Highline Canal until it enters the Grand Valley just northeast of the Town of Palisade. On June 10, 1913, MCID entered into an agreement with the U.S. Bureau of Reclamation under the Grand Valley Project for the delivery of 15 cfs of water to the Stub Ditch and 25 cfs of water delivered through Government Highline Canal. The Shoshone water rights are integral to the administration of the Colorado River in the Grand Valley, and the protection of these water rights provides immense, long-term benefit to our communities and economies that rely on Colorado's namesake river.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River.



These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The Mesa County Irrigation District strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



Mesa County District Board of Directors

Scott Hoskins

A handwritten signature in black ink, appearing to read "Scott Hoskins", written in a cursive style.

Ed Derryberry

A handwritten signature in black ink, appearing to read "Ed Derryberry", written in a cursive style.

Michael Whiteman

CC:

Senator Michael Bennet

Senator John Hickenlooper

Representative Joe Neguse



MIDDLE PARK WATER CONSERVANCY DISTRICT

www.middleparkwcd.com

P.O. Box 145, Granby, CO 80446
(970)725-3460

September 17, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

Middle Park Water Conservancy District (MPWCD) strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, MPWCD has financially committed \$100,000 toward this effort in July 2024.

Middle Park Water Conservancy District's mission is to preserve, protect, and develop water resources and water rights in Grand and Summit Counties to preserve stream flows and water-related recreational opportunities. MPWCD has long been a partner in the Shoshone permanency effort as one of the 17 West Slope signatories to the 2013 Colorado River Cooperative Agreement (CRCA), which expressly recognizes the importance of – and memorialized the need to provide permanent protection of – the Shoshone flows. Permanent protection of the Shoshone water rights provides essential water security to ensure the Colorado River and its tributaries continue to sustain local economies, food production, and the environment.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought

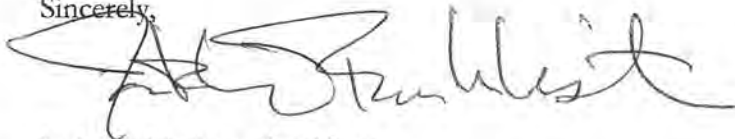
years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

MPWCD strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

A handwritten signature in black ink, appearing to read "Jack Buchheister". The signature is fluid and cursive, with a large initial "J" and "B".

Jack Buchheister, President
Middle Park Water Conservancy District Board of Directors

CC:

Senator Michael Bennet
Senator John Hickenlooper



777 35 3/10 Road, Palisade, CO 81526
970-464-4700 / Fax 970-464-1337

Sept 17, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Palisade Irrigation District strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the Shoshone water rights in Western Colorado. In April 2024 we financially committed \$50,000 to join over 20 other entities who have raised over \$55 million toward the \$99 million purchase price. Thus, underscoring the critical importance of this resource to our region.

Formed in 1904, the Palisade Irrigation District is comprised of about 6,500 acres and delivers quality irrigation water from the Colorado River to a wide variety of high-value agricultural enterprises in the eastern portion of the Grand Valley of west-central Colorado. Within the District you can find world-acclaimed vineyards and orchards including pear, peach, apricot, cherry, and apple. Hay, corn, alfalfa, vegetables, are also grown. The Shoshone water rights are crucial to the success of our District's agricultural economy and heritage, which relies on a healthy and secure Colorado River.

Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing the quantity and quality of river diversions and over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

The Palisade Irrigation District strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

Kent Brumback, President
Palisade Irrigation District Board

CC:
Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse

September 30, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240



RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

Tri-County Water Conservancy District strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

Formed in 1957, Tri-County Water Conservancy District provides domestic water to residential and commercial taps in the rural Uncompahgre Valley serving portions of Delta, Montrose, and Ouray counties. The District recognizes the importance of the Shoshone water rights to the security and viability of Colorado's Western Slope and its communities that are dependent on a healthy, flowing Colorado River.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price

recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

Tri-County Water Conservancy District strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

A handwritten signature in black ink, appearing to read "Jerry Young", written over a printed name.

Jerry Young
General Manager

CC:

Senator Michael Bennet
Senator John Hickenlooper



September 11, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The City of Grand Junction strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, the City of Grand Junction has financially committed \$1 million toward this effort in April 2024.

The City of Grand Junction, home to over 68,000 residents, currently holds conditional water rights on the Colorado River. Permanently protecting the Shoshone water rights will sustain critical flows and water levels in the Colorado River year-round throughout the Grand Valley, especially in dry years, thereby maintaining water quality through the dilution of pollutants and sediment. Across the West, redundant drinking water sources are becoming critical for municipalities like Grand Junction, which continue to experience increased pressures from the impacts of a warming climate, including wildfires, drought, and diminished water quality from lower flows.

Additionally, the Shoshone flows support recreation on the Colorado River, an important driver for the City's economy. The recently constructed, recreationally oriented side channels and amenities at Las Colonias Park benefit from sustained flows and offer high-quality recreation experiences for residents and visitors.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the Colorado River's largest, most senior nonconsumptive water rights. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened and

endangered fish. These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price, underscoring this resource's critical importance to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The City of Grand Junction strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



Abe Herman
Mayor, City of Grand Junction

CC:

Senator Michael Bennet
Senator John Hickenlooper

September 17, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Town of Breckenridge strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

Founded in 1859 and located in Colorado's high country, the Town of Breckenridge sits at the base of the Tenmile Range and the headwaters of the Blue River. In addition to supporting flows on the Colorado River mainstem, the Shoshone water rights also support the many tributaries that benefit from additional water brought downstream from the Shoshone call, such as the current flow regime on the Blue River. If the Shoshone Water Rights were not exercised, the primary beneficiaries would be trans-mountain diverters which would experience increased yield through their respective collection systems. Of importance to the Town of Breckenridge, the Upper Blue River streamflow above Dillon Reservoir would likely experience reductions with an increased frequency of Continental Hoosier Project in-priority diversions.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

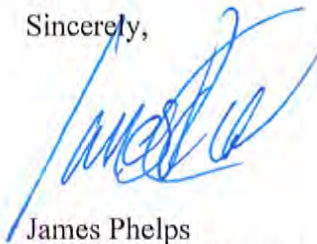
Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The Town of Breckenridge strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



James Phelps
Public Works Director
Town of Breckenridge

CC:

Senator Michael Bennet
Senator John Hickenlooper



601 Center Circle • P.O. Box 1309 • Silverthorne, Colorado 80498

October 1, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Town of Silverthorne strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

Located in the Blue River Valley, the Town of Silverthorne sits downstream alongside the Dillon Reservoir dam and enjoys the tailwater section of the Blue River. In addition to supporting flows on the Colorado River mainstem, the Shoshone water rights also support the many tributaries that benefit from additional water brought downstream from the Shoshone call, such as the current flow regime on the Blue River. If the Shoshone Water Rights were not exercised, the primary beneficiaries would be trans-mountain diverters which would experience increased yield through their respective collection systems. As a result, the Blue River streamflow below Dillon Reservoir could remain at or below 50 cfs in the non-irrigation season for longer periods of time due to increased diversions into Dillon Reservoir and through the Roberts Tunnel, particularly in drought periods. Decreased releases from Dillon Reservoir Dam could be seen in the irrigation season as well, especially during dry and average years.

The Blue River is an economic driver and iconic community feature for residents and visitors who seek to enjoy the river through numerous fishing access points, the River's Edge Park, and the Blue River trail. The Town of Silverthorne continues to invest in the health of the Blue River through stormwater infrastructure improvements and the Blue River Habitat Restoration Project. However, the success of these collective efforts relies on healthy flows, and the current flow regime provided by the Shoshone water rights are invaluable to our community.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the

Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.



601 Center Circle • P.O. Box 1309 • Silverthorne, Colorado 80498

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The Town of Silverthorne strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

TOWN OF SILVERTHORNE

CC:

Senator Michael Bennet
Senator John Hickenlooper



City of Glenwood Springs
101 West 8th Street
Glenwood Springs, CO 81601

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

Thursday, September 05, 2024

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The City of Glenwood Springs strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, the City of Glenwood Springs has financially committed \$2 million toward this effort in May 2024.

The City of Glenwood Springs is a West Slope community whose economy and way of life depends on recreation, especially on our rivers. The health of the Colorado River, which flows through the town, is directly tied to the heart of the community, quality of life for residents, and local economy.

According to the Shoshone Outfitter Partnership, the Colorado River through Glenwood Canyon experiences over 70,000 commercial customer trips and an estimated 80,000 private boaters who launch from the Grizzly Creek and Shoshone boat ramps. River recreation drives the summer economy of the City of Glenwood Springs, which sustains local businesses and a foundational tax base for the city through its recreation- and tourism-based economy. Achieving Shoshone permanency provides certainty and security for outfitters, the hospitality industry, and all local businesses that rely on resident and non-resident tourists and qualified employees. In 2022, the Colorado River Outfitters Association estimated that commercial river rafting through Glenwood Canyon created an economic impact of \$23.5 million.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250

miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The City of Glenwood Springs strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



Ingrid Wussow
Mayor, City of Glenwood Springs

September 18, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240



RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The City of Rifle strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, the City of Rifle has financially committed \$100,000 toward this effort.

The City of Rifle provides drinking water to its 10,000 residents. Our citizens rely on the Colorado River for water, and we are grateful for the opportunity to partner with the Colorado River District to ensure that the Shoshone water rights are protected. Securing the Shoshone water rights is an unprecedented opportunity to safeguard the health of the Colorado River for future generations.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

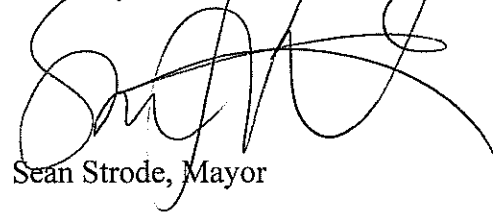
These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and

recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The City of Rifle strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

A handwritten signature in black ink, appearing to read 'Sean Strode', written over a white background.

Sean Strode, Mayor

CC:

Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse



Town of New Castle

450 W. Main Street
PO Box 90
New Castle, CO 81647

Office of the Town Mayor

Phone: (970) 984-2311

Fax: (970) 984-2716

www.newcastlecolorado.org

September 9, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner, Touton:

The Town of New Castle strongly supports the Colorado River Water Conservation's application to the Upper Basin Environmental Drought Mitigation (B2E) program to permanently secure the historic Shoshone water rights in Western Colorado. Protecting these rights is vital to the region's future.

Though New Castle's primary water source is East Elk Creek, the Colorado River provides a crucial backup, especially as climate change intensifies drought, wildfires, and water quality issues. As a local source of recreation and tourism, the Colorado River relies on historic water flows which contribute to the health of our local economy.

The Shoshone Hydro Plant holds senior non-consumptive water rights that sustain ecosystems and communities from Grand County to Grand Junction. With the Colorado River's flow reduced by 20% due to rising temperatures, preserving these rights is critical to maintaining over 250 miles of ecosystems, including Gold Medal fisheries and habitats for endangered species.

These rights are essential to Colorado's agricultural and recreation economies and ensure cleaner drinking water for towns like ours.

The Shoshone Water Rights Preservation Coalition, a broad alliance, has already raised over \$55 million toward the \$99 million purchase. We urge you to approve this application to protect the Colorado River flows and safeguard the future of Western Colorado.

Sincerely,

Mayor Art Riddile
Town of New Castle

CC:

Senator Michael Bennet
Senator John Hickenlooper



231 N. 7th Street / P.O. Box 70 / Silt, CO 81652
Phone: 970-876-2353 / Fax: 970-876-2937

September 9, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Town of Silt (Silt) strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

The Town of Silt is located along the Colorado River about 26 miles downstream of the Shoshone Hydro Plant in the Colorado River Valley. The Colorado River is the primary source of drinking water for the Town, and Silt is the first town west of Glenwood Canyon that directly draws drinking water from the Colorado River. The Colorado River experiences high turbidity during the runoff season, creating increased operational costs for our water treatment. Additionally, the Town continues to experience exacerbated conditions with high levels of post-fire sediment and debris following the Grizzly Creek Fire in 2020. The Shoshone flows are a critical dilution source for our water supplies by improving water quality and reducing additional treatment and infrastructure costs.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish. These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The Town of Silt strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



Mayor Keith Richel
Town of Silt

CC:
Senator Michael Bennet
Senator John Hickenlooper



October 9, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Town of Basalt strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

The Town of Basalt has built its values and way of life around healthy, flowing rivers, and a thriving, small-town economy that depends on tourism and local businesses. Gold-medal waters provide world-class fishing, and visitors come from across the state to enjoy flat water recreation on nearby Ruedi Reservoir. Protecting the natural beauty of our valley, and the way of life for our residents goes hand in hand with ensuring that local, riparian ecosystems thrive.

If the Shoshone Hydro Plant were to cease operation without permanent protection of the water rights, the negative economic and environmental risks to Western Colorado and to the state of Colorado would be significant. Primary Roaring Fork basin-specific impacts would largely come from an expected increase in the Cameo Call and would include (1) lower water levels at Ruedi Reservoir in dry years, including during the summer recreation season, (2) higher releases from Ruedi Reservoir to fulfill streamflow targets in the 15-Mile Reach and increased augmentation needs which could result in fishing-wading difficulties on the Fryingpan River, and (3) many Roaring Fork Basin water users would be required to amend their augmentation plans, an expensive and time-consuming process.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought

years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The Town of Basalt strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

David Knight, Mayor



CC:

Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse





THE SOUTHWESTERN WATER CONSERVATION DISTRICT

Developing and Conserving the Waters in the
SAN JUAN AND DOLORES RIVERS AND THEIR TRIBUTARIES
West Building – 841 East Second Avenue
DURANGO, COLORADO 81301
(970) 247-1302

October 14, 2024

Bureau of Reclamation
Attn: Acquisition Management Division
Wallace F. Bennett Federal Building
125 South State Street
Salt Lake City, UT 84138-1102

Re: Upper Basin Environmental Drought Mitigation (B2E) – Letter of Support

To the Bureau of Reclamation:

Southwestern Water Conservation District (SWCD) supports the Colorado River Water Conservation District's (CRWCD) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and protect the historic Shoshone water rights in Western Colorado. The B2E program presents a tremendous opportunity for eligible entities, like the River District, to respond to drought and enhance ecosystem resiliency across Colorado's Western Slope through a variety of projects. While SWCD is sponsoring its own application through the Southwestern Water Conservation and Infrastructure Partnership for B2E funding, we are united in supporting all efforts to safeguard water resources on the Western Slope of Colorado.

SWCD, which serves all or part of nine counties in southwest Colorado, is statutorily charged with protecting, conserving, using, and developing the water resources of the San Juan and Dolores River Basins, while ensuring that Colorado retains its rightful share of water. For more than 80 years, we have upheld this mission, serving as strategic leaders for our diverse constituents. CRWCD has a similar statutory mandate and encompasses the remaining counties on Colorado's Western Slope. As a result, both SWCD and the CRWCD share the common goal of advocating for the protection, use, and conservation of Western Slope water, working together as leaders to safeguard the region's water resources.

The Shoshone Hydro Plant in Glenwood Canyon holds some of the largest and most senior non-consumptive water rights on the Colorado River. Protecting these water rights supports ecosystems and habitats on Colorado's Western Slope, from Grand County to Grand Junction. As the climate crisis is predicted to further reduce flows, continued operation of the Shoshone

water rights help prevent further declines, especially during drought years, safeguarding over 250 miles of ecosystems, including Gold Medal fisheries and habitats for endangered species. These water rights are also crucial for supporting Colorado's agricultural and recreational economies, which are the backbone of thriving Western Slope communities. Moreover, the Shoshone flows help improve drinking water quality by diluting salinity and sediment, reducing municipal water treatment and infrastructure costs.

As one of the two Water Conservation Districts serving the Western Slope, SWCD recognizes the value of the River District's efforts to acquire and protect the Shoshone water rights and stands in support of its application for a portion of the available B2E funding. We appreciate your consideration of this important initiative.

Sincerely,



Steve Wolff,
General Manager

September 10, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Basalt Water Conservancy District (BWCD) strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to its full support, BWCD pledged \$100,000 toward this effort in March 2024.

The District was created in 1964 to conserve and enhance water supplies for constituents in portions of Garfield, Pitkin, and Eagle counties within the Roaring Fork Valley. The District provides legal water supplies, including through contracts with the Bureau of Reclamation for water stored in Ruedi Reservoir and Green Mountain Reservoir, to support domestic, irrigation, commercial, and other beneficial uses by thousands of Roaring Fork Valley residents. These supplies support activities that fuel the Roaring Fork Valley's economy, greatly contributing to Colorado's overall economic vitality.

If the Shoshone Hydro Plant were to cease operation without permanent protection of the water rights, the negative economic and environmental risks to the District and its constituents, and the State of Colorado overall, would be significant. The District and its constituents would be directly impacted by a foreseeable and likely increase in the frequency and duration of the "Cameo Call" to supply major irrigation water rights near Grand Junction, including water rights associated with other Reclamation projects. Impacts of an increased Cameo Call may include (1) lower water levels at Ruedi Reservoir in dry years, including during the summer recreation season, (2) higher releases from Ruedi Reservoir to fulfill streamflow targets in the 15-Mile Reach and increased augmentation needs, and (3) many Roaring Fork Basin water users would be required to amend their plans for augmentation to address changes in historical hydrology, which is an expensive and time-consuming process.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights

ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower. (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish. For example, the Shoshone water rights provide a clear benefit to the 15-Mile Reach, a stretch of critical habitat in Western Colorado that is heavily impacted by drought and water development. The Shoshone water rights provide well-timed flows during important shoulder seasons when the river is prone to high temperatures and low flows, as well as during the winter months, preserving the natural baseflow in the river.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, supporting thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The Basalt Water Conservancy District strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



Dr. Gary Knaus
Board President

CC:

Senator Michael Bennet
Senator John Hickenlooper



October 14, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Associated Governments of Northwest Colorado, AGNC, is pleased to provide a letter of support for the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

As a council of governments and designated Economic Development District for Northwest Colorado's Region 11, AGNC has outlined key economic development priorities to support as part of its federally approved [Comprehensive Economic Development Strategy \(CEDS\)](#), which is recognized by the Economic Development Administration (EDA) under the Department of Commerce. Specifically, the Shoshone Water Rights funding request addresses AGNC's CEDS:

Strategy B) GOAL B: VIBRANT & HEALTHY COMMUNITIES.

6B. Healthy Community/Healthy Lifestyle: Support clean air and water through infrastructure modernization efforts, monitoring/enforcement, and strengthened partnership with federal and state regulatory agencies.

Strategy D) GOAL D: EXTRAORDINARY INFRASTRUCTURE

4D. Regional Cooperation: The preservation of the Shoshone water rights exemplifies AGNC's commitment to regional cooperation, as outlined in Strategy 4D of the CEDS. This initiative brings together local governments, water conservation districts, environmental groups, and stakeholders across the Western Slope in a unified effort to safeguard one of the most critical natural resources—water.

By fostering collaboration between counties, municipalities, and organizations such as the Colorado River District, this effort strengthens regional ties and ensures that the interests of multiple communities are represented and protected.



ASSOCIATED GOVERNMENTS
OF NORTHWEST COLORADO
ECONOMIC DEVELOPMENT DISTRICT

Through this partnership, the Shoshone Water Rights project serves as a model of how collaborative efforts can lead to shared success, preserving water flows that support not only agriculture and recreation but also the overall economic health of the region. Moreover, the project underscores the importance of working together to secure funding from federal, state, and local sources, demonstrating that regional cooperation is essential for addressing complex environmental and economic challenges.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters through our region. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems. This project is vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

AGNC strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application to protect Colorado River flows for future generations.

Sincerely,

A handwritten signature in black ink, appearing to be 'Tiffany', written in a cursive style.

Tiffany Dickenson, Executive Director, Associated Governments of Northwest Colorado

CC:

Senator Michael Bennet

Senator John Hickenlooper

October 15, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The undersigned businesses/organizations strongly support the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

Many of our communities have invested financial resources to protect this water. Businesses throughout the region and the state will benefit from continued protection of water resources in Colorado.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

We, the undersigned strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,





CONSCIENCE BAY
C O M P A N Y



**BUSINESS FOR
WATER**
STEWARDSHIP



CC:
Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse



“Voice of the Western Slope since 1953”
A coalition of counties, communities, businesses & individuals

(970) 242-3264 ★ FAX (970) 245-8300
P.O. Box 4795 ★ Grand Junction, CO 81502
www.club20.org

4/18/2024

Mr. Andrew Mueller, General Manager
Colorado River Water Conservation District
P.O. Box 1120
Glenwood Springs, Colorado 81602

Dear Mr. Mueller:

As you know, Club 20 has served as “The Voice of the Western Slope” for more than seven decades. As such, we are proud to represent our nonpartisan collection of members that come from both sides of the aisle and range from small business owners, elected officials, and members of some of the biggest industries in our region.

Club 20 was founded and continues 71 years later to focus on and advocate for the protection, conservation, and development of western Colorado’s precious water resources. It is with this primary resource focus and the numerous supporting board-adopted policies that I write to applaud the River District’s history of and current milestone efforts to make permanent the flows and resulting benefits of the Shoshone water rights.

Club 20 fully recognizes the importance of the river flows ensured by these water rights and the immeasurable benefits to the west slope environment, agriculture, and recreation and to the statewide consumptive uses of Colorado River water made secure only with the continued success of the Upper Colorado River Recovery Program for the Four Endangered Fishes. Accordingly, Club 20 pledges its support and offers any assistance you may require to ensure the success of the District’s landmark Shoshone Permanency Project.

Sincerely,

Brittany Dixon

Executive Director

Club 20

October 4, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

Colorado Mesa University strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, Colorado Mesa University has pledged \$500,000 to support the purchase the Shoshone water rights.

Founded in 1925, Colorado Mesa University is a public higher education institution located in Grand Junction that enrolls more than 11,000 students each year. As western Colorado's regional comprehensive university, CMU recognizes the importance of the Shoshone water rights to securing the future of our communities, our environment, and the next generation of leaders we educate.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish. These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last

December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

Colorado Mesa University strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



John Marshall
President
Colorado Mesa University

CC:
Senator Michael Bennet
Senator John Hickenlooper

September 10, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Colorado River Valley Economic Development Partnership (CRVEDP) strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

The Colorado River Valley Economic Development Partnership (CRVEDP) is a coalition of regional stakeholders dedicated to building community, upward mobility and regional prosperity throughout West Garfield County. Agriculture, river recreation and tourism are key economic drivers for our communities that rely on a healthy, flowing Colorado River now and in to the future. Additionally, our member communities of Silt, Rifle, Parachute, and Battlement Mesa draw and treat water directly from the Colorado River for their primary drinking water source. Permanently protecting the Shoshone water rights will sustain critical flows and water levels in the Colorado River on a year-round basis, especially in dry years, thereby maintaining water quality through the dilution of pollutants and sediment.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs. As we look at opportunities to diversify our economy in our region, bring Better Jobs Closer to Home and encourage alternative energy industries and consumption, water and access to it is at the forefront of our efforts.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

CRVEDP strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,



Alicia Gresley, Director
Colorado River Valley Economic Development Partnership
www.crvedp.org
info@crvedp.org

CC:
Senator Michael Bennet
Senator John Hickenlooper

September 18th 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton,

The Grand Junction Economic Partnership strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

At the Grand Junction Economic Partnership, our mission is to enhance the economic vitality in Mesa County, creating a strong and diverse economy and an improved quality of life. We support the Shoshone water rights purchase because we believe protecting this asset will not only protect our way of life here on the western slope but also pave the way for future efforts to support economic vitality and resilience across multiple sectors by protecting the Colorado River.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

Securing the permanent protection of the historic Shoshone water rights on the Colorado River and protecting our critical infrastructure is imperative. This generational investment in Colorado's water security will protect Colorado's environment, native fish, and recreational economy. It will also protect our productive agriculture economy and our community's clean drinking water.

The Grand Junction Economic Partnership strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Respectfully,



Curtis Englehart
GJEP Executive Director

CC:

Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse

October 1, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

Grand Valley Power strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado. In addition to our full support, Grand Valley Power has committed \$100,000 toward this effort.

Formed in 1936, Grand Valley Power is the oldest rural electric cooperative in Colorado serving over 19,000 members in Mesa County. Grand Valley Power is committed to supporting initiatives that sustain the long-term health of our farming and ranching communities and investing in the future of Western Colorado. Our rural economy is tied to agriculture, which depends on water. By securing the Shoshone water rights, Grand Valley Power is helping ensure the Colorado River remains a viable resource for energy, agriculture, recreation, and the environment.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

Grand Valley Power strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

A handwritten signature in black ink that reads "Thomas Walch". The signature is fluid and cursive, with the first name "Thomas" and last name "Walch" clearly legible.

Thomas Walch
Chief Executive Officer

CC:

Senator Michael Bennet
Senator John Hickenlooper



ADVENTURE OUTDOORS

3330 S Glen Ave, Unit A
Glenwood Springs, CO 81601

September 17, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Shoshone Outfitter Partnership strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

The Shoshone Outfitter Partnership represents the 16 licensed commercial operators who provide safe and accessible river recreation on the Colorado River through Glenwood Canyon. The Partnership is responsible for managing over 70,000 commercial user days (or individual customer trips) each year, and an estimated 80,000 private boaters take advantage of the access points and Forest Service staffing at the Grizzly Creek and Shoshone boat ramps which are paid for by those commercial fees. River recreation is the foundation of summer tourism in the City of Glenwood Springs and reliable flows through Glenwood Canyon are essential for sustaining our businesses and the whitewater rafting industry on the Colorado River.

The companies which make up the Shoshone Outfitter Partnership are locally owned, and our operations account for a significant part of the area's recreation and tourism-based economy. The Colorado River and Glenwood Canyon are internationally known whitewater destinations, and both resident and non-resident tourists who come to raft and fish here often travel across the state, infusing other towns and counties with tourism travel dollars as well. One of the reasons these visitor numbers are so large is because the Shoshone Hydropower Plant "call" keeps boatable flows in the river after most other stretches of whitewater are no longer accessible. Anglers and fishing enthusiasts also flock to Colorado in the late summer and fall after flows have dropped across the Front Range and other basins.

Consistent flows also support our employees. Like so many small businesses across the state, commercial outfitters are struggling to attract and retain qualified staff due to cost of living increases and housing shortages in mountain communities. When we can offer the certainty of employment which comes from knowing that we can book trips far in advance, we are better able to hire and keep skilled employees who will live and work in the community.

During the past four years, the Colorado River through Glenwood Canyon has experienced significant impacts from climate change ranging from wildfires to mudslides to high water temperatures and early low streamflow. By helping to permanently secure the recreational benefits of the Shoshone Water Rights against these increasing pressures, the Bureau of Reclamation would be supporting local businesses, local economies, and the long-term health of our state's namesake river.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior non-consumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's mainstem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

Hot temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and sound science tells us we should anticipate and plan for further significant reductions. Without the Shoshone water rights, Colorado River flows would be significantly lower, (especially in drought years), diminishing over 250 miles of connected ecosystems that rely on the river's flows to support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The Shoshone Outfitter Partnership strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

A handwritten signature in black ink that reads "Ken Murphy". The signature is written in a cursive, slightly slanted style.

Ken Murphy
Adventure Outdoors LLC

CC:
Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse

THE COLORADO BASIN ROUNDTABLE
C/O 201 CENTENNIAL STREET
GLENWOOD SPRINGS, COLORADO 81601

October 09, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Colorado Basin Roundtable strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

The Colorado Basin Roundtable is one of nine grassroots water policy roundtables throughout Colorado working to develop locally driven collaborative solutions to water supply challenges. Supporting this funding request advances a long-standing, Tier 1 priority for the Colorado Basin Roundtable which "recognizes that permanent management of the flow on the Colorado River that mimics the Shoshone Call is important to the Colorado River basin and the State of Colorado." As stated in the 2022 Colorado Basin Implementation Plan, Protecting the Shoshone Hydroelectric Plant call is vital to both consumptive and non-consumptive needs in the Colorado River watershed, and it is "imperative" to ensure the Shoshone Hydroelectric Plant water rights are maintained in perpetuity.

Colorado River water users benefit greatly from Shoshone's flows, which provide vital environmental, economic, and community benefits both upstream and downstream from the hydroelectric plant. Shoshone's flows support Gold Medal fisheries and critical habitat for native, threatened, and endangered fish. For example, the Shoshone water rights provide a clear benefit to the 15-Mile Reach, a stretch of critical habitat in Western Colorado that is heavily impacted by drought and water development. The Shoshone water rights provide well-timed flows during important shoulder seasons when the river is prone to high temperatures and low flows, as well as during the winter months, preserving the natural baseflow in the river. In addition, Shoshone flows are one of the four identified long-term protection measures for the Upper Colorado River Wild and Scenic River Alternative Management Plan.

These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

The Shoshone Water Rights Preservation Coalition represents a broad, diverse, and long-standing alliance between local partners, the Colorado River District, irrigation entities, environmental and recreation interests, and the State of Colorado. Since signing the Purchase and Sale Agreement last December, the coalition has raised over \$55 million towards the \$99 million purchase price underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

The Colorado Basin Roundtable strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

April B. Long

April Long

Chair, Colorado Basin Roundtable

CC:

Senator Michael Bennet

Senator John Hickenlooper

Representative Joe Neguse



Gunnison Basin Roundtable

Wendell A. Koontz, Chair
Kathleen Curry, Vice-Chair
Adam Turner, Recorder

September 16, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Gunnison Basin Roundtable strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.

The Gunnison Basin Roundtable is one of nine grassroots water policy roundtables throughout Colorado working to develop locally driven collaborative solutions to water supply challenges. Supporting this funding request advances a long-standing, Tier 1 priority for the Colorado Basin Roundtable which "recognizes that permanent management of the flow on the Colorado River that mimics the Shoshone Call is important to the Colorado River basin and the State of Colorado."

Representing a significant tributary to the Colorado River, we recognize the importance of the Shoshone water rights to the ecological health of the Colorado River system. Additionally, these water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. We stand with the Colorado Basin Roundtable to support and advance this durable and permanent solution for the Colorado River.

Therefore, the Gunnison Basin Roundtable strongly supports the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-many-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

Wendell A. Koontz
Chair, Gunnison Basin Roundtable

Kathleen Curry
Vice-Chair, Gunnison Basin Roundtable



October 7, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

The Yampa-White-Green Basin Roundtable, at its September 11, 2024, meeting, **unanimously** supported the Colorado River Water Conservation District's (Colorado River District's) application for \$40 million funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect the historic Shoshone water rights in Western Colorado.


The Yampa-White-Green Basin Roundtable is one of nine grassroots water policy roundtables throughout Colorado working to develop locally driven collaborative solutions to water supply challenges. Supporting this funding request advances a long-standing, Tier 1 priority for the Colorado Basin Roundtable which "recognizes that permanent management of the flow on the Colorado River that mimics the Shoshone Call is important to the Colorado River basin and the State of Colorado." This purchase supports the Yampa-White-Green Basin Implementation Plan goal of "Protect the Basin from compact curtailment of existing decreed water uses and some increment of future uses".

Representing significant tributaries to the Colorado River, the YWG BRT recognizes the importance of the Shoshone water rights to the ecological health of the Colorado River system. Additionally, these water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies, which support thriving Western Slope communities. We stand with the Colorado Basin Roundtable to support and advance this durable and permanent solution for the Colorado River.

Yampa-White-Green BRT Letter of Support: Shoshone Water Rights Preservation

Therefore, the Yampa-White-Green Basin Roundtable is providing this letter in support of the Colorado River District's efforts to permanently secure the Shoshone water rights. We urge you to approve this application and support a once-in-a-generation opportunity to protect Colorado River flows for future generations.

Sincerely,

A handwritten signature in blue ink, appearing to read "Stephen Hinkemeyer".

Stephen Hinkemeyer
Chair, Yampa-White-Green Basin Roundtable

CC:
Senator Michael Bennet
Senator John Hickenlooper

Upper Basin Environmental Drought Mitigation, Bucket 2 Ecosystem (“B2E”) Financial Assistance Program

Shoshone Water Rights Protection Project

Appendix 3 – Proof of Financial Commitments

This appendix includes evidence to demonstrate the current financial commitments from non-federal parties such as letters of commitments, resolutions, meetings minutes, and other documentation. Table 1 below summarizes current funding commitments of \$56 million in formal contributions. The Colorado River District is continuing efforts to secure local funding with ongoing conversations from additional local and regional partners.

Table 1: Local Funding Commitments (as of November 13, 2024)

Entity	Financial Contribution	Proof of Financial Commitment
Colorado River District	\$20 million	Meeting Minutes: December 19, 2023
State of Colorado	\$20 million	Final Act: House Bill 24-1435
Garfield County	\$3 million	Meeting Minutes: June 10, 2024; Letter of Commitment: September 10, 2024
Eagle County	\$2 million	Meeting Minutes: April 23, 2024
City of Glenwood Springs	\$2 million	Meeting Minutes: May 16, 2024; Letter of Commitment: September 05, 2024
Ute Water Conservancy District	\$2 million	Meeting Minutes: February 14, 2024; Letter of Commitment: April 15, 2024
Eagle River Water and Sanitation District & Upper Eagle Regional Water Authority	\$1 million	Meeting Minutes: May 23, 2024; Letter of Commitment: September 22, 2024
Grand County	\$1 million	Meeting Minutes: April 23, 2024; Open Lands, Rivers, and Trails Advisory Committee Recommendations: April 23, 2024
City of Grand Junction	\$1 million	Resolution No. 24-24, April 3, 2024
Mesa County	\$1 million	Meeting Minutes: April 23, 2024
Summit County	\$1 million	Meeting Minutes: August 13, 2024; Consent Agenda: August 13, 2024

Shoshone Water Rights Preservation Project
Appendix 3 – Proof of Financial Commitments

Colorado Mesa University	\$500,000	Letter of Commitment: September 11, 2024
Clifton Water District	\$250,000	Letter of Commitment: April 16, 2024; Resolution No. 2024- 02, February 8, 2024
Grand Valley Irrigation Company	\$250,000	Letter of Commitment: March 11, 2024
Basalt Water Conservancy District	\$100,000	Letter of Commitment: August 13, 2024
Grand Valley Power	\$100,000	Meeting Minutes: July 25, 2024; Resolution 24-06
Grand Valley Water Users Association	\$100,000	Letter of Commitment: September 04, 2024
Middle Park Water Conservancy District	\$100,000	Letter of Commitment: July 18, 2024
Orchard Mesa Irrigation District	\$100,000	Letter of Commitment: March 11, 2024
City of Rifle	\$100,000	Meeting Minutes: March 6, 2024; Letter of Commitment: March 8, 2024
Snowmass Water & Sanitation District	\$100,000	Meeting Minutes: May 22, 2024
Town of Silverthorne	\$100,000	Resolution 2024-52, September 11, 2024
Mesa County Irrigation District	\$50,000	Letter of Commitment: April 11, 2024
Palisade Irrigation District	\$50,000	Letter of Commitment: April 4, 2024
West Divide Water Conservancy District	\$50,000	Letter of Commitment: February 22, 2024
Kobe Water Authority	\$25,000	Draft Meeting Minutes: August 28, 2024*
Town of Parachute	\$25,000	Town Council provided verbal direction on October 17, 2024**
Total:	\$56.0 million	

*The Kobe Water Authority has not met since August 28, 2024. The August 2024 meetings will be finalized at their next meeting on November 19th, 2024.

**The Town of Parachute, Town Manager, reported that the Town Council has directed Staff to prepare a \$25,000 contribution to be memorialized at a future 2024 meeting.

MINUTES
SPECIAL JOINT MEETING OF THE BOARD OF DIRECTORS OF THE
COLORADO RIVER WATER CONSERVATION DISTRICT AND OF THE
COLORADO RIVER WATER CONSERVATION DISTRICT
ACTING BY AND THROUGH ITS COLORADO RIVER WATER PROJECTS ENTERPRISE

December 19, 2023

Pursuant to notice duly and properly given, the Special Joint Meeting of the Board of Directors of the Colorado River Water Conservation District (CRWCD) and of the Colorado River Water Conservation District acting by and through its Colorado River Water Projects Enterprise was held on Tuesday, December 19, 2023.

Directors present during all or part of the meeting:

Kathy Chandler-Henry, President, Eagle County	Marc Catlin, Vice President, Montrose County
Alden Vanden Brink, Rio Blanco County	Rebie Hazard, Saguache County
Doug Monger, Routt County	Scott McInnis, Mesa County
Kathleen Curry, Gunnison County	Mark Roeber, Delta County
Martha Whitmore, Ouray County	Mike Ritschard, Grand County
Stan Whinnery, Hinsdale County	Steve Beckley, Garfield County
Taylor Hawes, Summit County	

Directors not present:

Tom Gray, Moffat County
John Ely, Pitkin County

Others present during all or part of the meeting:

Peter C. Fleming, General Counsel, CRWCD
Andrew A. Mueller, General Manager, CRWCD
Jason V. Turner, Senior Counsel, CRWCD
Lindsay DeFrates, Deputy Director of Public Relations, CRWCD
Melissa Wills, Community Funding Partnership Program Manager, CRWCD
Brendon Langenhuizen, Director of Technical Advocacy, CRWCD
Hunter Causey, Director of Asset Management/Chief Engineer, CRWCD
Lorra Nichols, Paralegal, CRWCD
Lyzzi Borkenhagen, Administrative Assistant, CRWCD
Ian Philips, Director of Financial & Administrative Services, CRWCD
Audrey Turner, Chief of Operations, CRWCD
Marielle Cowdin, Director of Public Relations, CRWCD
Rebecca Briesmoore, Water Resources Engineer/Project Manager, CRWCD
Stephanie Moore, Executive Assistant, CRWCD
Zane Kessler, Director of Government Relations, CRWCD
Bruce Walters, Associate Counsel, CRWCD
Amy Moyer, Director of Strategic Partnerships, CRWCD
Sam Calahan, Water Resources Data Specialist
Bill Rools, Rooks Angus
Claire Carroll, NWCCOG QQ
Frank Alfone, Mt. Werner Water and Sanitation District
Jennifer Yachnin, E&E News
Katie Birch, Colorado Parks and Wildlife
Kendrick Neubecker, American Rivers
Luke Mecklenburg, Colorado Department of Law

¹An audio recording has been made of the meeting. The motions described herein may not necessarily represent a verbatim transcription. The audio recordings are available for listening at the CRWCD offices during regular office hours. These minutes are the official record of the Colorado River Water Conservation District's meeting.

Representative Julie McCluskie, Colorado House of Representatives

Jay Seaton, GJ Sentinel
Matt Rice, American Rivers
Fred Jarman, Garfield County
Tom Jankovsky, Garfield County
Mike Samson, Garfield County
Heather Beattie, Garfield County
Stephanie Reecey, Mesa County
Scot Stewart, Mesa County
Dick Cleveland, Eagle River Water and Sanitation District
George Gregory, Upper Eagle Regional Water Authority
Joseph Bernal, Grand Valley Water Users Association
Greg Williams, Ute Water
Jonathan Godes, City of Glenwood Springs
Stan Kazier, Middle Park Water Conservancy District
Clint Hostettler, City of Rifle
Dave Merritt, Individually
Chris Treese, Individually

Quorum.

President Chandler-Henry found a quorum and called the meeting to order at 1:36 p.m.

Proposed Approval of Purchase and Sale Agreement with Public Service Company of Colorado.


Director Ritschard moved, seconded by Director McInnis, to authorize the execution of the proposed Purchase and Sale Agreement with Public Service Company of Colorado (PSCo) for the acquisition of the Shoshone Water Rights. Motion carried unanimously.

Proposed Approval of Community Funding Partnership Fund Grant for Colorado River District Contribution to Purchase and Sale Agreement.

Director Catlin moved, seconded by Director Beckley, to commit, in the form of a grant, \$20 million in funding from the Colorado River District Community Funding Partnership to satisfy the Colorado River District's funding portion for the acquisition of the Shoshone Water Rights in accordance with the proposed Purchase and Sale Agreement with Public Service Company of Colorado. As a component of the \$20 million, the Board also authorizes an expenditure of \$1 million to be used for transaction costs (\$500,000 paid to PSCo) and a deposit (\$500,000 paid to the escrow holder). The remaining \$19 million of the requested funding commitment will be subject to available revenue and future appropriations by the Board of Directors. If the Purchase and Sale Agreement does not close by December 31, 2027, \$19 million of the funding commitment (plus the \$500,000 deposit, depending on certain terms in the agreement) will revert to the Community Funding Partnership Fund unless otherwise extended by the Board. Motion carried unanimously.

Adjourn.

There being no other business before the Board, President Chandler-Henry adjourned the meeting at 2:04 p.m.



Kathy Chandler-Henry, President

ATTEST:



Andrew A. Mueller, Secretary/General Manager

An Act

HOUSE BILL 24-1435

BY REPRESENTATIVE(S) McCormick and Catlin, Amabile, Bird, Boesenecker, Brown, Daugherty, Duran, Froelich, Hamrick, Jodeh, Joseph, Kipp, Lieder, Lindstedt, Lukens, Lynch, Marshall, Marvin, Mauro, McLachlan, Ortiz, Rutinel, Sirota, Snyder, Story, Taggart, Titone, Velasco, Weissman, Young, McCluskie;
also SENATOR(S) Roberts and Simpson, Baisley, Bridges, Buckner, Cutter, Fields, Gardner, Gonzales, Jaquez Lewis, Kirkmeyer, Liston, Michaelson Jenet, Mullica, Pelton B., Pelton R., Priola, Van Winkle, Will, Winter F., Fenberg.

CONCERNING THE FUNDING OF COLORADO WATER CONSERVATION BOARD PROJECTS, AND, IN CONNECTION THEREWITH, MAKING AN APPROPRIATION.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. Continuation of the satellite monitoring system - operation and maintenance - appropriation. (1) For the 2024-25 state fiscal year, \$380,000 is appropriated to the department of natural resources for use by the division of water resources. This appropriation is from the Colorado water conservation board construction fund created in section 37-60-121, C.R.S. To implement this section, the division of water

Capital letters or bold & italic numbers indicate new material added to existing law; dashes through words or numbers indicate deletions from existing law and such material is not part of the act.

(2) The money authorized in subsection (1) of this section remains available for the designated purposes until it is fully expended.

(3) The Colorado water conservation board may make loans for the project specified in subsection (1) of this section from money that is or may become available to the Colorado water conservation board construction fund. The total amount of the loans will be in the amount listed in subsection (1) of this section plus or minus the amount, if any, as may be justified by reason of ordinary fluctuations in construction costs as indicated by the engineering cost indices applicable to the types of construction required for the project or as may be justified by reason of changes in the plans for the project due to differing or unforeseen site conditions, errors or omissions in the plans and specifications, changes instituted by regulatory agencies, or changes in material quantities beyond contract limits.

SECTION 13. Northern integrated supply project - loan authorization. (1) Pursuant to section 39-29-109 (2)(a)(I.5), C.R.S., the Colorado water conservation board is authorized to make loans in the amount of up to \$101,000,000 from the severance tax perpetual base fund created in section 39-29-109 (2)(a), C.R.S., to the northern integrated supply project water activity enterprise owned by the northern Colorado water conservancy district to develop a new regional water supply project. The project will provide new water supplies annually for eleven communities and four water districts in the northern front range.

(2) The money authorized in subsection (1) of this section remains available for the designated purposes until it is fully expended.

(3) The Colorado water conservation board may make loans for the project specified in subsection (1) of this section from money that is or may become available to the severance tax perpetual base fund. The total amount of the loans will be in the amount listed in subsection (1) of this section plus or minus the amount, if any, as may be justified by reason of ordinary fluctuations in construction costs applicable to the types of construction required for the project or as may be justified by reason of changes in the plans for the project due to differing or unforeseen site conditions, errors or omissions in the plans and specifications, changes instituted by regulatory agencies, or changes in material quantities beyond contract limits.

SECTION 14. Colorado river water conservation district -

purchase of Shoshone power plant water rights - transfer - appropriation. (1) On July 1, 2024, the state treasurer shall transfer \$20,000,000 from the severance tax perpetual base fund created in section 39-29-109 (2)(a), C.R.S., to the Colorado water conservation board construction fund created in section 37-60-121, C.R.S., to support the purchase and sale agreement between the Colorado river water conservation district and the public service company of Colorado for the purchase of the water rights associated with the Shoshone power plant.

(2) (a) For the 2024-25 state fiscal year, \$20,000,000 is appropriated to the department of natural resources for use by the Colorado water conservation board. This appropriation is from the Colorado water conservation board construction fund created in section 37-60-121, C.R.S. To implement this subsection (2)(a), the Colorado water conservation board may use this appropriation to partner with the Colorado river water conservation district in the purchase of the water rights owned by the public service company of Colorado and currently used for the operation of the Shoshone power plant. The Colorado water conservation board shall vote to release the money to the Colorado river water conservation district after confirming that the closing conditions of the purchase and sale agreement between the Colorado river water conservation district and the public service company of Colorado have been met.

(b) The money appropriated in subsection (2)(a) of this section remains available for the designated purposes until June 30, 2031.

SECTION 15. Grant-making for projects that assist in implementing the state water plan - appropriation. (1) For the 2024-25 state fiscal year, \$23,300,000 is appropriated to the department of natural resources for use by the Colorado water conservation board. This appropriation is from the water plan implementation cash fund created in section 37-60-123.3 (1)(a), C.R.S. To implement this subsection (1), the Colorado water conservation board may use this appropriation for grant-making for projects that assist in the implementation of the state water plan pursuant to section 37-60-106.3 (6), C.R.S., through the Colorado water conservation board's application and guidelines process.

(2) The money appropriated in subsection (1) of this section remains available for the designated purposes until it is fully expended.

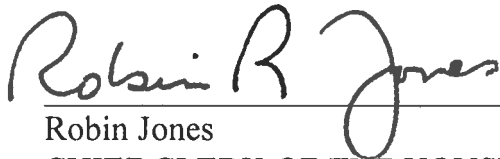
the support and maintenance of the departments of the state and state institutions.



Julie McCluskie
SPEAKER OF THE HOUSE
OF REPRESENTATIVES



Steve Fenberg
PRESIDENT OF
THE SENATE

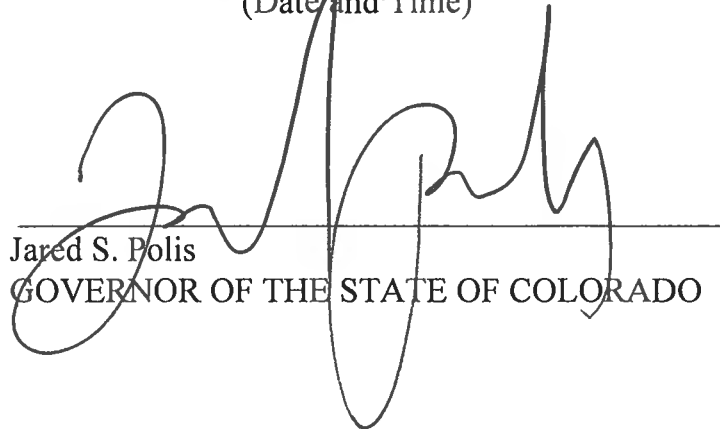


Robin Jones
CHIEF CLERK OF THE HOUSE
OF REPRESENTATIVES



Cindi L. Markwell
SECRETARY OF
THE SENATE

APPROVED Wednesday May 29th 2024 at 10:30 AM
(Date and Time)



Jared S. Polis
GOVERNOR OF THE STATE OF COLORADO



**PROCEEDINGS OF THE GARFIELD COUNTY BOARD OF COMMISSIONERS
GARFIELD COUNTY, COLORADO**

**June 10, 2024, 9:00 a.m.
Parachute Branch Library
244 Grand Valley Way
Parachute, CO 81635**

Commissioners Present: Commissioner Jankovsky, Chairman Martin, Commissioner Samson

Staff Present: Manager Fred Jarman, Deputy Manager Bentley Henderson, Attorney Heather Beattie, Michele Davies

Staff Absent: Clerk Jacklyn Harmon, Vola Mercer, Stephanie Hidalgo

1. **ROLL CALL - 9:00 a.m.**
2. **PLEDGE OF ALLEGIANCE**
3. **MOMENT OF SILENCE**
4. **PUBLIC COMMENTS FROM CITIZENS NOT ON THE AGENDA - 9:05 a.m.**
5. **REGULAR WORK SESSION:**
 - 5.a **Elected Officials:**
 - 5.a.1 **Jackie Harmon, Garfield County Clerk & Recorder**
 - 5.a.1.1 **Request for the Board of County Commissioners, as the local liquor authority, to issue a 120-day temporary Hotel & Restaurant/Optional liquor license to Parachute/Battlement Mesa Park and Recreation District dba Callahan's at Battlement Mesa Golf Club**

Michele Davies, Garfield County Clerk & Recorder Office Administrator, and Megan Braby, Parachute/Battlement Mesa Park & Recreation District, were present.
Michele Davies presented the request to issue the temporary liquor license and to set the date for the public hearing as July 8, 2024.
Megan Braby introduced herself.

CARRIED

5.b.1 Approve Bills

5.b.2 Payroll Funding for June 7, 2024

5.b.3 Monthly Wire Memo

5.b.4 Monthly Void Memo

5.b.5 Recommendation to review the agreement with Justice Works CO, LLC to provide adolescent mediation and behavioral coach services - Procurement Department

5.b.6 Recommendation to renew the contract with CorrHealth, LLC to provide inmate medical services - Procurement Department

6. County Manager Update: County Manager Fred Jarman

6.a Public Meetings:

6.a.1 Action Items:

6.a.1.1 To consider a request by the Colorado River District for funding from \$2M - \$4M for the purchase of water rights regarding the Shoshone Permanency Project - Amy Moyer, Director of Strategic Partnerships

Amy Moyer, Colorado River District Director of Strategic Partnerships, Peter Fleming, Colorado River District General Counsel, and Andy Mueller, Colorado River District General Manager, were present

Andy Mueller requested the funds for the purchase of the water rights and explained why the rights were needed.

The Board discussed the amount of funds they would like to pledge.

Moved by: Commissioner Samson

Seconded by: Commissioner Jankovsky

Commissioner Samson – Mr. Chair I move that we appropriate \$3 million as a pledge for the future and hopefully if we're not here, the three commissioners that are will honor that pledge for the Shoshone water rights.

Commissioner Jankovsky – Second.

CARRIED

6.a.1.2 To request that the Board of County Commissioners determine a county representative to serve on the Urban Renewal Authority (URA) Commission

Tom Jankovsky, Chair Pro Tem
District 1

John Martin, Chair
District 2

Mike Samson
District 3



September 10, 2024

Via electronic mail

Andrew Mueller, General Manager
Colorado River Water Conservation District
201 Centennial St., Suite 200
Glenwood Springs, CO 81601

RE: Financial Commitment for the Shoshone Water Right Preservation Effort

Dear Mr. Mueller:

We are pleased to inform you that on June 10th, 2024, the Garfield County Board of County Commissioners (the Board) formally acted to commit \$3 million for the acquisition and permanent protection of the Shoshone water rights, subject to annual appropriations. This commitment included a recognition that the Board may consider an additional funding request if needed in the future. This funding commitment furthers the current effort to permanently protect the historic, non-consumptive Shoshone water rights on the upper Colorado River for future generations, an outcome long sought by over 20 Western Slope water entities and local governments.

Garfield County remains a leader in the support and protection of water resources on the western slope by continuing to host and support the semi-annual Garfield County Water Forum and maximizing our involvement on statewide and regional water issues including the Colorado River Basin Roundtable, the Colorado River Water Conservation District, and the Middle Colorado Watershed Council's conservation planning. A few of our highlighted policies include:

- 1) The Commissioners are committed to protecting Garfield County and Western Slope water rights including playing an active role in negotiations with the Colorado River District and the Common Interest Cost-Share Agreement (CICSA) to ensure Shoshone permanency.
- 2) Garfield County shall have full participation in any process that establishes Minimum Stream Flows. The minimum stream flow is the amount of flow necessary to preserve desired stream values, including fish and wildlife habitat, aquatic life, navigation and transportation, recreation, water quality, and aesthetic beauty.
- 3) Projects that improve water quality and quantity, while also increasing the dependability of the water supply should be developed as appropriate.

Permanent protection of the Shoshone flows will secure multiple benefits to Colorado River water users on the West Slope and across the state such as:

- Maintaining Colorado's foundational \$11.9 billion agricultural economy and \$14.6 billion recreation economy
- Water quality improvements for agriculture & drinking water
- Ecosystem benefits and Endangered Species Act compliance via a successful Upper Colorado River Endangered Fish Recovery Program and healthy 15-Mile Reach
- Maintaining stream flow through Upper Colorado River Wild & Scenic Alternative Management Plan river sections

During the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important. If the power plant were to cease operation without permanent protection of the water right, the negative economic and environmental impacts to Western Colorado would be significant.

The Board strongly supports the Colorado River District's efforts to complete the conditions necessary to execute the purchase and sale of the Shoshone water rights.

Sincerely,



John Martin, Chairman

PUBLIC HEARING

April 23, 2024

Present:	Matt Scherr	Chairman
	Jeanne McQueeney	Commissioner
	Kathy Chandler-Henry	Commissioner
	Jeff Shroll	County Manager
	Matt Peterson	Assistant County Attorney
	Kathy Scriver	Deputy Clerk to the Board

This being a scheduled Public Hearing, the following items were presented to the Board of County Commissioners for their consideration:

Constituent Input

Chairman Scherr opened and closed constituent input, as there was none.

Commissioner Updates

Commissioner Chandler-Henry let everyone know that Congressman Joe Neguse from Congressional District 2 would be at Yetis in Eagle tomorrow from 1-1:45 pm. Secondly, the Bureau of Land Management announced their adoption of the Public Lands Rule which allowed BLM to use conservation values on an equal footing with other uses of public lands.

Commissioner McQueeney expressed excitement over the upcoming highway cleanup. The Eagle River Coalition was organizing the event, and she encouraged folks to sign up with a team. It was a great event and put a shine on Eagle County.

Chairman Scherr stated that it was Volunteer Recognition Week, and this community was full of tremendous organizations.

County Manager Updates

Jeff Shroll gave a shout-out to the Open Space and Natural Resources team along with the Wildfire Mitigation specialist team that worked hard last week on a series of prescribed burns on the Brush Creek Open Space.

Consent Agenda

1. Construction Staging License Agreement Between Eagle County and Eagle River Water & Sanitation District - Hillcrest Roundabout
Rickie Davies, Engineering
2. Agreement for the Supply of Magnesium Chloride Between Eagle County and Envirotech Services, LLC
Nicole Trujillo, Road & Bridge

3. **Resolution 2024-025** Appoint the Eagle County Land Use Regulations Reform Project Advisory Committee
Dani Moore, Administration

Commissioner Chandler-Henry moved to **approve** the Consent Agenda for April 23, 2024, as presented.
Commissioner McQueeney seconded the motion. The vote was declared unanimous.

Business Item(s)

1. Financial Commitment Letter for the Shoshone Water Right Preservation Effort
Dani Moore, Administration

Executive Summary: The Eagle County Board of County Commissioners are presenting its intent to commit \$2 million for the acquisition and protection of the Shoshone Water Rights.

Kallie Rand, Vegetation Stewardship Supervisor, thanked the board for supporting this effort. The Shoshone Water Rights currently supported the Shoshone Power Plant. The Water Rights was one of the oldest and largest non-consumptive rights on the Colorado River. The power plant was located off Interstate 70 near Glenwood Springs. The concern here was as the power plant aged, the water rights could be purchased by a different entity and used in a different manner such as being moved to a different basin or transferred to a consumptive use. The steam flow was critical for habitat, water quality, and on an economic level, for recreation and agricultural needs. Keeping this higher amount of flow within the Colorado River reduced the impact of climate change. None of the current agricultural uses would change under this agreement or negatively affect users. The funding strategy relied on a diverse partnership of local, state, and federal funding sources. Locally, the western slope partners' goal was to contribute \$10-20 million. The Colorado River Conservation District was committed to \$20 million.

Amy Moyer, Director of Strategic Partnerships at the Colorado River District, spoke. Securing these water rights brought many benefits by maintaining Colorado's foundational, \$14.6 billion recreation economy and \$11.9 billion agricultural economy. It also brought ecosystem benefits as well as clean water. The \$98.5 million purchase price was not a small price tag but was a one-time investment that proved durable and priceless benefits for Colorado's Western Slope in perpetuity. They felt as though they were in a great position to move forward to the Federal level through a once-in-a-lifetime opportunity in the Inflation Reduction Act.

Commissioner Chandler-Henry noted that this was step one in the process. Step two would be a case before the Water Court. Step 3 would be approval by the Public Utility Commissioner for Xcel Energy to sell the water rights. Currently, there is a purchase and sale agreement in place between Xcel and the Colorado River District on behalf of the West Slope Partners. She cleared up the misconception on the effect on the Roaring Fork portion of the valley; if the Shoshone call was gone or purchased by Trans Mountain diverters, it would drain water from Ruedi Reservoir and have a detrimental effect on the Frying Pan River. She was totally in favor of this funding request and hoped her fellow commissioners were as well.

Commissioner McQueeney supported the request and appreciated everyone's work on this.

Chairman Scherr believed water law was complicated but this would create an instream flow. He was fully in support of the efforts.

Commissioner Chandler-Henry moved to **approve** to commit \$2 million dollars toward the purchase of Shoshone Water Rights through signature of the letter in the board packet.

Commissioner McQueeney seconded the motion. The vote was unanimous.



City of Glenwood Springs
101 West 8th Street
Glenwood Springs, CO 81601

Andrew Mueller, General Manager
Colorado River Water Conservation District
201 Centennial St., Suite 200
Glenwood Springs, CO 81601

Thursday, September 05, 2024

RE: Financial Commitment for the Shoshone Water Right Preservation Effort

Dear Mr. Mueller:

We are pleased to inform you that on May 16, 2024, the City of Glenwood Springs formally acted to **commit \$2 million for the acquisition and permanent protection of the Shoshone Water Rights**. This funding commitment furthers the current effort to permanently protect the historic, non-consumptive Shoshone water rights on the upper Colorado River for future generations, an outcome long sought by over 20 Western Slope water entities and local governments.

Permanent protection of the Shoshone flows will secure multiple benefits to Colorado River water users on the West Slope and across the state such as:

- Maintaining Colorado's foundational \$14.6 billion recreation economy and \$11.9 billion agricultural economy;
- Water quality improvements for agriculture & drinking water;
- Ecosystem benefits and stream flow to support a successful Upper Colorado River Endangered Fish Recovery Program and healthy 15-Mile Reach;
- Maintaining stream flow through Upper Colorado River Wild & Scenic Alternative Management Plan river sections.

During the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important. If the power plant were to cease operation without permanent protection of the water right, the negative economic and environmental impacts to Western Colorado would be significant.

The City of Glenwood Springs strongly supports the Colorado River District's efforts to complete the conditions necessary to execute the purchase and sale of the Shoshone Water Rights.

Sincerely,

Ingrid Wussow
Mayor, City of Glenwood Springs



MINUTES
CITY OF GLENWOOD SPRINGS
CITY COUNCIL MEETING
MAY 16, 2024
6:15 PM

Note: Official meeting minutes are located on the City website via YouTube video at the following link: <https://www.youtube.com/user/GlenwoodSprings1885/videos>. The times in agenda items indicate approximately where the item can be found on the YouTube video timeline.

REGULAR SESSION

Item 6. 1:11 Roll Call

Present: Mayor Wussow, Mayor Pro-Tem Marco Dehm, Councilor Godes, Councilor Weimer, Councilor Kaup, Councilor Zalinski. Also present were; City Manager Steve Boyd; City Clerk Ryan Muse; City Engineer Ryan Gordon; City Attorney Karl Hanlon; Finance Director Yvette Gustad; Lieutenant John Hassell; Chief of Police Joseph Deras; Director of Economic and Community Development Hannah Klausman; Senior Planner Watkins Falk-Gray; Deputy Fire Chief Doug Gerrald; and Public Information Officer Bryanna Starbuck.

Item 7. 1:39 Agenda Changes & Conflicts

1:47 Councilor Zalinski moved to remove item C from the consent agenda and address it at a to be determined future date. Mayor Pro-Tem Dehm seconded.

The motion passed unanimously.

2:20 Councilor Kaup would like to move item B from the consent agenda to discuss in more detail. Item B is moved to item 22 of the agenda.

2:56 Councilor Godes moved to move item 21, ORDINANCE 2024-11, to item 16 of the agenda and to remove conversations about duplexes, up-zoning, and allowed uses from the agenda, tabling the topic indefinitely. The discussion about lot sizes will remain on the agenda.

Councilor Zalinski seconded.

Councilor Godes and Mayor Wussow made comments.

5:26 The motion passed 5-1 with Council Weimer voting against.

Item 8. 6:16 Council Announcements

There were none.

Item 9. 6:30 Citizens Appearing Before Council (for items not on the agenda - comments limited to 3 minutes)

6:45 Mayor Wussow opened the floor to public comment.

Public comments were made.

5:59 Mayor Wussow closed the floor to public comment.

Item 10. 10:02 Council Reactions to Public Comment

Mayor Wussow and Councilor Zalinski made comments.

Item 11. 13:42 Consent Agenda

13:44 Councilor Dehm moved to approve the consent agenda with Item B moved to the formal agenda for discussion and Item C moved to a future date. Councilor Kaup seconded.

The motion passed unanimously.

Item 12. 14:17 Proclamation for Police Week

Mayor Wussow presented Lt. John Hassell with a proclamation honoring police officers for their work and to mark National Peace Officers week.

Item 13. 18:53 Proclamation for Wildfire Preparedness Month

Mayor Wussow presented Doug Gerrald, Deputy Fire Chief, with a proclamation marking Wildfire Preparedness Month.

Item 14. 19:03 Shoshone Contribution

Randy Mueller, General Manager at the Colorado River District and Glenwood Springs resident, presented about the water rights at the Shoshone Power Plant. The River District is requesting a \$2M contribution toward the purchase of those water rights.

24:42 Mayor Wussow opened the floor to public comment.

Public comments were made.

31:04 Mayor Wussow closed the floor to public comment.

31:12 Councilor Kaup moved to approve a \$2 million contribution toward the purchase of water rights at the Shoshone Power Plant. Councilor Godes seconded the motion.

Councilors Zalinski, Dehm, Godes and Mayor Wussow made comments.

37:12 The motion passed unanimously.

Item 15. 37:44 South Bridge Update

Ryan Gordan, City Engineer, presented.

43:10 Mayor Wussow opened the floor to public comment.

None were made.

43:20 Mayor Wussow closed the floor to public comment.

Ute Water Conservancy District
Board Meeting
February 14, 2024

Meeting No. 992 of the Ute Water Conservancy District's Board of Directors and the Ute Water Activity Enterprise was called to order by President Greg Green at 5:30 p.m. at the District office.

ROLL CALL

Board Members: Briana Board, Newt Burkhalter, Carl Conner, Dan Cronk, Tammy Eret, Greg Green, Ken Henry, Ben Miller, Bruce Talbott, Troy Waters, and Bob Wilson were present. Robert Foster and Sally Huddle attended remotely. Pat Brennan was absent.

Ute Water employees at the meeting included Justin Bates, Nick Bierman, Jayton Brach, Larry Clever, Gary Coup, Tanner DeGuire, Cody Grinolds, John Eklund, Jamie George, Ben Hoffman, Jesse Klingler, Andrea Lopez, Jeremy Lyon, Justin Marchun, Tim Moore, Scott Olsen, Pat Orient, Dave Payne, Dave Priske, Rick Stengel, Logan Wagner, Greg Williams, and Tim Wygant. Lacey O'Connor attended remotely. Ute Water's general counselors, Chris Geiger and Sara Dunn, attended remotely. Ute Water's lobbyist, Kathleen Curry, attended remotely.

Guests in attendance included Josh Mathers, Scott McInnis, Andy Mueller, and Mark Ritterbush.

PUBLIC COMMENTS

No public comments were made.

MINUTES

A motion was made by Briana Board to approve the January board meeting minutes, No. 991. Tammy Eret seconded the motion. The board voted unanimously in favor of approving the January board meeting minutes with the following revision: The Distribution Department report should read, "Mr. Moore reported that in response to a second waterline break within a few weeks on 26 ½ Road, north of G Road, the District has prioritized the replacement of 500 feet of six-inch AC waterline. The original waterline will be replaced with an eight-inch PVC waterline."

BILLS

A motion was made by Ken Henry to approve the January bills. The motion to approve the bills was seconded by Dan Cronk. The board voted unanimously in favor of approving the January bills.

COLORADO RIVER DISTRICT SHOSHONE WATER RIGHTS PRESERVATION

Andy Mueller, General Manager of the Colorado River District, provided a brief history of the Colorado River District and introduced the Mesa County-appointed Colorado River District board member, Scott McInnis.

Mr. Mueller presented on the Colorado River District's progress regarding the Shoshone Water Rights Preservation Campaign. After decades of work to keep the Shoshone water right on the Western Slope, in December of 2023, the Colorado River District signed a Purchase Sale Agreement (PSA) with Xcel Energy. According to Mr. Mueller, the purchase price is \$98.5 million, plus \$500,000 to cover the transaction costs. Mr. Muller stated that the Colorado River

District has four years to close the deal and outlined the contingencies the Colorado River District must meet to ensure a successful purchase of the water rights.

Mr. Mueller explained that the water rights Xcel Energy currently owns are non-consumptive hydroelectric power rights decreed for use at the power plant located in Glenwood Canyon, with a 1902 senior water right delivering 1,250 cubic feet per second and a 1929 junior water right delivering 158 cubic feet per second. The power plant has not been in operation for 11 months, and due to maintenance issues and the potential of a rockslide, it is not anticipated to be back in operation until April. According to Mr. Mueller, because the water right is non-consumptive and the water volume is significant, trans-mountain diverters tend to either replace the water pumped over the Continental Divide or reduce their diversions. Mr. Mueller stated that the Shoshone water right is a keystone to the economy and environment on the Western Slope.

Mr. Mueller briefly presented the potential impacts of the Shoshone water rights not continuing to flow west, including the effects on water quality, the endangered fish species in the 15-Mile Reach, recreational outfits, and economic impacts. Mr. Mueller expressed that the Colorado River District's concern is that the water could be diverted to the Eastern Slope if the power plant permanently shuts down under existing law.

Mr. Mueller updated the board on the current progress toward funding the purchase of the Shoshone water right. To date, the Colorado River District has committed 20 million dollars, and the Colorado Water Conservation Board has also committed 20 million dollars. The goal is to secure 10 million dollars from Western Slope coalition members, and the remaining 49 million dollars will be requested from the federal government.

President Green congratulated the Colorado River District on progressing on a historic and monumental event. He asked Mr. Mueller when he estimated the process would be concluded. Mr. Mueller stated that he believed the process would be concluded by the end of 2027, the date on the current contract, but it could be extended by mutual agreement.

Board member Ken Henry asked if there were any concerns about the current plan to secure the Shoshone water right. Mr. Mueller replied that his biggest concern was the amount of funding needed from the federal government. Board member Robert Foster asked if there was any opposition to the Colorado River District working towards securing the Shoshone water right. Mr. Mueller commented that federal, statewide, and local partners have supported the efforts. Mr. Mueller stated that this past summer, the Colorado River District also had conversations with the Central Arizona Project, which has a junior water right downstream of the Colorado River, and Mr. Mueller believes that they will also have support from the Lower Colorado River Basin.

A motion was made by Ben Miller that the Board of Directors **commit two million dollars to support the acquisition of the Shoshone water rights**, subject to available revenue and future appropriations by the Board of Directors, and that the General Manager provide a letter confirming the commitment and expressing the board's support for this effort. Newt Burkhalter seconded the motion. The board voted unanimously in favor of the motion.

PETITION FOR INCLUSION – 589 39 ROAD

April 15, 2024

Andrew Mueller, General Manager
Colorado River Water Conservation District
201 Centennial St., Suite 200
Glenwood Springs, CO 81601

RE: Financial Commitment for the Shoshone Water Right Preservation Effort

Dear Mr. Mueller:

We are pleased to inform you that on February 14th, 2024, the Ute Water Conservancy District Board of Directors formally acted to commit \$2 million for the acquisition and permanent protection of the Shoshone water rights. This funding commitment furthers the current effort to permanently protect the historic, non-consumptive Shoshone water rights on the upper Colorado River for future generations, an outcome long sought by over 20 Western Slope water entities and local governments.

Ute Water's source water portfolio relies heavily on protecting these historic Colorado River flows to provide safe drinking water to our 90,000 customers in the Grand Valley.

Permanent protection of the Shoshone flows will secure multiple benefits to Colorado River water users on the West Slope and across the state such as:

- Maintaining Colorado's foundational \$11.9 billion agricultural economy and \$14.6 billion recreation economy
- Water quality improvements for agriculture & drinking water
- Ecosystem benefits and Endangered Species Act compliance via a successful Upper Colorado River Endangered Fish Recovery Program and healthy 15-Mile Reach
- Maintaining stream flow through Upper Colorado River Wild & Scenic Alternative Management Plan river sections

During the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important. If the power plant were to cease operation without permanent protection of the water right, the negative economic and environmental impacts to Western Colorado would be immediate and profound.

The Ute Water Conservancy District strongly supports the Colorado River District's efforts to complete the conditions necessary to execute the purchase and sale of the Shoshone water rights.

Sincerely,



Dave Payne
Assistant General Manager
Ute Water Conservancy District

Eagle River Water & Sanitation District
Board of Directors Meeting
May 23, 2024
MINUTES

A regular meeting of the Board of Directors of the Eagle River Water & Sanitation District (District) was held May 23, 2024, at 12:00 p.m., in the Walter Kirch Room of the District, 846 Forest Road, Vail, Eagle County, Colorado, in accordance with the applicable statutes of the state of Colorado.

ATTENDANCE

The following Directors were present and acting:

- 1 Kate Burchenal
- 2 Dick Cleveland
- 3 Steve Coyer
- 4 Sarah Smith Hymes
- 5 Timm Paxson
- 6 Rick Pylman
- 7 Robert Warner, Jr.

Also in attendance were:

- | | | | |
|----|-----------------------|----|--|
| 8 | <u>District Staff</u> | 26 | Kailey Rosema |
| 9 | Justin Allen | 27 | Jeffrey Schneider |
| 10 | Tricia Bancker | 28 | Brian Thompson |
| 11 | Jenna Beairsto | 29 | Jared Wagner |
| 12 | Tom Borawski | 30 | Brad Zachman |
| 13 | Jim Cannava | 31 | |
| 14 | Jason Cowles | 32 | <u>Consultants</u> |
| 15 | Bryan Curtis | 33 | Steve Bushong, Bushong & Holleman PC |
| 16 | Allison Ebbets | 34 | Kristin Moseley, Somach Simmons & Dunn |
| 17 | Tim Friday | 35 | Kathryn Winn, Collins Cole Flynn Winn & Ulmer PLLC |
| 18 | Salma Huque | 36 | |
| 19 | Diane Johnson | 37 | <u>Public</u> |
| 20 | Jennie Koenig | 38 | Tammy Baker |
| 21 | David Norris | 39 | Zoe Goldstein |
| 22 | Chuck Owen | 40 | Amy Moyer |
| 23 | Siri Roman | | |

DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

The board noted it had received more than 72 hours prior to the meeting certain disclosures of potential conflicts of interest for the following Directors indicating the following conflicts: Director Pylman disclosed that he owns a land planning consulting company doing business in the District's service area that has represented entities that have and may do business with the District. Director Warner disclosed that he is a former Builder/Developer in the District, a Member of the Eagle County Planning Commission and Zoning Board of Adjustment, and President of McCoy Springs at Arrowhead Homeowners Association. Director Burchenal disclosed that she is an employee of Airborne Snow Observatories, Inc., which does not currently do business with the District but there may be a time in the future when they do business with the District or other partners in the District's service area.

CALL TO ORDER

Having determined there was a quorum, Chair Cleveland called the meeting to order at 12:01 p.m.

INTRODUCTIONS

Three new employees were introduced: Mr. Cannava introduced controller Tricia Bancker; Ms. Rosema introduced water systems operator Justin Allen; and Mr. Friday introduced GIS analyst Jared Wagner.

PUBLIC COMMENT

Chair Cleveland called for public comment and there was none.

ORGANIZATIONAL ITEMS

Extending board officer terms– Mr. Thompson presented a memorandum, a copy of which is attached hereto as **Exhibit A** and incorporated herein by this reference. He referenced his May 7 email to directors explaining the misalignment between biennial board officer term elections

Eagle River Water & Sanitation District

GENERAL MANAGER REPORT

Ms. Roman shared her experiences from the 2024 Yampa River Awareness Project trip and thanked the board for supporting her participation. She said she will be co-presenting with Eagle County Commissioner Kathy Chandler-Henry on land use and water supply at the Colorado Counties Inc. Conference in Vail on May 28. She also said the U.S. Senate Energy and Natural Resources Committee will be holding a public lands subcommittee hearing on the Bolts Ditch Act in mid-June. Finally, she said Town of Vail is working with Eagle Valley Trout Unlimited and Colorado Parks and Wildlife on a project to improve fish habitat along Gore Creek using funds from the 2021 Gore Creek fish kill settlement and multiple grants.

Shoshone Water Right Preservation Campaign – Ms. Roman presented a memorandum and referenced the Colorado River Water Conservation District (“River District”) memorandum, copies of which are attached hereto as **Exhibits M** and **N**, respectively, and incorporated herein by this reference. She referenced previous board discussion about the River District’s request for the District and Authority to contribute to the Shoshone water right acquisition, and said staff met with Eagle County about its contribution. She reminded the board of its support of a \$1 million joint contribution between the District and Authority with funding levels based on the proportion of SFEs between the Vail Water subdistrict and the Authority. She also said the Authority board authorized a commitment of 62% of a joint \$1 million contribution, conditioned upon the District board’s commitment of the remaining 38%. Upon motion duly made and seconded, it was unanimously

RESOLVED to authorize a financial commitment in the amount of 38% of a \$1 million joint contribution with the Upper Eagle Regional Water Authority to support the Shoshone Water Right Preservation Campaign, funded from the 2025, 2056, and 2027 annual budgets subject to future appropriations, and conditioned upon the Colorado River District fulfilling its purchase contingencies.

Following this vote, Ms. Moyer, Director of Strategic Partnerships for the River District, thanked both boards for their commitment and support of the Shoshone campaign.

BUSINESS ADMINISTRATION REPORT

Housing update – Mr. Norris presented a memorandum and a PowerPoint, copies of which are attached hereto as **Exhibits O** and **P**, respectively, and incorporated herein by this reference. He provided an update on 2024 rental rates and housing program stipends. He also reported on potential employee housing units available for purchase at Timber Ridge and reviewed funding options. Upon discussion, the board directed staff to pursue the purchase of 4 one-bedroom units and express interest in potentially purchasing two to four additional one-bedroom units.

Quarterly financials – Mr. Cannava presented the report, a copy of which is attached hereto as **Exhibit Q** and incorporated herein by this reference. He said Q1 financials are tracking to budget and both wastewater and water operating revenues, as well as combined operating expenses, are favorable. He also discussed the effects of 2023 net income carryforwards on approved 2024 projects. He also said staff is recommending the issuance of a \$23 million bond to fund Vail Water



September 22, 2024

Via electronic mail

Andrew Mueller, General Manager
Colorado River Water Conservation District
201 Centennial St., Suite 200
Glenwood Springs, CO 81601

RE: Financial Commitment for the Shoshone Water Right Preservation Effort

Dear Mr. Mueller:

We are pleased to inform you that on May 23, 2024, Eagle River Water & Sanitation District and Upper Eagle Regional Water Authority formally acted to commit \$1,000,000 for the acquisition and permanent protection of the Shoshone water rights. This funding commitment furthers the current effort to permanently protect the historic, non-consumptive Shoshone water rights on the upper Colorado River for future generations, an outcome long sought by over 20 Western Slope water entities and local governments.

Permanent protection of the Shoshone flows will secure multiple benefits to Colorado River water users on the West Slope and across the state such as:

- Maintaining Colorado's foundational \$11.9 billion agricultural economy and \$14.6 billion recreation economy.
- Water quality improvements for agriculture and drinking water.
- Ecosystem benefits and stream flow to support a successful Upper Colorado River Endangered Fish Recovery Program and healthy 15-Mile Reach.
- Maintaining stream flow through Upper Colorado River Wild & Scenic Alternative Management Plan river sections.

During the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important. If the power plant were to cease operation without permanent protection of the water right, the negative economic and environmental impacts to Western Colorado would be profound.

The Eagle River Water & Sanitation District and Upper Eagle Regional Water Authority strongly support the Colorado River District's efforts to complete the conditions necessary to execute the purchase and sale of the Shoshone water rights.

Sincerely,

A handwritten signature in blue ink, appearing to read "Dick Cleveland".

Dick Cleveland
Chair, Eagle River Water & Sanitation District

A handwritten signature in blue ink, appearing to read "George Gregory".

George Gregory
Chair, Upper Eagle Regional Water Authority

MEETING MINUTES
GRAND COUNTY BOARD OF COMMISSIONERS
GRAND COUNTY HOUSING AUTHORITY
GRAND COUNTY BOARD OF HUMAN SERVICES

Tuesday, April 23, 2024

Present: Commissioner Merrit S. Linke, Commissioner District 2 – Chair
Commissioner Richard D. Cimino, Commissioner District 1
Commissioner Randal F. George, Commissioner District 3

Also Present: County Clerk and Recorder Jolene Linke
County Manager Ed Moyer
Assistant County Manager Micah Benson
County Attorney Maxine LaBarre-Krostue

Approval of Board Minutes

Commissioner George moved to approve the Minutes for April 16, 2024 as presented. This motion passed unanimously.

Finance

Commissioner George moved to approve vouchers and wire payments presented on Tuesday, April 23, 2024 for payment on Wednesday, April 24, 2024 for Grand County and the Department of Human Services, and vouchers for the Grand County Housing Authority. This motion passed unanimously.

Departmental Contracts, Comments, Issues

Emergency Medical Services

Commissioner Cimino moved to approve the Provider Services Agreement for Direction for Emergency Medical Services with Dr. Darcy Selenke. This motion passed unanimously.

Grand County Sheriff Office

Commissioner Cimino moved to approve the Intergovernmental Agreement Extension Request between Northern Water Conservancy District and Grand County Sherriff's office and sign all applicable documents by DocuSign. This motion passed unanimously.

Commissioner George moved to approve the construction contract for the Byers Canyon Shooting Range Paving Project as presented. This motion passed unanimously.

Road and Bridge / Division of Natural Resources

Commissioner Cimino moved to approve the Letter of Support for the U.S. Forest Service Big Meadows Fuel Break Project, with the signature to be stamped as needed. This motion passed unanimously.

Sitting as the Grand County Housing Authority Board

Commissioner Cimino moved to approve the Coyote Creek, Unit 5, Lot 21 Affordable Housing Transfer Fee Exemption Application, as presented. This motion passed unanimously.

Sitting as the Grand County Board of County Commissioners

Community Development: Plats, Resolutions, Permits for Signature

Commissioner George moved to approve RESOLUTION No 2024-4-10 – WAIVING THE BUILDING PERMIT FEE FOR HABITAT FOR HUMANITY PROJECT IN HOT SULPHUR SPRINGS AT 210 E. NEVADA STREET, HOT SULPHUR SPRINGS, as presented. This motion passed unanimously.

Commissioner Cimino moved to approve RESOLUTION NO. 2023-8-15 – A RESOLUTION APPROVING THE FINAL PLAT OF HOMESITES AT COUGAR AVENUE SUBDIVISION AND ACCEPTING LETTER OF CREDIT NO. 512001156572 ISSUED BY CITYWIDE BANKS IN THE AMOUNT OF \$505,248.00 TO BE HELD AS SECURITY TO GUARANTEE COMPLETION OF THE SUBDIVISION IMPROVEMENTS AND AS WARRANTY SECURITY, and sign all applicable documents. This motion passed unanimously.

Commissioner George moved to approve RESOLUTION NO 2024-3-13 – A RESOLUTION APPROVING THE TYBUS OUTRIGHT EXEMPTION AND VARIANCE TO SECTION 1.6 OF THE OUTRIGHT EXPEMPTION REGULATIONS, and for the chair to sign all applicable documents. This motion passed unanimously.

Department of Human Services

Commissioner George moved to authorize the Director of Human Services to sign two confidential placement agreements. This motion passed unanimously.

Manager & Attorney Items

News of a Water Agreement between Denver Water and Grand County is expected today!

County Manager Weekly Update

Consent Agenda

Commissioner Cimino moved to approve the Consent Agenda items, and sign the attached certificates. This motion passed unanimously.

RESOLUTION NO. 2024-04-06 – APPROVING THE BOARD OF COUNTY COMMISSIONERS OF THE COUNTY OF GRAND, STATE OF COLORADO, D/B/A/ GRAND COUNTY EMERGENCY MEDICAL SERVICES, TO OPERATE AN AMBULANCE SERVICE WITHIN GRAND COUNTY, COLORADO IN ACCORDANCE WITH GRAND COUNTY RESOLUTION NO. 2021-12-9, 6 CCR SECTION 1015-2 AND C.R.S. SECTION 25 3.5-301, *et seq.*, WITH AN EFFECTIVE DATE OF MAY 1, 2024, APPROVING THE ISSUANCE OF AN AMBULANCE SERVICE LICENSE CERTIFICATION, and accompanying certificates.

RESOLUTION NO. 2024-04-09 – APPROVING THE GRANBY / GRAND COUNTY AIRPORT – KREMMLING / MCELROY FIELD AIRPORT ADVISORY COMMITTEE BY LAWS.

Board Business / Correspondence / Calendar

Commissioner Cimino moved to draft a follow-up letter to support the Middle Park Stock Growers' letter to CPW. This motion passed unanimously.

Commissioner Cimino requested a letter of support for adding the First Creek Cabin to the Historic Register, for the Colorado Historic Preservation Review Board, with signatures to be stamped. This motion was approved unanimously.

Open Lands, Rivers, & Trails

Commissioner Cimino moved to approve the slate of projects presented and fully funding as requested. This motion passed unanimously.

- Grand County Shoshone Water Right Preservation
- Colorado Headwaters Land Grand Lake Trail Grooming Grant Payment
- Headwaters Trails Alliance/ BLM Projects 2024
- Grand Lake Trail Grooming / Summer Grooming

Community Development

Commissioner Cimino moved to approve the High Ridge Townhomes Sketch Plan as presented with recommended conditions. This motion passed unanimously.

Executive Session

Commissioner Cimino moved to open the executive session, pursuant to C.R.S. § 24-6-402(4)(e) to determine positions relative to matters subject to negotiations, developing strategy for negotiations and instructing negotiators; regarding stream improvement operational framework.

Attending: Merrit S. Linke, Richard D. Cimino, Randal F. George, Ed Moyer, Micah Benson, Maxine LaBarre-Krostue

Closed executive session at 11:52 am

Commissioner George moved to approve the Stream Improvement Framework between Northern Water Conservancy District and Grand County, and authorize staff to execute all applicable documents. This motion passed unanimously.

Community Development

Commissioner George moved to approve the Silver Bullet Subdivision Exemption – Final Plat. This motion passed unanimously.

Commissioner Cimino moved to approve the Amended Final Plat of Lot 16A, being a replat of Lots 16 and 17, Block 11, Colorado Anglers Club No.1, as presented with the assigned conditions. This motion passed unanimously.

Commissioner George moved to approve the wolf letter from Board Business as amended. This motion passed unanimously.

OLRTAC Memo

To: Grand County Board of County Commissioners
From: Open Lands, Rivers, and Trails Advisory Committee
Date: April 23, 2024
RE: Recommendations regarding disbursement of monies from the Open Lands, Rivers and Trails (OLRT) Fund – Spring 2024 Grant Cycle

Open Lands/Rivers (see Table 1 on page 3)

Funds Available as of 12/31/2023: \$8,018,015.48

Recommending Funding: \$1,035,100.00

Applicant: Grand County

Project Name: Shoshone Water Right Preservation

Brief Description: *Grand County Government is requesting \$1,000,000, which is 1.02% of the total project cost.* Grand County Government is leading a joint application for OLRT funding on behalf of municipalities and several water and sanitation districts within Grand County. This initiative aims to support Grand County's contribution to the Shoshone Water Right Preservation. In December 2023, the Colorado River District signed a purchase agreement with Xcel Energy to acquire these senior, historic water rights for \$98.5 million, a significant milestone in permanently safeguarding these rights. Working in partnership with the Colorado River District, the project's objective is to secure all necessary funding to finalize the purchase of the Shoshone water right to permanently conserve and keep water in the Colorado River and its tributaries within Grand County to satisfy the call by the Shoshone water right.

Recommended Funding: With an average score of 96.0/100, OLRTAC recommends fully funding the grant request. Unanimous recommendation by all Committee members present.

Applicant: Colorado Headwaters Land Trust

Project Name: Kawuneeche Ranch Conservation Easement Transfer

Brief Description: *Colorado Headwaters Land Trust is requesting \$35,100 which is 74% of the total project cost.* This project facilitates the assignment of a conservation easement held by the American Easement Foundation (AEF), incorporated in the Commonwealth of Virginia, to CHLT, by request of the Rector Family Partnership (landowner) and allowed by the Deed of Conservation Easement dated 12/26/2001. The easement covers 84.48 acres in the Kawuneeche Valley and protects conservation values contributing to the ecological integrity of the Colorado River. This transfer is the first step in collaborating with neighboring private landowners in the Valley to conserve their properties and to further wildlife habitat improvements in and around Rocky Mountain National Park with the Kawuneeche Valley Restoration Collaborative.

Recommended Funding: With an average score of 84.1/100, OLRTAC recommends OLRTAC recommends fully funding the grant request. Unanimous recommendation by all Committee members present.

RESOLUTION NO. 24-24

A RESOLUTION SUPPORTING A FINANCIAL COMMITMENT OF \$1,000,000 IN SUPPORT OF THE COLORADO RIVER DISTRICT EFFORT TO ACQUIRE THE SHOSHONE WATER RIGHT

Recitals:

The Shoshone Hydro Plant, a unique run-of-the-river hydroelectric power plant, sits alongside the Colorado River in Glenwood Canyon, about eight miles east of Glenwood Springs. Owned by the Public Service Company of Colorado (PSCo), a subsidiary of Xcel Energy, it produces 15 megawatts of electricity, enough power to serve approximately 15,000 customers. Importantly, Shoshone holds a senior (1902), nonconsumptive water right on the Colorado River, returning the flows it uses to the river after a short trip through the hydropower plant's penstocks and turbines. Shoshone's flows provide critical habitat to four fish listed under the Endangered Species Act, provide water security and quality to Western Slope agriculture and many of cities that utilize the mainstem of the Colorado for drinking water supplies and wastewater discharge.

The Shoshone call provides critical water supplies that drive the recreational economies supported by rafters, kayakers, and anglers from Eagle to Mesa County. For more than 20 years, the Colorado River District and 19 other Western Colorado governments and water entities, including Summit, Grand, Eagle, Garfield, and Mesa Counties and many of the municipalities and major water organizations therein, have been working together to find a way to permanently preserve the Shoshone flows. In fact, the 2013 Colorado River Cooperative Agreement between Denver Water and 17 West Slope governments/water user organizations expressly recognizes the importance of – and memorialized the need to provide permanent protection of – the Shoshone flows.

On December 19, 2023, Xcel Energy and the Colorado River District signed a Purchase & Sale Agreement (PSA) to transfer ownership of the historic Shoshone water rights to the River District for \$98.5 million. As defined in the PSA, the "Shoshone Water Rights" to be acquired by the Colorado River District include both the senior Shoshone Power Plant water right in the amount of 1,250 cfs with an appropriation date of January 7, 1902, and the junior Shoshone Power Plant water right in the amount of 158 cfs with an appropriation date of May 15, 1929. The purchase price for the Shoshone Water Rights is \$98,500,000, with an additional \$500,000 payment for PSCo's transaction costs for a total cost of \$99,000,000.

The funding of the purchase will rely on a diverse partnership of local, state, and federal sources. The broad-based West Slope Coalition proposes to contribute at least \$30 million, \$20 million of which has already been approved and committed by the River

District's Board of Directors, made possible through increased property tax revenues approved by West Slope voters in 2020 following the passage of ballot question 7A. The remaining \$10 million is expected to come from West Slope governments and water entities.

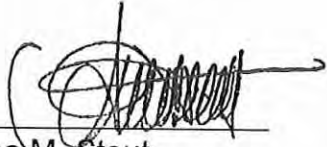
On January 29, 2024, the Colorado Water Conservation Board (CWCB) voted unanimously to recommend a \$20 million investment in the Shoshone Water Rights Preservation effort. In recognition of the critical importance of the Shoshone flows to the continued success of the Upper Colorado River Endangered Fish Species Recovery Program and other benefits to federal interests, the Colorado River District has initiated discussions with the Bureau of Reclamation to contribute the remaining \$49 million of the acquisition costs through funding made available as part of the Inflation Reduction Act.

The Colorado River District requested that the City of Grand Junction consider a \$1 million financial commitment to support the acquisition and permanent protection of the Shoshone Water Rights.

NOW THEREFORE, BE IT HEREBY RESOLVED BY THE CITY COUNCIL OF THE CITY OF GRAND JUNCTION THAT:

1. The Recitals are incorporated herein and in consideration of the same and with due deliberation the City Council expresses its support for a financial commitment by the City of \$1,000,000 dollars for the acquisition and permanent protection of the Shoshone Water Rights.
2. The City Council by and with this Resolution authorizes the City Manager to initiate supplemental budget appropriations to allocate \$1,000,000 from the General Fund to support the financial commitment.
3. The City Council by and with this Resolution authorizes the City Manager, in consultation with the City Attorney, to sign the necessary and appropriate agreement(s) on behalf of the City to commit funding to the Colorado River District for the acquisition of the Shoshone Water Rights.
4. This Resolution shall be in full force and effect from and after its passage and adoption in support of the purposes hereof and as herein provided subject to and conditioned on the Colorado River District securing commitments for the purchase as described herein.

PASSED and ADOPTED this 3rd day of April 2024.



Anna M. Stout
President of the City Council



ATTEST:



Amy Phillips
City Clerk



Board of County Commissioners

544 Rood Avenue • Grand Junction, CO 81501

970.244.1800

District 1 • Cody Davis

District 2 • Bobbie Daniel

District 3 • Janet Rowland

Approved 04/30/2024

MINUTES

TUESDAY

04/23/2024

ADMINISTRATIVE PUBLIC HEARING

544 Rood Avenue, Public Hearing Room

09:00 AM

Call Meeting to Order

At 9:00 a.m., Chair Bobbie Daniel called to order a regular Administrative Public Meeting of the Board of Mesa County Commissioners at the Mesa County Courthouse, Public Hearing Room, 544 Rood Avenue, Grand Junction, Colorado. Those present included Commissioner Cody Davis; Commissioner Janet Rowland; Pete Baier, County Administrator; Todd Starr, County Attorney, Greg Moberg, Community Development Director, and Laura Cardenas, and Jennifer Inman, Clerks to the Board. Minutes prepared by Laura Cardenas.

Rules of Decorum

Chair Bobbie Daniel referenced and reminded the audience that the Rules of Decorum were to be followed during the hearing.

Deletions/Changes to Agenda

There were no Deletions or Changes to the Agenda.

Presentations

1. Departmental presentation and overview: Facility Management

Gideon Bullock, Facilities Director, spoke to the Board.

Commissioners' Reports

Commissioner Cody Davis spoke on a new page you can find on Mesa County's website in regards to the proposed Dolores Canyons National Monument.

County Administrator Report

Public Comment

Hollis Cremeens, resident, and Diana Seehase, resident, spoke to the Board.

Consent Agenda

1. Consider Approving a Resolution Authorizing Chair for the Mesa County Board of County Commissioners to Sign Letters of Support to be Ratified at the Next Available Administrative Public Hearing

COMMISSIONER JANET ROWLAND MOVED TO APPROVE THE CONSENT AGENDA AS PUBLISHED; COMMISSIONER CODY DAVIS SECONDED. MOTION PASSES 3-0 UNANIMOUSLY.

For: COMMISSIONER BOBBIE DANIEL, COMMISSIONER CODY DAVIS, COMMISSIONER JANET ROWLAND.

Item(s) Needing Individual Consideration

1. Consider approving the Administrative Public Hearing draft minutes from April 16, 2024.

COMMISSIONER CODY DAVIS MOVED TO APPROVE THE ADMINISTRATIVE PUBLIC HEARING MINUTES FROM APRIL 16, 2024. COMMISSIONER JANET ROWLAND SECONDED. MOTION PASSES 2-0 UNANIMOUSLY.

For: COMMISSIONER CODY DAVIS, COMMISSIONER JANET ROWLAND

Abstained: CHAIR BOBBIE DANIEL

2. Consider committing to appropriate \$1,000,000 to the Colorado River Water Conservation District, at a future date and subject to annual appropriation, to go towards the purchase of Shoshone water rights.

Pete Baier, County Administrator, Peter Fleming, Colorado River District, Gigi Richard, Orchard Mesa Irrigation District, Ty Jones, Clifton Water District and Ute Water Conservancy District, Joe Bernal, Grand Valley Water Users Association, Sean Norris, Grand Valley Irrigation Company, and Tom McCloskey, resident, spoke to the Board.

COMMISSIONER JANET ROWLAND MOVED TO CONSIDER COMMITTING TO APPROPRIATE \$1,000,000 TO THE COLORADO RIVER WATER CONSERVATION DISTRICT, AT A FUTURE DATE AND SUBJECT TO ANNUAL APPROPRIATION, TO GO TOWARDS THE PURCHASE OF SHOSHONE WATER RIGHTS. COMMISSIONER CODY DAVIS SECONDED. MOTION PASSES 3-0 UNANIMOUSLY.

For: COMMISSIONER BOBBIE DANIEL, COMMISSIONER JANET ROWLAND, COMMISSIONER CODY DAVIS.

3. Consider approving a contract with Can/Am Teller Technologies for \$209,806.00, for a web-based point-of-sale system to assist with cashiering, balancing, providing reconciliation workflows, and provide reporting and visibility into financial transactions.

Alec Anderson, Administrative Operations Manager, spoke to the Board.



BOARD OF COUNTY COMMISSIONERS

970.453.3414 ph | 970.453.3535 f 208 East Lincoln Ave. | PO Box 68
SummitCountyCO.gov Breckenridge, CO 80424

SUMMIT COUNTY BOARD OF COUNTY COMMISSIONERS
Tuesday, August 13, 2024 at 1:30 p.m.
SUMMARY MINUTES

*For assistance or questions regarding special accommodations, accessibility,
or available audio/visual equipment, please contact 970-453-3500 as soon as possible.*

I. CALL TO ORDER

The Regular Meeting of the Board of County Commissioners on Tuesday, August 13, 2024, was called to order by Vice Chair, Eric Mamula, at 1:30 p.m. in the County Commissioners' Meeting Room, Summit County Courthouse, 208 Lincoln Avenue, Breckenridge, Colorado.

II. ROLL CALL

Board Members present and answer to the roll call were:

Eric Mamula, Vice Chair

Nina Waters, Commissioner

Staff Present in person and via Zoom were as follows: David Rossi, County Manager; Jeff Huntley, County Attorney; Cameron Turpin, Assistant County Attorney; Andrew Armstrong, Assistant County Attorney; Andy Atencio, Assistant County Manager; Jenny Wood, Assistant County Manager; Adrienne Isaac, Communications Director; David Reynolds, Finance Director; Caitlin Johnson, Executive Administrative Manager; Kathleen Neel, County Treasurer; Johanna Jacobsen, Administrative Assistant; Lori Dwyer, Deputy Clerk and Millicent Marter, Deputy Clerk.

Additional Attendees in person and via Zoom: Jenn Schenk, Zane Kessler, Steven Smith, Aaron Parmet, Mark Schulze, Julie Schulze, Emily Saunders, Tyler Olson, and others that did not sign in.

III. APPROVAL OF AGENDA

IV. CITIZEN COMMENT

Julie Schulze stated that she is persisting in seeking a Certificate of Occupancy despite the issues she is having with her subdivision's developer and noted that she is hopeful that she can work with the County to find a solution.

Zane Kessler thanked the Board for their work with the River District regarding water rights and the Shoshone Water Right Preservation Effort.

Aaron Parmet thanked the Board for their previous support regarding the concern he had with the Swan Mountain Road traffic signal.

V. CONSENT AGENDA

- A. Approval of 7/23/2024 Regular Meeting Minutes. **Approved as Presented; and**
- B. Warrant List 07/16/24-07/31/24. **Approved as Presented by the Finance Department; and**
- C. Liquor License Renewal for 760 Copper Road, LLC dba Nowhere Pizza & Pub Copper Mountain; Hotel & Restaurant; Jeff Lawson; located at 760 Copper Road, Units C-102, C-103, C-103B, Copper Mountain, CO (Clerk). **The Sheriff's report indicated no record of negative information on the establishment and stated no reason to disapprove the issuance of the license at this time; and**
- D. Liquor License Renewal for Guest Services 112, LLC dba The Lodge at Breckenridge; Hotel & Restaurant; Rhonda Wilson; located at 112 Overlook Drive, Breckenridge, CO (Clerk). **The Sheriff's report indicated no record of negative information on the establishment and stated no reason to disapprove the issuance of the license at this time; and**
- E. Liquor License Renewal for Cris Jo Corporation dba Cala Pub and Restaurant; Hotel & Restaurant; Cristina Kelly; located at 40 Cove Blvd., Unit A, Dillon, CO (Clerk). **The Sheriff's report indicated no record of negative information on the establishment and stated no reason to disapprove the issuance of the license at this time; and**
- F. Approval of Amendment to Third Amended and Restated Intergovernmental Agreement Establishing the Summit Combined Housing Authority to include newly formed Town of Keystone in governance and costs of the Authority. **Approved Resolution 2024-47 as Presented; and**
- G. Approval of a Financial Commitment for the Shoshone Water Right Preservation Effort. **Approved as Presented; and**

MOTION: A motion was made by Commissioner Waters and seconded by Commissioner Mamula to approve the Consent Agenda, items A-G including Resolution 2024-47, as presented.

MOTION PASSED UNANIMOUSLY BY THE BOARD PRESENT

VI. NEW BUSINESS

- A. A Resolution Regarding the Regulation of Solid Waste Disposal, Collection and Transportation in Summit County by the Summit County Disposal District Amending and Restating Disposal District Plan and Disposal District Regulations.

Commissioner Mamula read the Resolution in title only.

Commissioner Mamula opened the item for public comment.

Tom Castrigno noted that he works with Short Term Rentals, where guests often contaminate recycling when they are not educated regarding which materials are acceptable. He encouraged the Board to engage with rental management companies.

Commissioner Mamula closed the item for public comment.

Commissioner Mamula noted that the Pay as You Throw aspect of the regulations is important and intended to increase the life expectancy of the landfill.



BOARD OF COUNTY COMMISSIONERS

970 453 3414 ph | 970 453 3535 f
summitcountyco.gov

208 East Lincoln Ave. | PO Box 68
Breckenridge, Colorado 80424

September 16, 2024

The Honorable Camille Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240

RE: Letter of Support: Shoshone Water Rights Preservation

Dear Commissioner Touton:

Summit County, Colo., strongly supports the Colorado River Water Conservation District's (Colorado River District's) application for funding through the Upper Basin Environmental Drought Mitigation (B2E) program to acquire and permanently protect historic Shoshone water rights in Western Colorado. In addition to its full support, Summit County has financially committed \$1 million toward this effort.

The Shoshone Hydro Plant, located on the Colorado River in Glenwood Canyon, collectively holds some of the largest, most senior nonconsumptive water rights on the Colorado River. These rights ensure essential water flows down the Colorado River's main stem, providing vital ecosystem, habitat, and restoration benefits from the river's headwaters in Grand County to Grand Junction.

As a headwaters county impacted by multiple trans-basin diversions, the Shoshone call and associated flow regime is critical to aquatic health, fisheries and drought resilience in Summit County's rivers. Further, commercial river outfitters and recreationalists using the river need these flows to keep local economies afloat and maintain recreation as a central economic driver for the state.

High temperatures over the last 23 years have diminished the flows of the Colorado River by 20%, and science tells us to anticipate and plan for further significant reduction. Without the Shoshone water rights, Colorado River flows would be pointedly lower, especially in drought years, diminishing over 250 miles of connected ecosystems that rely on the river's flows to support critical habitat for native, threatened, and endangered fish.

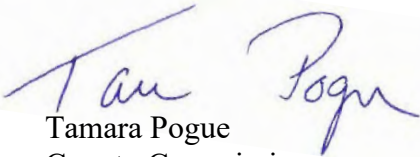
These water rights are vital to Colorado's \$11.9 billion agricultural and \$14.6 billion recreation economies which support thriving Western Slope communities. Additionally, Shoshone flows improve drinking water quality by diluting salinity and sediment in the source water, reducing municipal treatment and infrastructure costs.

Since signing the Purchase and Sale Agreement last December, the Shoshone Water Rights Preservation Coalition has raised over \$55 million toward the \$99 million purchase price, underscoring the critical importance of this resource to the region. Over twenty water entities, local governments, and regional partners have contributed over \$15 million in funding alongside \$20 million each from the State of Colorado and the Colorado River District.

Summit County strongly supports the Colorado River District's efforts to permanently secure the

Shoshone water rights. We urge you to approve this application and support a rare opportunity to protect Colorado River flows for future generations.

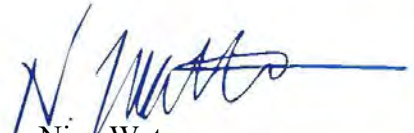
Sincerely,
The Summit County Board of Commissioners



Tamara Pogue
County Commissioner



Eric Mamula
County Commissioner



Nina Waters
County Commissioner

CC:
Senator Michael Bennet
Senator John Hickenlooper
Representative Joe Neguse

September 11, 2024

Colorado River District
201 Centennial Street, Ste. 200
Glenwood Springs, CO 81601

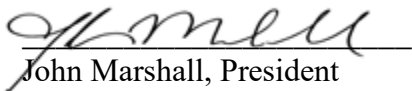
Re: Commitment Letter

To Whom It May Concern:

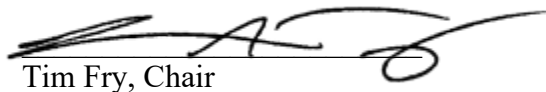
It is my pleasure to share with you that at our August 19th Board Meeting, the Colorado Mesa University Board of Trustees approved to pledge the first \$500,000 of utility cost savings resulting from the first phase of campus geo-exchange infrastructure improvements to support the Colorado River Conservation District's efforts to purchase the Shoshone Water Rights on the Colorado River.

We are happy to partner with the Colorado River Conservation District in this endeavor. Thank you for the work you are doing to preserve water in western Colorado.

Best,



John Marshall, President



Tim Fry, Chair

April 16, 2024

Via electronic mail

Andrew Mueller, General Manager
Colorado River Water Conservation District
201 Centennial St., Suite 200
Glenwood Springs, CO 81601

RE: Financial Commitment for the Shoshone Water Right Preservation Effort

Dear Mr. Mueller:

We are pleased to inform you that on February 8, 2024, 2024, Clifton Water District formally acted to commit up to \$250,000 for the acquisition and permanent protection of the Shoshone water rights. A copy of the Board's Resolution is attached. Please note that the Board's Resolution was not intended and should not be deemed or construed as creating any multiple-fiscal year direct or indirect debt or financial obligation on the part of the District within the meaning of Colorado Constitution Article X, Section 20 or any other constitutional or statutory provision. All financial obligations of the District are subject to annual budgeting and appropriation, in its sole discretion. This funding commitment furthers the current effort to permanently protect the historic, non-consumptive Shoshone water rights on the upper Colorado River for future generations, an outcome long sought by over 20 Western Slope water entities and local governments.

Permanent protection of the Shoshone flows will secure multiple benefits to Colorado River water users on the West Slope and across the state such as:

- Maintaining Colorado's foundational \$11.9 billion agricultural economy and \$14.6 billion recreation economy
- Water quality improvements for agriculture & drinking water
- Ecosystem benefits and Endangered Species Act compliance via a successful Upper Colorado River Endangered Fish Recovery Program and healthy 15-Mile Reach
- Maintaining stream flow through Upper Colorado River Wild & Scenic Alternative Management Plan river sections

During the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important. If the power plant were to cease operation without permanent protection of the water right, the negative economic and environmental impacts to Western Colorado would be immediate and profound.

The Clifton Water District strongly supports the Colorado River District's efforts to complete the conditions necessary to execute the purchase and sale of the Shoshone water rights.

Sincerely,



Ty Jones
District Manager

RESOLUTION 2024-02

RESOLUTION TO CONTRIBUTE FUNDING TOWARDS THE PURCHASE OF SHOSHONE WATER RIGHTS

WHEREAS, on December 19th, 2023 a Purchase & Sale Agreement was officially signed by the Colorado River District and the Public Service Company of Colorado to transfer the 1,408 cubic foot per second Shoshone water right, and;

WHEREAS, the sale price of the Public Service Company (Shoshone) water right is \$98.5 million, and;

WHEREAS, the Colorado River District is the signer of the Purchase & Sale Agreement, and is dependent on the financial contributions from its Coalition Partners & other interested parties along the Colorado River towards the purchase of the water rights and;

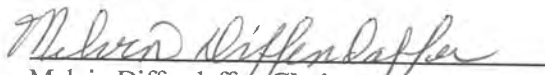
WHEREAS, the Clifton Water District is directly dependent on the Colorado River for the treatment of, and distribution to, their constituents, and;

WHEREAS, it is extremely important to the Clifton Water District that the historical Westward flow of the Shoshone water rights continue to flow West to our diversion points.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF CLIFTON WATER DISTRICT, COLORADO;


The Board of Directors for the Clifton Water District will commit to contributing up to \$250,000 to the purchase and preservation of the Shoshone water right purchase by the Colorado River District, with actual payment anticipated to be made in 2027.

ADOPTED, this day 8th day of February, 2024.


Melvin Diffendaffer, **Chairman**


Dan McElley, **Vice Chairman**


Michael Slauson, **Treasurer**


Wesley Davis, **Secretary**


Nick Genova, **Director**

THE GRAND VALLEY IRRIGATION COMPANY

688 26 Road
Grand Junction, Colorado
81506

March 11, 2024

Andrew Mueller, General Manager
Colorado River Water Conservation District
201 Centennial St., Suite 200
Glenwood Springs, CO 81601

RE: Financial Commitment for the Shoshone Water Right Preservation Effort

Dear Mr. Mueller:

We are pleased to inform you that on March 7th, 2024, the Grand Valley Irrigation Company formally acted to commit \$250,000 for the acquisition and permanent protection of the Shoshone Water Rights. This funding commitment furthers the current effort to permanently protect the historic, non-consumptive Shoshone water rights on the upper Colorado River for future generations, an outcome long sought by over 20 Western Slope water entities and local governments.

Permanent protection of the Shoshone flows will secure multiple benefits to Colorado River water users on the West Slope and across the state such as:

- Maintaining Colorado's foundational \$11.9 billion agricultural economy and \$14.6 billion recreation economy
- Water quality improvements for agriculture & drinking water
- Ecosystem benefits and Endangered Species Act compliance via a successful Upper Colorado River Endangered Fish Recovery Program and healthy 15-Mile Reach
- Maintaining stream flow through Upper Colorado River Wild & Scenic Alternative Management Plan river sections

During the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important. If the power plant were to cease operation without permanent protection of the water right, the negative economic and environmental impacts to Western Colorado would be immediate and profound.

The Grand Valley Irrigation Company strongly supports the Colorado River District's efforts to complete the conditions necessary to execute the purchase and sale of the Shoshone Water Rights.

Sincerely,



Sean Norris
President

August 13, 2024

Via electronic mail

Andrew Mueller, General Manager
Colorado River Water Conservation District
amueller@crwcd.org

RE: Financial Commitment for the Shoshone Water Right Preservation Effort

Dear Mr. Mueller:

We are pleased to confirm that, on March 12th, 2024, the Basalt Water Conservancy District (“District”) resolved to commit \$100,000 for the acquisition and permanent protection of the Shoshone Water Rights.

The District was created in 1964 to conserve and enhance water supplies for constituents in portions of Garfield, Pitkin, and Eagle counties within the Roaring Fork Valley. The District provides legal water supplies to support domestic, irrigation, commercial, and other beneficial uses by thousands of Roaring Fork Valley residents. These supplies support activities that fuel the Roaring Fork Valley’s economy, greatly contributing to Colorado’s overall economic vitality.

Permanent protection of the Shoshone flows will secure multiple benefits to Western Colorado water users and throughout the state. In addition to the substantial benefits the Shoshone flows provide in maintaining Colorado’s \$11.9 billion agricultural and \$14.6 billion recreation economies, in enhancing water quality for agriculture and drinking water, and the incalculable ecosystem benefits, maintenance of the Shoshone flows is critical for the District to provide legal water supply to its constituents and to conserve storage water supplies in Ruedi Reservoir and Green Mountain Reservoir for use in critical drought years.

The benefits of the Shoshone flows have become even more evident and important during the last 23 years of drought. If the power plant ceases operation without permanent protection of the water rights, Western Colorado will experience immediate and profound negative economic and environmental impacts.

The Basalt Water Conservancy District strongly supports the Colorado River District’s efforts to complete the conditions necessary to execute the purchase and sale of the Shoshone Water Rights.

Sincerely,



Charles Spickert, Vice President
Board of Directors
Basalt Water Conservancy District

24-06

RESOLUTION

APPROVAL OF DONATION TO COLORADO RIVER WATER CONSERVATION DISTRICT

WHEREAS, the Board of Directors of Grand Valley Rural Power Lines, Inc. (Grand Valley Power) supports the use of unclaimed capital credits for educational and charitable purposes pursuant to its Policy Bulletin No. 84;

WHEREAS, the Board of Directors has been presented information regarding the preservation of certain Shoshone Hydroelectric Plant non-consumptive water rights (Water Rights) and their essential benefits for maintaining agricultural and recreational support for Western Colorado;

WHEREAS, The Colorado River Water Conservation District (District) desires to purchase such Water Rights for such purposes, and has requested financial support from Grand Valley Power in order to do so; and

WHEREAS, the Board of Directors desires to make a \$50,000 contribution in 2024 and a \$50,000 contribution in 2025 under the conditions that (1) the contributions would be made to a 501(c)(3) organization as required by Policy Bulletin No. 84; and (2) the Colorado District would hold the funds in escrow until used for the purchase of the Water Rights. If the District does not use the funds for such purchase, the funds would be returned to Grand Valley Power, along with any interest earned while held in escrow.

NOW THEREFORE BE IT RESOLVED that the Board of Directors of Grand Valley Rural Power Lines, Inc. hereby approves the above donation to the Colorado River Water Conservation District for the purchase of the Water Rights.

Approved, adopted and passed this 25th day of July 2024 by a vote of

6 Yeas Nays 2 Abstain and 1 Absent.



Janie VanWinkle, President

09/04/2024

Via electronic mail

Andrew Mueller, General Manager
Colorado River Water Conservation District
201 Centennial St., Suite 200
Glenwood Springs, CO 81601

RE: Financial Commitment for the Shoshone Water Right Preservation Effort

Dear Mr. Mueller:

We are pleased to inform you that on January 4, 2024, the Grand Valley Water Users Association formally acted to commit \$100,000 for the acquisition and permanent protection of the Shoshone water rights. This funding commitment furthers the current effort to permanently protect the historic, non-consumptive Shoshone water rights on the upper Colorado River for future generations, an outcome long sought by over 20 Western Slope water entities and local governments.

Permanent protection of the Shoshone flows will secure multiple benefits to Colorado River water users on the West Slope and across the state such as:

- Maintaining Colorado's foundational \$11.9 billion agricultural economy and \$14.6 billion recreation economy
- Water quality improvements for agriculture & drinking water
- Ecosystem benefits and stream flow to support a successful Upper Colorado River Endangered Fish Recovery Program and healthy 15-Mile Reach
- Maintaining stream flow through Upper Colorado River Wild & Scenic Alternative Management Plan river sections

During the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important. If the power plant were to cease operation without permanent protection of the water right, the negative economic and environmental impacts to Western Colorado would be profound.

The Grand Valley Water Users Association strongly supports the Colorado River District's efforts to complete the conditions necessary to execute the purchase and sale of the Shoshone water rights.

Sincerely,



Tina Bergonzini
General Manager
Grand Valley Water Users Association



Middle Park Water
Conservancy District
PO Box 145
Granby, CO 80446

July 18, 2024

Via electronic mail to: amoyer@crwcd.org

Colorado River District
Attn: Amy Moyer, Director of Strategic Partnerships
201 Centennial St., Suite 200
Glenwood Springs, CO 81601

Dear Colorado River District,

Middle Park Water Conservancy District is pleased to commit ONE HUNDRED THOUSAND DOLLARS (\$100,000 USD) toward Colorado River District's purchase and permanent protection of the Shoshone water rights. However, the Colorado River District must understand that this commitment is not intended to violate the terms of Article X, § 20 of the Colorado Constitution ("TABOR"). This commitment does not create a multi-fiscal year direct or indirect debt or obligation. Any payment obligation of Middle Park Water Conservancy District is dependent and conditioned upon the continuing availability of funds beyond the term of the current fiscal period.

Respectfully,

DocuSigned by:
MPWCD - Jack Buchheister, President 7/20/2024
33E4EA3D2F574F2...
Jack Buchheister, President
Middle Park Water Conservancy District Board of Directors

March 11, 2024

Via electronic mail

Andrew Mueller, General Manager
Colorado River Water Conservation District
201 Centennial St., Suite 200
Glenwood Springs, CO 81601

RE: Financial Commitment for the Shoshone Water Right Preservation Effort

Dear Mr. Mueller:

We are pleased to inform you that on March 7th, 2024, the Board of Directors of the Orchard Mesa Irrigation District formally acted to commit \$100,00 for the acquisition and permanent protection of the Shoshone Water Rights. This funding commitment furthers the current effort to permanently protect the historic, non-consumptive Shoshone water rights on the upper Colorado River for future generations, an outcome long sought by over 20 Western Slope water entities and local governments.

It is the mission of the Orchard Mesa Irrigation District to provide a sustainable supply of irrigation water to the constituency within the District. This investment in purchasing the Shoshone water rights is paramount in meeting this commitment.

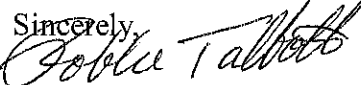
Permanent protection of the Shoshone flows will secure multiple benefits to Colorado River water users on the West Slope and across the state such as:


- Maintaining Colorado's foundational \$11.9 billion agricultural economy and \$14.6 billion recreation economy
- Water quality improvements for agriculture & drinking water
- Ecosystem benefits and Endangered Species Act compliance via a successful Upper Colorado River Endangered Fish Recovery Program and healthy 15-Mile Reach
- Maintaining stream flow through Upper Colorado River Wild & Scenic Alternative Management Plan river sections

During the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important. If the power plant were to cease operation without permanent protection of the water right, the negative economic and environmental impacts to Western Colorado would be immediate and profound.

The Orchard Mesa Irrigation District strongly supports the Colorado River District's efforts to complete the conditions necessary to execute the purchase and sale of the Shoshone Water Rights.

Sincerely,


Roblee Talbott, Board President


Jackie Fisher, District Manager



RIFLE CITY COUNCIL

REGULAR MEETING

March 6, 2024

7:00 p.m.

202 Railroad Avenue, Rifle, CO

CALL TO ORDER & ROLL CALL

A regular meeting of the Rifle City Council was called to order at 7:00 p.m. by Mayor Sean Strode.

Present at Roll Call:

Councilor Clint Hostettler, Councilor Karen Roberts, Councilor Joe Carpenter and Mayor Sean Strode.

Councilor Clint Hostettler moved to excuse Councilor Alicia Gresley, Councilor Chris Bornholdt and Councilor Brian Condie from the council meeting; seconded by Councilor Karen Roberts.

Roll Call: Yes - Karen Roberts, Clint Hostettler, Joe Carpenter, and Sean Strode.

No – None.

Others Present:

City Manager Tommy Klein, City Clerk Misty Williams, City Attorney Jim Neu, Rifle Cable 10 Manager (RCTV) Michael Churchill, Chief of Police Debra Funston, Planning Director Patrick Waller, Senior Planner Geir Sverdrup, Main Street Manager Kim Burner, Utilities Director Jared Emmert, Finance Director Scott Rust, Brenden Rifle 7 Theatres Senior Vice President Walter Eichenger, Colorado River District Strategic Partnerships Director Amy Moyer and Colorado River District Public Relations Deputy Director Lindsay DeFrates.

PUBLIC COMMENT

No public comment was heard.

CONSENT AGENDA – CONSIDER THE FOLLOWING ITEMS:

- A. Consider Minutes of the February 21, 2024 Regular Meeting
- B. Consider Approval of the Correction of Scrivener's Errors on Resolution Numbers from February 21, 2024 Meeting
- C. Consider Liquor License Renewal for Jalisco Grill, LLC dba Jalisco Grill
- D. Consider Liquor License Renewal for Ruedi Creek Enterprises, Inc. dba Sammy's
- E. Consider Roaring Fork Transit Authority (RFTA) Invoice for the 2024 Hogback Service
- F. Consider Resolution No. 8, Series of 2024 – Designating Persons Authorized to Sign Checks for the City of Rifle

Councilor Clint Hostettler moved to approve Consent Agenda Item A, B, C, D, E, and F; seconded by Councilor Joe Carpenter.

Roll Call: Yes - Sean Strode, Clint Hostettler, Karen Roberts and Joe Carpenter.

No – None.

PUBLIC HEARING

Consider Lodging and Entertainment Liquor License for Brenden Theatre Corporation dba Brenden Rifle 7 Theatres

Mayor Sean Strode opened the public hearing.

Applicant Walter Eichenger was sworn in and presented the Lodging and Entertainment liquor license application for Brenden Theatre Corporation dba Brenden Rifle 7 Theatres located at 250 West 2nd Street Rifle, CO 81650.

City Clerk Misty Williams provided an overview of the Lodging and Entertainment liquor license application received on November 27, 2023 for Brenden Theatre Corporation dba Brenden Rifle 7 Theatres. The public hearing for this application was properly noticed, the application is complete, the appropriate fees have been paid and a petition that reflected the neighborhood's needs and desires was also submitted. Brenden Theatre Corporation dba Brenden Rifle 7 Theatres currently has a state and city approved beer and wine license. Staff recommends approval of the Lodging and Entertainment liquor license application for Brenden Theatre Corporation dba Brenden Rifle 7 Theatres.

Ordinance No. 8, Series of 2024
AN ORDINANCE OF THE CITY OF RIFLE, COLORADO,
REZONING THE RIFLE BUSINESS PARK PLANNED UNIT
DEVELOPMENT BY AMENDING THE RIFLE BUSINESS PARK
PLANNED UNIT DEVELOPMENT GUIDE

Councilor Alicia Gresley moved approve Ordinance No. 8, Series of 2024 on its first as presented and order it to be published as required by Charter; seconded by Councilor Karen Roberts.
Roll Call: Yes - Joe Carpenter, Karen Roberts, Clint Hostettler, and Sean Strode.
No – None.

REGULAR AGENDA

Consider Funding Request from the Colorado River District for the Purchase of Shoshone Water Rights

Colorado River District Strategic Partnerships Director Amy Moyer and Colorado River District Public Relations Deputy Director Lindsay DeFrates provided a presentation regarding the funding request in support of the Colorado River District for the purchase of the Shoshone water rights. Presentation included the location of the Shoshone River power plant stream, history of the Shoshone River, project summary, funding strategy, the benefits of the purchase and the importance of the requested support for water right preservation. Director Amy Moyer expressed the critical need for securing local funding commitments as a necessary requirement for the River District to close on the final \$98.5 million deal to acquire the Shoshone Water Rights. Staff has had previous discussion and is in support of moving forward to support the Colorado River District to acquire the Shoshone Water Rights.

Colorado River District Strategic Partnerships Director Amy Moyer and City Attorney Jim Neu answered questions for Council.

Councilor Clint Hostettler moved to authorize staff to sign a letter committing \$100,000.00 for the purchase of Shoshone Water Rights; seconded by Councilor Karen Roberts.
Roll Call: Yes - Karen Roberts, Clint Hostettler, Joe Carpenter and Sean Strode.
No – None.

Consider Approving and Signing a Wagner Service Agreement for Water Plant Backup Generator

Utilities Director Jared Emmert presented a request to consider approving and signing a Wagner Service Agreement for Water Plant Backup Generator. The water treatment facility has a Wagner/Cat backup generator to meet the facility's electrical demand during power outages. The generator requires regular preventive maintenance to ensure it is always available during outages. Wagner is the manufacturer and authorized service provider for their generators. The plant's backup generator has been serviced each year by Wagner Equipment since the facility opened. A standard service agreement with Wagner is for 24 months. Staff recommends approval of request as this agreement would cover 2024 and 2025 maintenance services.

Councilor Clint Hostettler moved to approve the 2-year service agreement for a total of \$25,801.00; seconded by Councilor Joe Carpenter.
Roll Call: Yes - Sean Strode, Joe Carpenter, Clint Hostettler, and Karen Roberts.
No – None.

Consider Pre-Annexation Agreement to Allow Columbine Gymnastics to Connect to City of Rifle Sewer System

Senior Planner Geir Sverdrup presented a request to consider the pre-annexation agreement to allow Columbine Gymnastics to connect to the City of Rifle sewer system. The Columbine Gymnastics property is located north of Hwy 6 & 24 – 24207 Access Road. Columbine Gymnastics currently has water service with the City of Rifle but would like to be able to connect to the City of Rifle sewer and discontinue the use of their failing septic system. The property will remain in the Garfield County jurisdiction. Staff recommends approval of services and a pre-annexation agreement to allow the property to connect directly into an existing sewer main that already serves the west Rifle area with no new mains or additional responsibilities to the City's system.

Councilor Karen Roberts moved to approve Pre-Annexation Agreement to allow Columbine Gymnastics property to connect to the City of Rifle Sewer System; seconded by Councilor Clint Hostettler.
Roll Call: Yes - Karen Roberts, Sean Strode, Joe Carpenter and Clint Hostettler.
No – None.



March 8, 2024

Andrew Mueller, General Manager
Colorado River Water Conservation District
201 Centennial St., Suite 200
Glenwood Springs, CO 81601

RE: Financial Commitment for the Shoshone Water Right Preservation Effort

Dear Mr. Mueller:

We are pleased to inform you that on March 7th, 2024, the City of Rifle formally acted to commit \$100,000 for the acquisition and permanent protection of the Shoshone Water Rights. This funding commitment furthers the current effort to permanently protect the historic, non-consumptive Shoshone water rights on the upper Colorado River for future generations, an outcome long sought by over 20 Western Slope water entities and local governments.

Permanent protection of the Shoshone flows will secure multiple benefits to Colorado River water users on the West Slope and across the state such as:

- Water Quality Improvements for Mainstem Communities & Drinking Water
- Maintaining Colorado's Foundational \$14.6 Billion Recreation Economy and \$11.9 Billion Agricultural Economy
- Ecosystem Benefits and Endangered Species Act Compliance via a successful Upper Colorado River Endangered Fish Recovery Program and healthy 15-Mile Reach
- Maintaining Stream Flow Through Upper Colorado River Wild & Scenic Alternative Management Plan River Sections

During the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important. If the power plant were to cease operation without permanent protection of the water right, the negative economic and environmental impacts to Western Colorado would be immediate and profound.

The City of Rifle strongly supports the Colorado River District's efforts to complete the conditions necessary to execute the purchase and sale of the Shoshone Water Rights.

Sincerely,

A handwritten signature in black ink, appearing to read "Sean Strobe", is written over a large, stylized, light-colored graphic element that resembles a signature or a decorative flourish.

Sean Strobe, Mayor
City of Rifle
202 Railroad Avenue
Rifle, CO 81650

**SNOWMASS WATER AND SANITATION DISTRICT
MINUTES OF THE REGULAR MEETING OF MAY 22, 2024**

1. CALL TO ORDER

The Regular Meeting of the Board of Directors of the Snowmass Water and Sanitation District was called to order by Chairman Throm on May 22, 2024, at 9:03 a.m. at the District office, 0177 Clubhouse Drive, Snowmass Village, Pitkin County, Colorado. Chairman Throm stated that each member of the Board had received a copy of the packet and that the Notice and Agenda of the Meeting had been posted in conformance with the law.

2. ROLL CALL

The roll call showed the following Directors to be present:

Doug Throm, President
Mary Blankenau, Vice President
Dwayne Romero, Secretary
Tom Goode

Also present were:

Kit Hamby – District Manager
Mark Hamilton & Susan Ryan – Holland & Hart, District Attorney
Chad Paulson – SGM, District Engineer
Scot Broughton – Architect
Darrell Smith – District Water Resources Manager
Alex Meisler – District IT Manager
John Lewin – District HR
Christie Carballo – Office Administrator

3. PUBLIC COMMENT

There was none.

4. APPROVAL OF MINUTES

A motion to approve the Minutes of the Regular Meeting of April 17, 2024, was made by Director Romero, seconded by Director Goode, and passed unanimously.

5. APPROVAL OF TREASURER'S REPORTS and APPROVAL OF EXPENDITURES

A motion to approve the Treasurer's Report and Expenditures from April 2024 was made by Director Goode, seconded by Director Blankenau, and passed unanimously.

6. MANAGER'S REPORT

WTP Production

Production is decreasing, as would be expected during the off-season. Streamflows have been varying, yet are not outside expectations.

Spring Leak Detection

The field crew is performing springtime leak detection. There are a few small leaks that have been identified. District staff will repair these leaks.

Cybersecurity

Alex shared a video with the Board about the small water and wastewater systems that are being threatened and hacked, pointing to the importance of risk assessments when it comes to cybersecurity.

The District has upgraded all of the network infrastructure, complies with hardware security requirements, and continues to work on compliance with Homeland Security standards. The next step is an onsite assessment by CISA.

Alex showed how the spam filter works for District email and how you can see who is connected to the network. He also spoke about the camera and door access upgrades that will be happening soon. All of these things are centrally managed.

Pines Waterline Break

There was a waterline break near 281 Pine Crest Drive last week. The pipe was corroded and flaking which may have been caused by a lack of bonding between pipe sections. Kit showed the Board the pipe. A 20" pipe section was replaced.

Willows Fire

Scott Thompson, Roaring Fork Fire, came by to thank the District for all the help during the structure fire at the Willows. Kit reported that 279,000 gallons of water were used to fight the fire.

7. TOUR of SWSD ADAPTIVE REUSE EMPLOYEE HOUSING

Kit showed the Board the "before" pictures of the old filter building before heading over to tour the new employee housing. The Board enjoyed the tour of each unit and were amazed at how Scot and Kit could visualize this project and create these spaces.

8. SHOSHONE WATER RIGHTS PRESERVATION FUNDING

Kit asked the Board if they would consider donating to the Shoshone Water Right Preservation Fund. The Board agreed this is a community benefit and the District's support shows the importance.

A motion to approve a one-time pledge of \$100,000 to the Shoshone Water Rights Preservation Fund, was made by Director Romero, seconded by Director Blankenau, and passed unanimously.

9. ROARING FORK CONSERVANCY RUEDI WATER CONTRACT LEASE

The Roaring Fork Conservancy has asked the District to donate a portion of its 500 acre-feet of Ruedi water to protect the Frying Pan River during low flow periods. Kit stated that John Sikora feels the District could comfortably donate up to 250 acre-feet.

Mark suggested waiting to make a decision until John can provide a memo to the board that provides more understanding of this lease and the District's ability to use the Ruedi water. The Board agreed to move their decision to a later meeting.

10. WATER RESOURCE MANAGER REPORT

There has not been enough irrigation yet this year to start communications with customers about high outdoor usage. There will be an offer this year for irrigation audits and the District will be making a financial match based on improvements made.

11. ENGINEER'S REPORT

RESOLUTION 2024 -52

A RESOLUTION OF THE TOWN OF SILVERTHORNE COMMITTING FINANCIAL SUPPORT FOR THE SHOSHONE WATER RIGHT PRESERVATION EFFORT.

WHEREAS, the Town of Silverthorne is a political subdivision of the State of Colorado, and therefore an interested party to the effort to preserve the Shoshone Water Right; and

WHEREAS, the permanent protection of the Shoshone flows will secure multiple benefits to Colorado River water users on the West Slope and across the state such as: maintaining Colorado's foundational \$14.6 billion recreation economy and \$11.9 billion agricultural economy, water quality improvements for agriculture & drinking water, ecosystem benefits and stream flow to support a successful Upper Colorado River Endangered Fish Recovery Program and healthy 15-Mile Reach, and maintaining stream flow through Upper Colorado River Wild & Scenic Alternative Management Plan river sections; and

WHEREAS, during the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important; and

WHEREAS, If the Shoshone power plant were to cease operation without permanent protection of the water right, the negative economic and environmental impacts to Western Colorado would be significant: and

WHEREAS, the Town Council of the Town of Silverthorne wishes to contribute \$100,000 to the effort to preserve the Shoshone Water Right.

NOW, THEREFORE, IT IS RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF SILVERTHORNE, COLORADO, THAT:


Section 1. The above recitals are hereby incorporated as findings by the Town Council of the Town of Silverthorne.

Section 2. The Town Council of the Town of Silverthorne strongly supports the permanent protection of the Shoshone.


Section 3. The Town Council of the Town of Silverthorne authorizes the expenditure of \$100,000 toward permanent protection of the Shoshone.

INTRODUCED, PASSED, AND ADOPTED BY THE TOWN COUNCIL OF THE TOWN OF SILVERTHORNE, COLORADO THIS 11TH DAY OF SEPTEMBER 2024.




Ann-Marie Sandquist, Mayor

Attest:


Angie VanSchoick, Town Clerk



4/11/2024

Andrew Mueller, General Manager
Colorado River Water Conservation District
201 Centennial St., Suite 200
Glenwood Springs, CO 81601

RE: Financial Commitment for the Shoshone Water Right Preservation Effort

Dear Mr. Mueller:

We are pleased to inform you that on April 10th, 2024, the Mesa County Irrigation District formally acted to commit at least \$50,000 for the acquisition and permanent protection of the Shoshone Water Rights. This funding commitment furthers the current effort to permanently protect the historic, non-consumptive Shoshone water rights on the upper Colorado River for future generations, an outcome long sought by over 20 Western Slope water entities and local governments.

Permanent protection of the Shoshone flows will secure multiple benefits to Colorado River water users on the West Slope and across the state such as:

Maintaining Colorado's foundational \$11.9 billion agricultural economy and \$14.6 billion recreation economy

- Water quality improvements for agriculture & drinking water
- Ecosystem benefits and Endangered Species Act compliance via a successful Upper Colorado River Endangered Fish Recovery Program and healthy 15-Mile Reach
- Maintaining stream flow through Upper Colorado River Wild & Scenic Alternative Management Plan river sections

During the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important. If the power plant were to cease operation without permanent protection of the water right, the negative economic and environmental impacts to Western Colorado would be immediate and profound.

The Mesa County Irrigation District strongly supports the Colorado River District's efforts to complete the conditions necessary to execute the purchase and sale of the Shoshone Water Rights.

Sincerely,



Mesa County Irrigation District Board of Directors

Micheal Whiteman *Micheal Whiteman*

Brandon Hoskin *Brandon Hoskin*

Edward Derryberry *Edward Derryberry*



April 4, 2024

Via electronic mail

Andrew Mueller, General Manager
Colorado River Water Conservation District
201 Centennial St., Suite 200
Glenwood Springs, CO 81601

RE: Financial Commitment for the Shoshone Water Right Preservation Effort

Dear Mr. Mueller:

We are pleased to inform you that on April 4th, 2024, the Palisade Irrigation District formally acted to commit \$50,000 for the acquisition and permanent protection of the Shoshone Water Rights. This funding commitment furthers the current effort to permanently protect the historic, non-consumptive Shoshone water rights on the upper Colorado River for future generations, an outcome long sought by over 20 Western Slope water entities and local governments.

Permanent protection of the Shoshone flows will secure multiple benefits to Colorado River water users on the West Slope and across the state such as:

- Maintaining Colorado's foundational \$11.9 billion agricultural economy and \$14.6 billion recreation economy
- Water quality improvements for agriculture & drinking water
- Ecosystem benefits and Endangered Species Act compliance via a successful Upper Colorado River Endangered Fish Recovery Program and healthy 15-Mile Reach
- Maintaining stream flow through Upper Colorado River Wild & Scenic Alternative Management Plan river sections

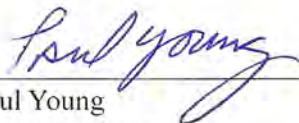
During the last 23 years of severe drought, the benefit of the Shoshone call to the flow of the river has become even more evident and important. If the power plant were to cease operation without permanent protection of the water right, the negative economic and environmental impacts to Western Colorado would be immediate and profound.

The Palisade Irrigation District strongly supports the Colorado River District's efforts to complete the conditions necessary to execute the purchase and sale of the Shoshone Water Rights.

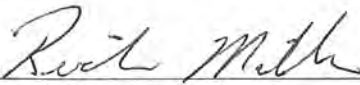
Sincerely,



Kent Brumback
President Palisade Irrigation District Board



Paul Young
Secretary/Treasurer



Rick Miller
Vice President

*Emailed CRD
4/8/24
sed*

February 22, 2024

Andrew Mueller
General Manager
Colorado River Water Conservation District
201 Centennial St., Suite 200
Glenwood Springs, CO 81601

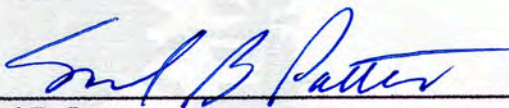
Mr. Mueller:

We are pleased to inform you that the **West Divide Water Conservancy District's ("West Divide") Board of Directors has voted to commit \$50,000 to the acquisition of the Shoshone water right and subsequent transfer to instream flow purposes to maintain the historical flow regimes on the Colorado River.**

West Divide (including its constituents) is a beneficiary of the river conditions resulting from the Shoshone water right administration and desires that it remain a controlling water right on the mainstem Colorado River. In the absence of a Shoshone call, the District's available supplies could be depleted more quickly due to the increased downstream call at Cameo resulting in higher augmentation requirements.

West Divide truly appreciates the many years of effort the Colorado River District has put into this effort as it has been a priority project in the Colorado River Basin and reiterated in the Colorado Basin Implementation Plan. As flows on the Colorado River are depleted from Transmountain Diversions and threats of lower basin calls loom, the Shoshone water right ensures flows are available in this reach of the river for agriculture, municipalities, recreationists, environmental flows, and overall aesthetics of the river corridor that we call home.

West Divide fully supports the Colorado River District's efforts to ensure Shoshone water right permanence.



Samuel B. Potter
West Divide Board President

MINUTES¹
KOBE WATER AUTHORITY MEETING
201 Centennial Street, Glenwood Springs, CO 81601
August 28, 2024 –9:30 a.m.

Authority members participating during all or part of the meeting:

Tom Latham, Chair Ed Baker, Vice Chair
David H. Merritt Scott McInnis

Others participating during all or part of the meeting:

Jason Turner, Deputy General Counsel, CRWCD
Lorra Nichols, Paralegal, CRWCD
Ian Philips, Director of Financial & Administrative Services, CRWCD
Diana Cardenas, Senior Accountant, CRWCD
Ryan Jarvis, JVAM
Chad Paulson, SGM Engineers, Inc.

Quorum.

Chairman Latham found a quorum and called the meeting to order at 9:31 a.m.

Approval of Minutes and Actions Taken.

Director Merritt moved, seconded by Director McInnis, to approve the minutes of the June 10, 2024, meeting. Motion carried unanimously.

Acceptance of Treasurer’s Report, Check Register and Draft Financial Statements for January-June 2024.

Director Baker moved, seconded by Director Latham, to approve and accept the treasurer’s report, check registers and draft financial statements for January—June 2024. Motion carried unanimously.

Potential Monetary Contribution by the Kobe Water Authority

The Board was briefed and discussed the River District’s Shoshone Water Rights Preservation Project as well as potential monetary support for other projects within the Bluestone District boundaries.

Director Merritt moved, seconded by Director McInnis to allocate \$25K from the 2024 KWA budget towards the support of the Shoshone Power Plant Purchase. Motion carried unanimously.

Manager’s Report from SGM.

Chad Paulson reported the following:

- 350 acre-feet was pumped per the request of Laramie Energy..
- Work needs to be done on the generator at the Kobe Pump Station. for the estimate from Cummins totaled \$5,487.90. Director McInnis recommended review of the warranty.. Ian Philips reported the 2024 budget can be amended to cover the Cummins expense.

1An audio recording has been made of the meeting. The motions described herein may not necessarily represent a verbatim transcription. The audio recordings are available for listening at the CRWCD offices during regular office hours. These minutes are the official record of the Kobe Water Authority’s meeting.

PURCHASE AND SALE AGREEMENT

THIS PURCHASE AND SALE AGREEMENT (this “**Agreement**”) is made as of the **Effective Date** by and between Colorado River Water Conservation District, a political subdivision of the state of Colorado (the “**River District**”) and Public Service Company of Colorado, a Colorado corporation (“**PSCo**”). PSCo and the River District may be hereinafter referred to individually as a “**Party**,” and together as the “**Parties**.” All capitalized terms used but not immediately thereafter defined shall have the meanings ascribed thereto elsewhere in this Agreement.

RECITALS

- A. PSCo owns the Shoshone Water Rights (defined below in Article 2), which are diverted at the Shoshone Dam, located in Glenwood Canyon, Colorado, and used for non-consumptive hydro-power generation at the Shoshone Hydroelectric Generation Station (“**Power Plant**”). Water delivered to the Power Plant is discharged and returned directly into the Colorado River at the outfall of the Power Plant.
- B. Operation of the Shoshone Water Rights for hydropower purposes for over 100 years has had the added benefits of maintaining administrative stability of water rights in the Colorado River basin, , helping Colorado to meet the recovery requirements of endangered fish species under the federal Endangered Species Act, contributing significant flows to the interstate Colorado River System, and providing stream flows necessary to meet municipal, agricultural, environmental and recreation needs on Colorado’s western slope.
- C. The River District represents western slope interests that desire to maintain in perpetuity the operation of the Shoshone Water Rights in a manner consistent with their historical operation in order to preserve the benefits described above.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

ARTICLE 1. BASIC TERMS

- 1.1 Effective Date: January 1, 2024
- 1.2 Seller: PUBLIC SERVICE COMPANY OF COLORADO, a Colorado Corporation
- 1.3 Buyer: COLORADO RIVER WATER CONSERVATION DISTRICT, a political subdivision of the state of Colorado
- 1.4 Subject Property: The Shoshone Water Rights, as more particularly described in Article 2, below.
- 1.5 Purchase Price: NINETY-EIGHT MILLION FIVE HUNDRED THOUSAND DOLLARS (\$98,500,00.000).

- 1.6 Transaction Costs: Five Hundred Thousand Dollars (\$500,000.00), as more particularly defined in Article 3, below.
- 1.7 Due Diligence Period: The period beginning on the Effective Date and ending on May 15, 2024.
- 1.8 Closing Date: Thirty (30) days following the satisfaction of the Closing Conditions.
- 1.9 Exhibits:
- Exhibit A: Escrow Agreement
 - Exhibit B: PSCo’s Due Diligence Deliveries
 - Exhibit C: Special Warranty Deed
 - Exhibit D: Lease of Shoshone Water Rights
 - Exhibit E: Promissory Note
 - Exhibit F: Deed of Trust

ARTICLE 2. PROPERTY DEFINED

2.1 Shoshone Water Rights. As used in this Agreement, the property being conveyed is the following described water rights:

(a) The Shoshone Power Plant senior water right decreed as the Glenwood Power Canal and Pipeline water right on Dec. 9, 1907, in Civil Action No. 0466, Eagle County District Court, in the amount of 1,250 cfs with an appropriation date of Jan. 7, 1902, for power, mining, milling, manufacturing, lighting and heating and traction purposes, and as further decreed by the Eagle County District Court on Feb. 27, 1911, in Civil Action No. 553; and

(b) The Shoshone Power Plant junior water right decreed as the Shoshone Hydro Plant Diversion No. 2 on Feb. 7, 1956 in Civil Action No. 1123, Eagle County District Court, in the amount of 158 cfs with an appropriation date of May 15, 1929, for manufacturing and generation of electrical energy.

together, (the “**Shoshone Water Rights**”).

ARTICLE 3. PURCHASE & SALE

3.1 Agreement of Purchase and Sale. Subject to the terms and conditions of this Agreement, PSCo agrees to convey to River District, and River District agrees to purchase from PSCo the Shoshone Water Rights for the Purchase Price. The River District’s payment of the Purchase Price to PSCo shall be as follows:

(a) Deposit. Not later than ten (10) business days following the Effective Date, River District shall deliver FIVE HUNDRED THOUSAND and 00/100 DOLLARS (\$500,000.00), by wire transfer or bank or cashier’s check, at its election (the “**Initial Deposit**”) to the escrow holder defined below (the “**Escrow Holder**”). The Initial Deposit shall be deposited with and held by Escrow Holder as a deposit against the Purchase Price in accordance with the terms and provisions of this Agreement, and shall be credited against the Purchase Price if the transaction closes. All interest accruing on the Initial Deposit shall accrue to PSCo and be applied

against the Purchase Price at Closing. In the event this Agreement is terminated pursuant to the terms of this Agreement, the Escrow Holder shall distribute the Initial Deposit and interest accrued thereon in a manner consistent with Section 4.5, below.

(b) Escrow Holder. The Escrow Holder shall be First American Title Insurance Company, 1380 17th Street, Denver, CO 80202, Attn: Nichole Segura, Vice President, Commercial Escrow Officer. Upon execution of this Agreement, the Parties shall execute an escrow agreement as reasonably requested by the Escrow Holder, subject to PSCo's and River District's review and approval, not to be unreasonably withheld (the "**Escrow Agreement**"), substantially in the form of Exhibit A attached hereto. Escrow Holder shall hold and dispose of the Deposit in accordance with the terms of this Agreement and the Escrow Agreement.

(c) Transaction Costs. In addition to the Purchase Price, the River District shall pay PSCo FIVE HUNDRED THOUSAND and 00/100 DOLLARS (\$500,000.00) (the "**Transaction Cost Prepayment**") as prepayment for PSCo's legal and consulting fees and costs incurred in negotiating this Agreement, negotiating associated agreements with the River District, Colorado Water Conservation Board and Denver Water; participating in filing and prosecuting a change application in Water Court, and participation in other negotiations, agency or regulatory approval processes, including the Colorado Public Utilities Commission, or other actions related to this transaction ("**Transaction Costs**"). The River District shall pay the Transaction Cost Prepayment no later than ten (10) days following the Effective Date by delivering the same directly to PSCo by wire transfer pursuant to instructions provided by PSCo. The Transaction Cost Prepayment to PSCo shall not be refundable in any amount to River District, except upon early termination of this Agreement and shall not be applied or credited against the Purchase Price at Closing. If the total Transaction Costs exceed the Transaction Cost Prepayment, the River District shall pay the difference at Closing (the "**Final Transaction Costs**"). Prior to Closing, at least every sixty (60) days, PSCo shall provide an up-to-date accounting of the Transaction Costs incurred by PSCo which will identify the billing entity, the total billed by such entity, and a brief description of the work performed. Before any funds may be transferred to PSCo as contemplated by this paragraph, PSCo must provide a signed W-9 to the River District, be set up as a vendor in the River District's billing/accounting system, provide its wiring instructions to the River District, and participate in a wire confirmation call with the River District.

(d) Closing Payment.

1. On the day of the Closing, SEVENTY-EIGHT MILLION FIVE HUNDRED THOUSAND and 00/100 DOLLARS (\$78,500,000.00) of the Purchase Price, as adjusted by the Initial Deposit, and any interest accrued thereon, shall be paid in cash to PSCo by wire transfer (the "**Closing Payment**"). Notwithstanding the foregoing, the River District may, in its sole option and discretion, choose to pay more than the Closing Payment at Closing.

2. The balance of the Purchase Price, if any, after payment of the Closing Payment, and any other amounts tendered by the River District at Closing pursuant to Section 3.1(d)1. above, shall be paid to PSCo over ten (10) years in equal annual installment due on or before April 30 each year, as set forth in the promissory note (the "**Promissory Note**") attached hereto as Exhibit E and

incorporated herein by reference. The Promissory Note and Deed of Trust attached assumes the remaining balance will be TWENTY MILLION and 00/100 DOLLARS (\$20,000,000.00) and the Parties agree to adjust the principal sum stated on the Promissory Note and Deed of Trust to reflect the actual balance of the Purchase Price prior to its execution. If the River District tenders the entire Purchase Price at Closing, the Promissory Note and Deed of Trust will not be required to close the transaction contemplated by this Agreement.

ARTICLE 4. DUE DILIGENCE AND CONDITIONS PRECEDENT TO CLOSING

4.1 PSCo's Due Diligence Deliveries. PSCo shall deliver or make available to River District, within fourteen (14) business days after the Effective Date, complete, legible copies of the items described in Exhibit B attached to this Agreement to the extent such items are in the possession or control of PSCo (collectively, "**PSCo's Due Diligence Deliveries**"). The Due Diligence Deliveries shall be considered to be Common Interest Information pursuant to the Common Interest, Confidentiality and Joint Defense Agreement executed by the Parties as of March 15, 2023 (the "**JDA**"). In the event that the Closing hereunder shall not occur for any reason whatsoever, River District shall promptly return PSCo's Due Diligence Deliveries to PSCo and shall destroy all copies and abstracts thereof.

4.2 Right of Inspection.

(a) During the Due Diligence Period and prior to Closing, River District shall, at its own cost and expense, have the right to review all aspects of the Shoshone Water Rights and conduct such inspections as it determines are necessary for completion of the transaction. River District shall schedule and coordinate all physical inspections of the Shoshone Water Rights and/or the Power Plant with PSCo and shall give PSCo at least seven (7) days' prior notice thereof. The River District, and its authorized agents and employees, must be escorted by a badged PSCo representative at all times while the River District is at the Power Plant or on other PSCo-owned property. The River District, and its authorized agents and employees, must observe PSCo's safety and security policies at all times while at the Power Plant or on other PSCo-owned property. PSCo shall reasonably cooperate with River District's inspections (including without limitation River District's interviews with PSCo personnel) so long as such cooperation is at no material expense to PSCo. River District shall not, in connection with its investigations, unreasonably interfere with Power Plant operations.

(b) To the extent allowed by applicable law, the River District shall indemnify, defend and hold PSCo harmless from and against all costs, expenses, damages, liabilities, liens or claims, including, without limitation, attorneys' fees and court costs, directly related to any entry on property associated with the Power Plant or Shoshone Water Rights by the River District, its agents, employees or contractors in the course of performing inspections, tests and/or inquiries provided for under this Agreement, or resulting from any conditions on such property created by River District's entry and testing (but not including any claims resulting from the discovery or disclosure of pre-existing physical or environmental conditions or any claims resulting solely from the gross negligence or willful misconduct of PSCo or its agents, representatives, employees or contractors). The foregoing indemnity shall survive the Closing Date or earlier termination of this Agreement.

4.3 Due Diligence Review; Approval. River District shall promptly commence, and shall diligently and in good faith pursue, its due diligence reviews hereunder within the Due Diligence Period. If, prior to the expiration of the Due Diligence Period, based upon such review, examination or inspection, River District determines in its sole and absolute discretion that it no longer intends to acquire the Shoshone Water Rights, the River District shall promptly notify PSCo of such determination in writing (“**Disapproval Notice**”) whereupon this Agreement, and the obligations of the Parties to purchase and sell the Shoshone Water Rights, shall terminate, except those provisions that expressly survive the termination hereof, and the Initial Deposit shall be returned to the River District. If River District fails to deliver the Disapproval Notice to PSCo on or before the expiration of the Due Diligence Period, River District shall be deemed to have approved of all of the foregoing matters, and the transaction shall proceed to Closing, subject to completion of the Closing Conditions described in Section 4.4, below. In the event River District fails to deliver the Disapproval Notice on or before the expiration of the Due Diligence Period, River District shall be deemed to have accepted the condition of the Shoshone Water Rights in their “AS IS, WHERE IS” and “WITH ALL FAULTS” condition subject to the representations and warranties expressly made by PSCo in this Agreement.

4.4 Conditions Precedent to Obligations of River District and PSCo to Close. In addition to the River District’s approval of its due diligence review as provided in Section 4.3, PSCo and River District agree that the Parties’ obligation to complete the transaction hereunder shall be subject to the satisfaction or mutually agreed upon waiver of the following conditions at or prior to Closing (the “**Closing Conditions**”):

(a) Negotiate Use of the Shoshone Water Rights by CWCB for Instream Flow Purposes. The Parties agree to use their best efforts to mutually negotiate an agreement between the PSCo, the River District, and the Colorado Water Conservation Board (“**CWCB**”) to enable the Shoshone Water Rights to be used for instream flow purposes when they are not being used for power generation purposes (the “**Instream Flow Agreement**”). The Instream Flow Agreement shall be executed prior to filing the Change Application described in Section 4.4(c), below, *provided however* that the Instream Flow Agreement will be effective as of the Closing Date of this Agreement, and will be held in escrow by the Parties pending delivery at Closing. The Instream Flow Agreement with the CWCB shall include the following provisions:

1. Use of the Shoshone Water Rights by the CWCB shall be subject to the lease of said water rights after Closing by the River District, as lessor, to PSCo, as lessee, for continued hydroelectric generation purposes (the “**Lease**”).
2. PSCo’s continued use of the Shoshone Water Rights pursuant to the Lease shall have precedence over use of the said water rights for instream flow purposes.
3. The use of the Shoshone Water Rights by the CWCB shall be conditioned upon the Closing of this Agreement and the issuance of a final Water Court Decree (as defined in Section 4.4(c) below), which changes the use of the Shoshone Water Rights to include instream flow purposes.

(b) Negotiate with Certain Potential Water Court Objectors. As described in subsection (c), below, the Parties intend to file a joint application to change the Shoshone Water Rights to include instream flow uses as an additional decreed use. Prior to filing such application, the Parties agree to use their best efforts to identify third parties who would likely file statements of opposition to the Change Application, and to enter into negotiations with said third parties to address their concerns with the goal of eliminating or minimizing objections to the Change Application. Closing is not specifically dependent on the Parties' success in reaching an agreement or stipulation with any of the potential water court objectors.

(c) Obtain Decree for Change of Shoshone Water Rights. The Parties and the CWCB will file an application with the Water Court, Water Division 5, seeking to change the Shoshone Water Rights to add instream flow uses as an additional decreed use (the "**Change Application**"). The Parties agree to prosecute the Change Application with diligence with the goal of obtaining a final decree (the "**Water Court Decree**"), with all rights of appeal exhausted or expired, by June 30, 2026; provided, however, that the deadline for completion of litigation may be extended by the Parties by mutual agreement to address unforeseen circumstances in completing the litigation. Should PSCo, in its sole and absolute discretion, determine that the adjudication of the Change Application would negatively impact the Shoshone Water Rights, impair PSCo's ability to continue hydroelectric generation at the Power Plant, or otherwise impair significant PSCo business interests, PSCo may withdraw the Change Application and terminate this Agreement. Should the River District, in its sole and absolute discretion, determine that the adjudication of the Change Application would prevent the acquisition of these rights from providing the intended benefit, the River District may withdraw the Change Application and terminate this Agreement.

Should either Party make a determination to withdraw the Change Application in accordance with this subparagraph (c), such Party shall provide notice of its intent to withdraw to the other Party, and the Parties shall then have sixty (60) days (the "**Review Period**") from the date of such notice during which the Parties shall discuss the concerns of the issuing Party and attempt to resolve those concerns and prevent withdrawal of the Change Application and termination of this Agreement. If the Parties are unable to resolve the issuing Party's concerns within the Review Period, the Party who issued the notice may withdraw from the Change Application and terminate this Agreement.

(d) Negotiate Amendment of Shoshone Relaxation Agreement with Denver Water. Effective January 1, 2007, PSCo entered into that certain Agreement Concerning Reduction of Shoshone Call (the "**Relaxation Agreement**") with the City and County of Denver, acting by and through its Board of Water Commissioners ("**Denver Water**"). The Parties to this Agreement will seek to negotiate the following amendments to the Relaxation Agreement with Denver Water (the "**Amendment to the Relaxation Agreement**"), to be effective upon Closing of this Agreement:

1. Modify the term of the Relaxation Agreement to be perpetual instead of terminating on February 28, 2032;
2. Allow all or part of the Relaxation Agreement to be assigned by PSCo to the River District if PSCo permanently ceases operation of the Power Plant;

3. Remove or modify the bidding rights granted to Denver in paragraph 13 of the Relaxation Agreement;

4. Include new provisions that would provide for the Relaxation Agreement to continue to operate in a manner that replicates historical Power Plant outages for regular maintenance activities if Power Plant operations permanently cease and the Shoshone Water Rights are used solely for instream flow purposes.

(e) Approval of the Public Utility Commission. PSCo shall obtain any final, non-appealable, approvals and decisions from the Colorado Public Utilities Commission (“**PUC**”) legally required to effectuate the transaction contemplated by this Agreement (the “**PUC Decision**”), which must be fully acceptable to PSCo, and shall not impose any unsatisfactory conditions nor revise the terms and conditions of this Agreement, PSCo’s tariffs, or any related agreements in any material respect. PSCo shall commence the approval process with the PUC upon satisfaction of Section 4.4(a), (c) and (d) and receipt from the River District of evidence that the River District has sufficient funds to make the Closing Payment. The Parties shall cooperate to seek such PUC Decision, including, without limitation, preparing responses to any information requests, providing any testimony or witnesses, and filing any supporting briefs or affidavits as may be useful and helpful to obtain regulatory approval. PSCo agrees to pursue the PUC Decision with diligence with the goal of obtaining the same by twelve (12) months from the date of PSCo’s first public filing in the PUC approval process; provided, however, that the deadline for obtaining the PUC Decision may be extended by the Parties by mutual agreement to address unforeseen circumstances in completing the PUC approval process. PSCo, in its sole and absolute discretion, shall have the right to file any application for rehearing, reargument, and reconsideration with the PUC or to appeal any decision of the PUC to the courts.

(f) River District Financing. River District shall have available sufficient funds to make the Closing Payment to PSCo, and evidence of the same must be submitted to PSCo prior to commencing the PUC process outlined in subsection (e) immediately above. The Parties recognize that the River District anticipates a portion of the Closing Payment will be paid using funding from governmental funding sources (i.e. municipal, county, state, or federal governments or agencies, including but not limited to the River District) and that evidence of available sufficient funds from governmental sources in this paragraph shall include funds that are appropriated and/or otherwise committed by the governmental entity or entities toward the purchase of the Shoshone Water Rights.

(g) Release of PSCo Corporate Indenture. Following expiration of the Due Diligence Period, PSCo shall make application for a release of the Shoshone Water Rights from the lien of PSCo’s corporate indenture (“**Indenture Release**”). In the event the Indenture Release is not issued, for any reason, on or before Closing, PSCo may, at PSCo’s option, extend the Closing Date by written notice to River District for up to six (6) successive thirty (30) day periods or until such Indenture Release is issued.

(h) Waiver of Closing Conditions. The conditions set forth in Section 4.4(a) through (g) are for the mutual benefit of River District and PSCo. Unless stated otherwise therein, to the extent that one or more of the Closing Conditions have not been satisfied, the Parties may only waive such Closing Condition by mutual agreement in writing.

4.5 Termination.

(a) Except as may otherwise be indicated, if any of the conditions expressly set forth in Sections 4.4(a)-(f) have not been satisfied, extended or waived by mutual agreement of the Parties by December 31, 2027, or in the event of termination pursuant to Section 5.2(c), this Agreement may be terminated, with both Parties consenting to and acknowledging such termination in writing, and the terms hereof shall be of no further force and effect, except those provisions that expressly survive the termination hereof. In the event of termination in accordance with this Section 4.5(a), the Initial Deposit, and any accrued interest thereon, shall be released to PSCo.

(b) In the event of termination pursuant to Section 4.3, Section 4.4(g), and Section 5.1(h), the Initial Deposit, and any accrued interest thereon, shall be released to the River District.

(c) If this Agreement is terminated pursuant to a termination right expressly set forth in this Section 4.5, then:

1. within ten (10) business days following such termination and to the extent not otherwise prohibited by applicable law, River District shall deliver to PSCo all of the PSCo Due Diligence Deliveries it holds in non-electronic form or shall certify the destruction of same;
2. any documents deposited with Escrow Holder by River District shall be returned to River District, and any documents deposited with Escrow Holder by PSCo shall be returned to PSCo;
3. the Parties shall equally share any cancellation fee of the Escrow Holder;
4. the Parties shall withdraw the Change Application if it is pending, with a preference to withdraw the Change Application without prejudice;
5. PSCo shall withdraw the PUC application if it is pending;
6. if the Instream Flow Agreement has been finalized, the Parties and CWCB shall terminate such agreement;
7. if the Amendment to the Relaxation Agreement has been finalized, the Parties and Denver Water shall terminate such agreement;
8. the Parties shall execute all documents necessary to direct the Escrow Holder to release the Initial Deposit, in accordance with Sections 4.5(a) and 4.5(b) above; and
9. neither Party shall have any further obligations to the other hereunder, except for those obligations and indemnities which are expressly made to survive the termination.

(d) If the transaction contemplated by this Agreement is terminated prior to the Closing Date, PSCo, within ninety (90) days after the termination, shall provide an accounting of its actual Transaction Costs as of the date of termination to the River District and

1. if the actual Transaction Costs have not exceeded the Transaction Cost Prepayment, PSCo shall within that ninety (90) day period return to the River District any unapplied balance of the Transaction Cost Prepayment; or

2. if the actual Transaction Costs have exceeded the Transaction Cost Prepayment, the River District shall within that ninety (90) day period pay to PSCo the amount of the Transaction Costs which have exceeded the Transaction Cost Prepayment.

Before any funds may be transferred to the River District as contemplated by this paragraph, the River District must provide a signed W-9 to PSCo, be set up as a vendor in PSCo's billing/accounting system, provide its wiring instructions to PSCo, and participate in a wire confirmation call with PSCo.

(e) Pre-Closing Default. EXCEPT FOR THE RELEASE OF THE INITIAL DEPOSIT TO PSCo WHERE SPECIFIED HEREIN AND THE PAYMENT OF INCURRED TRANSACTION COSTS TO PSCo, SUBJECT TO ACCOUNTING IN THE EVENT OF TERMINATION, THE PARTIES HEREBY SPECIFICALLY WAIVE ANY SPECIAL, CONSEQUENTIAL, PUNITIVE, SPECULATIVE OR DIRECT DAMAGES AND ANY RIGHT EITHER PARTY MAY HAVE TO SPECIFIC PERFORMANCE IN THE EVENT OF A TERMINATION PURSUANT TO THIS SECTION 4.5.

ARTICLE 5. REPRESENTATIONS, WARRANTIES, AND COVENANTS

5.1 PSCo's Representations and Warranties. PSCo represents and warrants to River District as of the Effective Date and again as of Closing as follows:

(a) PSCo is a Colorado corporation, duly organized and validly existing and in good standing under the laws of the State of Colorado.

(b) This Agreement and all documents executed by PSCo that are to be delivered to River District at the Closing are, or at the time of Closing will be, duly authorized, executed and delivered by PSCo and are, or at the time of Closing will be, legal, valid and binding obligations of PSCo.

(c) To the best of PSCo's knowledge as of the Effective Date, PSCo has received no notice from any governmental authority with jurisdiction over the Shoshone Water Rights of any current violation of any laws or regulations applicable to the Shoshone Water Rights.

(d) To the best of PSCo's knowledge, there is no material litigation pending or threatened against PSCo that arises out of the ownership of the Shoshone Water Rights.

(e) To the best of PSCo's knowledge, no condemnation or other eminent domain proceedings are pending or threatened against the Shoshone Water Rights.

(f) PSCo is not and has never been a “foreign person” within the meaning of Section 1445 of the Internal Revenue Code of 1986, as amended, and any applicable regulations promulgated thereunder. Neither PSCo nor, to PSCo’s knowledge, any of its affiliates or their respective partners, members, shareholders or other equity owners is a person or entity with whom U.S. Persons or entities are restricted from doing business under regulations of the Office of Foreign Asset Control (“OFAC”) of the Department of the Treasury or under any statute, executive order, or other governmental action.

(g) To the best of PSCo’s knowledge, PSCo has not received any written notice that the Shoshone Water Rights are in breach of any “Environmental Requirements,” meaning all laws, ordinances, statutes, codes, rules, regulations, agreements, judgments, orders, and decrees, now or hereafter enacted, promulgated or amended, of the United States, the State of Colorado, local governmental entities or any other political subdivision or agency exercising jurisdiction over the owner of the Shoshone Water Rights, the Shoshone Water Rights, or the use of the Shoshone Water Rights, relating to pollution, the protection or regulation of human health, natural resources, or the environment, or the emission, discharge, release or threatened release of pollutants, contaminants, chemicals of industrial, toxic or hazardous substances or waste or hazardous materials into the environment (including, without limitation, ambient air, surface water, ground water or land or soil).

(h) To the extent that PSCo becomes aware after the Effective Date and prior to the Closing that any of the representations and warranties set forth in this Section 5.1, are no longer true and correct, PSCo shall promptly, and in any event prior to the Closing, provide River District with written notice thereof and explain in reasonable detail the facts giving rise to the change. Unless PSCo elects to cause and does cause the representation or warranty to again become true or correct prior to Closing, River District shall have the right to terminate the Agreement based any changes in the representations set forth in Section 5.1.

The representations and warranties of PSCo set forth in Section 5.1, as updated as of the Closing Date in accordance with the terms of this Agreement, shall survive Closing for a period of six (6) months (the “**Survival Period**”), and upon expiration thereof shall be of no further force or effect except to the extent that, with respect to any particular alleged breach, River District gives PSCo written notice so as to be received by PSCo on or before the expiration of the Survival Period of such alleged breach with sufficient detail summarizing the nature of such alleged breach (a “**Claim Notice**”) and files an action against PSCo with respect thereto within sixty (60) days of the date of such Claim Notice. Notwithstanding anything to the contrary contained herein, PSCo shall have no liability to the River District for the breach of any representation or warranty made in this Agreement or in PSCo’s closing documents unless the loss resulting from PSCo’s breach of its representations and warranties exceeds, in the aggregate, Twenty-Five Thousand Dollars (\$25,000.00), in which event PSCo shall be liable for each dollar of damages resulting from the breach or breaches of its representations and warranties, but in no event shall PSCo’s total liability for any such breach or breaches exceed, in the aggregate, five percent (5%) of the Purchase Price (the “**Cap**”); provided, however, that the Cap shall not apply to any claims made by River District due to any PSCo fraud. In no event shall any claim for a breach of any representation or warranty of PSCo be actionable or payable if the breach in question results from or is based on a condition, state of facts or other matter which was actually known by River District or any of River District’s

employees, without any duty of inquiry, prior to Closing. PSCo shall indemnify and defend River District, its directors, officers, employees, agents, successors and assigns from and against any claim, loss, liability or expense, including reasonable attorneys' fees that, during the Survival Period, arise out of or result from the breach by PSCo of any of the foregoing representations or warranties.

With the sole exception of the representations and warranties set forth in this Agreement or in the closing documents executed by PSCo at Closing ("**PSCo Closing Documents**"), the agreement between River District and PSCo for the sale of the Shoshone Water Rights is made without representation or warranty of any kind by PSCo. With the sole exception of the representations and warranties set forth in this Agreement or in the PSCo Closing Documents, PSCo makes no representation or warranty of any kind with regard to the quality or quantity of the Shoshone Water Rights or the physical condition of any infrastructure associated therewith, with regard to any restrictions, requirements, costs or constraints that may be associated with the Shoshone Water Rights, or with regard to the suitability of the Shoshone Water Rights for River District's purposes, it being the parties' express understanding and agreement that River District shall fully inspect the Shoshone Water Rights and all aspects thereof during the Due Diligence Period and prior to Closing, and that River District will rely solely upon its own inspection in determining the physical condition and other features of the Shoshone Water Rights, any restrictions, requirements, costs or constraints that may be associated with the Shoshone Water Rights, and whether the Shoshone Water Rights are suitable for River District's intended purposes. With the sole exception of the representations and warranties set forth in this Agreement or in the PSCo Closing Documents, River District will acquire the Shoshone Water Rights in an "AS IS" and "WITH ALL FAULTS" condition. Without limiting the generality of the foregoing, except to the extent the representations and warranties set forth in this Agreement or in the PSCo Closing Documents are not true and correct, River District, for itself and its successors and assigns, releases PSCo and PSCo's agents, employees, managers, members, brokers, contractors and representatives from, and waives any and all causes of action or claims against any of such persons for, (a) any and all liability attributable to any physical condition of Shoshone Water Rights, including, without limitation, the presence of any hazardous materials; and (b) any and all liability resulting from the failure of the Shoshone Water Rights to comply with any applicable laws, including, without limitation, any environmental laws. Wherever herein a representation is made based upon the knowledge of, or notice to, PSCo, such knowledge or notice, is limited to the actual knowledge without duty of inquiry of, or notice received by Donald Hartinger, Director, Plant Operations, and Patrick Martinez, Sr. Manager, Operations, all of Xcel Energy Services Inc., provided nothing in this Agreement will be deemed to be a representation made by any named individual other than in their respective representative capacity, and the River District hereby expressly releases such individuals from any and all personal liability arising out of this Agreement or the representations made herein.

5.2 River District's Representations and Warranties. River District hereby represents and warrants to PSCo as of the Effective Date and again as of Closing as follows:

(a) River District is a body corporate and politic and a political subdivision of the state of Colorado duly organized and validly existing under the laws of the state of Colorado, with full right, power and authority to take title to the Shoshone Water Rights and to enter into and otherwise perform and comply with the terms of this Agreement.

(b) This Agreement and all documents executed by River District that are to be delivered to PSCo at the Closing are, or at the time of Closing, will be duly authorized, executed and delivered by River District and are, or at the time of Closing will be legal, valid and binding obligations of River District.

(c) To the extent that River District becomes aware after the Effective Date and prior to the Closing that any of the representations and warranties set forth in Section 5.2 are no longer true and correct, River District shall promptly, and in any event prior to the Closing, provide PSCo with written notice thereof and explain in reasonable detail the facts giving rise to the change. Unless River District elects to cause and does cause the representation or warranty to again become true or correct prior to Closing, PSCo shall have the right to terminate the Agreement based on any material change in the representations set forth in Section 5.2.

(d) The representations and warranties of River District set forth in Section 5.2 as updated as of the Closing in accordance with the terms of this Agreement, shall survive Closing for a period of six (6) months.

5.3 PSCo's Covenants. Between the Effective Date and the Closing or earlier termination of this Agreement, or for such other time period as set forth below, PSCo covenants and agrees as follows:

(a) PSCo shall operate and maintain the Shoshone Water Rights in substantially the same manner in which PSCo is currently operating the Shoshone Water Rights, subject to outages at the Power Plant due to necessary maintenance and repairs.

(b) Except for the existing lien of PSCo's corporate Indenture, PSCo shall not sell, mortgage, pledge, transfer or dispose of the Shoshone Water Rights, or any interest therein, except as contemplated as a condition of this Agreement. PSCo shall not create any new encumbrances on, or limitations on the exercise of, the Shoshone Water Rights.

(c) PSCo will not directly or indirectly solicit, actively encourage, initiate, entertain, substantively review, or participate in any negotiations or discussions with any other person or entity with respect to any offer or proposal to sell or finance the Shoshone Water Rights or any part thereof.

ARTICLE 6. CLOSING

6.1 Date and Location. The closing of this transaction (the "**Closing**") shall occur at a mutually agreeable time and place as the Parties and Escrow Holder may mutually agree to in writing, but not later than sixty (60) days following issuance of the PUC Decision and the expiration of all periods of appeal of such decision without contest (the "**Closing Date**").

6.2 Transactions at Closing.

(a) On or before the Closing Date, PSCo shall deliver or cause to be delivered to the Escrow Holder, with appropriate instructions for recording and disbursement consistent with this Agreement, the following documents duly executed and acknowledged where appropriate:

1. The Special Warranty Deed substantially in the form of Exhibit C.
2. The Lease to PSCo substantially in the form attached as Exhibit D.
3. The Indenture Release.
4. A Certificate of non-foreign status pursuant to Section 1445 of the Internal Revenue Code of 1986, as amended, together with any Certificates required pursuant to Colorado law.
5. The Amendment to the Relaxation Agreement.
6. The PUC Decision.
7. A W-9 Form.
8. Such other documents as may be reasonably necessary and appropriate to complete the Closing as contemplated herein.

(b) On or before the Closing Date, River District shall deliver or cause to be delivered to the Escrow Holder, with appropriate instructions for recording and disbursement consistent with this Agreement, the following documents to be duly executed and acknowledged where appropriate:

1. An executed Promissory Note substantially in the form attached as Exhibit E.
2. A Deed of Trust substantially in the form attached as Exhibit F.
3. The Lease.
4. The Instream Flow Agreement.
5. The Water Court Decree.
6. A W-9 Form.
7. Such other documents as may be reasonably necessary and appropriate to complete the Closing contemplated herein.
8. The Closing Payment.
9. The Final Transaction Costs, if any.

(c) Each Party shall, at Closing or from time-to-time prior to Closing, execute and deliver such further instruments, affidavits, and documents as the other Party or the Escrow Holder may reasonably request to effectuate the intent of this Agreement or as required by applicable law.

(d) The Escrow Holder shall record and/or distribute the Closing Documents and shall release the Initial Deposit, the Closing Payment, and Final Transaction Costs to PSCo.

(e) River District shall pay for the cost of recording of all deeds. The Parties shall each pay for one-half (1/2) of the cost of recording any of the other Closing Documents. The Parties shall each pay one-half (1/2) of the Escrow Holder costs. Except as provided in Section 3.1(c) above, each Party shall pay its own attorneys' fees.

ARTICLE 7. GAINS ON SALE

The River District recognizes and agrees that any decision on how PSCo allocates or uses the gains on sale, if any, from the transaction contemplated by this Agreement (the “**Gains**”) is a business decision within the discretion of PSCo. In addition to the foregoing, the Parties recognize and agree that the allocation or use of the Gains may be limited by the PUC Decision.

PSCo and the River District share an interest in the ecological and environmental health of the Colorado River. The Parties also share an interest in the benefits of emerging and next-generation utility projects, and PSCo plans to pursue these types of projects across Colorado. Should PSCo identify a project located in the western Colorado region served by the River District which advances these shared interests, and which provides a benefit to PSCo’s ratepayers across the State of Colorado, and should PSCo decide to allocate, use or invest any of the Gains to finance such a project, the Parties agree to work together to promote such projects.

Notwithstanding the foregoing, the River District will not make any public statements in opposition to PSCo’s business decisions on how to allocate or use the Gains in accordance with Section 4.4(e).

ARTICLE 8. POST-CLOSING DEFAULTS AND REMEDIES

8.1 Events of Default. After Closing, each of the following shall constitute an “**Event of Default**”:

(a) Default by either Party in the due and punctual performance of any of its covenants, conditions, agreements, payments or other provisions contained in this Agreement on its part to be performed, if such default continues for thirty (30) days after written notice specifying such default and requiring the same to be remedied is given by the non-defaulting Party; provided that if such default cannot be cured within such thirty (30) days, and during such period corrective action has commenced to remedy such default and subsequently is diligently pursued to the completion of such performance, an Event of Default shall not be deemed to have occurred until one hundred and twenty (120) days after written notice has been delivered.

(b) Subject to any of the survival provisions of Sections 5.1 and 5.2 (Survival), any of the representations or warranties made by a Party shall prove to have been materially incorrect under the circumstances when made.

8.2 Remedies, Generally. Upon the occurrence and continuation of an Event of Default, the following remedies shall be available to the Parties:

(a) Except as provided in Section 8.2(b) below, if an Event of Default by PSCo, River District may in its sole discretion:

1. Waive such default or condition; or

2. If the Event of Default by PSCo is not cured as provided in Section 8.1, above, River District shall have the right to damages, EXCEPT THAT RIVER DISTRICT SPECIFICALLY WAIVES ANY SPECIAL, CONSEQUENTIAL, PUNITIVE, SPECULATIVE OR INDIRECT DAMAGES.

(b) If the Event of Default consists of a default by River District under Section 8.1, above, PSCo may in its sole discretion:

1. Waive such default or condition; or

2. If the Event of Default by River District is not cured as provided in Section 8.1, above, PSCo shall have the right to damages, EXCEPT THAT PSCo SPECIFICALLY WAIVES ANY SPECIAL, CONSEQUENTIAL, PUNITIVE, SPECULATIVE OR INDIRECT DAMAGES.

ARTICLE 9. NOTICES

Any notice, demand, claim or other written instrument required or permitted to be given pursuant to this Agreement shall be in writing signed by the Party giving such notice and shall be sent by electronic mail, hand messenger delivery, overnight courier service or certified mail (receipt requested) to the other Party at the addresses set forth below and shall be deemed to have been duly given by delivery to the respective addresses provided below, or such other address changed by the recipient by notice consistent with this Article: (i) on the date and at the time of delivery if delivered personally to the Party to whom notice is given at such address; (ii) on the date and at the time of delivery or refusal of acceptance of delivery if delivered or attempted to be delivered by an overnight courier service to the Party to whom notice is given as such address; (iii) on the date of delivery or attempted delivery shown on the registered or certified mail, return receipt requested, postage prepaid and properly addressed to such address; (iv) if an email address is specified, on the date and at the time shown on the sent email message if sent to the e-mail address specified below:

If to PSCo: Public Service Company of Colorado
 Attn: Environmental Services - Water Resources
 1800 Larimer Street, Suite 1300
 Denver, CO 80202

With Copy to: Public Service Company of Colorado
 Attn: Director, Community Relations
 1800 Larimer Street, Suite 1400
 Denver, CO 80202

and: Xcel Energy
Attn: Frances A. Folin, Esq.
1800 Larimer Street, 14th Floor
Denver, CO 80202
Frances.A.Folin@xcelenergy.com

and: Welborn Sullivan Meck & Tooley, P.C.
1401 Lawrence Street, Suite 1800
Denver, CO 80202
Attn: Carolyn Burr, Esq.; James M. Noble, Esq.
cburr@wsmtlaw.com
jnoble@wsmtlaw.com

If to River District: Andy Mueller, Esq.
General Manager
Colorado River Water Conservation District
201 Centennial St., #200
Glenwood Springs, CO 81601
amueller@crwcd.org

With Copy to: Peter Fleming, Esq.
General Counsel
Colorado River Water Conservation District
201 Centennial St., #200
Glenwood Springs, CO 81601
pfleming@crwcd.org

If to Escrow Holder: First American Title Insurance Company
1380 17th Street
Denver, CO 80202
Attn: Nichole Segura, Vice President
303.876.1112
nsegura@firstam.com

ARTICLE 10. MISCELLANEOUS

10.1 No Third-Party Beneficiary; No Waiver of Governmental Immunity. This Agreement shall not create any duty of care or liability with respect to any person or entity not a Party to this Agreement, or waive any of the privileges or immunities River District or its officers, employees, successors and assigns may present pursuant to law, including, but not limited to, the Colorado Governmental Immunity Act, C.R.S. 24-10-101, et seq., as amended.

10.2 Limits on Governmental Immunity. River District represents that, pursuant to C.R.S. Section 24-10-106, its governmental immunity is limited to claims for injury that lie in tort or could lie in tort. Under existing law, River District is not entitled to raise the defense of

sovereign immunity in connection with any legal proceeding to enforce or collect upon contractual obligations, including this Agreement, or any amendments or exhibits to this Agreement, including the payment of any amounts due thereunder, provided however that no term or condition of this Agreement shall be construed or interpreted as a waiver, express or implied, of any of the privileges or immunities River District, its officers, employees, successors or assigns may present pursuant to law, including but not limited to the Colorado Governmental Immunity Act, C.R.S. Section 24-10-101 et seq., as amended.

10.3 Mediation. If any dispute arises under this Agreement (including as to whether either Party has breached this Agreement or whether an Event of Default has occurred), then either Party may require that the other engage in nonbinding dispute resolution processes upon delivery of a written notice (a “**Dispute Notice**”) setting forth the disputed matter. Upon receipt by the other party of such Dispute Notice, the Parties shall use commercially reasonable efforts to negotiate a resolution of the dispute for a period of sixty (60) days (the “**Dispute Resolution Period**”) which may include mediation using a mediator chosen by the Parties. During the Dispute Resolution Period, no Party may bring a claim or commence legal action related to or in connection with the matter set forth in the Dispute Notice until the Dispute Resolution Period ends. This section shall not alter any date in this Agreement, unless the Parties agree otherwise in writing.

10.4 Time. Except as otherwise provided in this Agreement, time is of the essence as to each provision of this Agreement and the performance of each Party’s obligations hereunder.

10.5 Attorneys’ Fees. If any legal action or other proceeding is commenced to enforce or interpret any provision of this Agreement, the prevailing Party (defined below) shall be awarded its attorneys’ fees and expenses, in addition to any other relief granted. The phrase “**Prevailing Party**” shall include the Party who receives substantially the relief desired whether by dismissal, summary judgment, judgment or otherwise. This provision shall survive the termination of this Agreement.

10.6 No Waiver. No waiver by any party of the performance or satisfaction of any covenant or condition shall be valid unless in writing and shall not be considered to be a waiver by such party of any other covenant or condition hereunder. Any failure of a Party to enforce any of the provisions of this Agreement or to require compliance with any of its terms at any time during the pendency of this Agreement shall in no way affect the validity of this Agreement, or any part hereof, and shall not be deemed a waiver of the right of such Party thereafter to enforce any and each such provision.

10.7 Entire Agreement. This Agreement contains the entire agreement between the Parties. This Agreement may only be modified by mutual written agreement duly authorized and executed by the Parties.

10.8 Survival. The provisions of this Section and Sections 3.1(d), 4.2, 4.3, 5.1, 5.2, and 10.5 shall survive the Closing or any earlier termination of this Agreement.

10.9 Publicity. Neither PSCo nor River District shall issue any public announcement referencing the Purchase Price or the other economic terms of this Agreement without the prior

written consent of the other. The Parties agree to work cooperatively and in good faith to jointly prepare all public announcements involving this Agreement.

10.10 Assignment. River District may not assign or otherwise transfer this Agreement or any of its rights or obligations hereunder without first obtaining PSCo's prior consent and approval thereto.

10.11 Governing Law and Construction. This Agreement, including any instrument or agreement required hereunder, and all matters arising out of or in connection with this Agreement (whether in contract, tort or otherwise) shall be construed in accordance with and governed by the laws of the State of Colorado without giving effect to any conflict of law principles that would require the application of the laws of another jurisdiction. The Parties hereby agree that the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Agreement or any amendments or exhibits hereto.

10.12 Venue. All actions or proceedings arising out of or relating to this Agreement and any dispute shall be litigated in the District Court in Garfield County, Colorado. Each Party accepts for itself, generally and unconditionally, the exclusive jurisdiction and venue of the aforesaid court, submits itself to the personal jurisdiction of such courts and waives any defense of forum non conveniens or any similar defense. Each Party hereby waives its respective right to a trial by jury for any claim or cause of action based upon or arising out of or related to this Agreement in any action, proceeding, or other litigation of any type brought by any Party against any other Party, whether with respect to contract claims, tort claims, or otherwise. Each Party agrees that any such claim or cause of action will be tried by a court trial without a jury.

10.13 Joint Effort. Preparation of this Agreement has been a joint effort of the Parties and the resulting document shall not be construed more severely against one Party than against the other Party.

10.14 Days. In the event any time period set forth in this Agreement commences, expires or is determined from a date which falls on a Saturday, Sunday, legal holiday of the State of Colorado, the date of such commencement, performance, expiration or determination shall automatically be extended to the next business day. As used in this Agreement "business day" means any day except any Saturday, Sunday, any day which is a Federal or State of Colorado legal holiday, or any day on which banking institutions in the State of Colorado are authorized or required by law or other governmental action to close.

10.15 Counterparts; Electronic Signatures. This Agreement may be executed in any number of multiple counterparts, each of which shall be deemed to be an original copy and all of which shall constitute one agreement, binding on all parties hereto. PDF or DocuSign signatures shall be sufficient to bind the Parties.

10.16 Integrated Agreement. This Agreement, including all exhibits referenced herein, constitutes the complete, unseverable, unitary, integrated agreement between PSCo and River District concerning the subject matter hereof. The parties hereto acknowledge that they negotiated this Agreement, including all exhibits, as a single transaction and would not have entered into any

portion of the Agreement without the rights and obligations conferred by the Agreement as a whole. In the event of a conflict between the terms of this Agreement and any exhibits, the terms of this Agreement shall control unless such exhibit specifically identifies the Section(s) of this Agreement that will be superseded.

10.17 Approval.

(a) THE OBLIGATIONS OF THE RIVER DISTRICT ARE EXPRESSLY CONTINGENT UPON THE APPROVAL OF THIS AGREEMENT BY THE BOARD OF DIRECTORS OF THE RIVER DISTRICT.

(b) The River District's Board will not publish notice of its intent to consider this Agreement for approval, in accordance with Colorado law, until receiving written confirmation of final approval of this Agreement by the Board of Directors of PSCo and its parent company. Upon confirmation of the River District's Board's approval of this Agreement at a public meeting, each Party shall execute and deliver the Agreement to the other. The Parties may elect and mutually agree to a time and place for in-person execution of this Agreement.

10.18 Requirement of Good Faith and Reasonable Judgment. Unless otherwise expressly provided in this Agreement, all decisions to be made by a Party or jointly by the Parties shall be interpreted to require the exercise of each Party's reasonable judgment, acting in good faith, in rendering such decision.

10.19 Severability. In case any one or more of the provisions contained in this Agreement for any reason is held to be invalid or unenforceable, the invalidity or unenforceability will not affect any other provision of this Agreement, which will be construed as if the invalid or unenforceable provision had not been contained in this Agreement and, in lieu of each invalid or unenforceable provision, there will be added automatically as a part of this Agreement a provision as similar in terms to the invalid or unenforceable provision as may be possible and be valid and enforceable.

10.20 No Warranty of Tax Treatment. Each party is relying solely on itself and its own tax advisors regarding the tax treatment of the transactions contemplated under this Agreement.

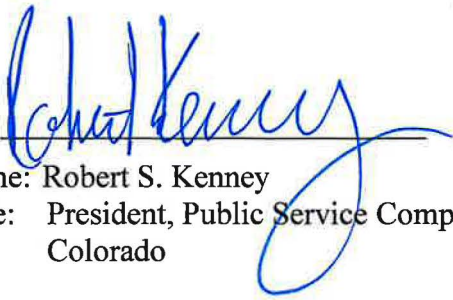
10.21 Cooperation. At the request of the other Party, each Party, on its own behalf, covenants that it shall reasonably cooperate with the other Party, at no cost to the cooperating Party, except as provided in Section 3.1(d), in negotiating with other parties, or obtaining governmental approvals which are required to implement the Agreement.

[Signatures on Next Page]

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement as of the Effective Date.

Public Service Company of Colorado, a Colorado Corporation:

Colorado River Water Conservation District, a political subdivision of the State of Colorado

By: 
Name: Robert S. Kenney
Title: President, Public Service Company of Colorado


By: 
Name: Kathy Chandler-Henry
Title: President, Colorado River Water Conservation District

EXHIBIT A
ESCROW AGREEMENT

See attached.



1380 17th Street
Denver, CO 80202

ESCROW INSTRUCTIONS

File # _____

First American Title Insurance Company (“Escrow Agent”), hereby agrees to act as the escrow agent for funds deposited with it by the other parties to this Escrow Agreement (“the Agreement”) under the terms and conditions set forth herein.

1. Colorado River Water Conservation District, a political subdivision of the state of Colorado (“Purchaser”), hereby deposits, in escrow with Escrow Agent, funds in the amount of FIVE HUNDRED THOUSAND and 00/100 DOLLARS (\$500,000.00) (the “Escrowed Funds”).

2. Escrow Agent is authorized to hold the Escrowed Funds in a segregated deposit account. The segregated deposit account [*check one*: X shall _____ shall not] be an interest-bearing deposit account.

3. If Public Service Company of Colorado, a Colorado corporation (“Seller”) and Purchaser do not jointly and timely authorize the closing of the transaction contemplated by that certain Purchase and Sale Agreement dated effective as of January 1, 2024 by and between Seller and Purchaser (the “PSA”), or if the PSA is terminated by either party pursuant to the terms thereof, Escrow Agent is instructed to follow the terms of the PSA with respect to the Escrowed Funds. Additionally, Escrow Agent shall obtain the written permission of both parties hereto prior to disbursing the Escrowed Funds. In doing so, Escrow Agent shall be relieved of any further responsibility or liability in connection with this Agreement or the Escrowed Funds.

4. The parties hereto agree that Escrow Agent has not yet made a search of the public records with respect to the transaction contemplated under the PSA, nor has Escrow Agent any documents deposited with Escrow Agent for validity, execution or their effect upon title, if any.

5. The parties agree to pay Escrow Agent any and all fees incurred pursuant to this Agreement or with respect to the escrowed funds and/or documents.

6. The parties hereto agree to hold Escrow Agent harmless, from and against any and all liabilities, losses, damages, expenses and charges, including but not limited to, attorney’s fees and expenses of litigation, including those necessary to enforce this indemnification paragraph, which may be sustained or incurred by Escrow Agent and its agents under, or arising directly or indirectly out of such any claim, action, proceeding, or judgment arising from the escrowed documents and/or funds. In the event of a dispute between the parties to this Agreement, Escrow Agent shall be permitted in its sole discretion: (a) not to act unless pursuant to an order of a court, or (b) to file a complaint in interpleader and deposit the documents and/or funds with the court, less all out-of-pocket fees and expenses incurred by Escrow Agent, including attorneys’ fees. Upon so acting under 6(a) or (b), Escrow Agent shall be released and forever discharged of all liability under the terms of this Agreement or with respect to the documents and/or funds escrowed.

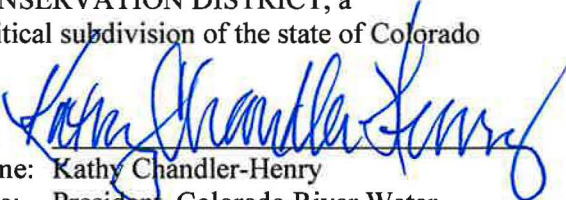
7. Escrow Agent shall not be personally liable for any act it may do or omit to do hereunder as such agent, while acting in good faith and in the exercise of its own best judgment, and any act done or omitted by it pursuant to the advice of its own attorneys shall be conclusive evidence of such good faith. Escrow Agent shall not be under any duty or obligation to ascertain the identity, authority or rights of the parties executing or delivering or purporting to execute or deliver these instructions or any documents or papers or payments deposited or called for hereunder, and assumes no responsibility or liability for the validity or sufficiency of these instructions or any documents or papers or payments deposited or called for hereunder.

8. The Agreement may be supplemented, altered, amended, modified or revoked by writing only, signed by all of the parties hereto.

Dated effective: January 1, 2024.

Purchaser:

COLORADO RIVER WATER
CONSERVATION DISTRICT, a
political subdivision of the state of Colorado

By: 
Name: Kathy Chandler-Henry
Title: President, Colorado River Water
Conservation District

Escrow Agent:

FIRST AMERICAN TITLE INSURANCE
COMPANY

By: _____
Name: _____
Title: _____

Seller:

PUBLIC SERVICE COMPANY OF
COLORADO, a Colorado corporation

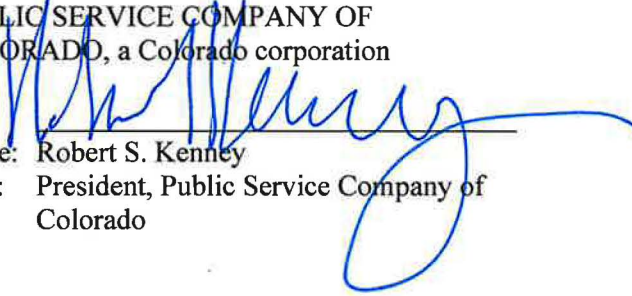
By: 
Name: Robert S. Kenney
Title: President, Public Service Company of
Colorado

EXHIBIT B

PSCo's DUE DILIGENCE DELIVERIES

Pursuant to Section 4.1 of the Agreement, PSCo shall provide any of the following documents in possession of PSCo, its agents, contractors, agents and/or attorneys to the River District within 14 days after the Effective Date of the Agreement:

1. Any and all title work, title opinions, correspondence, court documents related to the existence, title, ownership, conveyance, of title related to the Shoshone Water Rights.
2. Any and all documents related to historical diversion of the Water Rights.
3. Any official correspondence or notices from any and all government officials or agencies related to the diversion, beneficial use, or existence of the Shoshone Water Rights.
4. Any public document or correspondence from third parties related to the diversion, beneficial use or existence of the Shoshone Water Rights and/or the validity of the ability or right of the Shoshone Water Rights to call out junior water rights.
5. Any valuation, appraisal or assessment of the value of the Shoshone Water Rights.

EXHIBIT C

SPECIAL WARRANTY DEED

See attached.

SPECIAL WARRANTY DEED
(Grant of Water Rights)

THIS SPECIAL WARRANTY DEED, dated this ___ day of _____, 202_, is from Public Service Company of Colorado, a Colorado corporation (“Grantor”), whose address is 1800 Larimer Street, Suite 1300, Denver, Colorado 80202, to the Colorado River Water Conservation District (“Grantee”), a political subdivision of the State of Colorado, whose address is 201 Centennial Street, Suite 200, Glenwood Springs, Colorado 81601.

WITNESSETH, that Grantor, for and in consideration of the sum of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged does grant, sell, transfer, convey, and assign unto Grantee, its successors, and assigns, all of Grantor’s right, title, and interest in and to the following water rights:

- (a) The water right decreed as the Glenwood Power Canal and Pipe Line water right on December 9, 1907, in Civil Action No. 466, Eagle County District Court, in the amount of 1,250 cubic feet per second with an appropriation date of January 7, 1902, for power, mining, milling, manufacturing, lighting and heating and traction purposes, and as further decreed by the Eagle County District Court on February 27, 1911, in Civil Action No. 553; and
- (b) The water right decreed as the Shoshone Hydro Plant Diversion No. 2 First Enlargement on February 7, 1956 in Civil Action No. 1123, Eagle County District Court, in the amount of 158 cubic feet per second with an appropriation date of May 15, 1929, for manufacturing and generation of electrical energy,

TOGETHER with all and singular the hereditaments and appurtenances thereto belonging, or in anywise pertaining, and the reversion and reversions, remainder and remainders, and all the estate, right, interest, claim and demand whatsoever of the Grantor, in law or equity, of, in, and to the above-described water rights. (the “Shoshone Water Rights”).

TO HAVE AND TO HOLD, the Shoshone Water Rights, together with any and all rights incident thereto, forever, and all the estate, right, title and interest of Grantor in the Shoshone Water Rights unto the Grantee. Grantor further represents that it has the authority to convey to Grantee all rights described herein. Grantor, for itself, its successors and assigns, covenants and agrees that it will warrant title and forever defend the Shoshone Water Rights in the quiet and peaceable possession of Grantee, its successors and assigns, against all and every person or persons claiming the whole or any part thereof, by, through, or under the Grantor.

[signature page follows]

SPECIAL WARRANTY DEED
(Grant of Water Right)

IN WITNESS WHEREOF, Grantor has executed this Special Warranty Deed on the date set forth above.

GRANTOR

Robert S. Kenney, President
Public Service Company of Colorado

NOTARIZATION

STATE OF COLORADO)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me on the _____ day of _____ by as President of the Public Service Company of Colorado.

Witness my hand and official seal. My Commission Expires: _____

Notary Public

EXHIBIT D

LEASE OF SHOSHONE WATER RIGHTS

See attached.

WATER LEASE

This WATER LEASE (“Lease”) is entered into this ____ day of _____ (the “**Effective Date**”), by and between the COLORADO RIVER WATER CONSERVATION DISTRICT, a political subdivision of the state of Colorado (“**River District**”), and PUBLIC SERVICE COMPANY OF COLORADO, a Colorado corporation (“**PSCo**”).

RECITALS

WHEREAS, River District owns the following water rights, which were conveyed to it by PSCo pursuant to the Special Warranty Deed dated _____, 202_, and are diverted at the Shoshone Dam, located in Glenwood Canyon, Colorado, and historically used for non-consumptive hydro-power generation at the Shoshone Hydroelectric Generation Station (“**Power Plant**”).

(a) The Power Plant senior water right decreed as the Glenwood Power Canal and Pipeline water right on Dec. 9, 1907, in Civil Action No. 0466, Eagle County District Court, in the amount of 1,250 cfs with an appropriation date of Jan. 7, 1902, for power, mining, milling, manufacturing, lighting and heating and traction purposes, and as further decreed by the Eagle County District Court on Feb. 27, 1911, in Civil Action No. 553; and

(b) The Power Plant junior water right decreed as the Shoshone Hydro Plant Diversion No. 2 on Feb. 7, 1956 in Civil Action No. 1123, Eagle County District Court, in the amount of 158 cfs with an appropriation date of May 15, 1929, for manufacturing and generation of electrical energy.

together, (the “**Shoshone Water Rights**”); and

WHEREAS, PSCo desires to lease the Shoshone Water Rights from River District for continued use at the Power Plant for as long as the Power Plant is being operated to produce hydroelectric power; and

WHEREAS, River District is willing to lease the Shoshone Water Rights to PSCo for use at the Power Plant;

NOW THEREFORE, for good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, River District and PSCo agree as follows.

LEASE

1. Water Rights Lease. River District hereby leases to PSCo, and PSCo hereby leases from the River District, the above-described Shoshone Water Rights for use at the Power Plant for hydroelectric generation purposes.

2. Term of Lease. The term of this Lease begins on the Effective Date and terminates upon permanent abandonment and/or decommissioning by PSCo of Power Plant operations for hydroelectric generation purposes (the “**Term**”). Any temporary suspension of operations at the

Power Plant due to operational considerations, maintenance, replacement, repairs or for other reasons shall not constitute permanent abandonment or decommissioning. Notwithstanding the foregoing, PSCo may terminate this Lease during the Term for any reason by delivering one (1) year's advance written notice to River District. Additionally, refer to Paragraph 12 for provisions relating to termination for cause.

3. Annual Lease Fee. PSCo shall pay to River District annual rent in the amount of ten dollars (\$10.00) (the "**Annual Lease Fee**") on or before January 15 of each calendar year during the Term. For any Annual Lease Fee payment not already prepaid by PSCo, the River District will provide an invoice of the Annual Lease Fee to PSCo by December 31 of each calendar year prior to the due date of the Annual Lease Fee payment. PSCo may, in its discretion, prepay the Annual Lease Fee for more than one year of the Lease at any point during the Term. River District acknowledges that it has received a payment of \$500.00 from PSCo as of the Effective Date, representing payment of the Annual Lease Fee in advance for fifty (50) years through 20__.

4. Use of Water Rights.

a. PSCo shall use the water delivered pursuant to the Shoshone Water Rights only for power generation purposes at the Power Plant, consistent with the Shoshone Water Rights decrees. PSCo shall not use the Shoshone Water Rights for any other uses or at any other location. PSCo shall take and use the water delivered pursuant to the Shoshone Water Rights to the fullest extent practical, and shall undertake no action that could be construed as abandonment of the Shoshone Water Rights. At times when PSCo is operating the Power Plant, delivery of the Shoshone Water Rights to the Power Plant shall take precedence over any other use of the Shoshone Water Rights.

b. At times when the Power Plant is temporarily not operating or is not fully operating due to maintenance or repair issues, or due to other business considerations, the Shoshone Water Rights may be made available to the Colorado Water Conservation Board pursuant to the terms of the Instream Flow Agreement dated _____, 202__, between the River District, PSCo and the CWCB, and the decree entered in Division 5 Case No. ___CW___. PSCo shall provide advance written notice to River District at least thirty (30) days prior to any scheduled shutdown of Power Plant operations, and shall provide notice as soon as reasonably possible of any unscheduled shutdown of Power Plant operations. Such notice, whether for scheduled or unscheduled shutdown of Power Plant operations shall also provide River District notice of the anticipated amount of time that the Power Plant will be shutdown or partially shutdown.

5. Power Plant Operations. PSCo shall conduct Power Plant operations, including but not limited to replacing, reconstructing, upgrading, adding to, improving, or altering the Power Plant, in its sole discretion, so long as the same does not change the point of diversion, flow rate, and non-consumption of the Shoshone Water Rights through the Power Plant. If PSCo determines to decommission and/or permanently suspend operations of the Power Plant it will provide written notice to River District at least six (6) months before operations at the Power Plant permanently cease and this Lease shall automatically terminate as of the date of completion of decommissioning by PSCo and/or permanent abandonment of the Power Plant.

6. Restriction on Sublease and Assignment. Upon thirty (30) days advanced written notice to the River District, PSCo may assign this Lease only to a successive owner or operator of the Power Plant for power generation purposes. Otherwise PSCo shall not rent, sublet, transfer or convey the right to use the Shoshone Water Rights.

7. No Vested Interest in Shares or Joint Venture. River District grants no interest in the Shoshone Water Rights to PSCo other than as explicitly set forth in this Lease. PSCo shall make no claim to any rights, title, or interest in the Shoshone Water Rights other than as explicitly set forth in this Lease. This Lease does not create a partnership or joint venture of any kind between the parties. River District shall not be entitled to any claim based on revenue generated by PSCo by use of the Shoshone Water Rights at the Power Plant. Likewise, PSCo shall bear the entirety of any loss, cost, or expense incurred through its use of the Shoshone Water Rights at the Power Plant, including but not limited to the cost or expense related to any federal “headwaters benefit” charge. River District shall have no obligation express or implied to maintain, operate and or have any role in the decommissioning of the plant and or repair, replacement or removal of any infrastructure owned and/or operated by PSCo. PSCo hereby indemnifies and holds harmless the River District from any and all obligations, financial or otherwise related to the repair, replacement, removal of infrastructure arising from PSCo’s operation or decommissioning of the Power Plant or its associated infrastructure including but not limited to the current or future Shoshone dam.

8. No Guarantee of Yield. PSCo is entitled to receive the amount of water yielded by the Shoshone Water Rights by operation of the decrees therefore and administration of the same by the Colorado Division of Water Resources. River District makes no warranty, guarantee, or representation of any kind regarding the quality or physical yield of water to be delivered pursuant to the Shoshone Water Rights. PSCo shall not hold River District liable for any failure in delivery of the water pursuant to the Shoshone Water Rights, including, but not limited to, that caused by force of nature or failure of water supply infrastructure, except if such failure is a result of the exercise of the Shoshone Water Rights by the CWCB.

9. Maintenance of Infrastructure and Power Plant. During the Term, PSCo shall be responsible for the maintenance, construction, repair, operation, replacement, reconstruction, inspection, and improvement of:

a. the infrastructure and other personal property necessary to deliver water pursuant to the Shoshone Water Rights at PSCo’s own cost and expense. PSCo shall undertake the foregoing as may be necessary to keep the infrastructure and other personal property in good working condition during the Term of this Lease, as reasonably practicable in PSCo’s discretion.

b. the Power Plant at PSCo’s own cost and expense. PSCo may, in its sole discretion, conduct any of the foregoing at any time during the Term of this Lease so long as the Shoshone Water Rights’ use, and point of diversion remain unchanged by PSCo’s activities.

Any temporary shutdowns, suspensions, or reductions in operation of the Power Plant due to any of the foregoing activities shall not constitute a default pursuant to Paragraph 12 of this Lease.

If to River District: Andy Mueller, Esq.
General Manager
Colorado River Water Conservation District
201 Centennial St., #200
Glenwood Springs, CO 81601
amueller@crwcd.org

With Copy to: Peter Fleming, Esq.
General Counsel
Colorado River Water Conservation District
201 Centennial St., #200
Glenwood Springs, CO 81601
pfleming@crwcd.org

12. Default and Remedies.

a. If either River District or PSCo fails to comply with a term or condition herein, such failure constitutes a default of this Lease. The non-defaulting party may declare the default by providing written notice to the defaulting party in accordance with Paragraph 11 above. Upon receipt of this notice of default, the defaulting party will have thirty (30) days within which to cure the default.

b. If, in the sole discretion of the non-defaulting party, the default has not been cured, a cure has not commenced, or the defaulting-party has ceased to pursue the cure with diligence during such 30-day cure period, or after any written extension thereof mutually agreed upon by the parties, the non-defaulting party may treat the Lease as continuing and the non-defaulting party shall have the right to injunctive relief, specific performance or damages, or both, and to avail itself of any other remedy at law or equity. The failure of either party to declare a default or material breach does not establish a precedent or constitute an implied waiver of any subsequent breach of the terms and conditions in this Lease.

c. In the event either party is unable to perform its obligations under the terms of this Lease because of acts of God, strikes, stoppage of labor, riot, fire, flood, rock or mud slides, acts of war, insurrection, accident, order of any court, equipment or transportation failure or damage reasonably beyond its control, or other causes reasonably beyond its control, such party shall not be liable for damages to the other for any damages resulting from such failure to perform or otherwise from such causes.

d. All of the rights and remedies set forth in this Paragraph 12 shall be cumulative. In any action to enforce or construe the terms of this Lease, the substantially prevailing party shall recover all legal and related court costs, including all reasonable attorneys' fees and expert witness fees, costs and expenses.

13. No Third Party Beneficiaries. Nothing in this Lease, express or implied, is intended to confer any rights or remedies upon any parties other than PSCo and River District, or their respective permissible successors in interest.

14. Recovery of Costs and Fees. In addition to any remedies otherwise available, a party that is successful in a legal action commenced against the other due to a default or material breach of this Lease may recover from the defaulting party reasonable costs and attorneys' fees incurred during the course of such legal action.

15. Governing Law and Venue. This Lease shall be governed by and enforced in accordance with the laws of the State of Colorado. Proper venue for any action arising out of this Lease is the District Court for Garfield County, Colorado, or the Division 5 Water Court for the State of Colorado.

16. Severability. In the event a provision of this Lease is held invalid or unenforceable by a court of competent jurisdiction, such holding will not invalidate any other provision herein, and the remainder of the Lease should be interpreted in accordance with the intent of the parties.

17. Integration. This Lease constitutes a complete integration of the understanding and Lease between River District and PSCo with respect to the subject matter herein. No representations, negotiations, or warranties, express or implied, exist between River District and PSCo except as explicitly set forth in this Lease. This Lease may only be modified in a written form duly authorized, approved, and executed by River District and PSCo.

18. Counterparts. This Lease may be executed in counterparts, each of which shall be deemed an original, and all of which together shall constitute one and the same instrument. Executed copies of this Lease may be delivered by electronic means. The parties agree to accept and be bound by signatures hereto delivered by electronic means.

19. Recording. PSCo shall not record this Lease in the real property records of any jurisdiction. This Lease is not intended to run with the land as a covenant burdening real property.

[signature page follows]

IN WITNESS WHEREOF, the undersigned parties have executed this Water Lease on the date first set forth above.

**Public Service Company of Colorado, a
Colorado Corporation**

**Colorado River Water Conservation District,
a political subdivision of the state of Colorado**

By: _____
Name: _____
Title: _____

By: _____
Name: _____
Title: _____

EXHIBIT E
PROMISSORY NOTE

See attached.

PROMISSORY NOTE

\$20,000,000.00 (Twenty Million Dollars)

_____, 20__

FOR VALUE RECEIVED, the Colorado River Water Conservation District, a political subdivision of the state of Colorado (“**Borrower**”) promises to pay to Public Service Company of Colorado, a Colorado corporation (“**Lender**”) the principal sum of TWENTY MILLION and No/100 DOLLARS (\$20,000,000.00) (the “**Principal Amount**”), with interest on the unpaid balance thereof at the Effective Rate (hereinafter defined) in effect from time to time.

1. All sums owing hereunder are payable in lawful money of the United States of America, in immediately available funds.

2. For the purposes of this promissory note (this “**Note**”), the “**Effective Rate**” shall mean the Secured Overnight Financing Rate in effect on the date of this Note on a per annum basis. The Effective Rate is identified on the payment schedule attached hereto as Schedule 1 (the “**Payment Schedule**”).

3. The outstanding principal balance of this Note, together with all accrued and unpaid interest, shall be due and payable in annual installments calculated based on a 10-year amortization. The annual installment payments shall begin on the April 30, _____ and shall continue to be due on or before the 30th day of each subsequent April until the principal amount is paid in full, and shall be paid to Lender in accordance with the Payment Schedule.

4. Payment by Borrower shall be made to Lender by wire or electronic funds transfer per the instructions provided by Lender, or at such other place as may be designated by written notice to Borrower by Lender.

5. Payments will be applied first to any late fees, then to accrued interest, and the remainder, if any, to the then-outstanding Principal Amount. Any reductions of the Principal Amount may not be re-borrowed.

6. Any remaining Principal Amount, and any accrued interest thereon, that has not been paid in full on or before April 30, 20__ (“**Maturity Date**”) shall be due and payable on the Maturity Date.

7. The River District may prepay the then-outstanding amount of this Note, along with any outstanding interest, at any time without penalty or premium.

8. If any payment required by this Note is not paid when due the indebtedness shall bear interest at the rate of Effective Rate plus 5% per annum until such payment is made. Further, if any payment is not paid within 30 days of its due date, Borrower shall pay Lender a late payment charge of 10% of the amount of such annual payment. Should the Borrower fail to pay any payment due pursuant to this Note within sixty (60) days, Lender shall be entitled to accelerate the entire remaining principal amount then outstanding and all accrued interest and penalties thereon.

9. Nothing in this Note is intended or shall be construed to create a multiple fiscal year financial obligation or debt of the Borrower. Where activities or payment obligations provided in

and: Welborn, Sullivan, Meck & Tooley, P.C.
1401 Lawrence Street, Suite 1800
Denver, Colorado 80202
Attn: Carolyn Burr, Esq., James M. Noble, Esq.
(303) 830-2500
cburr@wsmtlaw.com, jnoble@wsmtlaw.com

If to Borrower: Andy Mueller, Esq.
General Manager
Colorado River Water Conservation District
201 Centennial St., #200
Glenwood Springs, CO 81601
970-945-8522
amueller@crwcd.org

with a copy to: Peter Fleming, Esq.
General Counsel
Colorado River Water Conservation District
201 Centennial St., #200
Glenwood Springs, CO 81601
970-945-8522
pfleming@crwcd.org

12. A waiver of any term of this Note or the Deed of Trust or of any of the obligations secured thereby must be made in writing and shall be limited to the express written terms of such waiver. In the event of any inconsistencies between the terms of this Note and the terms of any other document related to the loan evidenced by this Note, the terms of this Note shall prevail.

13. This Note shall be construed and enforced in accordance with the laws of the State of Colorado.

14. The provisions of this Note may be amended or revised only by an instrument in writing signed by the Borrower and Lender.

BORROWER:

Colorado River Water Conservation District,
a political subdivision of the State of Colorado

By: _____

Schedule 1
(Payment Schedule)

[insert amortization/payment schedule prior to closing]

EXHIBIT F
DEED OF TRUST

See attached.

Following recording return to:
Public Service Company of Colorado
c/o Xcel Energy
Attn: Legal Dept. – Real Estate
1800 Larimer Street, 14th Floor
Denver, Colorado 80202

DEED OF TRUST

THIS DEED OF TRUST is made this _____ day of _____, 20____, by the COLORADO RIVER WATER CONSERVATION DISTRICT, a political subdivision of the State of Colorado (“Trustor”), whose address is 201 Centennial Street, Suite 200, Glenwood Springs, Colorado 81601, in favor of the PUBLIC TRUSTEE OF GARFIELD COUNTY, COLORADO (“Trustee”), for the benefit of PUBLIC SERVICE COMPANY OF COLORADO, a Colorado corporation (“Beneficiary”), whose address is 1800 Larimer Street, Suite 1100, Denver, Colorado 80202.

1. **Property in Trust.** Trustor, in consideration of the indebtedness herein recited and the trust herein created, hereby grants and conveys to Trustee, for the benefit of Beneficiary, in trust, with power of sale, all of Trustor’s right, title, and interest in the following legally described property located in the COUNTY OF GARFIELD, STATE OF COLORADO (the “Property”):

- (a) The Shoshone Power Plant senior water right decreed as the Glenwood Power Canal and Pipeline water right on Dec. 9, 1907, in Civil Action No. 0466, Eagle County District Court, in the amount of 1,250 cfs with an appropriation date of Jan. 7, 1902, for power, mining, milling, manufacturing, lighting and heating and traction purposes, and as further decreed by the Eagle County District Court on Feb. 27, 1911, in Civil Action No. 553; and
- (b) The Shoshone Power Plant junior water right decreed as the Shoshone Hydro Plant Diversion No. 2 on Feb. 7, 1956, in Civil Action No. 1123, Eagle County District Court, in the amount of 158 cfs with an appropriation date of May 15, 1929, for manufacturing and generation of electrical energy.

2. **Note; Obligations Secured.** This Deed of Trust is given to secure to Beneficiary:

- (a) the repayment of the indebtedness evidenced by Trustor’s promissory note (“Note”), dated as of _____, in the principal sum of TWENTY MILLION and 00/100 DOLLARS (U.S. \$20,000,000.00), with interest as specified in the Note;
- (b) the payment of all other sums as specified in the Note disbursed by Beneficiary in accordance with this Deed of Trust to protect the security of this Deed of Trust; and
- (c) the performance of the covenants and agreements of Trustor herein contained.

If not sooner paid, the entire principal amount outstanding and accrued interest thereon shall be due and payable on _____.

3. **Title.** Trustor covenants that Trustor has taken no action to alienate and/or convey the title to the Property received from Beneficiary via Special Warranty deed dated the same date as this Deed of Trust.

4. **Payment of Principal and Interest.** Trustor shall promptly pay when due the principal of and interest on the indebtedness evidenced by the Note, and any late charges or other charges as provided in the Note, and shall perform all of Trustor's other covenants contained in the Note.

5. **Application of Payments.** All payments received by Beneficiary under the terms hereof shall be applied by Beneficiary first in payment of amounts due pursuant to §8 (Protection of Beneficiary's Security), and the balance in accordance with the terms and conditions of the Note.

6. **Prior Mortgages and Deeds of Trust; Charges; Liens.** Trustor represents and warrants that there are no prior deeds of trust, charges or liens on the Property.

7. **Preservation and Maintenance of Property.** Trustor shall not commit waste or permit impairment or deterioration of the Property and shall comply with the provisions of any lease if this Deed of Trust is on a leasehold. Trustor shall perform all of Trustor's obligations under any declarations, covenants, by-laws, rules, court decrees, or other documents governing the use or ownership of the Property.

8. **Protection of Beneficiary's Security.** If Trustor fails to perform the covenants and agreements contained in this Deed of Trust, or if a default occurs in a prior lien, or if any action or proceeding is commenced which materially affects Beneficiary's interest in the Property, then Beneficiary, at Beneficiary's option, with notice to Trustor if required by law, may make such appearances, disburse such sums, and take such action as is necessary to protect Beneficiary's interest, including, but not limited to:

- (a) any general or special taxes or ditch or water assessments levied or accruing against the Property;
- (b) the premiums on any insurance necessary to protect any improvements comprising a part of the Property;
- (c) sums due on any prior lien or encumbrance on the Property;
- (d) if the Property is a leasehold or is subject to a lease, all sums due under such lease;
- (e) the reasonable costs and expenses of defending, protecting, and maintaining the Property and Beneficiary's interest in the Property, including repair and maintenance costs and expenses, costs and expenses of protecting and securing the Property, receiver's fees and expenses, inspection fees, appraisal fees, court costs, attorney fees and costs, and fees and costs of an attorney in the employment of Beneficiary or holder of the certificate of purchase;
- (f) all other costs and expenses allowable by the evidence of debt or this Deed of Trust; and

- (g) such other costs and expenses which may be authorized by a court of competent jurisdiction.

Trustor hereby assigns to Beneficiary any right Trustor may have by reason of any prior encumbrance on the Property or by law or otherwise to cure any default under said prior encumbrance.

Any amounts disbursed by Beneficiary pursuant to this §8, with interest thereon, shall become additional indebtedness of Trustor secured by this Deed of Trust. Such amounts shall be payable upon notice from Beneficiary to Trustor requesting payment thereof, and Beneficiary may bring suit to collect any amounts so disbursed plus interest specified in the Note. Nothing contained in this §8 shall require Beneficiary to incur any expense or take any action hereunder.

9. **Condemnation.** The proceeds of any award or claim for damages, direct or consequential, in connection with any condemnation or other taking of the Property, or part thereof, or for conveyance in lieu of condemnation, are hereby assigned and shall be paid to Beneficiary as herein provided. In the event of a total taking of the Property, the proceeds shall be applied to the sums secured by this Deed of Trust, with the excess, if any, paid to Trustor.

In the event of a partial taking of the Property, the proceeds remaining after taking out any part of the award due any prior lien holder (net award) shall be divided between Beneficiary and Trustor, in the same ratio as the amount of the sums secured by this Deed of Trust immediately prior to the date of taking bears to Trustor's equity in the Property immediately prior to the date of taking. Trustor's equity in the Property means the fair market value of the Property less the amount of sums secured by both this Deed of Trust and all prior liens (except taxes) that are to receive any of the award, all at the value immediately prior to the date of taking.

If the Property is abandoned by Trustor or if, after notice by Beneficiary to Trustor that the condemnor offers to make an award or settle a claim for damages, Trustor fails to respond to Beneficiary within 30 days after the date such notice is given, Beneficiary is authorized to collect and apply the proceeds, at Beneficiary's option, either to restoration or repair of the Property or to the sums secured by this Deed of Trust.

Any such application of proceeds to principal shall not extend or postpone the due date of the installments referred to in §4 (Payment of Principal and Interest) nor change the amount of such installments.

10. **Trustor not Released.** Extension of the time for payment or modification of amortization of the sums secured by this Deed of Trust granted by Beneficiary to any successor in interest of Trustor shall not operate to release, in any manner, the liability of the original Trustor, nor Trustor's successors in interest, from the original terms of this Deed of Trust. Beneficiary shall not be required to commence proceedings against such successor or refuse to extend time for payment or otherwise modify amortization of the sums secured by this Deed of Trust by reason of any demand made by the original Trustor nor Trustor's successors in interest.

11. **Forbearance by Beneficiary Not a Waiver.** Any forbearance by Beneficiary in exercising any right or remedy hereunder, or otherwise afforded by law, shall not be a waiver or preclude the exercise of any such right or remedy.

12. **Remedies Cumulative.** Each remedy provided in the Note and this Deed of Trust is distinct from and cumulative to all other rights or remedies under the Note and this Deed of Trust or afforded by law or equity, and may be exercised concurrently, independently or successively.

13. **Successors and Assigns Bound; Joint and Several Liability; Captions.** The covenants and agreements herein contained shall bind, and the rights hereunder shall inure to, the respective successors and assigns of Beneficiary and Trustor, subject to the provisions of §21 (Transfer of the Property; Assumption). All covenants and agreements of Trustor shall be joint and several. The captions and headings of the sections in this Deed of Trust are for convenience only and are not to be used to interpret or define the provisions hereof.

14. **Notice.** Except for any notice required by law to be given in another manner, (a) any notice to Trustor provided for in this Deed of Trust shall be in writing and shall be given and be effective upon (1) delivery to Trustor or (2) mailing such notice by first class U.S. mail, addressed to Trustor at Trustor's address stated herein or at such other address as Trustor may designate by notice to Beneficiary as provided herein, and (b) any notice to Beneficiary shall be in writing and shall be given and be effective upon (1) delivery to Beneficiary or (2) mailing such notice by first class U.S. mail, to Beneficiary's address stated herein or to such other address as Beneficiary may designate by notice to Trustor as provided herein. Any notice provided for in this Deed of Trust shall be deemed to have been given to Trustor or Beneficiary when given in any manner designated herein.

15. **Governing Law; Severability.** The Note and this Deed of Trust shall be governed by the laws of the State of Colorado. In the event that any provision or clause of this Deed of Trust or the Note conflicts with the law, such conflict shall not affect other provisions of this Deed of Trust or the Note which can be given effect without the conflicting provision, and to this end the provisions of the Deed of Trust and Note are declared to be severable.

16. **Acceleration; Foreclosure; Other Remedies.** Except as provided in §21 (Transfer of the Property; Assumption), upon Trustor's breach of any covenant or agreement of Trustor in this Deed of Trust, at Beneficiary's option, all of the sums secured by this Deed of Trust shall be immediately due and payable (Acceleration). To exercise this option, Beneficiary may invoke the power of sale, may commence and maintain an action to foreclose this instrument and in such event Borrower specifically waives the defense of laches and any applicable statutes of limitation, and/or may exercise any other remedies permitted by law. Beneficiary shall be entitled to collect all reasonable costs and expenses incurred in pursuing the remedies provided in this Deed of Trust, including, but not limited to, reasonable attorney's fees.

If Beneficiary invokes the power of sale, Beneficiary shall give written notice to Trustee of such election. Trustee shall give such notice to Trustor of Trustor's rights as is provided by law. Trustee shall record a copy of such notice and shall cause publication of the legal notice as required by law in a newspaper of general circulation in each county in which the Property is situated, and shall

mail copies of such notice of sale to Trustor and other persons as prescribed by law. After the lapse of such time as may be required by law, Trustee, without demand on Trustor, shall sell the Property at public auction to the highest bidder for cash at the time and place (which may be on the Property or any part thereof as permitted by law) in one or more parcels as Trustee may think best and in such order as Trustee may determine. Beneficiary or Beneficiary's designee may purchase the Property at any sale. It shall not be obligatory upon the purchaser at any such sale to see to the application of the purchase money.

Trustee shall apply the proceeds of the sale in the following order: (a) to all reasonable costs and expenses of the sale, including, but not limited to, reasonable Trustee's and attorney's fees and costs of title evidence; (b) to all sums secured by this Deed of Trust; and (c) the excess, if any, to the person or persons legally entitled thereto.

17. **Trustor's Right to Cure Default.** Whenever foreclosure is commenced for nonpayment of any sums due hereunder, the owners of the Property or parties liable hereon shall be entitled to cure said defaults by paying all delinquent principal and interest payments due as of the date of cure, costs, expenses, late charges, attorney's fees and other fees all in the manner provided by law. Upon such payment, this Deed of Trust and the obligations secured hereby shall remain in full force and effect as though no Acceleration had occurred, and the foreclosure proceedings shall be discontinued.

18. **Appointment of Receiver; Beneficiary in Possession.** Beneficiary or the holder of the Trustee's certificate of purchase shall be entitled to a receiver for the Property after Acceleration under §16 (Acceleration; Foreclosure; Other Remedies), and shall also be so entitled during the time covered by foreclosure proceedings and the period of redemption, if any; and shall be entitled thereto as a matter of right without regard to the solvency or insolvency of Trustor or of the then owner of the Property, and without regard to the value thereof. Such receiver may be appointed by any Court of competent jurisdiction upon ex parte application and without notice; notice being hereby expressly waived.

Upon Acceleration under §16 (Acceleration; Foreclosure; Other Remedies) or abandonment of the Property, Beneficiary, in person, by agent or by judicially-appointed receiver, shall be entitled to enter upon, take possession of and manage the Property and to collect the rents of the Property including those past due. All rents collected by Beneficiary or the receiver shall be applied, first to payment of the costs of preservation and management of the Property, second to payments due upon prior liens, and then to the sums secured by this Deed of Trust. Beneficiary and the receiver shall be liable to account only for those rents actually received.

19. **Release.** Upon payment of all sums secured by this Deed of Trust, Beneficiary shall cause Trustee to release this Deed of Trust and shall produce for Trustee the Note. Trustor shall pay all costs of recordation and shall pay the statutory Trustee's fees. If Beneficiary shall not produce the Note as aforesaid, then Beneficiary, upon notice in accordance with §14 (Notice) from Trustor to Beneficiary, shall obtain, at Beneficiary's expense, and file any lost instrument bond required by Trustee or pay the cost thereof to affect the release of this Deed of Trust.

20. **Waiver of Exemptions.** Trustor hereby waives all right of homestead and any other exemption in the Property under state or federal law presently existing or hereafter enacted.

21. **Transfer of the Property; Assumption.** The following events shall be referred to herein as a "Transfer": (i) a transfer or conveyance of title (or any portion thereof, legal or equitable) of the Property (or any part thereof or interest therein); (ii) the execution of a contract or agreement creating a right to title (or any portion thereof, legal or equitable) in the Property (or any part thereof or interest therein); (iii) or an agreement granting a possessory right in the Property (or any portion thereof), in excess of 3 years; (iv) a sale or transfer of, or the execution of a contract or agreement creating a right to acquire or receive, more than fifty percent (50%) of the controlling interest or more than fifty percent (50%) of the beneficial interest in Trustor and (v) the reorganization, liquidation or dissolution of Trustor. Not to be included as a Transfer are the creation of a lien or encumbrance subordinate to this Deed of Trust, or an agreement with, or transfer to, the Colorado Water Conservation Board regarding the use of the Property for instream flow purposes.

At the election of Beneficiary, in the event of each and every Transfer:

- (a) All sums secured by this Deed of Trust shall become immediately due and payable (Acceleration).
- (b) If a Transfer occurs and should Beneficiary not exercise Beneficiary's option pursuant to this §21 to Accelerate, Transferee shall be deemed to have assumed all of the obligations of Trustor under this Deed of Trust including all sums secured hereby whether or not the instrument evidencing such conveyance, contract or grant expressly so provides. This covenant shall run with the Property and remain in full force and effect until said sums are paid in full. Beneficiary may without notice to Trustor deal with Transferee in the same manner as with Trustor with reference to said sums including the payment or credit to Transferee of undisbursed reserve Funds on payment in full of said sums, without in any way altering or discharging Trustor's liability hereunder for the obligations hereby secured.
- (c) Should Beneficiary not elect to Accelerate upon the occurrence of such Transfer then, subject to §21(b) above, the mere fact of a lapse of time or the acceptance of payment subsequent to any of such events, whether or not Beneficiary had actual or constructive notice of such Transfer, shall not be deemed a waiver of Beneficiary's right to make such election nor shall Beneficiary be estopped therefrom by virtue thereof. The issuance on behalf of Beneficiary of a routine statement showing the status of the loan, whether or not Beneficiary had actual or constructive notice of such Transfer, shall not be a waiver or estoppel of Beneficiary's said rights.

22. **Trustor's Copy.** Trustor acknowledges receipt of a copy of the Note and this Deed of Trust.

[signature page follows]

MEMORANDUM – DRAFT – SUBJECT TO REVISION

To: Colorado River District Staff and Counsel
From: Hydros Consulting, Inc.
Subject: Shoshone Power Plant Water Rights Yield Assessment
Date: September 11, 2024

Summary

The Colorado River District (River District) asked Hydros Consulting, Inc. (Hydros) to provide technical assistance in quantifying the yield or “pull” of the water rights associated with the Shoshone Power Plant (Shoshone), with the goal of understanding the impact of the Shoshone water rights on flows through the “15-Mile Reach”¹ near Palisade, Colorado and at the Colorado-Utah state line. To perform this analysis, Hydros used the State of Colorado’s StateMod water allocation and accounting model to assess impacts to river flows both with and without the Shoshone water rights being utilized. Notwithstanding the foregoing, this analysis is not intended to serve as an analysis of the historical use of the Shoshone water rights with respect to any proceeding in water court for a change in type of use for the Shoshone water rights. Instead, this analysis is provided to demonstrate the benefits of the Shoshone water rights on flows through the 15-Mile Reach.

The analysis indicates that continued exercise of the Shoshone water rights will result in significant benefits to the Colorado River through the 15-Mile Reach to the Colorado-Utah state line, and abandonment or disuse of those rights would dramatically reduce flows, particularly in drier years. Assuming full use of the Shoshone water rights, and continued growth of demands for consumptive uses in the upper mainstem Colorado River, the net annual benefit of the Shoshone call could be more than 80,000 acre-feet of water to the 15-Mile Reach in dry years. The benefit is even more pronounced during critically dry months when the Shoshone water rights are fully utilized. As shown in Table 7, flows in these critically dry months are as much as 29% higher (approximately 140 cfs) on average when the Shoshone water rights are being fully utilized. The benefits of continued exercise of the Shoshone water rights are not limited to critically dry periods, and an *average* flow increase of 6% - 9% (equal to approximately 78 cfs to 96 cfs) is expected across the driest 50% of *all* simulated monthly flows compared to flows without Shoshone.

This report first provides a background of the Shoshone water rights and the importance of the administration of those water rights on the Colorado River. Next, this report describes

¹ See, for example: <https://coloradowatertrust.org/project/15-mile-reach>.

the methodologies used to quantify the yield of the Shoshone water rights. Finally, a description of the various scenarios used to compare model runs with and without the Shoshone water rights and the results of those models are presented.

Background

The Shoshone Power Plant is a run-of-river hydroelectric power plant located on the Colorado River approximately nine miles east of Glenwood Springs, Colorado. The power plant has been in operation since the early 1900s and utilizes two water rights as described in Table 1. Together, the water rights total 1,408 cubic feet per second (cfs). As a run-of-river operation, the Shoshone hydroelectric plant has no consumptive use and no immediately identifiable impact on the river, other than a small forebay and reduced flows through a short section of Glenwood Canyon. The power plant's broader impact on the river, however, is at times significant. The Shoshone Call² will often limit the ability of junior users upstream of the power plant to divert water or will force those users to provide replacement water to offset their depletions. The beneficial effect of the Shoshone Call to river flows is also felt downstream of the power plant, as all of the water diverted through the plant's penstocks returns to the Colorado River and continues downstream, where it is available for diversion by other water users.

Table 1: Shoshone Power Plant Water Rights.

Water Right	Amount [cfs]
Adjudication Date 12/9/1907; Admin. No.: 20427.18999	1,250
Adjudication Date 2/7/1956; Admin. No.: 33023.28989	158

The River District is interested in acquiring the Shoshone water rights from Public Service Company of Colorado (PSCo). Model results demonstrate that protecting the Shoshone water rights would benefit flows through the 15-Mile Reach, which is critical habitat for endangered warm-water fish species. The River District and west slope water users have a number of operating agreements, leases, and other mechanisms in place to ensure that critical flows are maintained through the 15-Mile Reach.³ Failure to maintain these flows could lead to non-compliance with the Programmatic Biological Opinion and Record of Decision (PBO) regarding endangered fish species in the Colorado River basin. As with most western rivers, critically low flows are often associated with particularly dry hydrologic years, and with late summer and early fall months in *most* years, when demands are at their highest and the river is returning to baseflow conditions after the snowmelt runoff.

² Unless stated otherwise, "Shoshone Call" in this report refers to the full 1,408 cfs junior + senior call

³ See, for example: https://www.usbr.gov/gp/eca/10825_final_ea_fonsi.pdf

Without active diversions of the Shoshone water rights, the impacts to the river in the future could be even greater. Growth of both transmountain diversions (TMDs) and in-basin uses by junior water users would likely result in additional reduction to river flows absent the Shoshone water rights being exercised.

Between 1975 and 2020, the Shoshone Power Plant diverted an annual average of approximately 668,000 acre-feet/year, according to State records on Colorado's Decision Support System (CDSS) website. Figure 1 below shows the average monthly diversions (1975-2020) as reported by the State of Colorado via CDSS (<https://dwr.state.co.us/Tools/Structures/5300584>). These average monthly values are shown in comparison to the monthly volumes *if the Shoshone water rights were being met 100% of the time*.⁴ Natural hydrologic shortages, particularly during winter months, will often prohibit Shoshone from realizing those full diversion amounts, even if they are calling for their full decreed amounts. Shoshone's diversions are non-consumptive, and the Shoshone water rights are senior to many upstream diversions for consumptive uses. As a result, the Shoshone Call has historically resulted in increased flows in the Colorado River above and below the Shoshone Power Plant.

⁴ The CDSS records are based on an equation relating power generation to flow through the turbine. It is believed these records may underestimate the actual volume of water delivered to and through the Shoshone powerplant due to rating curve discrepancies, system losses, and other factors. If historical diversions are in fact greater than reported through CDSS, we expect the benefit from continued use of the Shoshone Rights to increase. Water availability, particularly during fall and winter months, will often limit how much water Shoshone can actually divert.

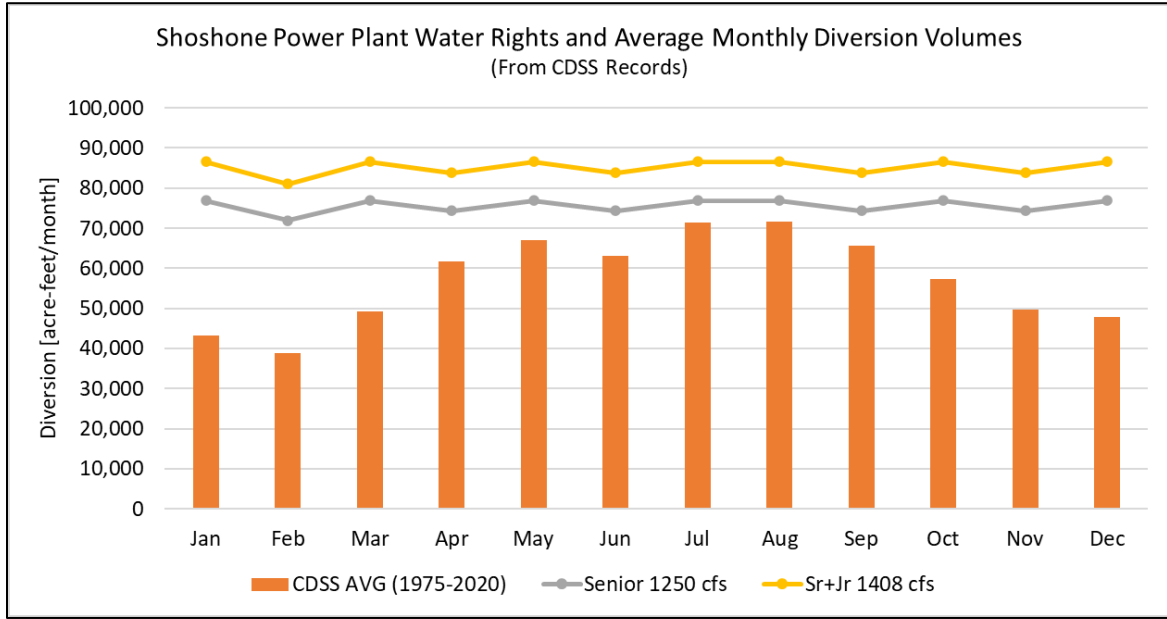


Figure 1: CDSS Shoshone Power Plant Average Monthly Diversions (1975-2020) and Maximum Decreed Diversion Rates.

Methodology

StateMod is a water rights administration and accounting model that simulates priority administration of Colorado water rights and operating protocols such as diversions to storage, releases, exchanges, and augmentation. It is often used to evaluate water availability for new water rights, or to evaluate potential impacts from changes in use of existing water rights. StateMod can simulate changes in diversions, releases, and other basin-wide water operations by senior and junior water rights both upstream and downstream of the Shoshone Power Plant if the exercise of the Shoshone water rights is modified. Of particular interest to this analysis are major downstream water rights such as the Grand Valley Project and Grand Valley Canal diversions, commonly referred to collectively as the “Cameo Call” diversions, and environmental flows through the 15-Mile Reach. The interaction between the Cameo Call and the Shoshone water rights is discussed in detail in Appendix C.

Using the Baseline model from the State of Colorado’s 2015 release of the Upper Colorado River Basin StateMod model (cm2015B⁵) with updates made as part of the Phase IV Risk Study (Hydros, 2023)⁶, Hydros evaluated the Shoshone water rights by performing a series of analyses comparing model runs with and without the Shoshone water rights active⁷. In addition to a “No Shoshone Call” scenario, several other scenarios were developed in which Shoshone’s water rights were active at different levels of demand. Using this modeling approach, the difference in model results between the activated and deactivated runs are used to illustrate the impact of the Shoshone water rights.

Scenario Descriptions

For this analysis, we compare four Shoshone operating policies together with both current and estimated future basin-wide demands. Analysis of results focuses on the “Stress-Test Period”⁸ (water years 1988-2013)⁹ as this includes several critically dry periods, particularly during the late 1980s, 2002-2005, and 2012-2013. Unique characteristics that

⁵ Obtained on 4/7/2022 from: <https://cdss.colorado.gov/software/statemod>

⁶ Technical Appendices A and B of the Phase IV Risk Study Report describe these modifications in detail. The purpose of the modifications was to enhance accuracy of simulation for the structures in the model that simulate the aggregated operations of numerous smaller diversions from tributaries, which is described in Appendix A, and to represent future incremental development of transmountain diversions and other demands to represent future conditions, which is described in Appendix B.

⁷ This analysis uses the publicly available version of StateMod simulating on a monthly timestep. The CWCB is currently developing a daily version of the mainstem Colorado River model in StateMod.

⁸ The “Stress Test” hydrology concept has been used extensively in Colorado River Basin planning efforts such as the Drought Contingency Plan (DCP) and other planning studies. The use of this period as the period of focus in this study should not be construed as a representative study period of the historical exercise of the Shoshone water rights for evaluation of the proposed change of use.

⁹ Water years start October 1st of the prior year and continue through September 30 of the year identified.

define each scenario include the demands assumed for Shoshone, the demands assumed for other water users in the basin, and whether a reduction in the Shoshone Call based upon a “call relaxation” agreement with Xcel (Xcel, 2007) is applied. The assumptions for each scenario are listed in Table 2.

Table 2. Scenario Definitions.

Scenario	Shoshone Demands	Basin-Wide Demands	Call Relaxation
Zero Shoshone Current	Zero ¹	Current ²	None
Zero Shoshone Future	Zero	Future ³	None
Senior Current	Senior ⁴	Current	None
Senior Future	Senior	Future	None
Max Current	Maximum ⁵	Current	None
Max Future	Maximum	Future	None
Senior Current w/ Relaxation Agreement	Senior	Current	3-year ⁶
Senior Future w/ Relaxation Agreement	Senior	Future	3-year
Max Current w/ Relaxation Agreement	Maximum	Current	3-year
Max Future w/ Relaxation Agreement	Maximum	Future	3-year

1) Scenarios with Zero demands for Shoshone are used to quantify the impact on river flows if the Shoshone water rights were abandoned or not exercised. This is the “worst case” scenario for river flows.

2) “Current” basin-wide demands apply to all water users other than Shoshone, and are the demands used in the CM2015B Baseline StateMod model of the Upper Colorado.

3) “Future” basin-wide demands apply to all water users other than Shoshone, and are the demands developed to represent future conditions identified in the Phase III Risk Study

4) “Senior” demands for Shoshone are based on only the senior diversion right of 1,250 cfs, totaling approximately 906,000 acre-feet per year.

5) “Maximum” demands for Shoshone assume full use of all decreed water rights for Shoshone, totaling approximately 1,019,000 acre-feet per year. These demands are used to estimate upper bounds on the impact of the Shoshone call (see Figure 1)

6) “3-year” Xcel Call Reduction scenarios apply the Call Relaxation in 2003, 2004, and 2013. 2003 and 2013 were years when the reduction historically occurred, and although not historically a call reduction year, Shoshone was not physically able to divert for part of 2004 so it is included here to mimic that historical reduction in demand.

Call Relaxation Agreement Background

In 2007, the City and County of Denver’s Board of Water Commissions and Xcel Energy entered into an agreement (2007 Agreement) to “relax” the Shoshone Call in years when the NRCS and Colorado River Basin Forecast Center predict that the April - July flow of the Colorado River at the Kremmling gage will be less than or equal to 85% of average (other requirements to trigger the call relaxation, including projections of defined storage content within Denver’s system, also apply, see 2007 Xcel Call Reduction [Xcel, 2007]). When the conditions for a “Call Relaxation” are met, Xcel will reduce the Shoshone Call

to a senior water right call of 704 cfs during the period of March 14th – May 20th (inclusive). 704 cfs is exactly half of the total decreed rate of 1,408 cfs diversion for the plant and represents the use of just one of the two turbines in the plant (see Table 1). A similar agreement was previously entered in 2003 (Xcel, 2003). Because the 2007 agreement is the most recent agreement, the terms of the 2007 Agreement are applied in this analysis for any year that includes a Call Relaxation. This agreement allows Denver Water and other junior water users to refill reservoirs and/or divert water through trans-basin or in-basin diversions during the pre-runoff period in exceedingly dry years when Shoshone would otherwise place an administrative call on those rights.

To simulate Call Relaxation under the 2007 Agreement, Hydros conducted model runs where the monthly demands in the Maximum Current and Maximum Future demand scenarios were reduced for the months of March, April, and May. To do this, the monthly diversion volumes were converted to a daily flow rate (assuming a uniform distribution for each month) and diversions for the period of March 14th - May 20th were limited to 704 cfs. The resulting reduction in demand is shown below in Figure 2. The daily diversion rates were then aggregated back to monthly volumes for use in the model (Table 3). The Call Relaxation scenarios were evaluated to determine incremental impacts from Call Relaxation under the 2007 Agreement during very dry years. For this analysis, we assume that the call reduction would occur in 2003, 2004, and 2013.¹⁰

¹⁰ 2003 and 2013 were years when the reduction historically occurred. The Shoshone Power Plant was not physically able to divert for part of 2004 due to infrastructure maintenance issues.

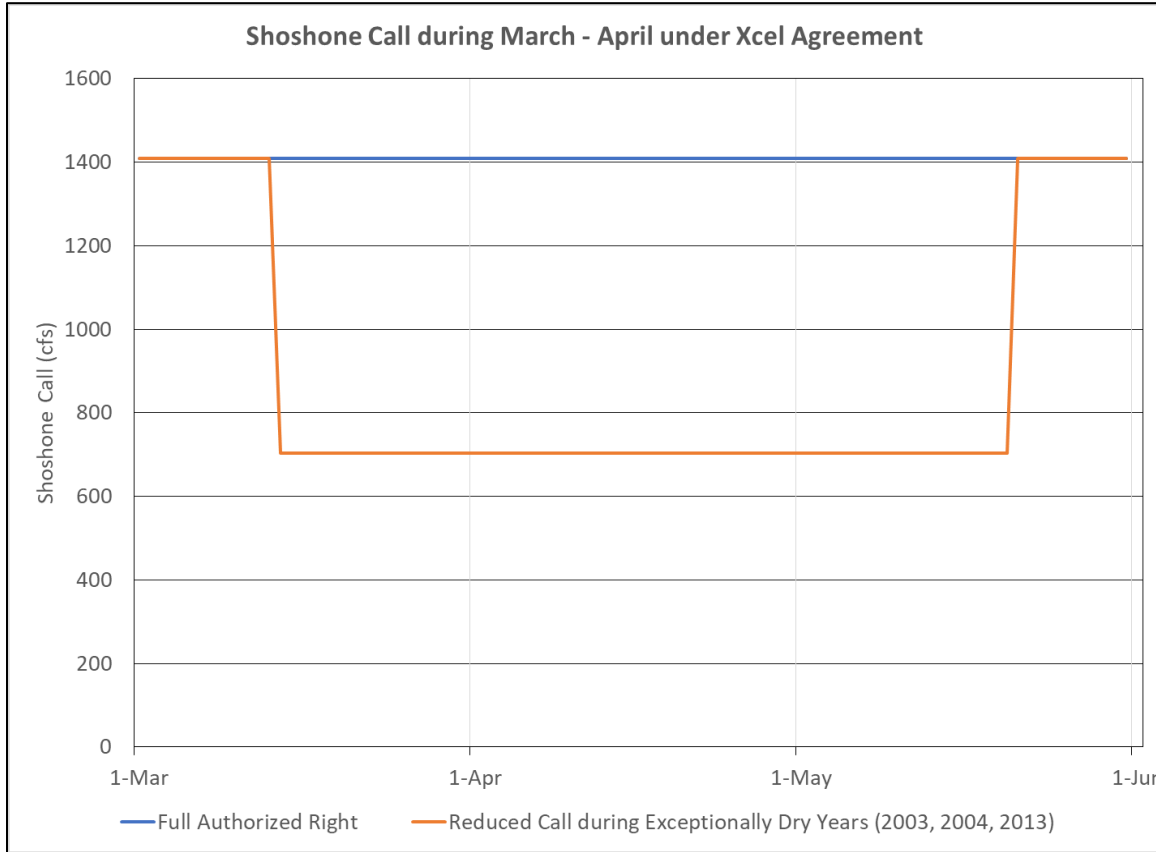


Figure 2: Demands with Call Relaxation applied to full use of both Shoshone rights.

Table 3: Change in Modeled Monthly Shoshone Call Volume (Demand) under the Call Relaxation Agreement.¹¹

Monthly Volumes	Full Use (AF)	Call Relaxation (AF)
March	86,576	61,441
April	83,783	41,892
May	86,576	58,648

Results

The following section provides a summary of results for the scenarios described above. Results focus on the Stress Test period of 1988-2013. Flows at both the Colorado-Utah state line and in the 15-Mile Reach were evaluated for each scenario, both as timeseries and via statistical analysis. Although some differences between impacts to the 15-Mile Reach and the state line were evident, the two locations had similar outcomes when comparing scenarios. As a result, and to simplify the discussion, the following summary

¹¹ Note that the relaxation agreement represents a change in demand (call) from Shoshone and the volumes shown would only be realized if water supply and river administrative conditions permit.

focuses on impacts in the 15-Mile Reach. In the following discussion of results, “yield” or “benefit” means the expected additional flow resulting from the Shoshone Power Plant and Call actively calling its decreed rights compared to expected changes in river flows without any active calls attributable to the Shoshone water rights.

The 15-Mile Reach is critical habitat for two threatened and two endangered warm-water fish species.¹² Flow recommendations have been developed by the U.S. Fish and Wildlife Service (USFWS) as part of the Programmatic EIS for the 15-Mile Reach. USFWS identified a minimum flow target of 810 cfs for dry hydrologic years for the months August-October. This is equivalent to approximately 50,000 acre-feet per month.

We examine the benefits of the Shoshone Call in two ways: first, we evaluate three example years to understand how the Shoshone Call impacts annual flow volumes in dry, average, and wet years; second, we look specifically at very low flow periods (months) in the 15-Mile Reach, to better understand how some of the most significant benefits of the Shoshone water rights are realized during times of critically low flows in this reach.

Appendix B to this report outlines the monthly distribution of yields in more detail and includes both quantifications of the typical variation in yields by month of the year. Appendix C describes the administrative conditions and operational mechanisms that lead to increased 15-Mile Reach flows during late-summer months.

Annual Examples

Antecedent conditions from one year to the next can cause significant differences in reservoir storage across scenarios with different administrative regimes or user demands. Varying levels of low initial storage between scenarios can distort or obscure the actual impacts of the Shoshone Call in the year of interest, particularly when comparing results across scenarios and multiple years. Wet, dry, and average example years were chosen based on having wet antecedent conditions in order to minimize differences between model scenarios caused by impacts of prior year drawdown in storage by junior water rights.

A table of annual results from the stress-test period (1988-2013) is attached in Appendix A as Table A-1. As shown in Table A-1, the example years are not necessarily the years with the highest yield within a particular hydrologic category. For example, we use 2010 as a typical average year. However, 1994 (another average year) has a simulated yield that is more than twice as large as 2010. Although the yield in 1994 is much larger than 2010,

¹² See <https://coloradoriverrecovery.org>

2010 is considered to be more representative of yields in an average hydrologic year due to a longer period of wet antecedent conditions leading up to that year.

Wet Year Example

1998 was chosen as the example year to represent wet conditions due to flows exceeding the 1988-2013 average by 33%, and due to antecedent conditions being wet or average for the prior 7 years. Yields for each scenario are tabulated in Table 4, where the yields for the scenarios with Call Relaxation under the 2007 Agreement are omitted due to the Call Relaxation not being active in the example year:

Table 4. Wet Year (1998) Example Yields.

Scenario	15-Mile Reach Yield (AF)
Senior Current	3,107
Senior Future	13,028
Max Current	13,359
Max Future	27,273

Average Year Example

2010 was chosen as the example year to represent average conditions, due to flows being within 4% of the 1988-2013 average, and due to antecedent conditions being wet or average for the prior 5 years. Yields for each scenario are tabulated in Table 5, where the yields for the scenarios with Call Relaxation under the 2007 Agreement are omitted due to the Call Relaxation not being active in the example year.

Table 5. Average Year (2010) Example Yields.

Scenario	15-Mile Reach Yield (AF)
Senior Current	5,376
Senior Future	22,608
Max Current	9,823
Max Future	27,324

Dry Year Example

2012 was chosen as the example year to represent dry conditions, due to flows being 48% below the 1988-2013 average, and due to antecedent conditions being wet or average for the prior 7 years. Yields for each scenario are tabulated in Table 6, where the yields for the scenarios with Call Relaxation under the 2007 Agreement are omitted due to the Call Relaxation not being active in the example year.

Table 6. Dry Year (2012) Example Yields.

Scenario	15-Mile Reach Yield (AF)
Senior Current	41,184
Senior Future	55,080
Max Current	69,580
Max Future	86,143

Annual Examples Summary

The wet, average, and dry year examples above all show a net benefit from maintenance of the Shoshone Call. These examples include both the senior (1,250 cfs) and maximum (1,408 cfs) calls for the Shoshone water rights, as well as current and future basin demands. A few obvious trends are apparent from the results:

1. There is generally a larger benefit to flows through the 15-Mile Reach in dry years as compared to wet years. This benefit is magnified when considering that the years with the highest volumetric yield are generally also the years with the lowest total annual flows to begin with.
2. Fully exercising both the senior and junior Shoshone water rights results in larger yields, meaning the junior water right provides additional value in contributing flows to the 15-Mile Reach.
3. The benefit of maintaining the Shoshone Call will increase with time, as additional upstream junior rights are developed or are more fully exercised. The Shoshone Call will be an important “backstop” to protect flows through the 15-Mile Reach as those junior rights are fully utilized.

Monthly Flow Impacts

A second analysis of the results focuses on monthly flow volumes during the Stress Test period (1988-2013), and in particular on very low flow months in which the minimum flow targets for the 15-Mile Reach are not met. Under the “No Shoshone Call” StateMod run with current basin-wide demands, approximately 15% (46 of 312 months) of *all months* since 1988 would fail to meet the late irrigation season minimum flow target of 50,000 acre-feet per month. Of these 46 months, 30 are in the August-October period (the others include 8 Aprils, 1 May, 2 Junes, and 5 Julys). Table 7 below illustrates the *average* increase in flow under the Shoshone Call during these 46 critically dry months. Table 7 includes results under both current and forecasted future Upper Colorado basin demands across the four Shoshone Call scenarios outlined in Table 2.

Under current basin demands and full exercise of the Shoshone water rights, average flows during these critically dry months are 23% higher than flows with no Shoshone Call. Assuming an increment of future growth by both TMDs and in-basin uses, the benefit of the continued exercise of Shoshone water rights results in 29% more flow on average in these critically dry months. In some instances, the monthly flows with the Shoshone Call active *more than double* the expected flow through the 15-Mile Reach under a no-call scenario. The 2007 agreement for Call Relaxation has a relatively minor impact on the critically dry months' results in the 15-Mile Reach, because the agreement is only active in certain spring conditions, and most of the critical low-flow months are in the late summer and early fall.

Table 7. Increase in flow through the 15-Mile Reach during months with less than 50,000 acre-feet of water in the 1988-2013 simulation period. Increases are shown as monthly average flow and percent increase above flows modeled in the “No Shoshone Call” scenario.

Average Monthly Flow Increase (cfs, %) 1988-2013 (Months < 50,000 AF)				
<i>Basin Demand Level</i>	Senior Shoshone Right 1,250 cfs	Senior Shoshone Right 1,250 cfs w/ Relaxation	Max Shoshone Call 1,408 cfs	Max Shoshone Call 1,408 cfs w/ Relaxation
<i>Current</i>	93 (18 %)	90 (18 %)	118 (23 %)	115 (22 %)
<i>Future</i>	123 (25 %)	120 (25 %)	140 (29 %)	127 (26 %)

The benefits of the Shoshone water rights are not limited to just the driest months. Table 8 shows the expected benefit in the driest quarter (25%) of all months in the 1988-2013 simulation period. While the average benefit across all these months is somewhat less than in the very driest of months, there is still a significant increase in average flow. Even considering the driest half of all the monthly flows in the simulation period (Table 9), there is a clear benefit from continued operation of the Shoshone water rights.

Table 8. Increase in flow through the 15-Mile Reach during the driest 25% of months in the 1988-2013 simulation period. Increases are shown as monthly average flow and percent increase over flows in the “No Shoshone Call” scenario.

Average Monthly Flow Increase (cfs, %) 1988-2013 (Driest 25% of Months)				
<i>Basin Demand Level</i>	Senior Shoshone Right 1,250 cfs	Senior Shoshone Right 1,250 cfs w/ Relaxation	Max Shoshone Call 1,408 cfs	Max Shoshone Call 1,408 cfs w/ Relaxation
<i>Current</i>	88 (12 %)	81 (11 %)	121 (16 %)	114 (15 %)
<i>Future</i>	119 (17 %)	114 (16 %)	147 (21 %)	136 (20 %)

Table 9. Increase in flow through the 15-Mile Reach during the driest half (50%) of months in the 1988-2013 simulation period. Increases are shown as monthly average flow and percent increase above flows modeled in the “No Shoshone Call” scenario.

Average Monthly Flow Increase (cfs, %) 1988-2013 (Driest 50% of Months)				
<i>Basin Demand Level</i>	Senior Shoshone Right 1,250 cfs	Senior Shoshone Right 1,250 cfs w/ Relaxation	Max Shoshone Call 1,408 cfs	Max Shoshone Call 1,408 cfs w/ Relaxation
<i>Current</i>	49 (4 %)	45 (4 %)	70 (6 %)	67 (6 %)
<i>Future</i>	76 (7 %)	73 (7 %)	97 (9 %)	88 (8 %)

Conclusions

This analysis of the Shoshone water rights indicates that abandonment or lack of enforcement of the water rights would have a significant detrimental effect on flows through the 15-Mile Reach of the Colorado River and likely would result in reduced flows at the Colorado-Utah state line. The impact of the Shoshone Call is particularly significant during dry years, such as in 2012, when the 15-Mile Reach would suffer a loss of approximately 41,000-86,000 acre-feet per year if the Shoshone water rights were no longer administered against upstream juniors.

This existing benefit of the Shoshone Call is critical to the continued success of the 15-Mile Reach PBO. If the Shoshone water rights were not exercised in the future, this would likely result in the further inability to satisfy the 15-Mile Reach PBO minimum target flows. Furthermore, the benefit of the Shoshone water rights is not only seen during these critical dry years. In average and wet years, flows in the 15-Mile Reach would be as much as 27,000 acre-feet lower (per year) without continued exercise of the Shoshone Water rights.

Of equal importance to the overall increase in annual flows through the 15-Mile Reach is the significant benefit to flows seen during late summer and early fall months, particularly in dry years, when the river is typically at its lowest. During these months, the Shoshone Call can double the monthly flow compared to flows without a Shoshone Call, and when averaged across all of the critically dry months, the Shoshone Call increases the monthly flows by 18% - 26% under the Senior Current and Future Max scenarios, respectively.

Future Work

As of early September 2024, the Colorado Water Conservation Board is working on an updated version of the Upper Colorado River Basin StateMod Model. This updated model will include revisions to operating rules, as well as a daily timestep version of the model. While that model was not publicly available when this analysis was performed, this memo will be updated *if warranted* after that model is made public.

References

- Hydros, 2023. Colorado River Risk Study Phase IV Draft Report. Prepared for the Colorado River District and the Southwestern Water Conservation District.
- Xcel, 2003. Agreement Concerning Proposed Operation of the Shoshone Power Call. Agreement between the City and County of Denver, acting by and through its Board of Water Commissioners, and the Colorado River Water Conservation District.
- Xcel, 2007. Agreement Concerning Reduction of Shoshone Call. Agreement between the City and County of Denver, acting by and through its Board of Water Commissioners, and Public Service Company of Colorado d/b/a Xcel Energy.

Appendix A: Increases inflow (aka “yield”) attributed to the Shoshone Call.

Table A-1. 15-Mile Reach Yields for Each Year in All Scenarios

Year	Hydrology	Future Development Yield* (AF)				Current Development Yield* (AF)			
		Senior	Senior-	Max	Max-Relaxation	Senior	Senior-	Max	Max-
1988	Average	20,708	20,708	20,986	20,986	3,407	3,407	-	-
1989	Dry	28,262	28,262	30,325	30,325	-	-	2,109	2,109
1990	Dry	51,330	51,330	50,386	50,386	18,267	18,267	42,655	42,655
1991	Average	35,394	35,394	33,374	33,374	38,505	38,505	19,770	19,770
1992	Average	32,442	32,442	41,387	41,387	15,995	15,995	18,658	18,658
1993	Wet		-	-	-	-	-	-	-
1994	Average	50,013	50,013	63,986	63,986	19,169	19,169	39,451	39,451
1995	Wet		-	-	-	-	-	-	-
1996	Wet		-	-	-	1,745	1,745	-	-
1997	Wet		-	-	-	-	-	-	-
1998	Wet	13,028	13,028	27,273	27,273	3,107	3,107	13,359	13,359
1999	Average	16,551	16,551	4,310	4,310	5,197	5,197	-	-
2000	Average		9,644	18,427	18,427	1,604	1,604	2,723	2,723
2001	Dry	48,552	48,552	59,162	59,162	27,086	27,086	30,354	30,354
2002	Dry	53,552	53,552	54,837	54,837	36,204	36,204	39,351	39,351
2003	Dry	32,060	25,699	43,610	12,703	22,834	17,318	24,549	19,031
2004	Dry	68,408	42,649	72,176	15,334	54,538	33,620	61,151	40,394
2005	Average	29,034	39,894	28,914	59,250	2,423	4,606	7,556	10,179
2006	Average	13,374	13,228	25,755	23,528	-	-	6,157	5,911
2007	Average		-	13,016	12,948	-	-	-	-
2008	Wet		-	-	-	-	-	-	-
2009	Wet	11,523	11,521	21,762	21,723	-	-	-	-
2010	Average	22,608	22,611	27,324	27,328	5,376	5,374	9,823	9,821
2011	Wet		-	-	-	-	-	-	-
2012	Dry	55,080	55,083	86,143	86,294	41,184	41,183	69,580	69,580
2013	Dry	20,429	5,926	22,192	-	5,419	-	7,213	-

**Yield is defined here as being necessarily greater than zero, because Shoshone’s call does not directly result in reductions in flow. Differences in reservoir operations between scenarios can cause reductions in flow greater in magnitude than Shoshone’s actual yield, resulting in zero apparent yield.*

Appendix B – Monthly Yield Analysis

This appendix provides a more detailed review of simulated monthly increases (yields) to the 15-Mile Reach than is provided in the main body of the report. Whereas the main body of the report contains results across all scenarios showing the annual yields, this appendix focuses on the Max-Relaxation scenarios¹³ under both current and future demand levels. The Max-Relaxation scenarios have distributions of monthly yields similar to the other scenarios in most years but exhibit reductions in overall yield to the 15-Mile Reach during Call Relaxation periods when compared to the Max-Relaxation scenarios, which do not include the 2007 Agreement. This appendix reviews the simulated patterns of monthly yields under the Max-Relaxation scenarios, followed by an illustration of the amount of 15-Mile Reach flows attributable to the Shoshone Call. As additional background information, Appendix C provides an overview of the operational mechanisms at Cameo (OMID Power Canal, Check Structure, and GVC operations) together with a more detailed explanation of how the exercise of the Shoshone water rights can increase flows in the 15-Mile Reach even when a Cameo Call is active.

Simulated Patterns of Monthly Yield – Magnitude and Frequency

Magnitude

The patterns of monthly yield to the 15-Mile Reach due to utilization of the Shoshone call are similar for both Current and Future demand levels. Figure 3 depicts the average amount of additional daily flow by month when full utilization of the Shoshone Call yields additional water to the 15-Mile Reach. Regardless of which demand set is used in the Max-Relaxation scenario, the pattern of monthly yields is similar, with the highest yields occurring in early spring – particularly April - and in the late summer months of August – October.

Additional flows in the 15-Mile Reach in months outside the irrigation season, such as in February and March, tend to result from changes in reservoir storage carryover from previous years, together with differing administrative regimes that can limit the amount of storable water¹⁴. The yields in those months typically result from reservoirs having to

¹³ The Max-Relaxation scenario assumes full use of the Shoshone water rights (1,408 cfs call) and implementation of a Call Relaxation under the 2007 Agreement, which is simulated to occur in this analysis in 2003, 2004, and 2013)

¹⁴ These changes may be due to both increased releases to offset other depletions and decreased ability to store water in priority. This phenomenon is seen in many years and is particularly evident in dry years, such as in 2001. In February and March of 2001, in both the Current and Future scenarios, Williams Fork Reservoir gains storage each month if the Shoshone Call is not active and loses storage each month if the Shoshone Call is active. The increase in flow at the 15-Mile Reach due to the different administrative regime at Williams Fork Reservoir in February and March with the Shoshone call on is about 88 cfs in 2001. However, the difference in river administration with and without the Shoshone Call does not impact

bypass inflows that – absent a Shoshone call – would be storable under their more junior storage rights. The pronounced increase in April is due to both changes in the ability of upstream reservoirs to fill, coupled with early-season irrigators either being curtailed or required to release additional augmentation water from storage.

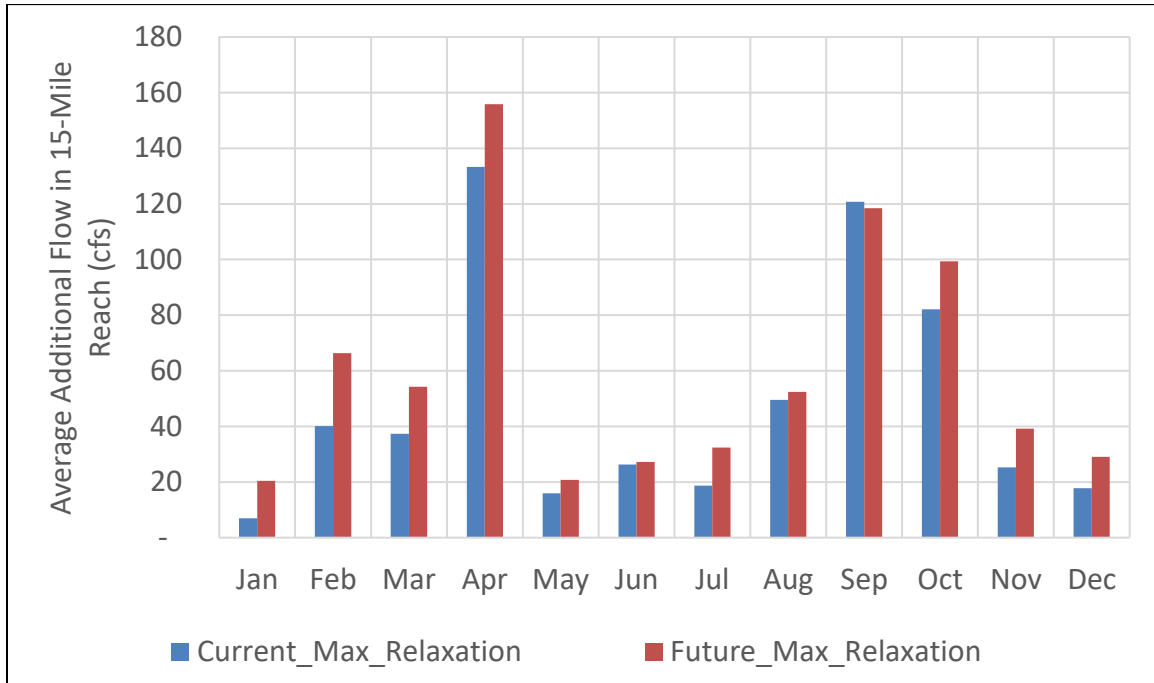


Figure 3. 1988-2013 Average Monthly Yield Magnitude Patterns - Current and Future Max Relaxation Scenarios

Frequency

In addition to increased flows during spring and late summer, the *frequency* of increased flows is also highest in these months. Table 10 illustrates expected frequency (likelihood) by month of increased 15-Mile Reach flows with the Shoshone Call active. The frequency shown is percentage of years over the 1988-2013 study period in which a given month saw increased flows.

Williams Fork Reservoir every year. Similarly, changes in storage at other reservoirs may exhibit different behavior in any given year due to the complexities of each reservoir’s operational response to the presence or absence of a Shoshone Call, and this impact may persist over multiple years.

Table 10. Monthly Yield Frequency - Current and Future Max Relaxation Scenarios

	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>
<i>Current</i>	27%	73%	69%	69%	12%	12%	15%	46%	88%	77%	46%	35%
<i>Future</i>	46%	92%	73%	77%	19%	12%	23%	54%	81%	85%	54%	54%

The monthly pattern of yield *frequency* is similar to the monthly pattern of yield *magnitude*, with the exception of the winter months (December through March). The four winter months show higher frequency of yield but a lower magnitude of yield, due to reduced natural flows in the winter and the lack of any substantial irrigation demands, including the Cameo Call, during this period.

PBO Comparison

Differences between these scenarios can also be evaluated against flow recommendations from the Upper Colorado River PBO.¹⁵ Table 2 of the PBO is repeated here for reference:

¹⁵ <https://coloradoriverrecovery.org/uc/wp-content/uploads/sites/2/2021/09/FinalPBO.pdf>

Table 11. (Table 2 from Upper Colorado River Programmatic Biologic Opinion)

Table 2. Recommended mean monthly flows for the top of the 15-Mile Reach in cubic feet per second. Rate is the percent of years recommended for identified flows based on winter snowpack levels. For example, in the wettest 25 percent of years, flows in June should average at least 15,660 cfs; stated another way, this recommendation should be met in 5 of every 20 years. During low-water years, June flows should average no less than 6,850 cfs, and such a minimum should occur at a rate of no more than 4 in 20 years (20 percent). Table from Osmundson et al. 1995.

Rate	25 percent	25 percent	30 percent	20 percent
Exceedance	25 percent	50 percent	80 percent	100 percent
JAN	1,630	1,630	1,630	1,240
FEB	1,630	1,630	1,630	1,240
MAR	1,630	1,630	1,630	1,240
APR	3,210	2,440	2,260	1,860
MAY	10,720	9,380	7,710	7,260
JUN	15,660	14,250	11,350	6,850
JUL	7,060	5,370	3,150	1,480
AUG	1,630	1,630	1,240	810
SEP	1,630	1,630	1,240	810
OCT	1,630	1,630	1,240	810
NOV	1,630	1,630	1,630	1,240
DEC	1,630	1,630	1,630	1,240

As noted in the inset table caption, PBO recommendations for very low-flow years are listed in cfs in the far right column by month. From a fisheries-benefit perspective, those low-flow targets ideally would have an 80% exceedance (i.e., only 4 years out of 20 would see flows corresponding to the right-most monthly targets). Figure 4 and Figure 5 compare the frequency of meeting the recommended flow targets for the months of April and September across the scenarios.

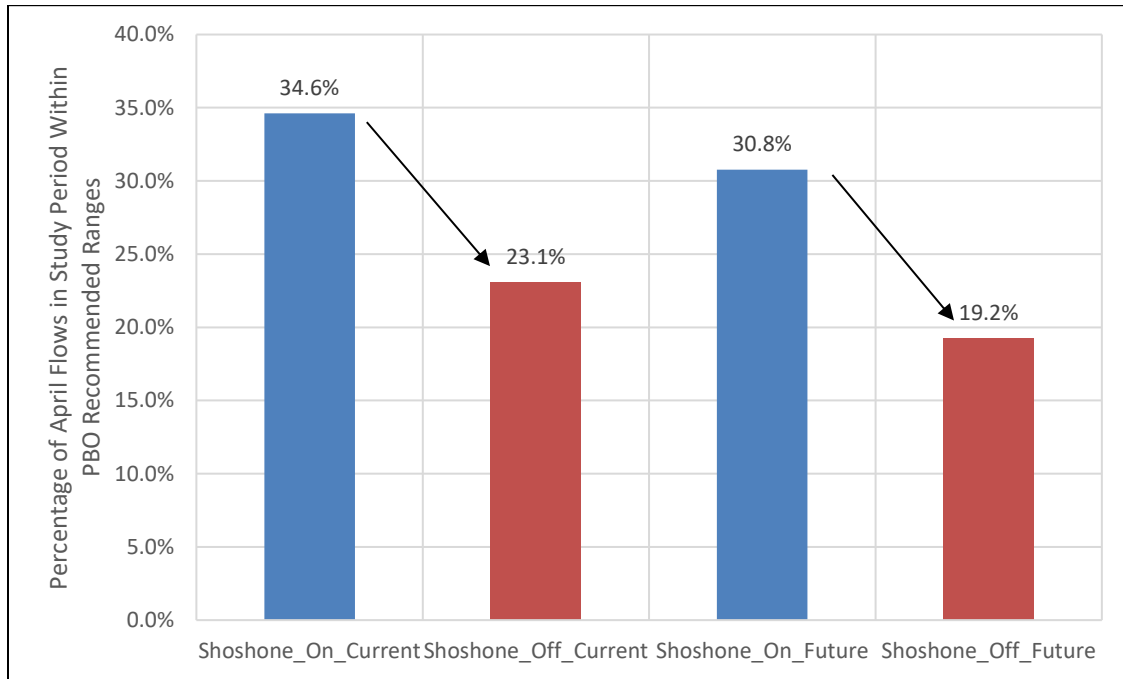


Figure 4. Frequency of April Flows meeting the Lowest PBO Recommended Range (Shoshone On Scenario is Max w/ Relaxation).

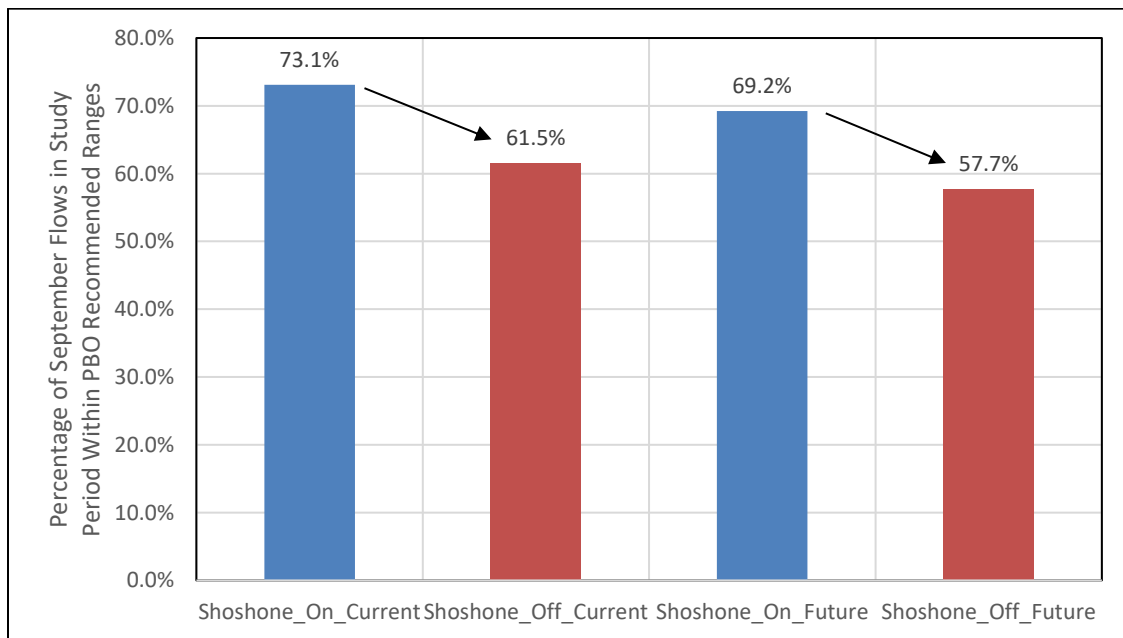


Figure 5. Frequency of September Flows meeting the Lowest PBO Recommended Range (Shoshone On Scenario is Max w/ Relaxation).

Notably, there is a significant *decrease* in the frequency of meeting the PBO recommendations when the Shoshone Call is *off*. While having the Shoshone Call active does not by itself meet all desired flow targets for the 15-Mile Reach, its absence would result in significant reductions in PBO target flow compliance rates.

Summary of Late-Summer Benefits

The increase in flows in August-October are of particular interest, because generally lower natural flow conditions—combined with upstream diversions that are often being fully utilized during late summer—tend to negatively impact flows, and hence endangered species, in the 15-Mile Reach. Despite having the lowest monthly flow target (810 cfs), flows in August-October meet that target just 72% of the time during the simulation period. The contribution of the Shoshone Call to flows in the 15-Mile Reach is significant, particularly in critically dry periods.

Model results indicate that when average flows in the 15-Mile reach are less than 810 cfs, the Shoshone Call is responsible for 22% (on average) of that flow, and in some months as much as 50% of the flow (Figure 6).

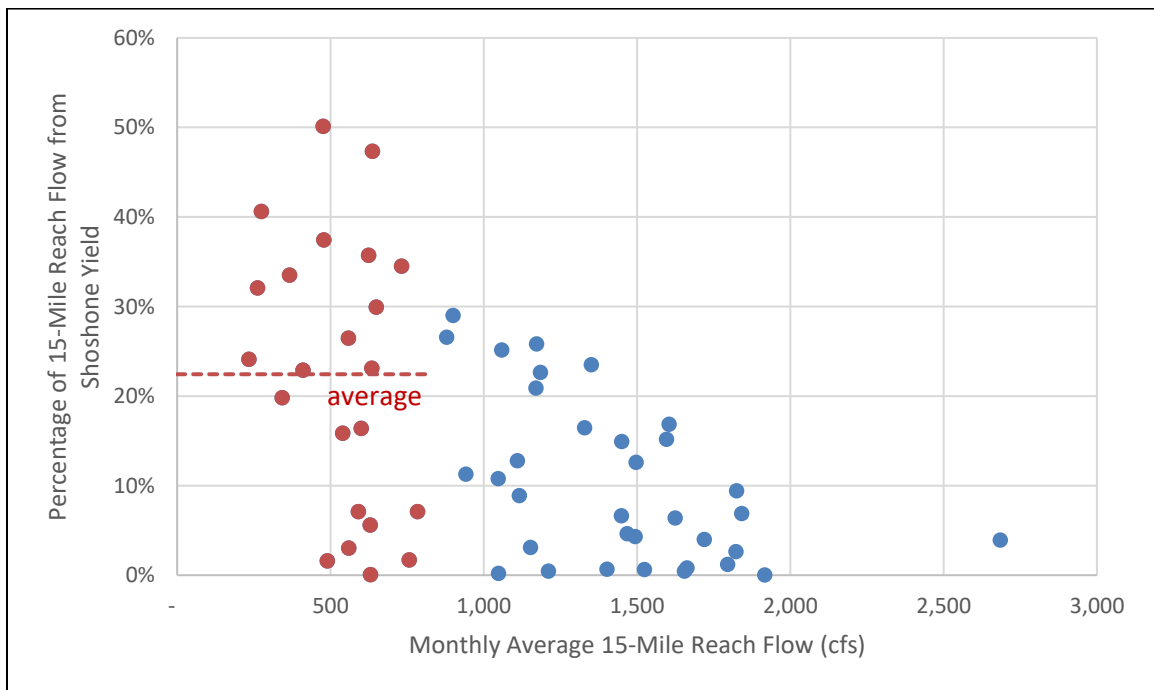


Figure 6. Relationship Between Monthly Average Flow and the Percentage of Flow Resulting from Shoshone's Call - Aug-Oct, Future Max Relaxation Scenarios.

Summary of Monthly Yield Analysis

The analysis presented in Appendix B illustrates several key benefits of the Shoshone Call to the 15-Mile Reach, including:

1. Increases in monthly flows through the 15-Mile Reach year-round, with the highest flow increases in early spring (February – April) and late summer (August – October).
2. The *frequency* of increased flows is also generally highest during the early spring and late summer months. Approximately 4 out of 5 years see some amount of increased flows in September and October (Table 10).
3. The benefits accruing to the 15-Mile Reach are particularly significant during the months with the lowest flows in the driest years. The likelihood of meeting the PBO recommended flow minimums increases across all scenarios when the Shoshone Call is on (Figures 4 and 5).
4. During critically dry (<810 cfs) months, the Shoshone Call contributes *on average* 22% of the flow in the 15-Mile Reach, and as much as 50% of the flow.

Appendix C: Dissecting the Cameo Calls – How Shoshone Contributes to the 15-Mile Reach in Late-Summer

This appendix is being provided in response to comments received during review of this report and associated presentations. The appendix provides additional details as to the mechanisms that result in additional flows to the 15-Mile Reach during months in which a Cameo Call may typically be active. The Cameo Call is a generic term that describes an administrative call for water placed by either the Grand Valley Project’s Government Highline Canal or the Grand Valley Canal, both of which are directly upstream of the 15-Mile Reach and both of which have relatively senior water rights in the basin (although the most senior Cameo water rights are junior to Shoshone’s senior water right). StateMod results indicate that having Shoshone active has a meaningful impact to the 15-Mile Reach. However, StateMod is somewhat limited in its ability to tease out details of how the Shoshone and Cameo calls interact, particularly over sub-monthly time periods. Examination of historical river administration records can be used to validate these conclusions.

Mechanisms that benefit 15-Mile Reach flows include:

1. Delayed Onset of the Cameo Call: A Shoshone Call brings additional water downstream, which delays and shortens the duration of the Cameo Call. This additional flow is the result of increased curtailment and/or release of larger volumes of augmentation water by junior users upstream of Shoshone.
2. Reduced Need for Recovery Program Flow Releases: A Shoshone Call reduces the need for Recovery Program supplemental releases by increasing flows past Cameo into the 15-Mile Reach. This reduces the need for releases from “fish water”¹⁶ storage accounts during certain times and allows for increased flexibility in providing flow augmentation releases during late summer months.
3. Operation of the OMID Check Dam during a Cameo Call: Efficient operation of the OMID Power Plant and Pump Turbine often results in only partial operation of the Check Dam. This enables more efficient power production and results in water bypassing the Check Dam and returning to the river at the head of the 15-Mile Reach.

Each of these is discussed in more detail below.

1. Delayed Onset of Cameo Call

Historically, the Cameo Call is the controlling call on the river during the late summer months of August through October. In the absence of a Shoshone Call, it is likely that the

¹⁶ “Fish Water” refers to releases from upstream reservoirs made specifically to benefit flows in the 15-Mile Reach. These releases are shepherded past the Cameo diverters for the benefit of the Endangered Fish.

Cameo Call would be initiated even earlier in the year, as the runoff peak ends and the river returns to a baseflow condition. Under an assumed full utilization of the Shoshone Call, the need for a Cameo Call is pushed later in the summer and may be eliminated altogether.

An example of the effect that the Shoshone Call has in delaying the Cameo Call can be seen in CDSS administrative data from August and September of 2019. The Shoshone junior call was first placed on 8/23/2019. The senior Shoshone call was then placed on 8/28/2019 with the swing right at CBT's 8/1/1935 priority. As Administrative Flows¹⁷ continued to fall, the swing right was adjusted to the Moffat Tunnel (7/9/1934) priority on 8/30, and finally to the Shoshone Priority (12/5/1905) on 9/2/2019. Although Shoshone was calling throughout September, the gradual reduction of mainstem and tributary inflows pushed the natural flow of the river low enough that by 9/25/2019, a Cameo Call was necessary at the 8/3/1934 priority of the Grand Valley Project.

In analyzing this historical sequence of calls, it is reasonable to conclude that absent the Shoshone Call, a Cameo Call would have been placed much earlier in September. In this example, the Shoshone Call likely delayed the onset of the Cameo Call by 3 or 4 weeks. Regardless of how much Administrative Flow was in the river over and above the Cameo diverters' demands, the lack of a Cameo Call during this period indicates that the Shoshone Call resulted in water in excess of the Cameo diverters' needs passing into the 15-Mile Reach. Absent the Shoshone Call, it is likely that the Cameo Call would have started weeks earlier and there would have been less water in the 15-Mile Reach. Delaying the onset of the Cameo Call by making the Shoshone Call permanent will result in additional flows into the 15-Mile Reach.

Sources of Water

The Senior Shoshone Call is administered under a 1905 priority and is approximately seven years senior to the senior Cameo Call, which is administered at a 1912 priority. Differences in the administrative dates and volume of the two calls impacts water users upstream of Shoshone. In general, the more senior Shoshone Call will force junior rights upstream to either provide additional augmentation water or curtail their uses.

To the extent that there was a swing call on one of the junior rights above Shoshone, exercising the Shoshone call over the Cameo call would increase that user's required offset, or would shift the swing to another user. Regardless, delaying or preventing a Cameo Call through continued utilization of the Shoshone rights will result in longer periods of flows

¹⁷ In general terms, the "Administrative Flow" equals the measured flow at the Dotsero Gage minus shepherded reservoir release water, including "fish water" that has been bypassed or released from upstream storage and is shepherded past other diversions in order to supplement flows in the 15-Mile Reach

at Cameo in excess of diversion demands, and result in more water being bypassed into the 15-Mile Reach.

2. Enhanced Flexibility of Recovery Program Releases

As previously discussed in the main body of this report, modeling results indicate a reduction in flows in the 15-Mile Reach during late summer months without Shoshone actively calling. However, when the Shoshone Call is active, average 15-Mile Reach flows increase, particularly during critically dry months and years.¹⁸ StateMod currently does not simulate changes to “fish water” releases that might result from changes to Shoshone operations. However, it is clear that having additional flows in the 15-Mile Reach by virtue of the Shoshone Call increases the likelihood of meeting PBO flow targets (See Figures 4 and 5) and will allow for greater flexibility in utilizing the various environmental pools to make releases to benefit the endangered fish populations in that reach.

3. Operation of OMID Check Dam during a Cameo Call

The existence of a Shoshone call does not guarantee that there will not be a Cameo call, although it does reduce the likelihood and delay the onset. During periods when both Cameo and Shoshone are calling, there can still be benefits to the 15-Mile Reach as compared to river conditions without a Shoshone Call.

Figure 7 presents a simplified schematic of the diversion infrastructure at Cameo that is useful in understanding how water moves through that system.¹⁹ The Orchard Mesa Irrigation District (OMID) diverts part of the flow of the Government Highline Canal into the OMID Power Canal. Tailwater from the OMID power plant and pump turbine are regulated by a Check Dam which can be operated to deliver water upstream through the bypass channel for diversion by the GVIC into the Grand Valley Canal. If the Check Dam is only partially closed, the portion of water not delivered back to GVIC is returned to the river just below the GVIC canal, at the head of the 15-Mile Reach.

OMID operates the Check Dam when flows available to meet the Cameo Call are at or below 1,950 cfs, thereby enabling power generation and deliveries to OMID without injuring the senior GVIC rights (see Figure 7). However, checking flows into the bypass channel at a rate greater than 100 cfs results in decreased power production due to a reduction in hydraulic head caused by pooling of the power and pumping plant tailwater. Thus, the Check Dam does not always redirect all the OMID Power Canal return flow water upstream to the GVIC diversion dam. Often, the Check operates only partially or not

¹⁸ See Figures 3-5.

¹⁹ This schematic is taken from a report by Paul Calder dated July 12, 1993 entitled "Orchard Mesa Irrigation District Operation of the 'Check'".

at all – even when a Cameo Call is in effect. Water not checked back into the bypass channel accrues to the 15-Mile Reach.

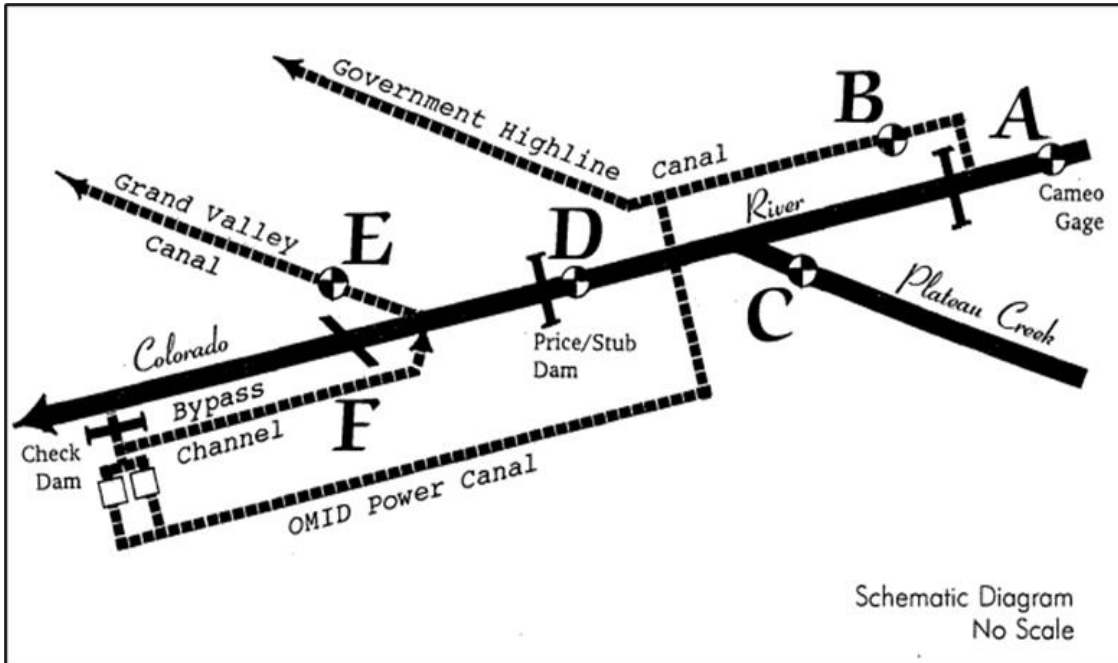


Figure 7. Schematic Diagram of Cameo Diversions.

Historical Example

Historical flows in the 15-Mile Reach were evaluated during periods when Shoshone was calling. The full set of data required for this assessment is available beginning in 2012, which was a year where infrastructure issues prevented full exercise of the Shoshone water rights. Figure 8 shows the period from July-October of that year when the senior Cameo Call was active, and how the Check Dam and the OMID power plant were operated in tandem during that time. In the figure, the “check structure” line represents flows delivered back to the river via the bypass channel to ensure GVIC’s demand is met. The difference in flow between the two lines represents—at a minimum—the amount of water entering the 15-Mile Reach. If GVIC is not diverting 100% of the flow at its headgate, additional water will arrive at the 15-Mile Reach as it passes the GVIC diversion dam.

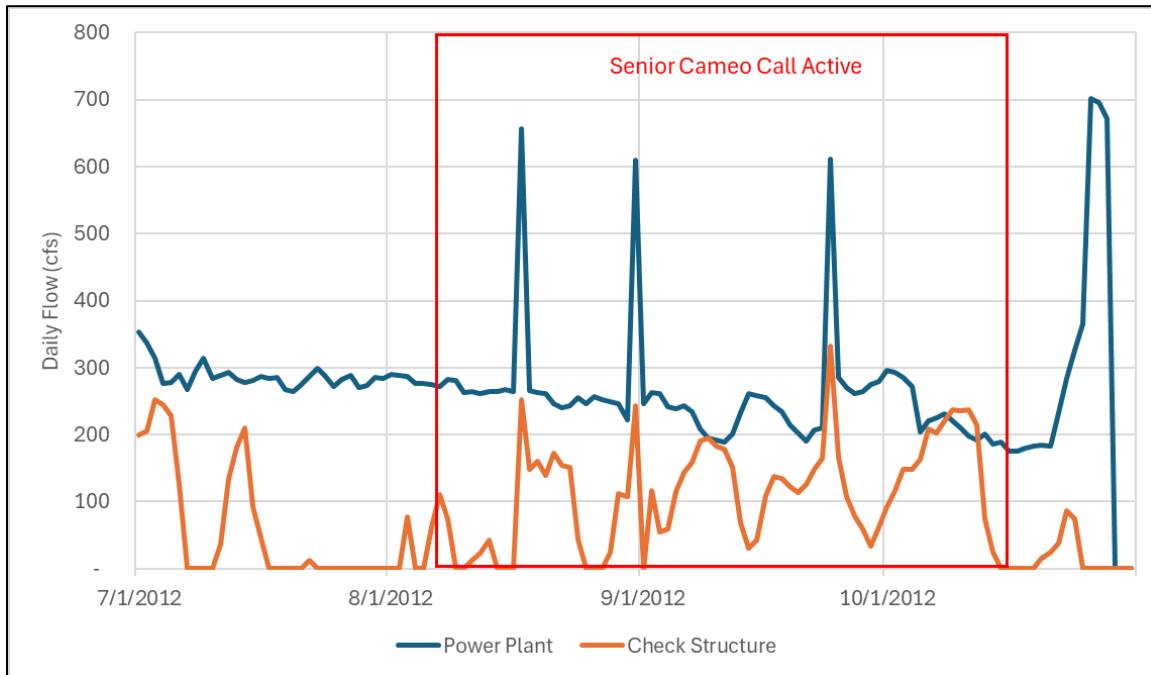


Figure 8. Historical Observed Power Plant Diversions and Checked Flow, 2012.

A portion of the difference in flow between the lines showing the OMID power plant and Check Dam usage corresponds to “Fish Water” that was released from upstream storage and is intended to supplement flow in the 15-Mile Reach. These deliveries are NOT subject to a Cameo Call, are often routed through the OMID power plant, would not be checked back into the bypass channel, and would be released into the river at the head of the 15-Mile Reach. Not all of the water represented by the difference between the two lines is “Fish Water”. Periods during which this additional flow accrues to the river below GVIC represent instances where calls from the Cameo water rights have been met, and any additional flows from upstream would accrue to the 15-Mile Reach. Had the senior Shoshone Call been in place during these times, there are upstream diversions junior to Shoshone but senior to Cameo that would have been called out, and the additional yield from their curtailment (or associated replacement water released from storage) would have accrued to the 15-Mile Reach.

DRAFT

TO: Colorado River District Staff and Counsel
FROM: Hydros Consulting, Inc.
SUBJECT: Addendum to September 11, 2024, Shoshone Power Plant Water Rights Yield Assessment
DATE: November 7, 2024

This memo is being provided as an addendum (Addendum) to the September 11, 2024 memo “Shoshone Power Plant Water Rights Yield Assessment” from Hydros Consulting to the River District. On September 18, 2024, a new version of the Upper Colorado River Basin Model (UCRM) and Baseline Data Set was released to the public by the Colorado Water Conservation Board (CWCB). The updated version of the UCRM can be run using either monthly or daily timesteps. A summary of the significant changes made to the 2015 version of the UCRM is provided in a memo from the State’s modeling contractor (herein “WWG Memo”) from Erin Wilson (Wilson Water Group) to Brian Macpherson (CWCB) dated September 16, 2024.¹

This Addendum provides a summary of additional analyses conducted using the daily timestep version of the new UCRM and addresses comments raised by organizations reviewing the original analysis. Like the original September 11, 2024, memo, the analysis presented in this Addendum is not intended to quantify the historical use of the Shoshone water rights.

Background

The daily timestep model provides an opportunity to more precisely analyze the effects of the proposed Shoshone water rights on stream flow and revisit the analysis of the impacts to Colorado River flow if the Shoshone water rights were eventually abandoned or otherwise not exercised. However, because the daily UCRM has yet to undergo any formal vetting process, the daily UCRM outputs are likely less accurate than what would occur under real-time conditions.²

¹ https://dnrftp.state.co.us/CDSS/ModelFiles/StateMod/Shoshone_StateMod_Baseline_9-26-2024.zip

² Note that this daily model was not calibrated to daily or monthly flows or operational data, and only generally approximates actual patterns of daily water user demands. It also does not reflect the reality of multi-day travel times when making reservoir releases or administering water rights. As such, the daily UCRM will tend to allocate water more precisely, but possibly less accurately, than would occur in reality.



For purposes of this Addendum, three different Shoshone water rights³ operation scenarios were evaluated:

1. The “Baseline” model as provided by CWCB, representing the current conditions in the basin;
2. A “Zero Shoshone” scenario, which simply sets the Shoshone demand to zero; and
3. A “Max Shoshone” scenario, which assumes a Shoshone demand of 1,408 cubic feet per second (cfs) year-round, subject to reduction as discussed below.

In both the Baseline and Max Shoshone scenarios, the years 2003 and 2013 are simulated using the Public Service Company/Denver Water Relaxation Agreement demands for the Shoshone water rights. Thus, the “Max Shoshone” scenario is comparable to the “Max with Relaxation” scenarios from the September 11, 2024, Hydros memo. These three Shoshone scenarios are combined with two sets of basin-wide user demands, representing “Current Conditions” (i.e., users other than Shoshone unadjusted from the “Baseline”), and “Future Conditions,” which approximate the increment of consumptive use allowed under the 15-Mile Reach Programmatic Biological Opinion (PBO).⁴

Impacts to Reclamation Projects and Associated Water Deliveries

Following release of the September 11, 2024, Hydros report which utilized the 2015 monthly UCRM, some water users expressed a desire for additional analyses of potential impacts, if any, the proposed “Shoshone Permanency” approach would have on Reclamation’s project operations, including reservoir storage and water deliveries.

As stated in the WWG Memo, the Baseline model represents current demands, infrastructure, and administration, and “*can be used as the basis against which to compare a simulation that includes a new use or operation.*” (WWG Memo, page 1). Given this intended use, and to address the questions raised with respect to impacts on other users, the Baseline model results were compared to a simulation of basin conditions under a “Max Shoshone” scenario in which a year-round demand of 1,408 cfs was assumed for the Shoshone Power Plant.

³ Unless otherwise noted, the use of “Shoshone” when referring to operational scenarios and model results generally refers to the demands placed by, and exercise of, the Shoshone water rights.

⁴ The PBO allows for 120,000 acre-feet of additional depletions in the Colorado River above its confluence with the Gunnison River. The updated UCRM Baseline demands are approximately 50,000 acre-feet more than the 2015 UCRM Baseline demand data. Thus, the Future Conditions demand dataset used in this Addendum targets an additional 70,000 acre-feet of demands. The depletions resulting from these demands increase by approximately 105,000 acre-feet on average due to shortages in some years.



In the Baseline scenario, Shoshone’s water rights demands vary between 704 cfs and 1,408 cfs depending on the season, assumptions about outages at the Shoshone Power Plant, and implementation of call relaxation in 2003 and 2013. In order to assess the possibility that the impact of the Shoshone Call⁵ might change in the future as basin-wide development increases, the daily UCRM under Baseline and Max Shoshone scenarios is simulated under both Current Conditions and Future Conditions for basin-wide demands. Since the objective of this analysis is to understand more about the impact and importance of the Shoshone Call, and not to assess the impacts of other development in the basin, comparisons here focus on differences between Baseline and Max Shoshone scenarios (as opposed to comparing the Max Shoshone scenario under Current and Future demand conditions).

Colorado – Big Thompson Project (C-BT) and Frying Pan – Arkansas (Fry-Ark) Storage

The Baseline and Max Shoshone scenarios produce almost identical results for storage in Granby Reservoir, Green Mountain Reservoir, and Ruedi Reservoir when minimum, average, or maximum storages are compared at a given level of basin-wide development. Table 1 presents a comparison of storage in units of thousands of acre-feet (KAF), where the largest difference resulting from Shoshone Max versus Baseline is the 0.1 KAF difference in average storage for Granby Reservoir. For reference, results for the “Zero Shoshone” scenarios are also presented in Table 1.

Table 1. C-BT and Fry-Ark Storage Comparison (units of KAF)

Scenario		Granby			Green Mountain			Ruedi		
		Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
Current Conditions	Baseline	74.4	332.8	539.7	48.6	95.9	154.6	52.0	83.6	102.4
	Max	74.4	332.8	539.7	48.6	95.9	154.6	52.0	83.6	102.4
	Zero	76.1	337.3	539.7	57.9	100.3	154.6	52.0	83.2	102.4
Future Conditions	Baseline	74.3	279.2	539.7	48.5	93.4	154.6	52.0	83.6	102.4
	Max	74.3	279.1	539.7	48.5	93.4	154.6	52.0	83.6	102.4
	Zero	73.6	282.4	539.7	57.6	97.4	154.6	52.0	83.1	102.4

There is no appreciable difference in simulated storages between the Baseline and Max Shoshone scenarios. There are differences, however, between those two scenarios and the Zero Shoshone scenario, which exhibits higher average storage levels for reservoirs upstream of the Shoshone Power Plant (Granby and Green Mountain Reservoirs), The

⁵ For purposes of this Addendum and the September 11, 2024, memo, the “Shoshone Call” means the historical administration of the 1,408 cfs attributable to the junior and senior priorities under the Shoshone water rights.



decrease in average storage at Ruedi Reservoir without the Shoshone Call occurs because administration of the Shoshone Call tends to prevent calls from Grand Valley water users that would impact Ruedi Reservoir. The differences in minimum and average storage levels in Granby Reservoir and Green Mountain Reservoir are due to changes in the timing of drawdown and refill of those facilities under the different scenarios.

Reclamation and Other Major Trans-Mountain Diversions (TMDs)

C-BT (Adams Tunnel) and Fry-Ark Project (Boustead Tunnel) deliveries to the East Slope are largely unaffected by Shoshone’s operations, when Baseline and Max Shoshone scenarios are compared to each other, similar to the impacts noted for project storage. There are also significant amounts of Colorado River water diverted for municipal and other uses for Front Range communities through the Homestake, Twin Lakes, Roberts, and Moffat Tunnels. None of these uses experience any appreciable reduction in their supplies between the Baseline and Max Shoshone scenarios as illustrated in Table 2:

Table 2. Major Trans-Mountain Diversions Average Annual Diversions (units of KAF)

Scenario		Adams Tunnel	Boustead Tunnel	Homestake Tunnel	Twin Lakes Tunnel	Moffat Tunnel	Roberts Tunnel
Current Conditions	Baseline	242.4	48.0	26.3	40.8	53.2	75.5
	Max	242.4	48.0	26.3	40.8	53.2	75.5
	Zero	242.7	47.8	26.7	40.7	53.5	75.5
Future Conditions	Baseline	254.4	48.0	28.7	40.8	60.2	96.6
	Max	254.4	48.0	28.7	40.8	60.2	96.6
	Zero	255.3	47.8	32.0	40.7	60.7	96.6

Grand Valley Project

Reclamation’s Grand Valley Project delivers water to the Grand Valley Water Users Association (GVWUA), Orchard Mesa Irrigation District (OMID), and Vinelands Hydropower Plant (Vinelands). Diversions to these water users are unchanged when comparing the Baseline, Max Shoshone, and Zero Shoshone scenarios under both Current and Future Conditions (the maximum difference is 0.02%, less than one acre-foot). The Grand Valley Project water users do not see increased demands under Future Conditions, and their water rights are senior enough not to be impacted by changes to Shoshone operations.

Recovery Program Storage

While the Shoshone demands are different between the Baseline and Max Shoshone scenarios, the outcome of the modeling is nearly identical under these two scenarios. These results are not unexpected, because physical water supply limits water availability for large periods of time when Shoshone is typically calling for water.⁶ In many periods, especially during winter months, regardless of whether Shoshone is calling for 900 cfs, 1,250 cfs, or 1,408 cfs, there is often not enough water to fully satisfy the Shoshone Call.

The UCRM tracks the use of the various user pools in each reservoir, so evaluation of impacts to specific user accounts is possible. One group of reservoir accounts of particular interest in this analysis are the “fish pool” accounts for the Upper Colorado River Recovery Program that store water for subsequent release to benefit threatened and endangered fish in the 15-Mile Reach. To address the possibility that the Max Shoshone scenario might negatively impact the fish pool accounts, combined storage in the fish pool accounts was evaluated and compared to the Baseline scenario. *Figure 1* presents the combined storage in the fish pool accounts in Ruedi, Wolford Mountain, and Granby Reservoirs under Current Conditions demands. Although the time series are not identical for each reservoir, as evident during the lowest drawdowns in some years, the average storage differs by less than 10 acre-feet (less than 0.1%).

⁶ Previous versions of the UCRM utilized average monthly state-recorded *diversions, which are calculated using a constant turbine efficiency at the Shoshone Power Plant*, as the basis for Shoshone water rights’ demands. This assumption underestimated Shoshone water rights’ actual *demand* for water and artificially limited the power plant’s ability to divert water for power production during times when the amount of water available for diversion exceeded the long-term average.

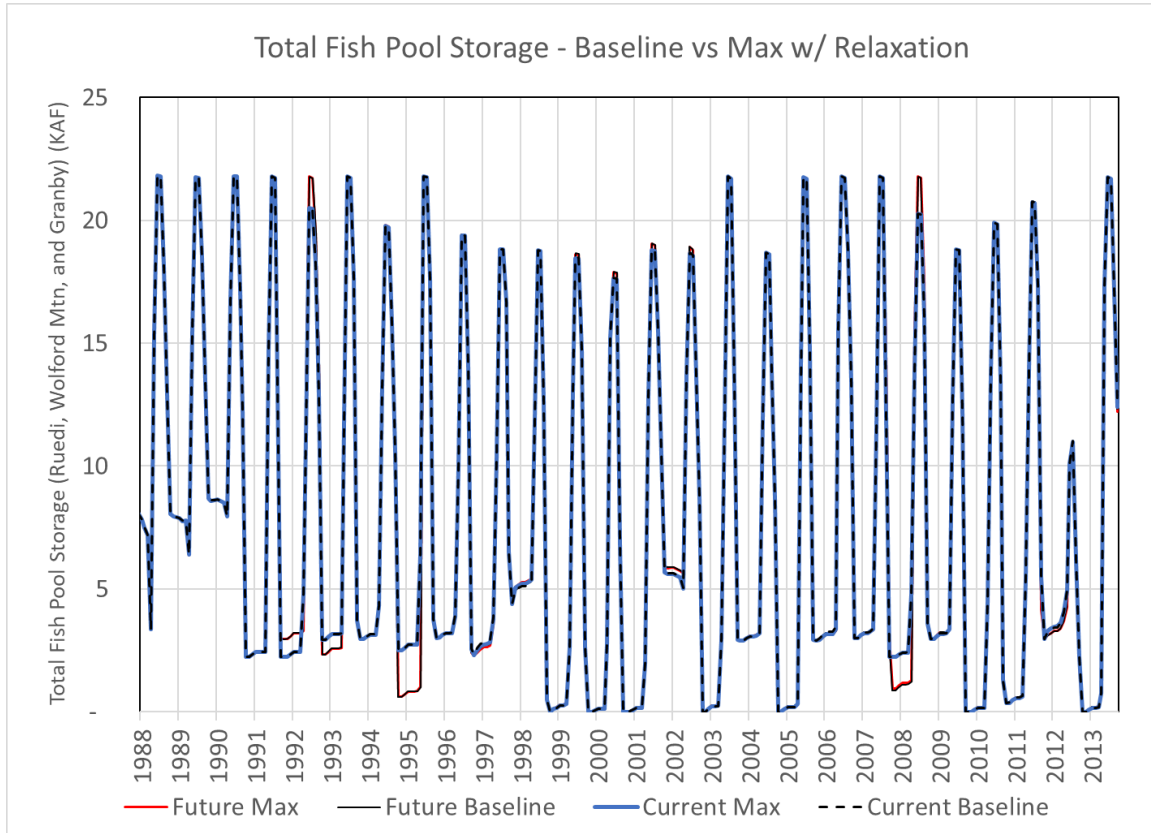


Figure 1. Total Fish Pool Storage - Baseline vs Max w/ Relaxation. The differences in minimum storage are so small as to be difficult to discern on this graph, except for some minimum storage values when Current and Future Conditions are compared.

Benefits to the 15-Mile Reach

Analysis of impacts to the 15-Mile Reach includes simulation of the Max Shoshone and Zero Shoshone scenarios under both Current Conditions and Future Conditions in the daily timestep version of the UCRM.

Summary: Results from this daily modeling analysis confirm the conclusions from the original Hydros yields assessment memo (September 11, 2024) using the monthly UCRM. Shoshone has a significant benefit to flows in the 15-Mile Reach, and the timing of that benefit is well aligned with the objectives of the Endangered Fish Recovery Program. The timing of the Shoshone call and the resulting benefits to the 15-Mile Reach are greatest during dry years, and in all years during the lowest flow months of August – October, when fish flow targets are most difficult to meet.

Based on outputs from the Baseline model, the Shoshone water rights are actively calling 62% - 64% of the time during the 1988-2013 period of simulation, under Current Conditions and Future Conditions, respectively. Absent the continued exercise and

administration of the Shoshone water rights, flows through the 15-Mile Reach would be reduced by an annual average of 24.2 KAF under Current Conditions and 26.9 KAF under Future Conditions.⁷ Importantly, 68% - 76% of that flow reduction would occur during the critical low-flow months of August through October. These results are shown in Table 4,⁸ which presents the expected annual and August-October benefits to the 15-Mile Reach due to Shoshone Permanency under both Current and Future Conditions. The maximum benefit to the 15-Mile reach in a single year is 41.9 KAF under Current Conditions and 56.0 KAF under Future Conditions. Maximum benefits to the 15-Mile Reach during August-October of a single year are 38.7 KAF and 33.8 KAF for Current and Future Conditions, respectively.

Table 4. Summary of Baseline Model Flow Benefit in the 15-Mile Reach attributable to ongoing exercise of the Shoshone water rights.

Basin-Wide Development	Average Annual Increase (KAF)	Average August-October Increase (KAF)	Increase occurring during August-October (% of Total Annual Increase)
Current Conditions	24.2	18.5	76%
Future Conditions	26.9	18.2	68%

Table 5 provides a breakdown of the benefits by year type for both Current and Future Conditions scenarios. The Shoshone water rights contribute a higher percentage of the total flow through the 15-Mile Reach during the period extending from August through October in dry years than in wet years, although the total volumes are similar. The average increase in daily flow attributable to continued exercise of the Shoshone water rights for Current and Future Conditions during August – October over the 1988-2013 period is approximately 100 cfs.

⁷ The “available flow” data from the Shoshone node in the daily UCRM is used to identify the days in the simulation period during which Shoshone water rights are actively calling. If there is no “available flow” at that node, it means that the Shoshone water rights are calling out upstream juniors and/or forcing them to provide replacement water for any depletions. All comparative results presented for the 15-Mile Reach are evaluated during periods that Shoshone water rights are calling under the Baseline scenario.

⁸ Results for the August-October summary statistics shown in Table 4 are for the calendar years 1988-2012. Using calendar years instead of water years allows continuity when computing results statistics over the August-October period. The difference in simulated annual average benefit between 1988-2013 water years and 1988-2012 calendar years is less than 1%. The model simulation ends in September 2013 (the end of the 2013 water year), so calendar year 2013 data are incomplete and not included in the annual summary results that include August-October, such as Table 4 and Table 5.

Table 5. Benefit of Shoshone Call on flows through the 15-Mile Reach by year type under the Baseline scenario. Both annual average and August-October average values are shown.

Hydrologic Condition	Current Conditions			Future Conditions		
	Average Annual Benefit (KAF)	Average August-October Benefit (KAF)	Aug-Oct Benefit (% of total flow in those months)	Average Annual Benefit (KAF)	Average August-October Benefit (KAF)	Aug-Oct Benefit (% of total flow in those months)
Dry	33.1	14.9	15%	36.8	15.0	17%
Average	22.6	20.0	12%	24.9	18.7	12%
Wet	18.3	19.6	7%	20.9	20.4	8%

Delaying the Cameo Call⁹

The September 11, 2024, Hydros memo compared monthly results to historical data from the CWCB’s CDSS website and concluded that the utilization of the Shoshone water rights impacts the “Cameo Call” by delaying the administration of junior rights to satisfy that call. Results from the daily timestep version of the UCRM confirm this finding.

In the Baseline scenario with Current Conditions, the Cameo Call is on for 1,041 days during the 1988-2013 simulation period. In comparison, the Cameo Call is on for 1,340 days in the Zero Shoshone scenario, a 29% increase in calling days over the Baseline scenario. The Future Conditions results also show a 29% increase in calling days, from 1,108 to 1,429, resulting from the removal of the Shoshone call. Minimizing the frequency of the Cameo Call is significant for the 15-Mile Reach. Every day that Cameo is not calling indicates that there is flow in the river in excess of the Cameo diverters’ needs, and that water will flow past those diverters and into the 15-Mile Reach.

Monthly Results

In the September 11, 2024, Hydros memo, Appendix B discusses monthly distributions of yield, and changes in frequency of flows meeting PBO-recommendations. The qualitative results from that analysis are generally unchanged when similar evaluations are carried out with 2024 UCRM results. Figure 2 presents the average increase in flows by month for periods when the Shoshone water rights are actively calling. These results are consistent with the monthly pattern of benefits seen in the 2015 UCRM results, with

⁹ “Cameo Call” is a generic term that describes an administrative call for water placed by either the Grand Valley Project’s Government Highline Canal or the Grand Valley Canal, both of which are directly upstream of the 15-Mile Reach and both of which have relatively senior water rights in the basin (although the most senior Cameo water rights are junior to Shoshone’s senior water right).

the most significant benefits in the early spring and late summer months. While the magnitude of yields in May and June for the 2024 UCRM is larger than the similar results from the 2015 UCRM, the frequency of yields (i.e., number of days of benefits) in those months is lower.

Another important monthly result that is similar to the 2024 UCRM's daily results is the expected reduction in flows during September under the Zero Shoshone scenario that meet PBO-recommendations (a minimum flow of 810 cfs). Figure 3 presents the comparison of days within the recommended flow range in September across Current Conditions and Future Conditions for the Baseline Shoshone scenario versus the Zero Shoshone scenario. There is a greater decrease in flows meeting the 15-Mile Reach PBO targets under the 2024 UCRM compared to the 2015 UCRM, when comparing the Zero Shoshone scenario to the Baseline, which is likely the result of the 2024 UCRM's ability to evaluate flows on a daily basis.

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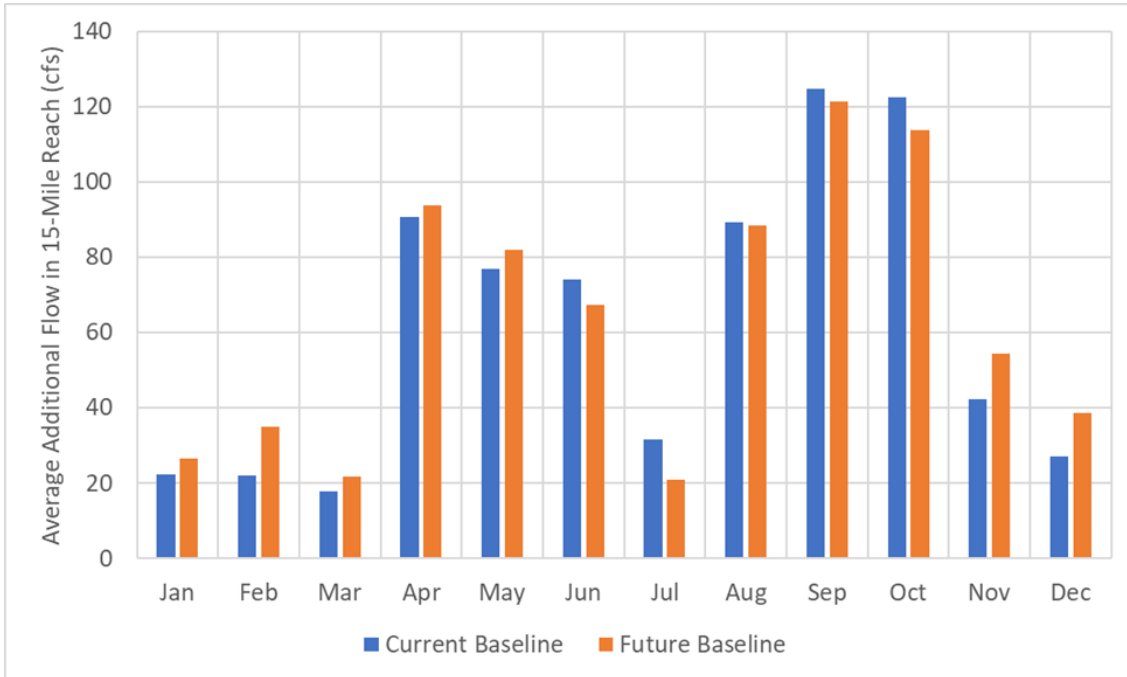


Figure 2. Monthly Distribution of 15Mile Reach Yield - 2024 UCRM

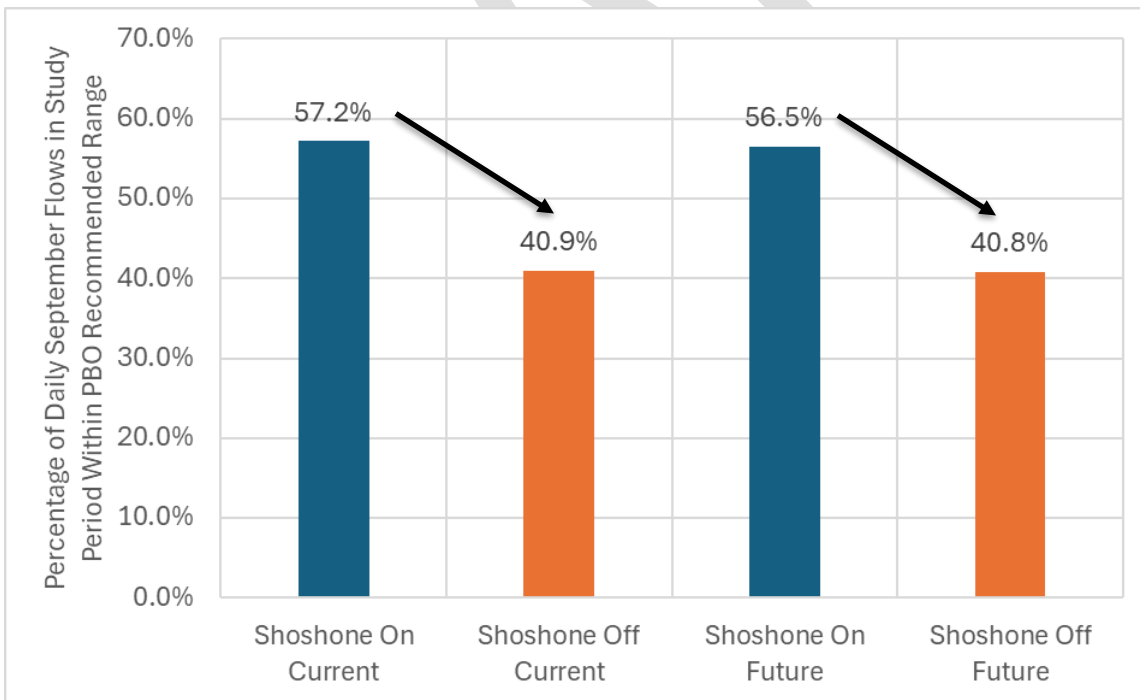


Figure 3. Decrease in Frequency in September Flows within PBO-Recommended Range without Shoshone Permanency

15-Mile Reach Discussion

Benefits to the 15-Mile Reach occur more uniformly across the different year types in the daily UCRM compared to the results from the monthly 2015 version of the UCRM, but still show the greatest benefit during dry (i.e., drought) years.

As expected, and consistent with the results presented in the September 11, 2024, memo, the benefit of Shoshone Permanency to the 15-Mile Reach is magnified when evaluating the Future Conditions scenarios. Results from those scenarios further illustrate the benefit that the Shoshone water rights have in limiting the impact of future growth in consumptive uses on flows through the 15-Mile Reach. As was noted in the original September 11, 2024, Hydros memo, and confirmed again here, the greatest benefit to the 15-Mile Reach, as a percentage of flow attributable to the Shoshone Call, is seen during the driest years and during the low-flow months of August, September, and October.

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Conclusions

This Addendum presents analyses using the recently released daily timestep version of the CWCB’s 2024 UCRM. This Addendum addresses specific questions raised by interested parties regarding potential impacts to existing projects and to flows in the 15-Mile Reach, which are critical to the success of the Upper Colorado River Endangered Fish Recovery Program. The Addendum also provides a point of comparison between the results presented previously, as shown in Table 5, which presents annual and dry year yields across various versions of the model that have been used to assess yield.

Table 5. Comparison of benefits of continued exercise of the Shoshone water rights on flows through the 15-Mile Reach across model versions and scenarios.

<i>Model + Scenario</i>	Annual Benefit, All Years (KAF)	Annual Benefit, Dry Years (KAF)
<i>2015 Monthly Model Max w/ Relaxation - Current</i>	14.0	30.4
<i>2024 Daily Model Max w/ Relaxation - Current</i>	24.0	32.8
<i>2015 Monthly Model Max w/ Relaxation - Future</i>	25.5	38.6
<i>2024 Daily Model Max w/ Relaxation - Future</i>	26.8	36.6
<i>2024 Daily Model Baseline - Current</i>	24.2	33.1
<i>2024 Daily Model Baseline - Future</i>	26.9	36.8

The results presented in this Addendum reaffirm the benefit of the Shoshone Call under both Baseline and Max Shoshone scenarios, particularly during dry years, in keeping additional water in the 15-Mile Reach when compared to river conditions absent utilization of the Shoshone water rights. Results indicate that full use of the Shoshone water rights does not negatively impact Reclamation projects when compared to the Baseline scenario, nor does it impact the water users that benefit from and/or provide water in support of those federal projects. Also notable is the similarity between the Baseline and Max with Relaxation results for the 2024 daily UCRM, which further validates the use of the Max with Relaxation scenario yields in the original analysis.

MEMORANDUM

TO: Peter Fleming, CRWCD
CC: Andy Mueller, Brendon Langenhuizen, Bruce Walters, Jason Turner
FROM: John Carron and Taylor Adams, Hydros Consulting
SUBJECT: Calibration and Validation of the 2015 Monthly Timestep StateMod Model of the Upper Colorado River Basin
DATE: October 13, 2024

This memorandum summarizes calibration and validation analyses performed on the Upper Colorado River Basin Water Resources Planning Model (herein, the UCRM). The UCRM is one of several basin-scale models developed using the StateMod modeling platform and is maintained by the Colorado Water Conservation Board (CWCB). This memo focuses on the monthly timestep version of the 2015 release of the model and is provided as a supplement to the September 2024 Shoshone Yield Analysis Modeling Report prepared for the River District by Hydros. Note that a daily timestep version of the UCRM was published by the CWCB on September 18, 2024, and is currently under review and analysis by Hydros. Therefore, this memo does not make any assumptions or conclusions about the new 2024 daily model.

StateMod is part of the State of Colorado's *Colorado Decision Support System* (CDSS) suite of modeling and database tools used to evaluate, manage, plan for, and record the use of Colorado's water resources. It is used to simulate the allocation of surface water, priority administration of water rights, reservoir operations, exchanges, return flows, consumptive uses, and water accounting. Many papers and studies have noted StateMod's strengths in simulating water allocation within a prior appropriation framework as compared to other modeling tools such as RiverWare, ModSim, WRAP (e.g., Winchester, 2008; Macpherson, 2016; Vandergrift, 2023; and Gupta, 2024).

A critical component in the development of any water resources planning model is the calibration and validation of the various data, physical processes, and operating policies that enable the model to replicate as closely as possible the "real world". The UCRM underwent a detailed calibration process during its development by the CWCB and its consultants.



Details of this effort are well documented in Chapter 7 of the “Upper Colorado River Basin Water Resources Planning Model User’s Manual” (Model Report) (<https://cdss.colorado.gov/resources/modeling-dataset-documentation>), and are summarized below.

The UCRM was calibrated in a two-step process. First, the model was run using historical diversions and reservoir storage elevations. The parameters used to distribute baseflows and return flows were adjusted during this step to obtain a “best fit” to observed data. The second step was to allow the reservoirs in the basin to operate using the policy rules instead of relying on historical reservoir storage and releases. This step allowed for tuning of the operating policies to reflect typical system operations and reservoir administration.

The calibration results for the UCRM indicate that the model performs well in simulating various aspects of the river basin's hydrology, water administration, and operations. It is appropriate for use *“as a tool to test the impacts of proposed diversions, reservoirs, water rights and/or changes in operations and management strategies.”* (CWCB 2016, p. 1-1) (emphasis added).

Key findings from the UCRM calibration process include:

1. Streamflow Calibration:
 - The model's streamflow calibration is very good, with most gages deviating less than 1% from historical values annually.
 - Some deviations occur below major reservoirs due to differences in current versus historical reservoir operations.
2. Water Balance:
 - The average annual stream inflow is nearly 5.6 million acre-feet, with an outflow of 4.53 million acre-feet.
 - Annual diversions average 4.63 million acre-feet, with approximately 1.02 million acre-feet consumed annually.
 - The model conserves mass correctly.
3. Diversion and Consumptive Use Calibration:
 - Average annual diversions differ from historical diversions by 1.6%.
 - Crop consumptive use estimates match well with historical data, with differences around 2%.



4. Reservoir Calibration:

- Simulated reservoir contents generally match historical values, with some discrepancies due to specific operational practices during certain periods that may not match the model policy logic.

Overall, the UCRM accurately simulates historical streamflows, diversions, consumptive use, and reservoir operations. This alignment of results with historical data validates the use of the UCRM for evaluation of changes to river operations and water administration under the proposed Shoshone Water Rights Preservation Project.

Results of the calibration process are provided in Section 7.4 of the Model Report. Appendix A below reproduces those results for significant reservoirs and gages and summarizes consumptive use results by water district. Specific results pertinent to United States Bureau of Reclamation (Reclamation) projects are discussed below.

Simulation of Reclamation Projects in the UCRM

Of special interest in the validation of the UCRM is the ability of the model to accurately reflect the operations of Reclamation projects. These include the Fry-Ark, Colorado-Big Thompson, and Grand Valley Projects. As shown below, the UCRM properly replicates the historical operations at three key reservoirs: Lake Granby, Green Mountain Reservoir, and Ruedi Reservoir. However, in certain years, the UCRM underestimates drawdown, particularly during the extremely dry 2002-2003 drought period.

These dry-year differences may have resulted from modified operations, which are typically one-off actions and not indicative of “normal” operating policy. These outlier years are not problematic for the UCRM’s intended use by Hydros and the River District in evaluating differences in system behavior with and without the Shoshone Water Rights. As a simplified and idealized representation of a complex system, any model is expected to produce some results that differ from the historically observed system or systems it represents, which is a necessary result of the practice of fitting a model to the “signal” in observed data, but not overfitting it to match the “noise” which isn’t necessarily expected to repeat in the future.



The UCRM is well calibrated with respect to water allocation to these Reclamation projects, as illustrated in the following table (adapted from Table 7.6 of the Model Report; <https://cdss.colorado.gov/resources/modeling-dataset-documentation>):

Reclamation Project	Historical Average Annual Diversions (AF) 1975-2013	Simulated Average Annual Diversion (AF) 1975-2013	Difference (AF)	Difference (%)
C-BT (Adams Tunnel)	233,602	233,602	0	0.0%
Fry-Ark (Boustead Tunnel)	41,286	40,536	750	1.8%
Grand Valley Project*	781,643	781,934	-291	0.04%

*Includes diversions to GVWUA, OMID, and Vinelands Power Plant

The following figures are also taken from the Model Report. The figures compare modeled to observed storage volumes and illustrate the ability of the UCRM to represent reservoir operations for the Reclamation projects referenced above.

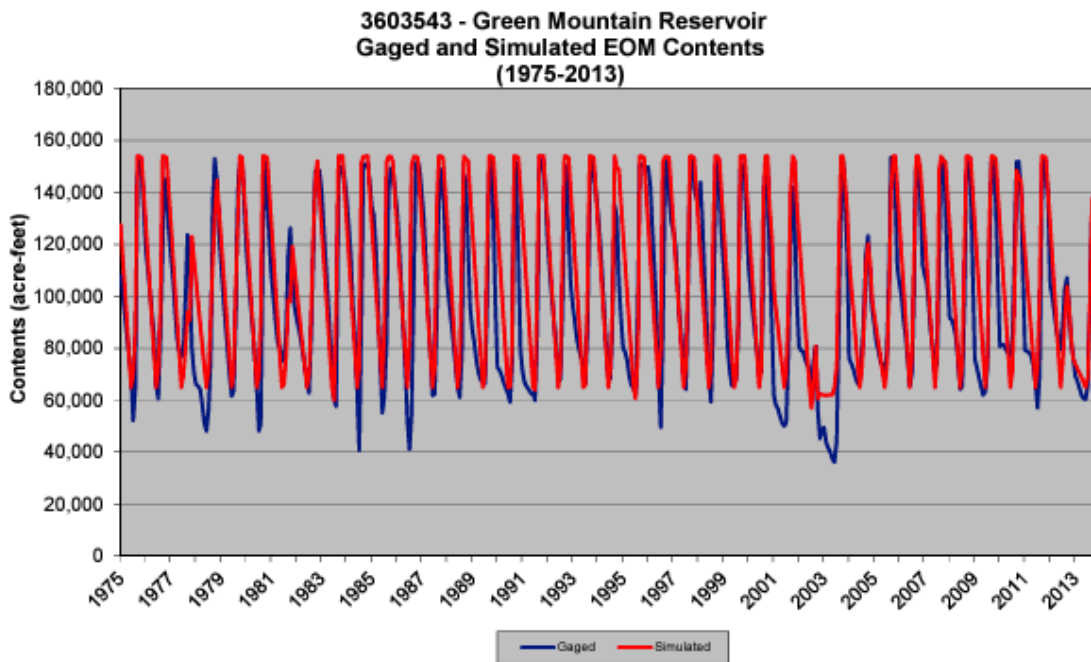


Figure 7.15 Reservoir Calibration – Green Mountain Reservoir

5104055 - CBT Granby Reservoir
Gaged and Simulated EOM Contents
(1975-2013)

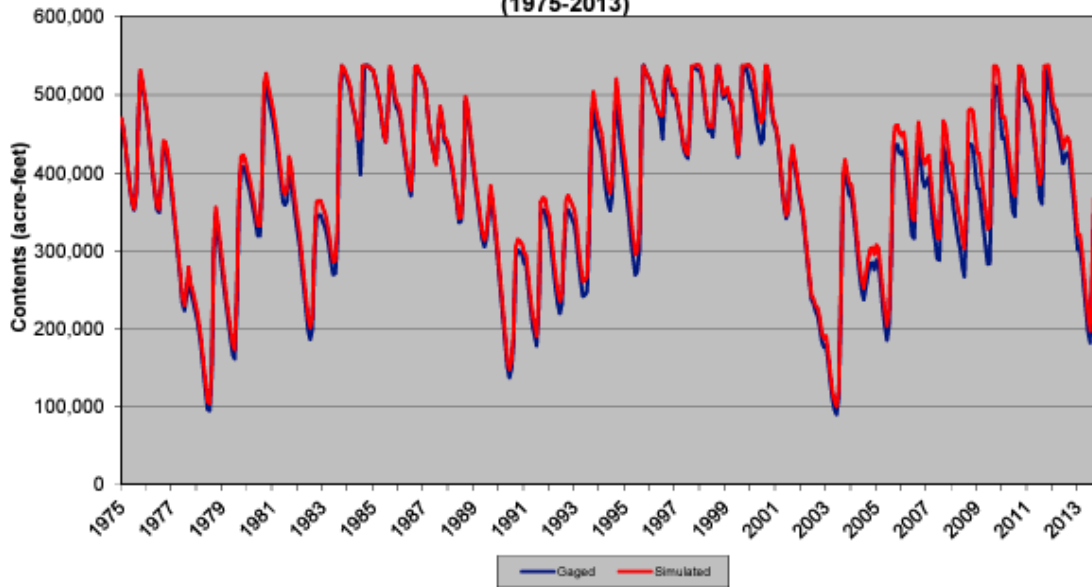


Figure 7.28 Reservoir Calibration – CBT Granby Reservoir

3803713 - Ruedi Reservoir
Gaged and Simulated EOM Contents
(1975-2013)

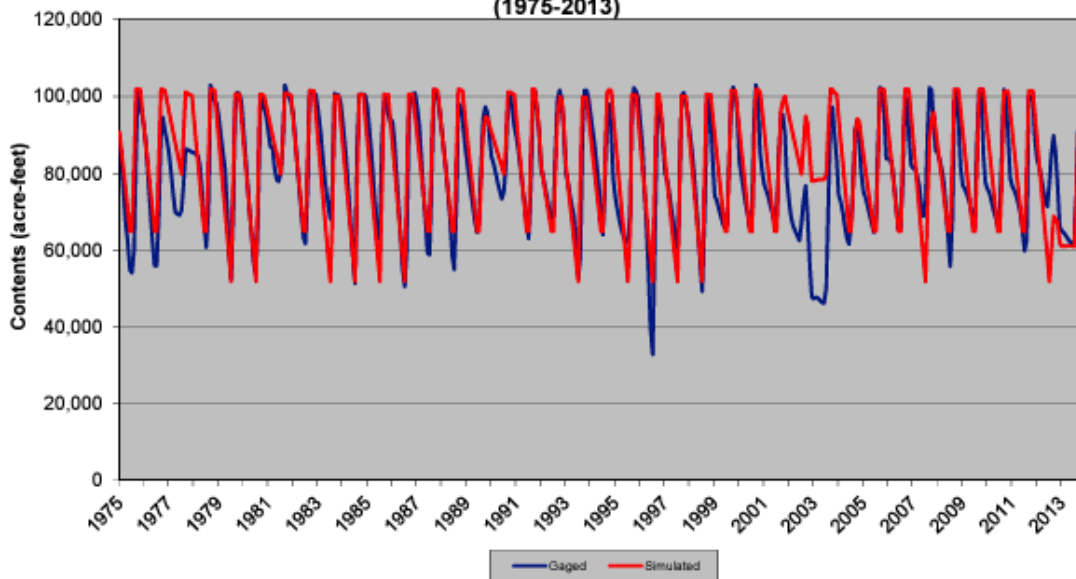


Figure 7.20 Reservoir Calibration – Ruedi Reservoir



References

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Appendix A: Calibration Results

The following tables and figures are taken directly from the Upper Colorado Water Resources Planning Model User's Manual, available on the CWCBC's website at <https://cdss.colorado.gov/resources/modeling-dataset-documentation>

Table 7.3
Historical and Simulated Average Annual Streamflow Volumes (1975-2013)
Calibration Run
(acre-feet/year)

Gage ID	Historical	Simulated	Historical - Simulated		Gage Name
			Volume	Percent	
09010500	46,878	46,878	0	0%	Colorado R Below Baker Gulch, Nr Grand Lake
09019500	41,849	40,030	1,819	4%	Colorado River Near Granby
09021000	27,492	28,048	-556	-2%	Willow Creek Below Willow Creek Reservoir
09024000	13,542	13,723	-181	-1%	Fraser River at Winter Park
09025000	11,122	14,443	-3,320	-30%	Vasquez Creek at Winter Park, CO.
09026500	15,676	15,703	-27	0%	St. Louis Creek Near Fraser, CO.
09032000	8,938	9,344	-406	-5%	Ranch Creek Near Fraser, CO.
09032499	7,570	7,570	0	0%	Meadow Creek Reservoir Inflow
09032500	20,648	22,928	-2,280	-11%	Ranch Creek Near Tabernash, CO.
09033500	Missing gage data during calibration period				Strawberry Creek Near Granby, CO.
09034250	175,638	177,839	-2,200	-1%	Colorado River at Windy Gap, Near Granby, CO.
09034800	Missing gage data during calibration period				Little Muddy Creek Near Parshall, CO.
09034900	7,544	7,544	0	0%	Bobtail Creek Near Jones Pass, CO.
09035500	13,972	14,043	-71	-1%	Williams Fork Below Steelman Creek, CO.
09036000	73,767	73,838	-71	0%	Williams Fork River Near Leal, Co
09037500	84,066	84,180	-115	0%	Williams Fork River Near Parshall, Co
09038500	97,264	97,038	226	0%	Williams Fork River bl Williams Fork Reservoir
09039000	22,364	22,711	-346	-2%	Troublesome Creek Near Pearmont, CO.
09040000	22,498	22,810	-312	-1%	East Fork Troublesome C Near Troublesome, CO.
09041000	49,395	50,845	-1,450	-3%	Muddy Creek Near Kremmling, CO.
09041200	Missing gage data during calibration period				Red Dirt Creek Near Kremmling, CO.
09041500	66,565	66,145	420	1%	Muddy Creek at Kremmling, CO.
09046600	69,503	69,364	139	0%	Blue River Near Dillon, CO.
09047500	45,154	45,159	-5	0%	Snake River Near Montezuma, CO.
09050100	75,129	75,221	-92	0%	Tenmile Creek Bl North Tenmile Creek at Frisco
09050700	146,064	147,125	-1,062	-1%	Blue River Below Dillon Reservoir
09052800	18,677	18,677	0	0%	Slate Creek at Upper Station, Near Dillon, CO.
09053500	312,567	322,421	-9,855	-3%	Blue River Above Green Mountain Reservoir, CO.
09054000	22,776	22,776	0	0%	Black Creek Below Black Lake, Near Dillon, CO.
09055300	14,558	14,558	0	0%	Cataract Creek Near Kremmling, CO.
09057500	304,217	302,692	1,525	1%	Blue River Below Green Mountain Reservoir
09058000	735,546	739,645	-4,099	-1%	Colorado River Near Kremmling
09060500	24,031	24,031	0	0%	Rock Creek Near Toponas, CO.
09060700	Missing gage data during calibration period				Egeria Creek Near Toponas, CO.
09063000	28,423	28,444	-21	0%	Eagle River at Red Cliff, CO.
09064000	20,352	20,258	94	0%	Homestake Creek at Gold Park, CO.



Gage ID	Historical	Simulated	Historical - Simulated		Gage Name
			Volume	Percent	
09065100	37,450	37,450	0	0%	Cross Creek Near Minturn
09065500	22,109	22,109	0	0%	Gore Creek at Upper Station, Near Minturn, CO.
09067300	Missing gage data during calibration period				Alkali Creek Near Wolcott, CO.
09068000	Missing gage data during calibration period				Brush Creek Near Eagle, CO.
09069500	Missing gage data during calibration period				Gypsum Creek Near Gypsum, CO.
09070000	414,477	414,126	352	0%	Eagle River Below Gypsum
09070500	1,474,478	1,478,971	-4,493	0%	Colorado River Near Dotsero
09071300	9,755	9,755	0	0%	Grizzly Creek Near Glenwood Springs, CO.
09073400	67,955	68,090	-134	0%	Roaring Fork River Near Aspen
09074000	29,607	29,644	-37	0%	Hunter Creek Near Aspen
09074800	31,675	31,675	0	0%	Castle Creek Above Aspen, CO.
09075700	50,076	50,076	0	0%	Maroon Creek Above Aspen, CO.
09078600	75,912	76,663	-751	-1%	Fryingpan River Near Thomasville
09080400	123,774	124,506	-731	-1%	Fryingpan River Near Ruedi
09080800	Missing gage data during calibration period				West Sopris Creek Near Basalt, CO.
09081600	215,584	215,584	0	0%	Crystal River Ab Avalanche Creek Near Redstone
09082800	10,923	10,923	0	0%	North Thompson Creek Near Carbondale, CO.
09084000	Missing gage data during calibration period				Cattle Creek Near Carbondale, CO.
09084600	Missing gage data during calibration period				Fourmile Creek Near Glenwood Springs, CO.
09085000	854,665	856,112	-1,447	0%	Roaring Fork River at Glenwood Springs
09085100	2,388,411	2,394,356	-5,945	0%	Colorado River Below Glenwood Springs
09085200	40,635	40,649	-14	0%	Canyon Creek Above New Castle, CO.
09087500	Missing gage data during calibration period				Elk Creek at New Castle, CO.
09088000	Missing gage data during calibration period				Baldy Creek Near New Castle
09089500	28,725	28,810	-85	0%	West Divide Creek Near Raven
09090700	Missing gage data during calibration period				East Divide Creek Near Silt, CO.
09091500	Missing gage data during calibration period				East Rifle Creek Near Rifle, CO.
09092500	3,591	3,591	0	0%	Beaver Creek Near Rifle
09092600	Missing gage data during calibration period				Battlement Creek Near Parachute
09093500	32,145	32,850	-705	-2%	Parachute Creek at Parachute, CO.
09093700	2,816,135	2,826,130	-9,994	0%	Colorado River Near De Beque
09094200	23,142	23,144	-3	0%	Roan Creek Near Clear Creek, Near De Beque
09095000	38,970	39,708	-738	-2%	Roan Creek Near De Beque, CO.
09095500	2,737,562	2,744,943	-7,380	0%	Colorado River Near Cameo
09096500	22,259	18,910	3,349	15%	Plateau Creek Near Collbran, CO.
09097500	30,447	31,203	-756	-2%	Buzzard Creek Near Collbran
09100500	Missing gage data during calibration period				Cottonwood Creek at Upper Sta, Near Molina
09104500	Missing gage data during calibration period				Mesa Creek Near Mesa, CO.
09105000	148,570	152,454	-3,884	-3%	Plateau Creek Near Cameo
09152500	1,794,354	1,794,352	1	0%	Gunnison River Near Grand Junction
09163500	4,522,322	4,533,583	-11,261	0%	Colorado River Near Colorado-Utah State Line



Table 7.4
Historical and Simulated Average Annual Diversions by Sub-basin (1975-2013)
Calibration Run (acre-feet/year)

Water District - Sub-basin	Historical	Simulated	Historical minus Simulated	
			Volume	Percent
WD 51 – Upper Colorado/Fraser Rivers	405,444	396,956	8,488	2%
WD 50 – Muddy/Troublesome Creeks	79,572	75,628	3,945	5%
WD 36 – Blue River	172,994	168,858	4,136	2%
WD 52 & 53 – Piney/Cottonwood and Tribs North of the Colorado River	787,938	778,390	9,548	1%
WD 37 – Eagle River	113,814	112,848	965	1%
WD 38 – Roaring Fork River	457,974	448,878	9,095	2%
WD 39 – Rifle/Elk/Parachute Creeks	118,575	113,548	5,027	4%
WD 45 and 70 – Divide and Roan Creeks	162,525	155,344	7,181	5%
WD 72 – Lower Colorado River	1,206,002	1,193,508	12,493	1%

Table 7.5
Average Annual Crop Consumptive Use Comparison (1975-2013)

Comparison	StateCU Results (af/yr)	Calibration Run Results (af/yr)	% Difference
Explicit Structures	334,009	327,150	2.1%
Aggregate Structures	124,587	121,414	2.5%
Basin Total	458,596	448,564	2.2%

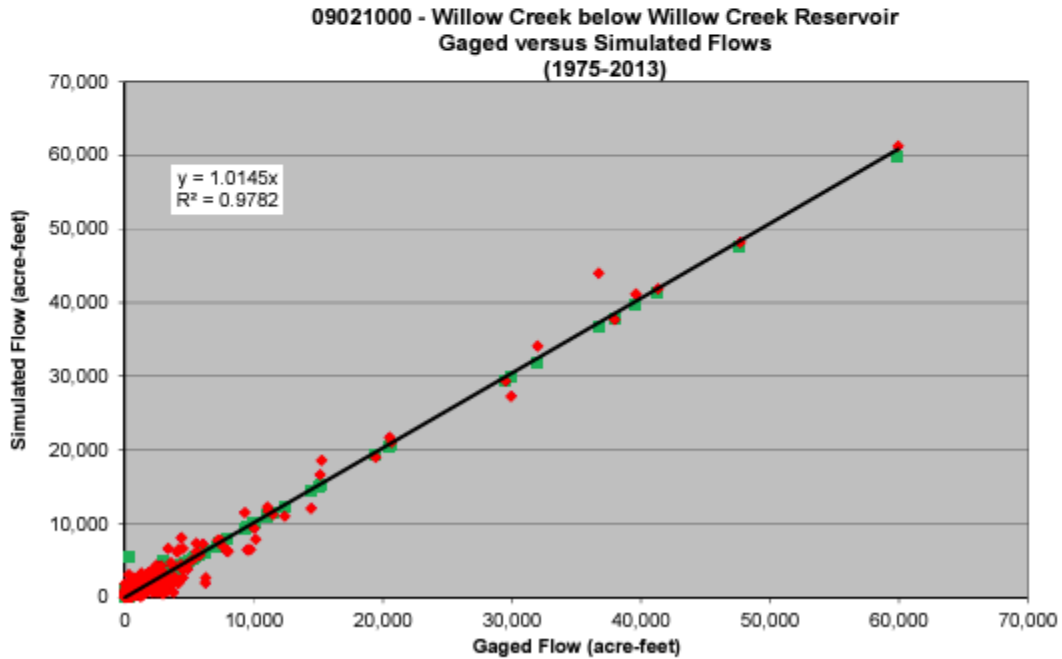
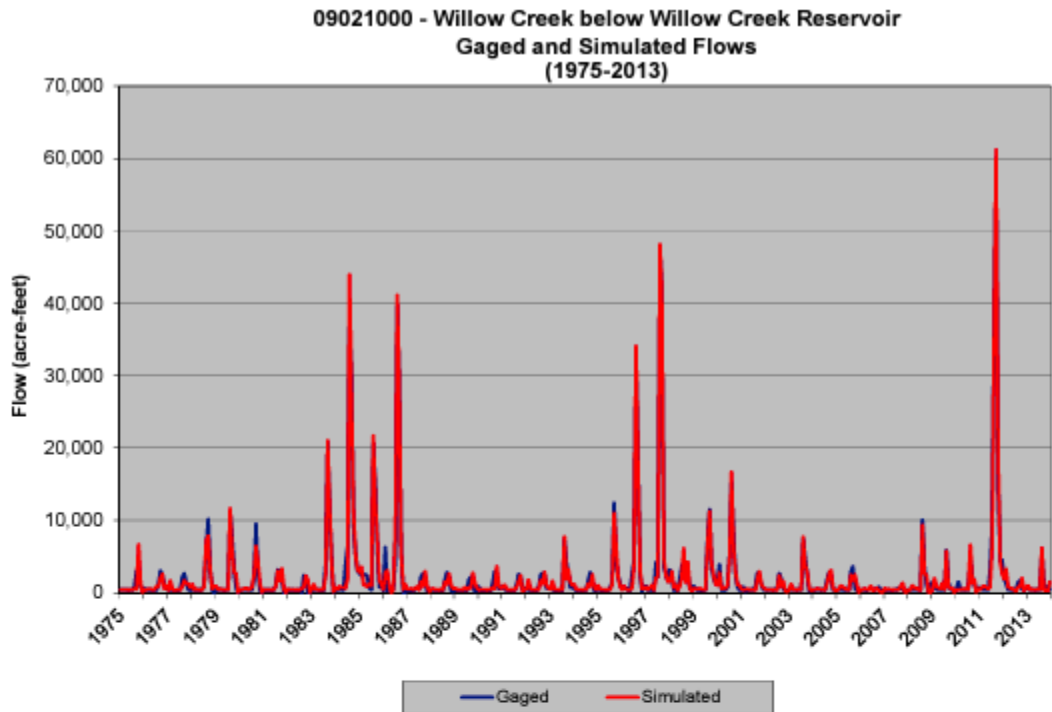


Figure 7.2 Streamflow Calibration – Willow Creek below Willow Creek Reservoir

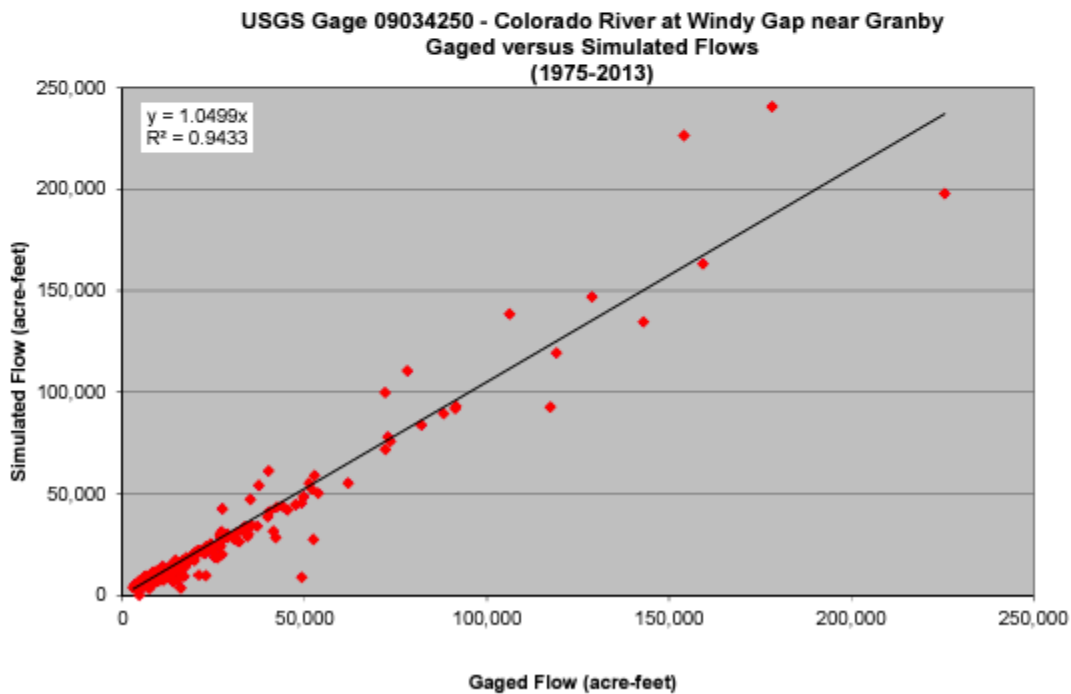
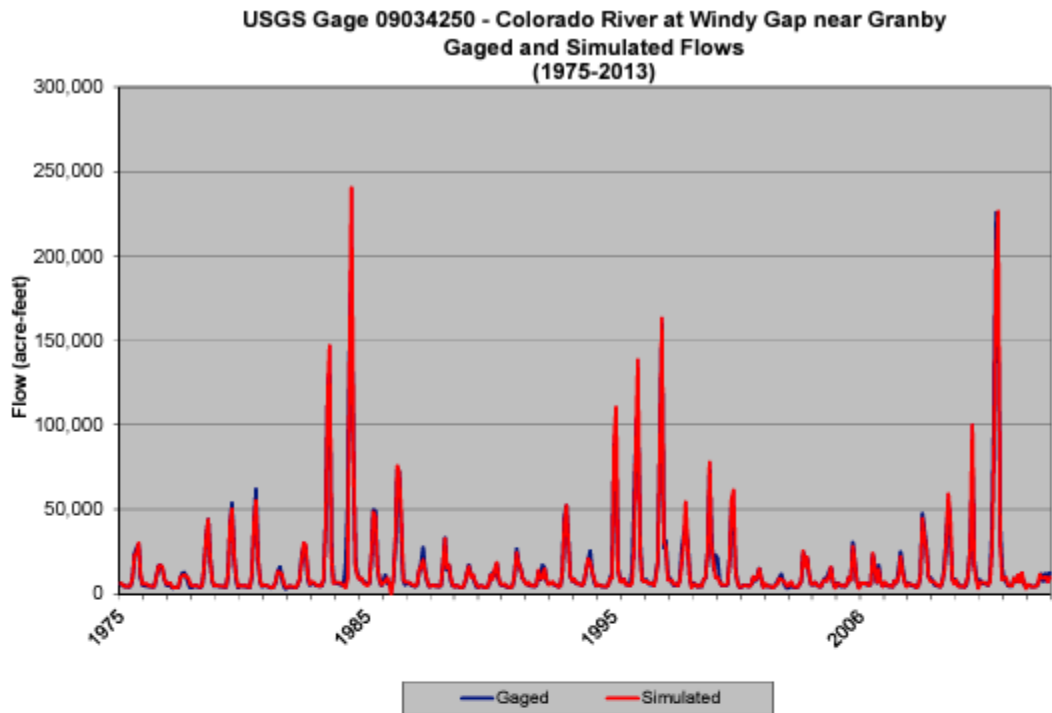


Figure 7.4 Streamflow Calibration – Colorado River at Windy Gap, near Granby, CO.

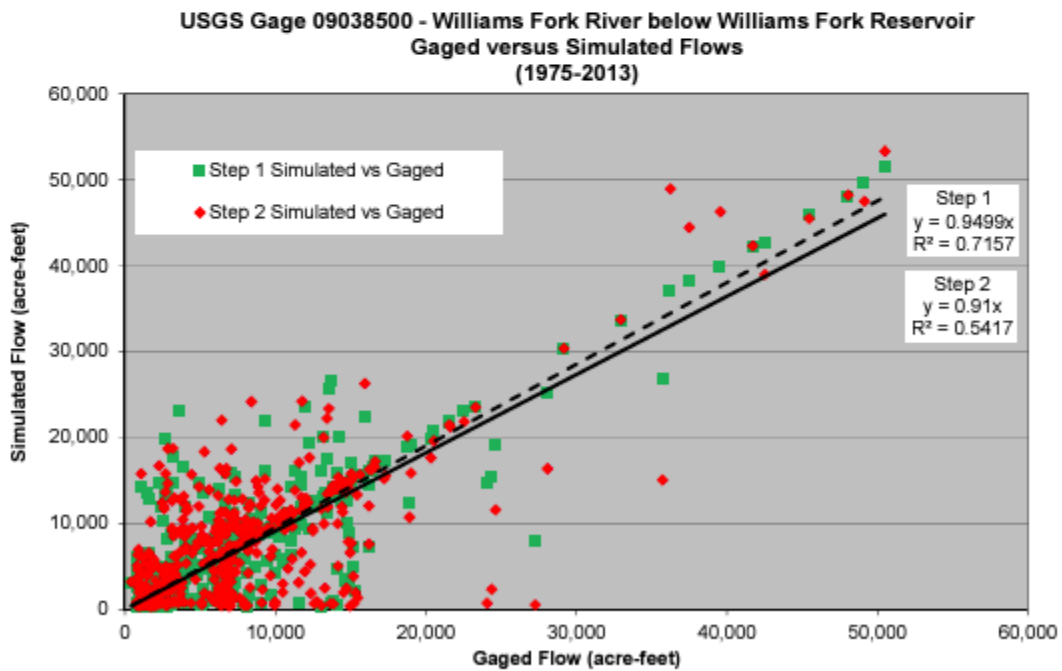
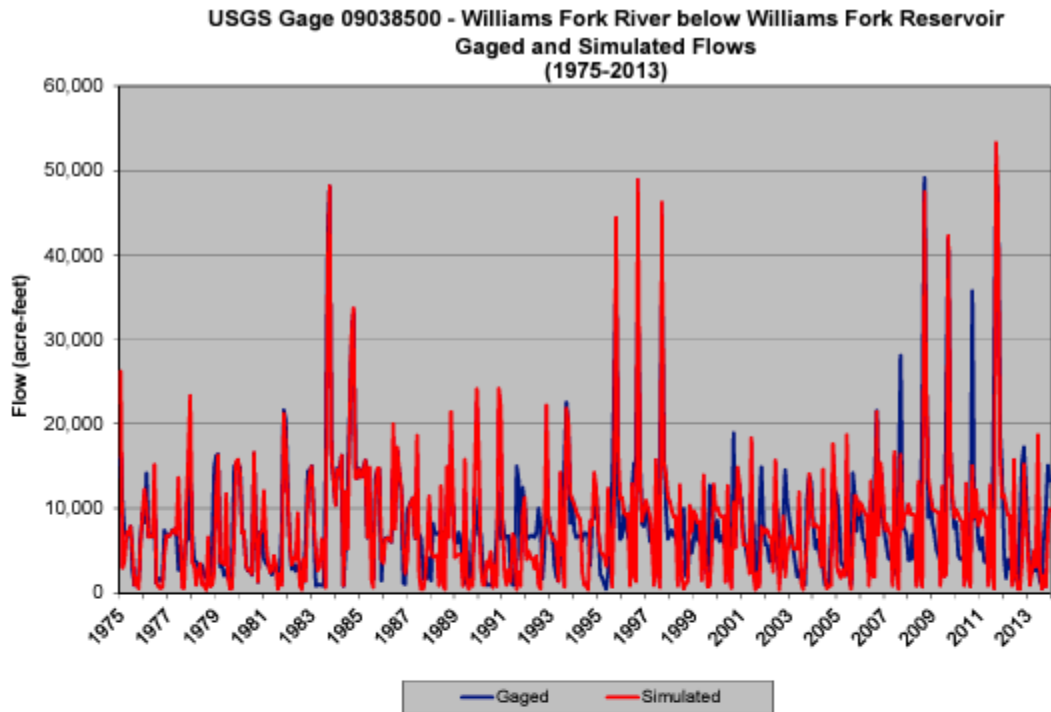
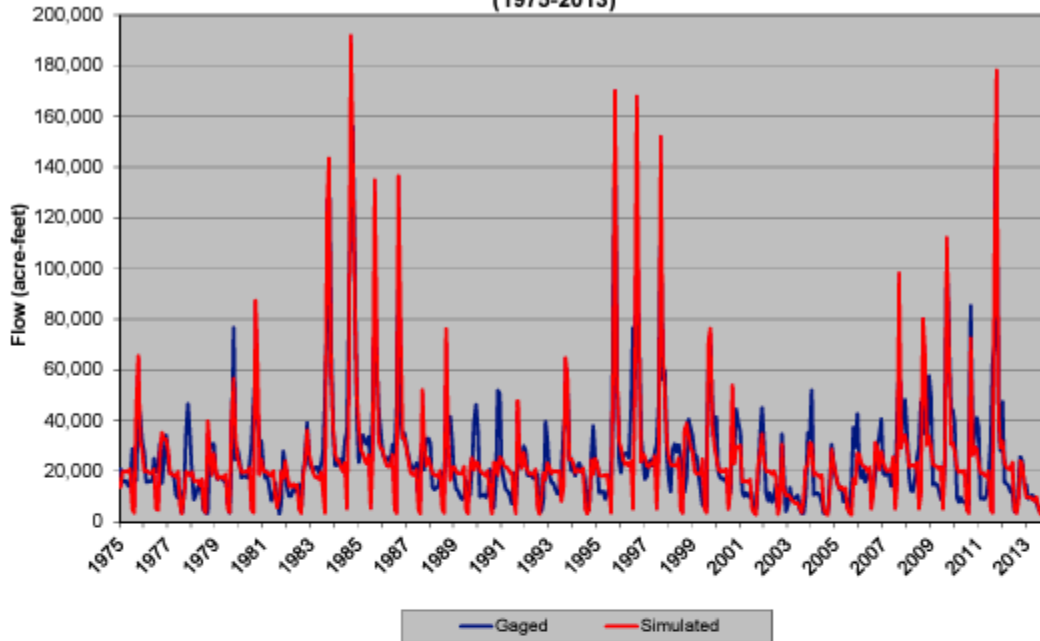


Figure 7.5 Streamflow Calibration – Williams Fork River below Williams Fork Res.

USGS Gage 09057500 - Blue River below Green Mountain Reservoir
Gaged and Simulated Flows
(1975-2013)



USGS Gage 09057500 - Blue River below Green Mountain Reservoir
Gaged versus Simulated Flows
(1975-2013)

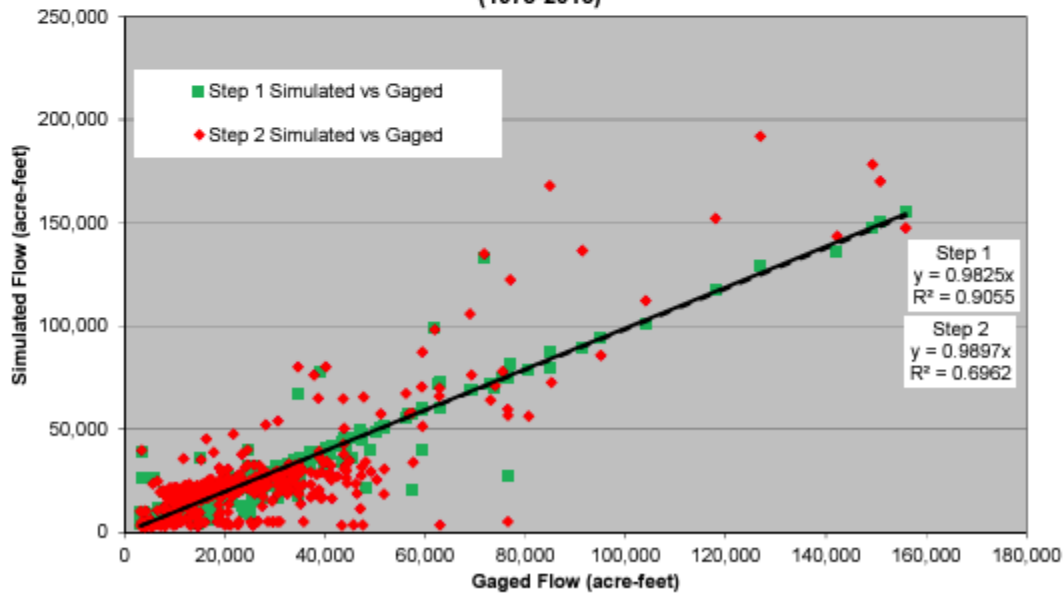


Figure 7.6 Streamflow Calibration – Blue River below Green Mountain Reservoir

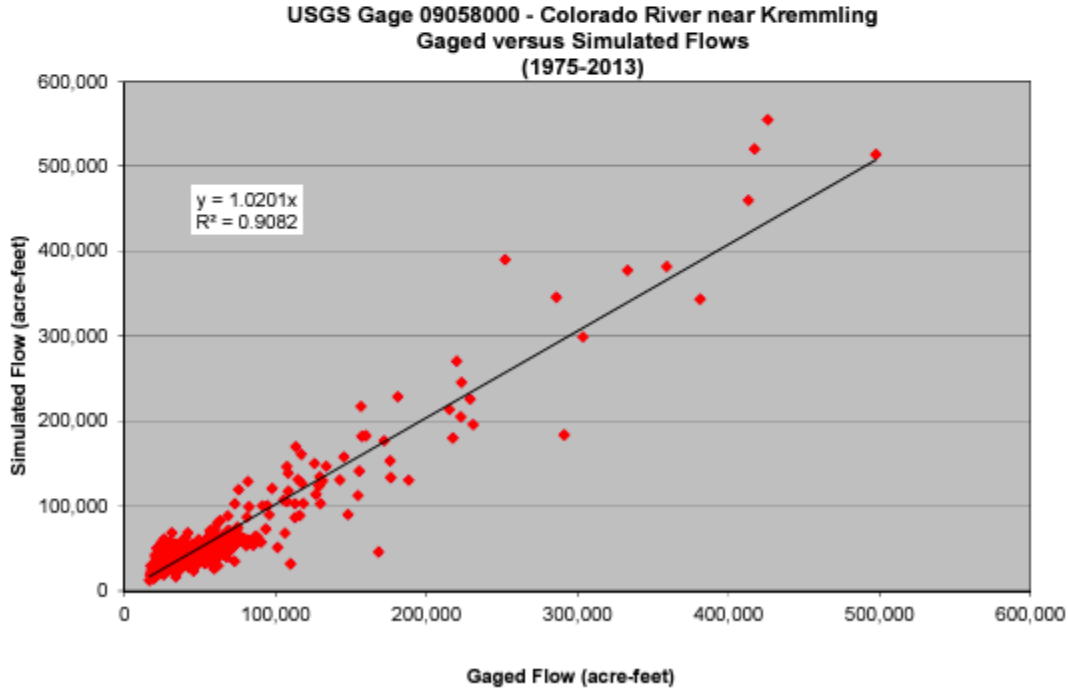
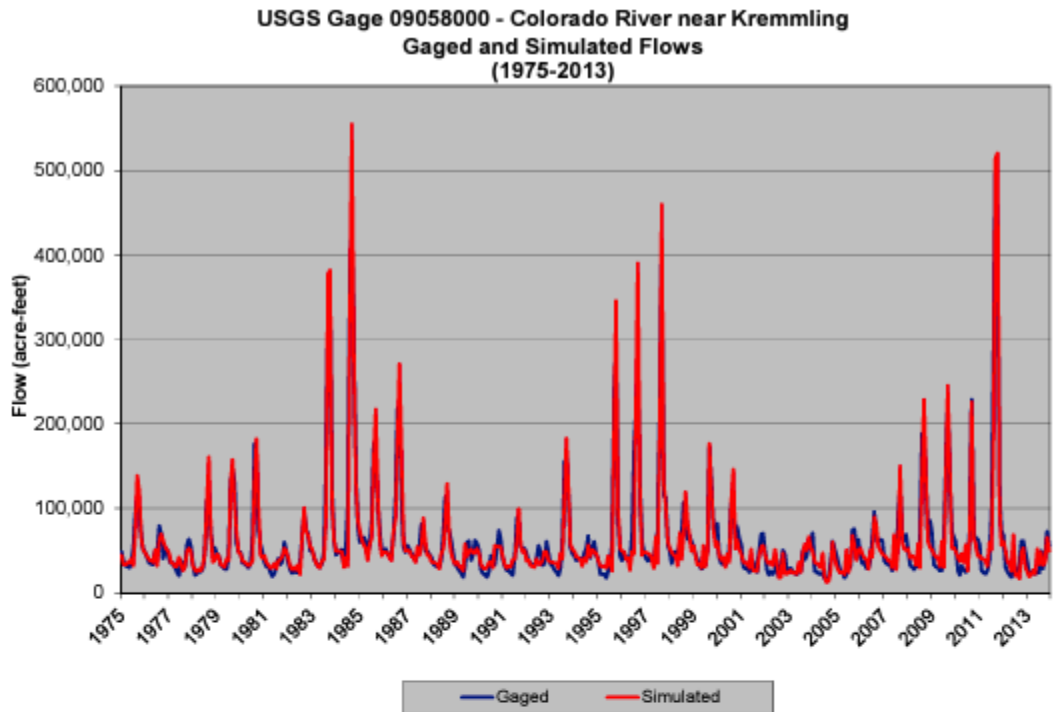


Figure 7.7 Streamflow Calibration – Colorado River near Kremmling

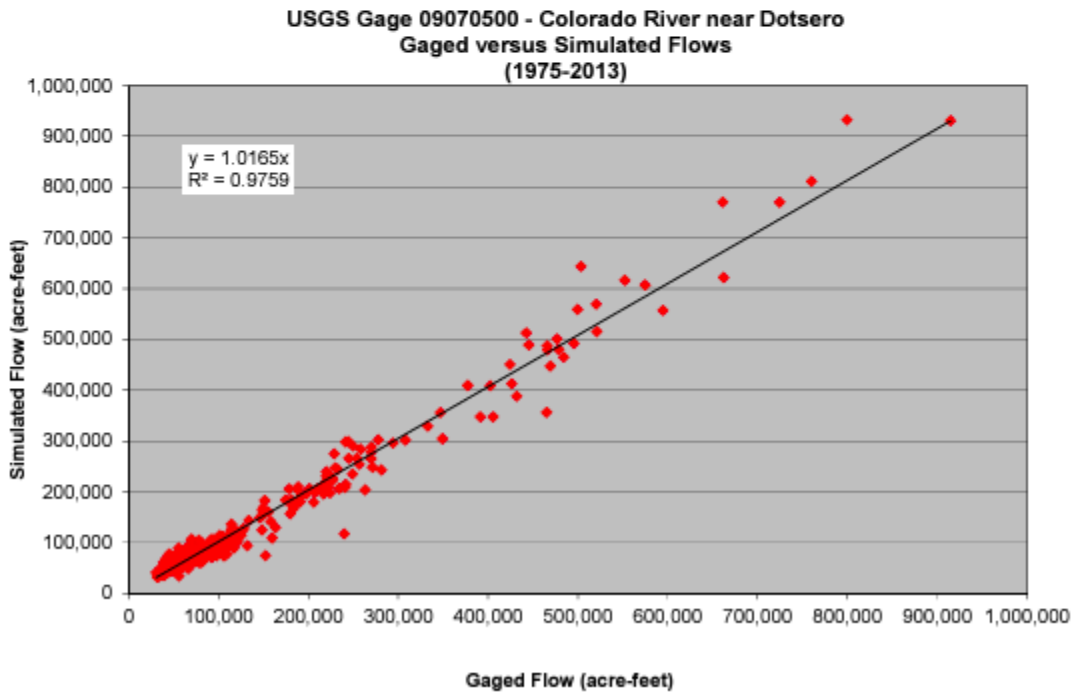
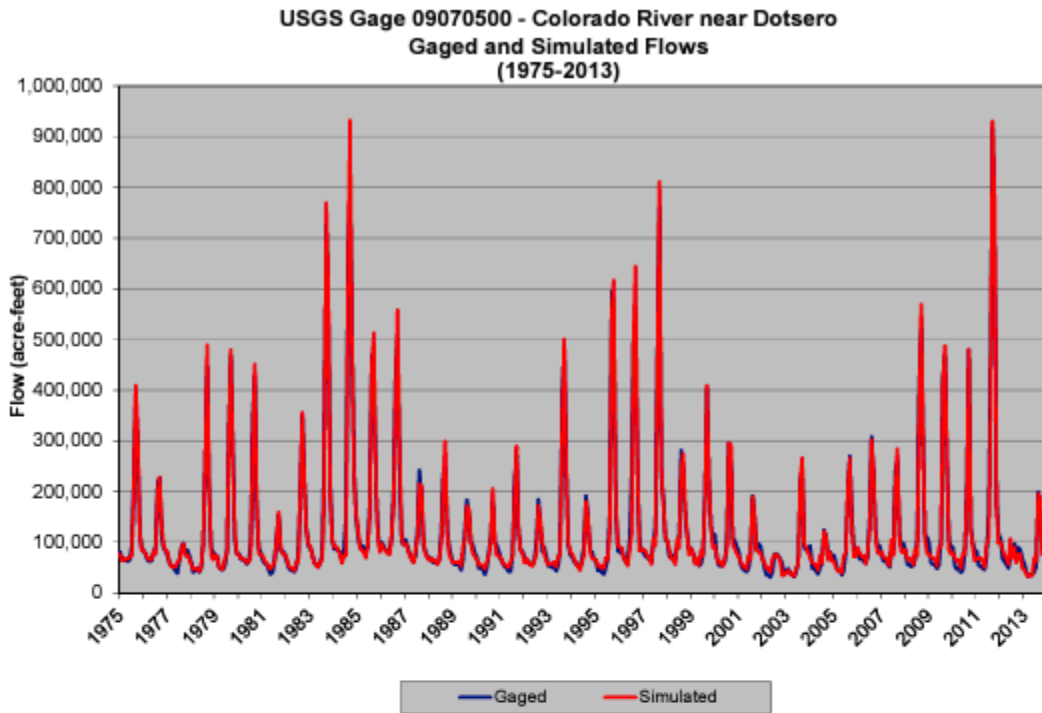


Figure 7.9 Streamflow Calibration – Colorado River near Dotsero

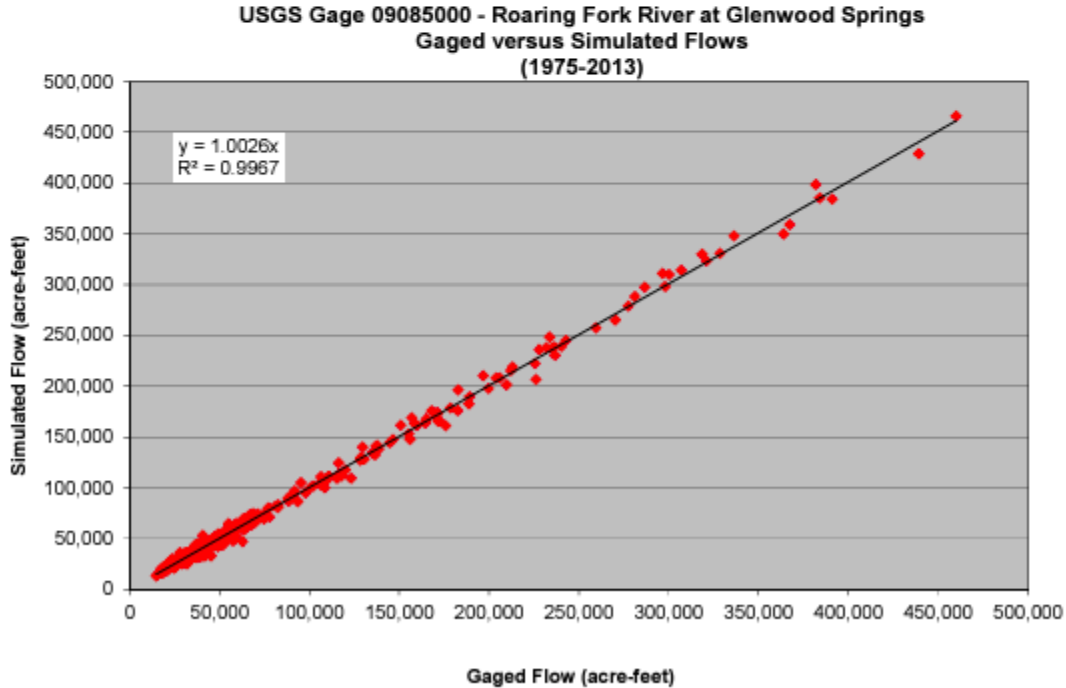
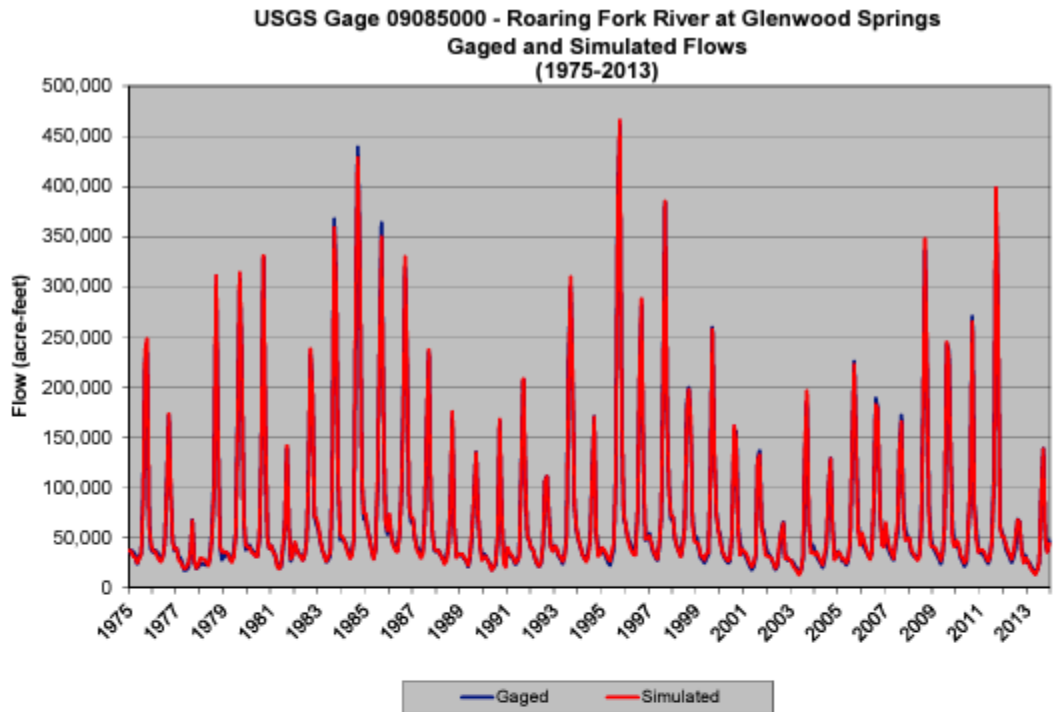


Figure 7.10 Streamflow Calibration – Roaring Fork River at Glenwood Springs

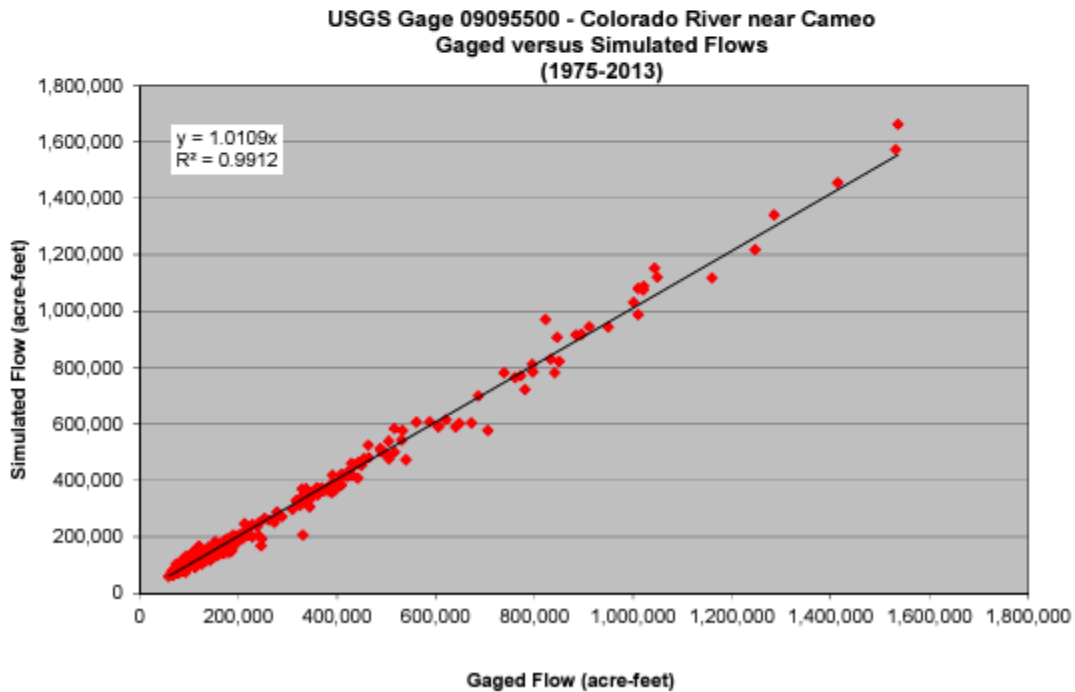
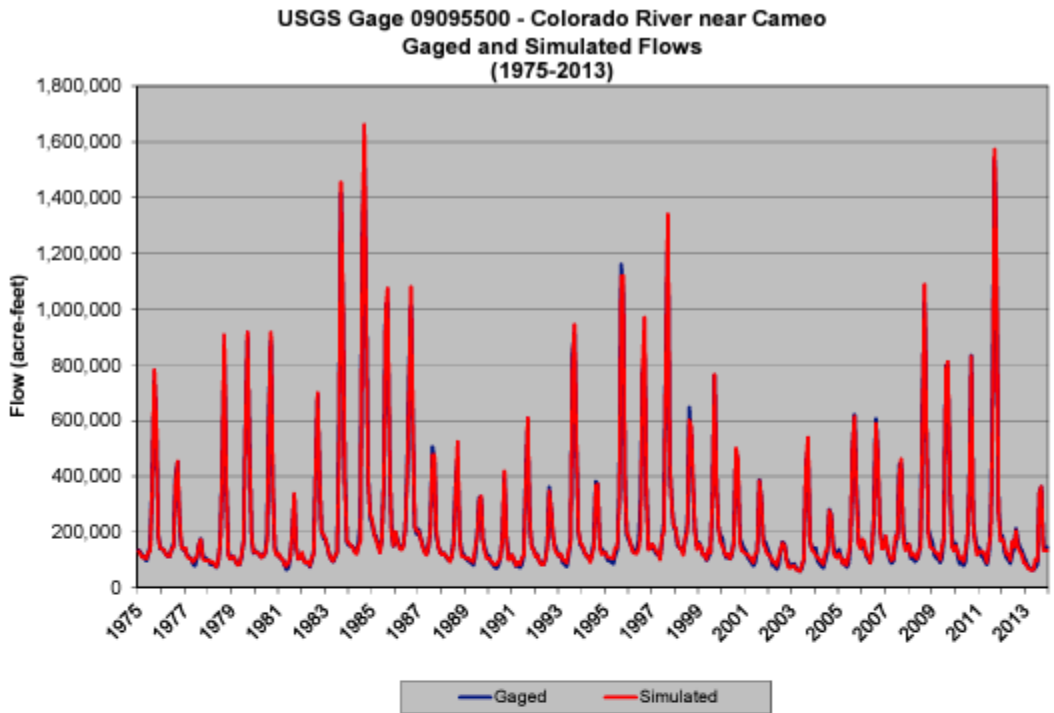


Figure 7.12 Streamflow Calibration – Colorado River near Cameo

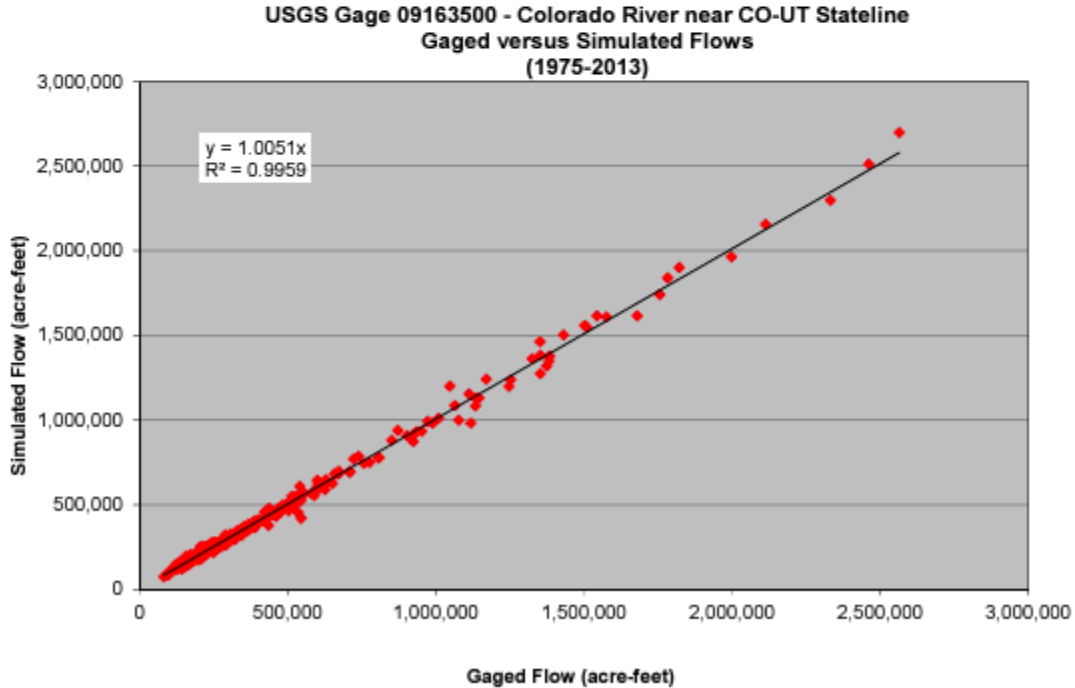
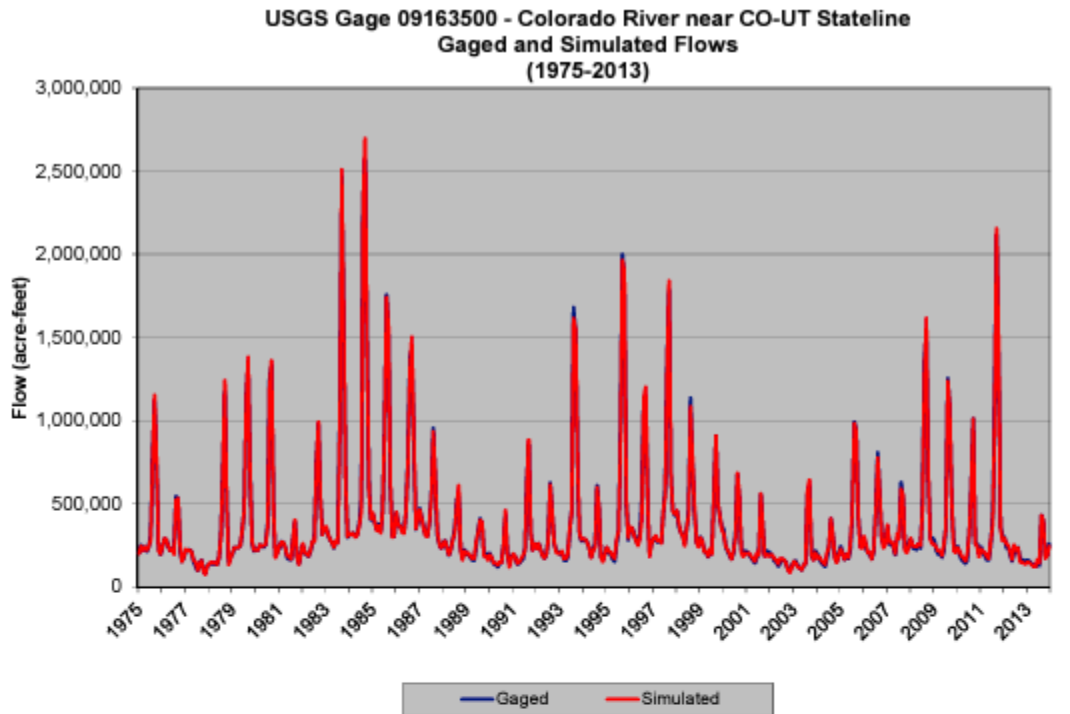


Figure 7.14 Streamflow Calibration – Colorado River near Colorado-Utah State Line

**3603543 - Green Mountain Reservoir
Gaged and Simulated EOM Contents
(1975-2013)**

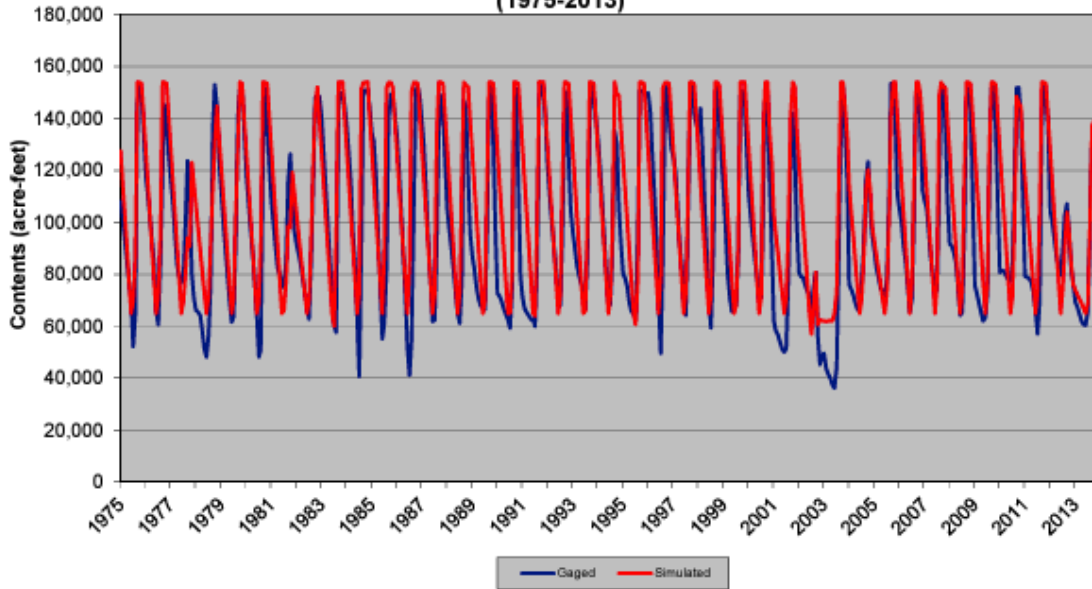


Figure 7.15 Reservoir Calibration – Green Mountain Reservoir

**3803713 - Ruedi Reservoir
Gaged and Simulated EOM Contents
(1975-2013)**

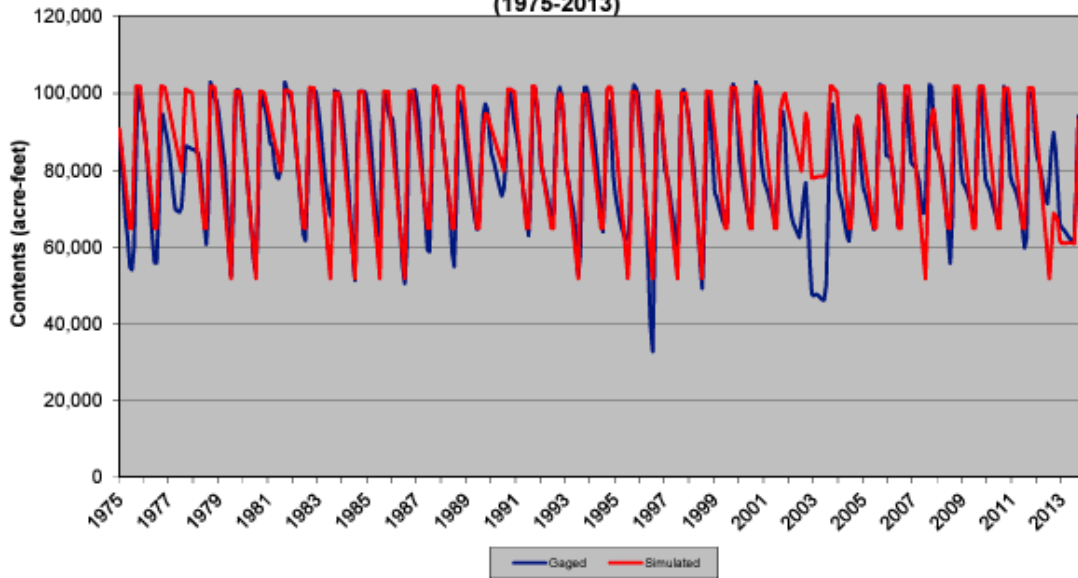


Figure 7.20 Reservoir Calibration – Ruedi Reservoir

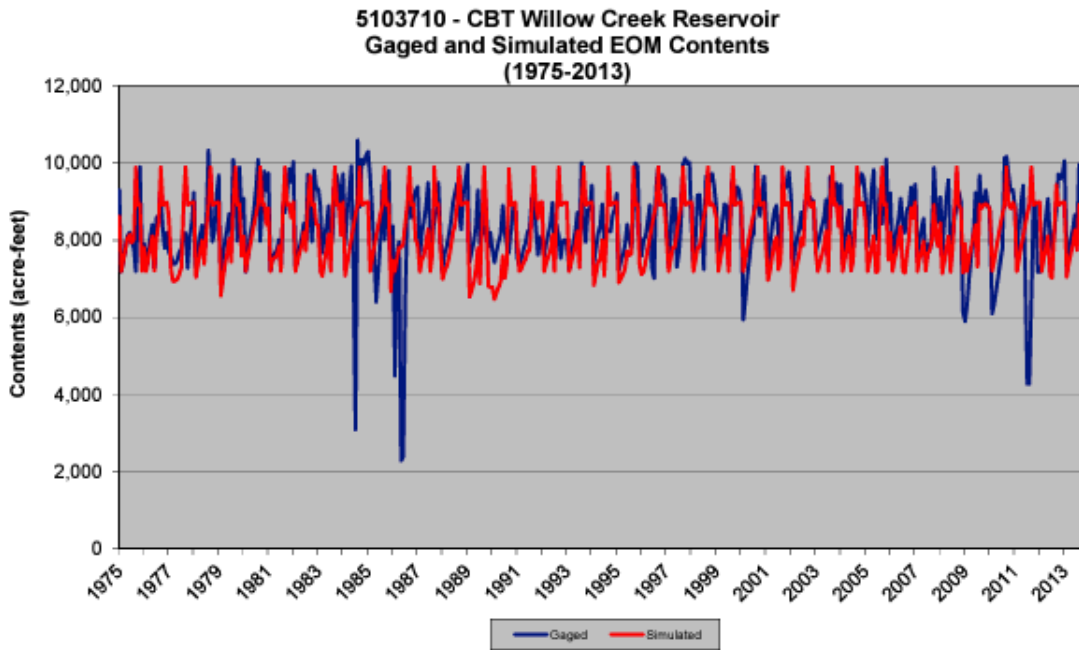


Figure 7.27 Reservoir Calibration – CBT Willow Creek Res

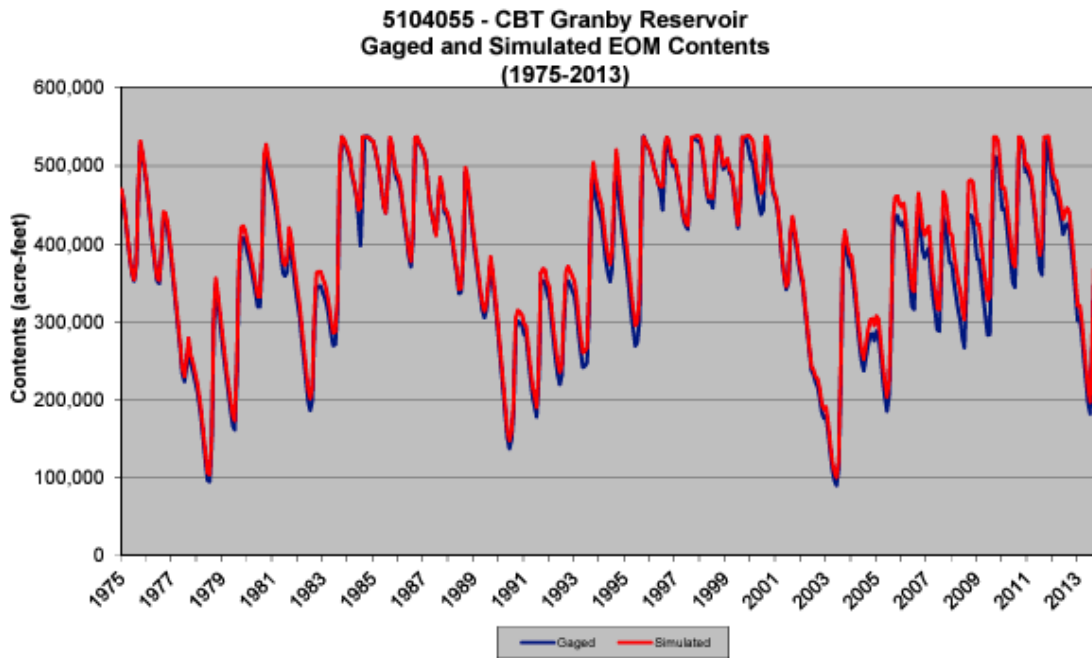


Figure 7.28 Reservoir Calibration – CBT Granby Reservoir

MEMORANDUM



To: Peter Fleming, Brendon Langenhuizen, Andy Mueller, Jason Turner, Bruce Walters
From: Kristina Wynne, P.H. and John Shuler, P.H.
Subject: Preliminary Shoshone Historical Use Assessment –**DRAFT**
Job: 0808.06
Date: November 8, 2024

The purpose of this memorandum is to present an estimate of the historical use of the Shoshone Power Plant water rights (“Shoshone Water Right(s)”). The analysis of historical use will support the Colorado River Water Conservation District’s (the “River District’s”) efforts to ensure the permanency of these senior non-consumptive water rights by changing their approved use in Colorado Water Court to add an alternate use for instream flow purposes to the already decreed hydropower purposes. The Shoshone Water Rights are among the largest and most senior water rights on the mainstem of the Colorado River. Since the Shoshone Power Plant began operating in 1909, the non-consumptive Shoshone Water Rights have operated nearly continuously in a manner that maximizes power production and subsequently maintains return flows for downstream water rights, including irrigation uses in the Grand Valley, municipal demands along the Colorado River west of Glenwood Canyon, and other non-consumptive uses such as assisting in the maintenance of flows for the Upper Colorado Endangered Fish Recovery Program (the “Fish Recovery Program”) in the 15-Mile Reach.

The proposed change of use of the Shoshone Water Rights to include instream flow purposes will require the filing of an application with the Colorado Division 5 Water Court. Such applications are required by statute to be supported by technical determinations of the historical (in this case, non-consumptive) use of the subject water right to ensure that the water right is not expanded, that historical streamflow patterns and return flows are maintained, and that the change of use prevents injury to other water rights. The historical use and yield of the water rights are ultimately determined as part of the Water Court process. Because the River District, Public Service Company of Colorado (“PSCo”), and the Colorado Water Conservation Board (“CWCB”)¹ have not yet filed a Water Court application for this change of use, and because various data sources are still being evaluated, a formal technical analysis has not yet been completed. This memorandum and the preliminary yield estimates presented herein are not intended for use in Water Court and may change in the future based upon additional data that may be evaluated or become available, and through ongoing discussions with the CWCB, PSCo, and potential opposers in the case. As with any change of water rights case, the River District seeks the ability to continue to utilize the

¹ Under statute, the CWCB is the only water user in the State of Colorado authorized to use water rights for instream flows and natural lake levels to preserve or improve the natural environment. Therefore, the CWCB will be a co-applicant with the River District and Public Service Company of Colorado when a Water Court application for a change of the Shoshone Water Rights is filed.

full Shoshone Water Rights at their decreed rates when legally and physically available, consistent with the historical use over a representative study period.

Background

The Shoshone Power Plant is located on the Colorado River in Glenwood Canyon just upstream of the City of Glenwood Springs, Colorado. The Shoshone Water Rights are diverted at an on-channel diversion dam (“Shoshone Dam”) that extends across the Colorado River, approximately eight miles downstream of the USGS stream gage located near Dotsero, Colorado (USGS Gage 09070500, the “Dotsero Gage”). Water is diverted at the Shoshone Dam into an approximately 2.5-mile concrete-lined tunnel to the power plant where it is delivered to twin penstocks before dropping a total of 167 feet through two turbines to generate electricity at the Shoshone Power Plant. As part of the facility’s normal operations to sluice sediment to prevent damage to the Shoshone Power Plant turbines and other infrastructure, some water is typically released from the tunnel at various locations. These uses are not consumed but must be diverted to optimize power generation at the Shoshone Power Plant, as discussed below. These diverted amounts return to the Colorado River un-depleted. The remaining water delivered to the penstocks and through the turbines to produce electricity is also not consumed, and therefore, all of the water diverted at the Shoshone Dam and delivered through the plant returns to the Colorado River at the Shoshone Power Plant outfall.

The Shoshone Power Plant is currently owned and operated by PSCo. In December 2023, the River District and PSCo entered into a purchase and sale agreement (“PSA”) for the Shoshone Water Rights. As described in the PSA, the River District, in coordination with the CWCB, seeks to permanently protect the Shoshone Water Rights by changing the decreed use of the water rights to include instream flow purposes in the reach between the Shoshone Dam and the Shoshone Power plant outfall. By adding an alternate beneficial use for instream flow purposes to the Shoshone Water Rights, the rights will continue to utilize their administrative priority dates while maintaining the historical flow regime of the Colorado River within the State of Colorado.

Shoshone Water Rights

The Shoshone Water Rights include two separate absolute water rights associated with the Shoshone Power Plant. The more senior, original Shoshone Water Right was decreed for 1,250 cubic feet per second (“cfs”) in Eagle County Civil Action No. 466 with a priority date of December 5, 1905. The entire 1,250 cfs was later made absolute in Eagle County Civil Action No. 553. The plant’s capacity and consequent demand for water later increased by 158 cfs to a total of 1,408 cfs in 1929. The junior Shoshone Water Right was decreed for 158 cfs in Eagle County Civil Action No. 1123 and is administered with a priority date of May 31, 1940. The total decreed amount of the two water rights is 1,408 cfs, which has historically been diverted at the full rate for at least a portion of nearly every year. The combined decreed uses for the senior and junior Shoshone Water Rights are for power production purposes which are non-consumptive. The Shoshone Water Rights are more particularly described in Table 1, below.

Table 1. Shoshone Power Plant Water Rights

Case No.	Amount (cfs)	App. Date	Adj. Date	Previous Adj. Date	Priority Admin No.	Use
CA-466, CA-553	1,250	1/7/1902	12/9/1907	12/5/1905	20427.18999	Power manufacturing, mining, milling, traction, heating and lighting purposes
CA1123	158	5/15/1929	2/7/1956	5/31/1940	33023.28989	Manufacturing and generation of electrical energy

While records dating back to the initial diversion of the Shoshone Water Rights are not available, records available from the Colorado Division of Water Resources (“DWR”) indicate that the Shoshone Water Rights may have placed calls since at least the mid-1960s. Calls for the Shoshone Water Rights have been and are currently administered by the DWR at the Dotsero Gage, located approximately eight miles upstream from the Shoshone Dam and approximately 10.5 miles upstream from the Shoshone Power Plant.

Plant History

Construction of the Shoshone Power Plant began in 1906, and it first operated in 1909. The tunnel at the Shoshone Power Plant can carry up to 1,408 cfs, which supplies water to two turbines at the Shoshone Power Plant which are capable of producing a combined 15,000 kW of electricity. Based on our discussions with current and past Shoshone Power Plant operators and PSCo water resources staff, we understand that unless the turbines, the plant, or the tunnel were shut down for maintenance, inspections, or for some other unforeseen circumstance, the plant was always diverting water and producing energy to the greatest extent possible. In other words, there has consistently been demand for the full amount of power that the plant can produce, in part due to the fact that the Shoshone Power Plant is a relatively small contributor to the larger energy grid. As such, over its operational lifespan, the delivery of power produced at the Shoshone Power Plant has not required reductions associated with a drop in demand at any time. Repairs to the turbines have historically been made using the same or similar parts throughout the life of the plant resulting in relatively consistent capacities, efficiencies, and operations over time.

For the majority of its 115-year history, the Shoshone Power Plant has operated constantly and exercised the Shoshone Water Rights to produce power, with routine partial shutdowns for maintenance. Review of available maintenance records from PSCo will occur prior to finalizing any historical use yield analysis. We understand from discussions with present and former PSCo staff that at least since the early 1980s, routine maintenance typically occurred from one to three months during the winter when streamflow is low, and the operators could minimize lost power

production. During that time, maintenance of the turbines was reportedly achieved by shutting down one turbine while keeping the other turbine online.

Based on DWR records which date back to the mid-1970s, and Historic Users Pool (“HUP”) Annual Reports, which records span 1998-2014, the Shoshone Power Plant operated consistently with minor shutdowns (most often related to planned maintenance) until approximately 2002 when PSCo voluntarily reduced its call from 1,408 cfs to 1,000 cfs to allow upstream junior water rights to divert or store water from June 13, 2002 through June 26, 2002. This informal “Shoshone Call Relaxation” was again implemented in 2003, when PSCo voluntarily reduced the Shoshone Water Rights call to 704 cfs in the winter and spring despite the fact that there was physically available flow to divert at a greater rate for a portion of this period and there was demand for the power at the full capacity of the plant.² A formal call reduction agreement between PSCo and the Board of Water Commissioners for the City and County of Denver (“Denver Water”) was signed in 2007.

In addition to the negotiated and voluntary call reduction agreements described above, the frequency of days during which the Shoshone Power Plant was not operational and unable to exercise the Shoshone Water Rights significantly increased after 2003, mostly due to natural phenomena or unforeseen circumstances beyond the control of PSCo and for which it worked diligently to make repairs necessary to get the plant back online and continue to meet the power demand. These major outages include but are not limited to the following events:

- 2004: PSCo conducted a major automation of the power plant’s operations, which required the plant to be offline between mid-March and mid-July.
- 2007-2008: A major penstock rupture on June 20, 2007 resulted in the plant being offline until April 25, 2008. Operational issues following the penstock failure and repair persisted through water year 2008.
- 2010: Unscheduled maintenance was required due to a generator fire in late 2009.
- 2012: The plant operated with only one turbine to reduce the head at the Shoshone Dam to reduce seepage and other issues at the dam.
- 2013: Denver Water call relaxation agreement was in effect.
- 2020: The plant was shut down during the spring of 2020 due to a flood that required the replacement of the turbine exciters. The Grizzly Creek Fire started on August 10, 2020 and closed Glenwood Canyon for 13 days. The Shoshone Power Plant was offline following

² The 2003 informal “Shoshone Call Relaxation” was conducted in accordance with the March 21, 2003 “Agreement Concerning Proposed Operation of the Shoshone Power Call” between the River District and the City and County of Denver, acting by and through its Board of Water Commissioners.

the highway closure because powerlines destroyed during the fire had to be repaired or replaced.

- 2021: The plant was partially or fully offline for much of 2021 for reasons that included a large debris flow between the Shoshone Dam and the Shoshone Power Plant. Rock debris was stuck in the diversion tunnel.
- 2022: The plant shut down due to specialized turbine and casing inspections.
- 2023-2024: The plant shut down due to hazardous rockfall at the Shoshone Power Plant site and safety concerns for on-site staff and facilities. During the extended outage, the runner in Turbine A was sent off-site for significant repairs and refurbishment.

As shown in Table 2 below, reported days of full outages were much more frequent after 2004, indicating that the post-2003 period is not representative of the long-term historical use of the Shoshone Water Rights and the consistent operation of the plant due largely to extreme circumstances beyond the control of the plant operators.

Table 2: Summary of Days of Full Outage at the Shoshone Power Plant³

Period	Total Days of Full Outage	Average Annual Days of Full Outage
1975-2003 (29 years)	89	3
2004-2022 (19 years)	1,493 ⁴	77

Available Data Sources

There are two readily available data sources associated with the administration, diversion, and deliveries attributable to the Shoshone Water Rights: (1) records available from the DWR’s Colorado Decision Support System (“CDSS”) database which are characterized as “diversion records,” and (2) administrative flow calculations quantified at the Dotsero Gage, where the Shoshone Water Rights are administered, as made available by the DWR through the Division Engineer’s Office for Colorado Water Division 5. The CDSS records and administrative flow data are described in more detail below.

CDSS Records

Daily records for the Shoshone Power Plant from 1975 to present are available from the CDSS database. However, records for some periods are missing or appear to be repeated for many days

³ Full daily outage based on days with reported zero or no data in CDSS records.

⁴ Value based upon CDSS records. PSCo data suggests that there may have been up to approximately 30 days, primarily in November 2013, when the plant was operational to some degree. However, CDSS records report zero.

or months in a row. While these data entries are represented as “diversion records,” these records are not based on the measurement of diversions or deliveries to the Shoshone Power Plant during this period. Rather, we understand that these records are based on power production records kept by the plant operators which were then converted to a flow rate based on a typical hydropower equation and an assumed unit efficiency of 81%. Generating unit efficiency was measured and variable unit efficiency curves were developed in the 1930s but were not used to develop the records that are currently available from the CDSS database.

Like most diversion structures and water rights uses, all the water diverted at the Shoshone Dam upstream of the plant and delivered through the tunnel is necessary for optimum operation of the Shoshone Power Plant even though not all the water diverted runs through the turbines to produce power. Analogous to other losses that are inherently included in and necessary for the operation of a reasonably efficient system and utilization of a water right, water is released through various tunnel “adits” or outlets. The Shoshone Power Plant operators open low level valves in the tunnel at several adits to clear sediment from the tunnel before the water reaches the penstocks in order to protect the turbine runners and other power plant infrastructure from damage and excessive wear. Based on discussions with operators at the plant, water may be released through the adits for many weeks at a time and releases may equal up to several hundred cfs. While water released through the adits returns directly to the Colorado River and is not run through the turbines, it is necessary for these amounts to be diverted to allow power to be generated in the safe operation of the power plant.

Because the CDSS records are based only on power produced at the Shoshone Power Plant, the additional water that was required to be diverted to enable the beneficial purposes at the plant is not included in the record. As a result, the CDSS records are more reflective of historical deliveries to the turbines than historical diversions from the river. The CDSS records underestimate the total amount of water actually available and diverted at the dam and subsequently delivered through the tunnel. Therefore, reliance on the CDSS records alone may not adequately protect the return flows historically available to downstream junior water rights because the CDSS records do not include water that was necessarily diverted to achieve the end beneficial use and that was returned to the river without directly producing power.

An additional consideration of the CDSS records is that at times they include reservoir water released for downstream users to fill any remaining tunnel capacity. The Shoshone Power Plant historically diverted and created power using the physically available flow, up to the plant’s capacity, and the CDSS records inherently include at least some water that was released from upstream storage and bound for downstream use, such as support for the Fish Recovery Program in the 15-Mile Reach. This water, often referred to as “virtual pipeline water” or “shepherded water,” is water that the Shoshone Power Plant may physically divert but that it does not have the right to call for. Diversion of shepherded water at the Shoshone Power Plant was allowed by the Division Engineer, as the Shoshone Water Rights are used for non-consumptive power generation and the water diverted would still be available for downstream users. Although the shepherded water cannot be “called” for by the Shoshone Water Rights, the diversion and beneficial use of that water demonstrates that except for periods of reduced use or non-use described above, the Shoshone Power Plant has a constant demand for 1,408 cfs.

Administrative Flow Data

While the Shoshone Power Plant may divert water on a year-round basis through the plant up to its capacity at any time, the ability for the Shoshone Water Rights to place a call has historically been administered by the Division 5 Engineer's Office ("DEO") based on the available "administrative flow" or "natural flow" at the Dotsero Gage. The administrative flow is determined by the DEO based on information from the U.S. Bureau of Reclamation ("USBR") and other users to account for upstream reservoir releases that must be shepherded to users below the Shoshone Power Plant including, but not limited to, contract water and HUP water released from Green Mountain Reservoir for use in the Grand Valley and water released for the Fish Recovery Program from Lake Granby, Wolford Mountain Reservoir, or other upstream sources. The DEO is charged with ensuring that this shepherded water is delivered past downstream intervening diversions to the final place of use. The administrative flow is therefore equal to the measured streamflow at the Dotsero Gage less the shepherded water. Because releases of contract water, HUP water, and water from other upstream sources generally only occur during the late summer months, the administrative flow is generally equal to the measured flow at the Dotsero Gage except from July through October.

The administrative flow has been formally considered and enforced as part of the DEO's administration of the Colorado River since 1998, following the start of the Fish Recovery Program releases on the Upper Colorado River in 1997. Based upon preliminary review of USBR Colorado River operations records and other DWR records, it appears that contract releases made above the Shoshone Power Plant and bound for users below the plant were minimal prior to 1998. Administrative flow calculations were made available by the DEO from 2017-2022. All administrative flow records prior to that period (back to 1998) were calculated based on the same sources of data and the same processes used by the DEO.

We understand that, until the mid-1980s, the administrative practice of the DWR and/or USBR may have been to limit the administration of the Shoshone Water Rights call to 1,250 cfs under the senior Shoshone Water Right. However, based on conversations with PSCo administrators and plant operators, in addition to streamflow records available pre-1998, there was always a demand for the full 1,408 cfs when such water was legally and physically available. Moreover, written call records from the 1980s indicate that plant operators at the Shoshone Power Plant routinely requested that DWR administer the entire 1,408 cfs when demands were not being met at the power plant. Therefore, for purposes of this analysis, we assumed that the administrative flow prior to 1998 is equal to the measured flow at the Dotsero Gage, limited to 1,408 cfs.

There was always demand for power generated at the Shoshone Power Plant and therefore the administrative flow could always be utilized so long as the power plant was operating at capacity and provided such water was legally and physically available. The administrative flow includes all water necessary to operate the plant to generate electricity including water released from the tunnel via the adits for sediment sluicing and other uses consistent with reasonably efficient operations. Consequently, the administrative flow is the best representation of the actual historical use of the Shoshone Water Rights and also more accurately reflects the historical impact to upstream water users during times when the plant was operating. Moreover, the administrative flow also includes

100% of the return flows from the historical exercise of the Shoshone Water Rights, which will be required to be maintained in a change of water right to prevent injury to downstream users. Because the administrative flow is most representative of historical conditions at the Shoshone Dam, it is also the most appropriate basis for determining the amount of water available for the alternate instream flow use within the proposed instream flow reach.

Additional Data and Records

For purposes of the analysis described in this memorandum, we relied on records available on DWR's CDSS database and administrative flow data recorded at the Dotsero Gage. Moving forward, the analysis of historical use described in this memorandum may be supplemented as additional information and data is discovered.

Preliminary Yield Analysis

In any change of use in Colorado Water Court, the historical use of the subject water right must be quantified based on the actual historical beneficial use of the water right for its decreed purposes to prevent the expansion of the water right and prevent injury to other water rights holders upstream and downstream. As described above, and for purposes of this analysis, the administrative flow is more representative of historical conditions than the "delivery" records available from the CDSS database.

Study Period

While the CDSS records are not the most representative data to reflect what flow rate was diverted under the Shoshone Water Rights, these records are available on a daily basis back to 1975 and indicate when the plant was operating, and that water was being used for its decreed purposes. The CDSS records, along with notes regarding the operations at the plant and calls by the Shoshone Water Rights, also show that the ability to operate the plant and divert water to the fullest extent was reduced after 2003. As described above, this was due to various reasons that were beyond the control of PSCo and, therefore, the post-2003 period is not reflective of the long-term historical exercise of the Shoshone Water Rights. Pursuant to Colorado law (e.g., CRS § 37-92-305(3)(d)), the entire study period of available data need not be considered in a change case provided that the selected study period is sufficiently long to show the true historical use of the water right to be changed.

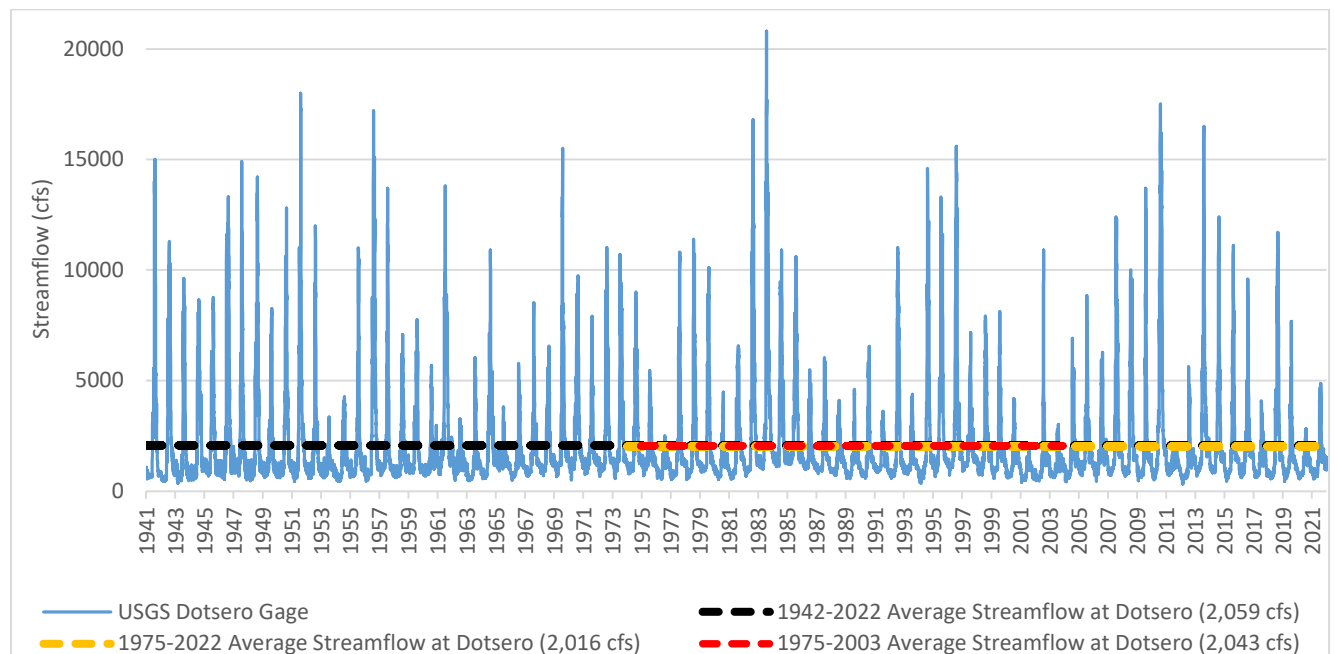
In other words, "quantification of the historical consumptive use of a water right must be based on an analysis of the actual historical use of the water right for its decreed purposes during a representative study period that includes wet years, dry years, and average years. The representative study period:

- (I) Must not include undecreed use of the subject water right; and
- (II) Need not include every year of the entire history of the subject water right."

Section 37-92-305(3)(d), C.R.S.

For the determination of the yield of the Shoshone Water Rights presented herein, a 1975 through 2003 water year study period was selected. This period represents years during which information regarding the operation of the plant is available and is reflective of a period of consistent operations at the plant and the exercise of the Shoshone Water Rights. The 29-year period of record also contains periods of wet, dry, and average hydrologic years, similar to years before and after the study period, as demonstrated below in Figure 1.

Figure 1 – Hydrograph of total Dotsero Gage streamflow with averages for different study periods to show that 1975-2003 study period is hydrologically representative.



Dotsero Gage data are available with minimal data gaps from 1942 to present. As shown in Figure 1, the entire period of record and the 1975-2003 period of record both include periods of wet, dry, and average streamflow years. Despite fluctuations in streamflow over the years, the average streamflow from 1942 to present is nearly identical to the average streamflow during the 1975-2003 study period (less than 1% difference). Similarly, the 1975-2022 average streamflow is approximately equal to the previous study periods (within approximately 2%). This indicates that any variance in average annual yield of diversions of the Shoshone Water Rights and plant operations after 2003 is not due to significant changes in physical supply available at Dotsero. Water diverted at the Shoshone Dam has historically fluctuated with the hydrograph given the nature of the operations, limited to the Shoshone Water Rights flow rate and the capacity of the plant.

Historical Use Quantification

Any change of a water right must ensure that the proposed changed use of the water right is not expanded and that historical streamflow patterns and return flows are maintained. This is most typically done through the imposition of decreed volumetric limits (which may be multi-year or annual averages) and return flow obligations. Volumetric limits can be determined by quantifying

the average historical use of a water right over a representative study period and may then be applied as a decreed limit to the future changed uses over a period of time consistent with the study period. Incorporating a running-average volumetric limitation based on a longer period of time allows a water right to operate with some flexibility and fluctuations in response to variable hydrology, just as it operated in the past, but prevents the expansion of the water right by limiting the running average annual diversion to the long-term historical average. Because the Shoshone Water Rights are non-consumptive water rights, maintaining the historical pattern of use will also maintain the historical return flows.

Therefore, we quantified the average annual yield of the Shoshone Water Rights for the representative study period of 1975-2003 by converting the daily administrative flow from 1998-2003 and the Dotsero Gage flow from 1975-1997 (limited to 1,408 cfs) to acre-feet (“ac-ft”) of water beneficially used and then summed the daily values over each month of the selected study period (i.e., 1975-2003). The monthly averages from 1975-2003 were then summed to determine an average annual historical yield.

To best reflect the historical exercise of the Shoshone Water Rights, and to maintain the historical streamflow patterns and return flows relied upon by downstream water users, it was necessary to make the following reasonable adjustments and assumptions regarding the administrative flow:

- As described above, the administrative flow record was estimated using methods confirmed by the DEO and DWR-provided data back to 1998. Information regarding any water shepherded past the Dotsero Gage is limited, though the volumes and daily flow rates of shepherded water would have been minimal and occurred only during the irrigation season. Therefore, for purposes of this analysis, we assumed that prior to 1998, the administrative flow is equal to the flow at the Dotsero Gage, with additional limitations described below.
- Daily flows included in the yield analysis are limited to the lesser of the administrative flow and the total 1,408 cfs available under the Shoshone Water Rights.
- While the administrative flow was determined for all days in the 1975-2003 study period, the Shoshone Water Rights could not take advantage of and beneficially use the flow during periods of outage at the plant. Therefore, days of full outage were excluded from the calculation of total yield. As shown in Table 2, during the 1975-2003 study period, there were 89 days of full outage, based upon days with no data or days with zero diversions in the CDSS records. Data which specifically indicate the periods of partial outages are not available and therefore no corresponding adjustments have been made to this analysis.
- During the 1975-2003 study period, the power plant operated consistently, with only brief periods of partial outage to address routine maintenance issues according to PSCo staff.

Utilizing the data described above, with the appropriate adjustments, our preliminary calculation of average annual yield for the 29-year study period of 1975-2003 is equal to 844,644 ac-ft. This value, when applied on a rolling 29-year average basis (i.e., not an annual volumetric limit) is an appropriate volumetric limit for the changed use of the Shoshone Water Rights. For purposes of comparison, the preliminary average annual yield presented here is less than the measured Dotsero

Gage flow (limited to 1,408 cfs). As shown in Table 3, the preliminary average annual yield is also significantly less than if the historical use was assumed to be the total Shoshone Water Rights of 1,408 cfs or the senior right of 1,250 cfs.

Table 3: Average Annual Yield Comparison for Study Period 1975-2003

Data Source	Average annual yield (ac-ft)
Calculated Administrative Flow	844,644
Measured Dotsero Streamflow (limited to 1,408 cfs)	857,696
1,408 cfs year-round	1,019,360
1,250 cfs year-round	904,972

It is important to note that the historical use of the Shoshone Water Rights fluctuated with historical hydrology. Additionally, the maximum administrative flow rate diverted at the plant over the 1975-2003 study period was equal to 1,408 cfs at least once in each month throughout the entire period of study (i.e., the administrative flow was equal to 1,408 cfs in at least one January, one February, etc. over the entire study period). Thus, the full decreed rate of flow should be available for both continued hydropower production and for instream flow use based on the actual historical diversion and use of the Shoshone Water Rights for their originally decreed purposes. However, because the full decreed rate was not continuously available on a daily basis in all months, the future use of the Shoshone Water Rights will be limited to the 29-year running average annual volume of use in order to prevent an expansion of the water right.

The yield estimate based upon the adjusted administrative flow record from 1975-2003 is reflective of a period of continuous exercise of the Shoshone Water Rights at the Shoshone Power Plant and the conditions on the mainstem of the Colorado River. Unlike the CDSS records, the administrative flow includes all water diverted that was necessary to generate power at the plant as well as the water that was returned to downstream users to prevent injury to vested water rights.

Conclusion

Under the PSA, the River District seeks to acquire the Shoshone Water Rights for the purpose of changing the decreed use of the water rights to include an alternate beneficial use by the CWCB for instream flow purposes. The change of use must be reflective of the historical beneficial use of the Shoshone Water Rights for the decreed non-consumptive uses and will require the continuation of historical streamflow patterns and return flows to the Colorado River that has occurred in conjunction with the consistent exercise of the Shoshone Water Rights.

For purposes of this analysis, adjusted administrative flows at the Dotsero Gage were used to determine the yield of the Shoshone Water Rights which is equal to a running 29-year annual average of 844,644 ac-ft during the 1975-2003 study period. This study period is representative of consistent operations of the Shoshone Power Plant and exercise of the Shoshone Water Rights and

excludes periods of extended unplanned outages that were outside of PSCo's control such as the 2007 penstock rupture, wildfire and subsequent debris flows in Glenwood Canyon, and other events. In addition, this historical average yield value is conservative because it does not include the virtual pipeline/shepherded water that was historically used by the Shoshone Power Plant to produce power. The yield analysis presented here is not only representative of the operation and beneficial use of the water rights necessary for hydropower production but also maintains the return flows resulting from diversions of these nonconsumptive water rights and preserves the historical streamflow regime on the Colorado River.

Ultimately, the historical yield of the water rights that may be changed for instream flow purposes will be determined through the Colorado Water Court process. Thus, the analysis of historical use described in this memorandum may be revised as additional information and data is discovered.

Report

November 11, 2024

Benefits from the Shoshone Water Rights to the Federal Government

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Benefits from the Shoshone Water Rights to the Federal Government

The purpose of this report is to examine and document the benefits to the federal government from the preservation of the Shoshone Water Rights (Shoshone WRs). The water flows protected by the Shoshone WRs in western Colorado and downstream are crucial to several federal interests, including the recovery of threatened and endangered aquatic species and compliance with the Endangered Species Act (ESA) within the 15-Mile Reach; reduction in salinity concentrations in the Upper Colorado River Basin and downstream; and avoiding reductions in Colorado River flows—improving drought management by stabilizing supplies—in the Upper and Lower Basins of the Colorado River.

The Shoshone WRs include the 1902 senior Shoshone water right and the 1929 junior Shoshone water right for a combined amount of 1,408 cubic feet per second (cfs). These important water rights are among the most senior water rights on the Colorado River in western Colorado.¹ The exercise of the Shoshone WRs guarantees a steady flow of water which benefits a wide range of downstream water users and ecosystems, particularly during dry periods. The historical exercise and administration of the Shoshone WRs by state water officials has resulted in a river flow regime that provides system stability and ecological benefits to the Upper Colorado River Basin by ensuring that upstream junior water rights, including transmountain diversions, are precluded from storing or diverting water without providing sufficient replacement water to cover stream depletions as needed to prevent injury.

¹ Addendum to September 11, 2024, Shoshone Power Plant Water Rights Yield Assessment; Hydros Consulting, October 22, 2024.

Endangered Species Recovery in the 15-Mile Reach

The Shoshone WRs play a critical role in supporting the success of the Upper Colorado Endangered Fish Recovery Program (Recovery Program), which targets the recovery of the Colorado pikeminnow, bonytail, razorback sucker, and humpback chub. Colorado's 15-Mile Reach is an important stretch of river that starts near Palisade, Colorado, and extends 15 miles downstream to the confluence of the Gunnison River. The 15-Mile Reach provides high quality, critical habitat for the endangered fish² The Recovery Program and water users across the State have invested significant effort towards meeting target flows in this reach, which is being used as a representative proxy for the Shoshone WRs benefit to the recovery of threatened and endangered fish.

Figure II-1.
Razorback Sucker (*Xyrauchen Texanus*)

Source:

Upper Colorado River Endangered Fish Recovery Program at <https://coloradoriverrecovery.org/information/fish-species/razorback-sucker/>.



The importance of the Shoshone WRs to the 15-Mile Reach was recently emphasized by the U.S. Fish and Wildlife Service (FWS) in its 2022 review of progress under the 1999 15-Mile Reach Consultation and Programmatic Biological Opinion (PBO). In the 2022 review, the FWS commended the Recovery Program for developing partnerships that have provided voluntary flow augmentation in the Upper Colorado River Basin but expressed concern at the reliance on voluntary water contributions due to their uncertainty. By contrast, the Shoshone WRs provide hydrologic stability in the Upper Colorado River, especially during dry periods when voluntary contributions may be unavailable.

Any significant alteration to or reduction of the current flow regime created by the Shoshone WRs could jeopardize the flows required by the Recovery Program. In addition, failure to make sufficient progress could lead to reinitiating and amending the PBO, which in turn would likely result in reductions in the water supply available to irrigators, municipalities, and other water users. Currently, the exercise of the

² 2021 Assessment of Implementation of Action Items in the December 20, 1999, 15-Mile Reach Programmatic Biological Opinion and US Fish and Wildlife Service Response.

Shoshone WRs provides the consistency of well-timed flows in the 15-Mile Reach during important shoulder and late irrigation seasons when the river is prone to higher temperatures and lower flows, as well as during the winter months, preserving the natural baseflow in the river. According to Hydros Consulting's September 11, 2024, Shoshone Power Plant Water Rights Yields Assessment, the Shoshone WRs can contribute 18%-29% of the existing flows in the 15-Mile Reach during critical flow periods when average monthly flows are less than the minimum flow target identified in the PBO. During these critical low flow periods, the Shoshone WRs can increase the monthly expected river volume in the 15-Mile Reach by more than 200 percent.³

The Overall Value of the Recovery Program

One indicator of the importance and the monetary value of the continued success of the Recovery Program is the federal investment in endangered species protection and recovery. A 2016 study,⁴ subsequently updated in 2019,⁵ estimated annual federal investment for all ESA-listed species.

Based on the 2016 study, the average annual federal investment per endangered species has been between \$914,000 and \$1.5 million in 2024 dollars. Based on the four endangered species in the 15-Mile Reach, this level of federal investment in endangered species recovery corresponds to an annual investment of about \$3.7 million to \$6.0 million for the Recovery Program. Across a 20-year median recovery time, the total investment in successfully recovering endangered species has averaged about \$24 million per species, corresponding to a potential total recovery cost of approximately \$100 million for the four endangered species in the 15-Mile Reach.

Figure II-2 summarizes the annual recovery costs associated with endangered species protection as estimated in the 2019 update and applies these average costs to the four threatened endangered species protected in the Upper Colorado River.

³ *Shoshone Power Plant Water Rights Yield Assessment*; Hydros Consulting, September 2024.

⁴ *Conservation triage or injurious neglect in endangered species recovery*. Gerber, L. R. Proc. Natl. Acad. Sci. U. S. A. 113, 3563–3566, 2016.

⁵ *Over \$1.5 billion per year is needed to recover Endangered Species Act (ESA)-listed species*. Center for Conservation Innovation at Defenders of Wildlife, 2019.

**Figure II-2.
Annual Recovery Cost Estimates
for Endangered Species in the
15-Mile Reach (2024 \$)**

Note:

Cost estimates are listed in 2024 dollars.

*The humpback chub was downlisted from Endangered to Threatened in 2021.

Source:

Center for Conservation Innovation at Defenders of Wildlife, 2019; BBC Research & Consulting.

	Annual Recovery Cost Estimate (Low)	Annual Recovery Cost Estimate (High)
Recovery cost for all ESA-listed species in 2019	\$1,519,000,000	\$2,500,000,000
Colorado pikeminnow	\$914,000	\$1,504,000
Bonytail	\$914,000	\$1,504,000
Razorback sucker	\$914,000	\$1,504,000
Humpback chub*	\$914,000	\$1,504,000
Annual costs in 15-Mile Reach	\$3,656,000	\$6,016,000

The valuation detailed in Figure II-2, above, uses average per-species recovery costs across all ESA-listed species nationwide and understates the investment in endangered species recovery when applied to the 15-Mile Reach. A 2011 study estimated that total investment through the first 22 years of the Recovery Program in the 15-Mile Reach was \$255 million (updated to 2024 dollars),⁶ or an average of \$11.6 million per year, which exceeds the high annual recovery cost estimate of \$6.0 million shown in Figure II-2. The significance of federal investment is also confirmed by the total partner contributions from 1988-2024 for the Recovery Program, which is in excess of \$506 million or \$14 million per year over the 36-year period.⁷

Valuing the Federal Benefit of the Shoshone WR to the 15-Mile Reach

A more specific estimate of the benefit of the Shoshone WRs to the 15-Mile Reach can be developed based on the costs associated with leasing water for the Recovery Program. Over the past decade, the Recovery Program water lease rate for flows targeting the 15-Mile Reach has averaged approximately \$44 per acre foot (AF), while the most recent lease agreements (with Garfield County beginning in 2020) have paid a higher rate of approximately \$60 per AF.⁸ Both of these rates help to establish a current range of the value for the flows provided by the Shoshone WRs.

Estimated Annual Yields. The current average annual yield from the Shoshone WRs is estimated to be approximately 24,200 acre-feet per year (AFY) at the top of the 15-Mile Reach based on the Upper Colorado River Basin Model and the Baseline Data Set released by the Colorado Water Conservation Board for public use in September 2024 and current basin-wide river demands on the Colorado River (referred to in this report as the “Current” yield scenario for “All Years”).⁹ During dry years, the annual yield from the Shoshone WRs is estimated to average approximately 33,100 AFY based on Current demands on the Colorado River (referred to in this report as the “Current” yield scenario for “Dry Years”), as shown

⁶ *The Cost of Recovery*. Rebecca Olgeirsen. Water Education Colorado, 2011.

⁷ See <http://coloradoriverrecovery.org/uc/wp-content/uploads/sites/2/2024/03/2023-24-Briefing-Book-Final.pdf>

⁸ Water leasing volumes and rates provided by the Colorado River District, August 2024; lease amounts updated to 2024 dollars using the BLS inflation calculator.

⁹ Addendum to September 11, 2024 Shoshone Power Plant Water Rights Yield Assessment, Hydros Consulting, October, 2024.

in Figure II-3. During a particularly dry year, annual yield from the Shoshone WRs is still larger and is estimated to be over 41,000 AFY.¹⁰

The yield from the Shoshone WRs will continue to increase in the future as water demands on the Colorado River continue to grow. Under future conditions with anticipated growth in water user demands (referred to in this report as “Future” yield scenarios), the average annual yield from the Shoshone WRs across All Years is expected to increase to about 26,900 AFY and the average annual yield during Dry Years is expected to increase to about 36,800 AFY as shown in Figure II-3.¹¹

Figure II-3.
Annual Shoshone WR Yield (AF)

Yield Scenario	Average Yield	Dry Years
Current	24,200	33,100
Future	26,900	36,800

Source: Addendum to September 11, 2024, Shoshone Power Plant Water Rights Yield Assessment.; Hydros Consulting, October 22, 2024.

Estimated Annual Benefits. Using the Recovery Program water lease rate of \$44 per AF and Garfield County's more recent and costly lease rate of \$60 per AF, we can estimate the annual benefit of the Shoshone WRs for flows into the 15-Mile Reach in financial terms.

Based on the average yield of 24,200 AF in the Current yield scenario across All Years, the annual benefit is estimated to be between \$1.07 million (using the Recovery Program rate) and \$1.45 million (using the Garfield County rate) as shown in Figure II-4. During average Dry Years, the annual benefit is estimated to increase to between \$1.46 and \$1.99 million. During an extremely dry year with a yield of at least 41,000 AFY, the current annual benefit increases to between \$1.8 million and \$2.5 million.

Figure II-4.
Annual Shoshone WR Benefit for the Recovery Program (2024 \$)

Yield Scenario	Average Yield		Dry Years	
	Recovery Program Rate (\$44/AF)	Garfield County Rate (\$60/AF)	Recovery Program Rate (\$44/AF)	Garfield County Rate (\$60/AF)
Current	\$1,065,000	\$1,452,000	\$1,456,000	\$1,986,000
Future	\$1,184,000	\$1,614,000	\$1,619,000	\$2,208,000

Source: BBC Research & Consulting, 2024 based on Hydrologic modeling using the *Upper Colorado River Basin Model* and the *Baseline Data Set* by Hydros Consulting, 2024; Water leasing volumes and rates provided by the Colorado River District, August 2024; lease amounts updated to 2024 dollars using the BLS inflation calculator.

¹⁰ Addendum to September 11, 2024, Shoshone Power Plant Water Rights Yield Assessment.; Hydros Consulting, October 22, 2024.

¹¹ Ibid.

Estimated Present Value of the Shoshone WRs for the Recovery Program. The present value of the ongoing yield from the Shoshone WRs varies depending on both the hydrologic conditions and lease rate (as described above) as well as the discount rate used to convert the stream of future annual benefits into its present value. All present value calculations in this report were developed using the United States Bureau of Reclamation’s (USBR’s) selected discount rate for plans for water and related land resources in 2024 of 2.75 percent.¹²

Figure II-5 details the range of present values for the perpetual benefit to the Recovery Program attributable to the exercise of the Shoshone WRs. The present value calculations are based on the average annual yield over all types of years (wet, dry and average) under both current and future water demands.

Figure II-5.
Present Value of Perpetual Shoshone WRs Benefit for the Recovery Program (\$ Millions)

Yield Scenario	2.75% Discount Rate	
	Recovery Program Rate (\$44/AF)	Garfield County Rate (\$60/AF)
Current	\$38.9	\$52.4
Future	\$43.3	\$58.3

Source: BBC Research & Consulting, 2024; *Shoshone Power Plant Water Rights Yield Assessment*, Hydros Consulting, 2023; Water leasing volumes and rates provided by the Colorado River District, August 2024; lease amounts updated to 2024 dollars using the BLS inflation calculator; *Report on the Social Cost of Greenhouse Gases. Estimates Incorporating Recent Scientific Advances*. U.S. Environmental Protection Agency, November 2023.

The lowest present value estimate is \$38.9 million; this result is based on the Current yield scenario at the Recovery Program water lease rate of \$44 per AF. At the other end, the highest present value estimate is \$58.3 million, based on the Future yield scenario at the Garfield County water lease rate of \$60 per AF.

At either end of the valuation range, these results reflect significant benefits that preserving the Shoshone WRs provides by avoiding the need to attempt to find and lease equivalent water volumes at historical water leasing rates. This valuation also does not consider the lack of available supplies to lease equivalent water, which in reality would take decades to secure and likely require new or expanded reservoir storage that may be prohibitively costly or unachievable due to permitting requirements, environmental impacts, or lack of available water. The Shoshone WRs represent a substantial financial benefit to the federal government as they support endangered species recovery and provide long-term ecological and economic stability for the 15-Mile Reach and the broader Colorado River system.

¹² Federal Register: Change in Discount Rate for Water Resource Planning. November 16, 2023.

Benefits from Reduced Salinity Due to the Shoshone WRs

The Shoshone WRs offer significant benefits in reducing salinity concentrations in the Colorado River Basin. Salinity levels in the Colorado River present a persistent challenge, with elevated salt concentrations negatively impacting agricultural productivity, drinking water quality, and infrastructure due to its corrosive effects. Salinity concentrations can be reduced in either of two ways—by physically removing salts from the river or by dilution (i.e., introducing additional water supply with very low salinity concentrations). The Shoshone WRs—which secure and protect pristine waters sourced in the headwaters of the Colorado River Basin where salts are virtually nonexistent—provide fresh flows that dilute downstream salinity and mitigate the accumulation of salts as the river moves through naturally saline soils that are characteristic of agricultural regions in western Colorado and further downstream.

Salinity is a significant issue in the Colorado River Basin. For agricultural users, high salinity levels can damage crops, reduce soil health, and lead to lower crop yields and lower profits.¹³ High salinity concentrations also increase treatment costs for water utilities and other non-agricultural, industrial water users. The federal government invests millions of dollars controlling salinity every year. The Colorado River Basin Salinity Control Program (CRBSCP)—works to ensure that Colorado River water is viable for agricultural, municipal and industrial applications while improving ecosystem health. These programs require substantial funding and staffing. The Shoshone WRs help to mitigate problems caused by salinity by ensuring adequate river flows that help reduce salt concentrations, thereby reducing the need for additional water for leaching and for soil amendments. This translates into cost savings and increased agricultural output, especially for salt-sensitive cash crops, such as fruit and vegetables.

Valuing the Federal Benefit of the Shoshone WR for Salinity Control

The benefit of the Shoshone WRs for salinity control can be estimated using the costs associated with salinity control programs operating in the Upper Colorado Basin.

Estimated Annual Yields. The average annual yield of the Shoshone WRs has been discussed previously in this report. Figure II-6 restates the hydrologic and yield scenarios utilized in BBC's valuation of benefits.

¹³ *Assessing salinity impacts on crop yield and economic returns in the Central Valley*. Agricultural Water Management. Nicolas et al., 2023.

**Figure II-6.
Annual Shoshone WR Yield (AF)**

Yield Scenario	Average Yield	Dry Years
Current	24,200	33,100
Future	26,900	36,800

Source: Addendum to September 11, 2024, Shoshone Power Plant Water Rights Yield Assessment.; Hydros Consulting, October 22, 2024.

Estimated Annual Salinity Reductions. Between 2000 and 2023, the average of annual salinity concentration samples recorded at the USGS gaging station located on the Colorado River near Cameo (0909550) (the “Cameo Gage”) was 513 mg of total dissolved solids per liter (TDS mg/L). The Cameo Gage provides a reliable baseline for measuring the impact of the Shoshone WRs on salinity levels in western Colorado. The flows provided by the Shoshone WRs help to dilute salinity in the Colorado River, which maintains lower salinity concentrations. The TDS concentration of 513 mg/L was converted to tons per AF by first applying the conversion of 1 mg/L to 1 gram per cubic meter (g/m³). Given that 1 AF contains approximately 1,233 cubic meters, multiplying the TDS concentration (513 g/m³) by this volume results in 632,700 grams of TDS per AF. This value is converted to tons using the factor of 907,200 grams per US ton, yielding approximately 0.70 tons of TDS per AF.

This approach allows for an accurate quantification of the salt load in the Colorado River at the Cameo Gage. The salt load at Cameo of approximately 0.70 grams of TDS per AF was then multiplied by the yields shown in Figure II-6.

Figure II-7 shows the estimated annual equivalent tons of salts avoided by having Shoshone flows in the Colorado River at the Cameo Gage.

**Figure II-7.
Annual Equivalent Total Dissolved Solids Removed (Tons)**

Yield Scenario	Average Yield	Dry Years
Current	16,896	23,109
Future	18,781	25,693

Source:
BBC Research & Consulting, 2024 Hydrologic modeling using the *Upper Colorado River Basin Model* and the *Baseline Data Set* by Hydros Consulting, 2024 National Water Quality Monitoring Council data for USGS site 09095500 Colorado River near Cameo, 2024.

Based on the average annual yield across all types of years of 24,200 AF in the Current scenario, the Shoshone WRs are estimated to result in the equivalent effect of removing an average of 16,896 tons of salt per year. During dry years, the salinity control benefit provided by the Shoshone WRs increases significantly, providing the equivalent effect of not needing to otherwise invest federal funds to remove 23,109 tons of salt in the Current water demands scenario and up to 25,693 tons of salt per year in the Future water demands scenario.

Estimated Annual Benefits. The value of this salinity control benefit can be estimated using the weighted average cost per ton for salinity control projects funded by

Reclamation in 2023,¹⁴ which is approximately \$76.49 per ton. Figure II-8 shows the salinity control program cost per ton applied to the equivalent tons of salt removal by having the Shoshone flows in the river.

**Figure II-8.
Annual Shoshone WRs Benefit for Salinity Control (2024 \$)**

Yield Scenario	Average Yield	Dry Years
Current	\$1,292,000	\$1,768,000
Future	\$1,437,000	\$1,965,000

Source:

BBC Research & Consulting, 2024; Hydrologic modeling using the *Upper Colorado River Basin Model* and the *Baseline Data Set* by Hydros Consulting, 2024; National Water Quality Monitoring Council data for USGS site 09095500 Colorado River near Cameo, 2024; Colorado River Basin Salinity Control Program 2023 project awards listed at <https://www.usbr.gov/uc/progact/salinity/>.

As shown in Figure II-8, the average annual financial benefit of the Shoshone flows in diluting salinity across all types of hydrologic years under current demand conditions is valued at about \$1.3 million, while during dry years this benefit rises to almost \$1.8 million. Based on projected increases in future water demands, these values increase further, ranging from over \$1.4 million annually in an average year to almost \$2 million annually during dry years.

Estimated Present Value of Salinity Benefits. The present value of permanently maintaining the exercise and administration of the Shoshone WRs for salinity control is estimated to be between \$47.0 million based on current water demands and \$52.3 million based on anticipated future water demands. BBC again utilized the 2.75 percent discount rate selected by the USBR for use during 2024 to calculate these present values.

Figure II-9 details the range of present valuations of the perpetual Shoshone WR benefit for salinity control in the Upper Colorado Basin. The present value calculation is based on the average yields from the Shoshone WRs across all types of hydrologic conditions (wet, dry and average).

**Figure II-9.
Present Value of Perpetual Shoshone WR Benefit for Salinity Control (\$ Millions)**

Yield Scenario	2.75% Discount Rate
Current	\$47.0
Future	\$52.3

Source:

BBC Research & Consulting, 2024; Hydrologic modeling using the *Upper Colorado River Basin Model* and the *Baseline Data Set* by Hydros Consulting, 2024; National Water Quality Monitoring Council data for USGS site 09095500 Colorado River near Cameo, 2024; Colorado River Basin Salinity Control Program 2023 project awards listed at <https://www.usbr.gov/uc/progact/salinity/>.

The Shoshone WRs provide a substantial and enduring benefit to salinity management in the Colorado River, reducing the need for costly intervention projects and helping to sustain agricultural productivity, drinking water security and water quality along the river for water users in five states and two countries.

¹⁴ Colorado River Basin Salinity Control Program 2023 project awards listed at <https://www.usbr.gov/uc/progact/salinity/>.

Drought Management and the Costs of Replacing Shoshone WRs Yield

In addition to their critical role in promoting endangered species recovery in the 15-Mile Reach and reducing salinity concentrations in the Colorado River, the Shoshone WRs contribute to managing drought in both the Upper and Lower Colorado River Basins. These water rights provide essential flows that help stabilize water supply during periods of scarcity. Replacing these flows through reductions in consumptive use would be both difficult and costly.

Valuing the Federal Benefit of the Shoshone WRs for Drought Management

The benefit of the Shoshone WRs for drought management can be estimated using the costs associated with programs aimed at reducing consumptive use, such as the Upper Colorado Basin's System Conservation Pilot Program (SCPP) or the Lower Basin's System Conservation and Efficiency Program.

Estimated Annual Yield. The average annual yield of the Shoshone WRs has been discussed previously in this report. Figure II-10 restates the hydrology and yield scenarios utilized in BBC's valuation of benefits.

Figure II-10.
Annual Shoshone WRs Yield (AF)

Yield Scenario	Average Yield	Dry Years
Current	24,200	33,100
Future	26,900	36,800

Source: Hydrologic modeling using the *Upper Colorado River Basin Model* and the *Baseline Data Set* by Hydros Consulting, 2024

Estimated Annual Benefits. The Upper Colorado River Commission currently utilizes federal funds awarded by the USBR to pay \$509 per AF for reductions in consumptive use by irrigators in the State of Colorado as part of SCPP.¹⁵ If the Shoshone WRs were abandoned, the cost of replacing these flows would be significant, particularly in dry years. BBC has used the \$509 per AF rate for the replacement cost valuation.

Figure II-11 shows the range of estimated annual benefits based on the yields of the Shoshone WRs across all years and during dry years.

¹⁵ SCPP 2024 Kick-off Webinar, Upper Colorado River Commission System Conservation Pilot Program (SCPP), October 27, 2023.

Figure II-11.
Annual Shoshone WRs Benefit for Drought Management (2024 \$)

Yield Scenario	Average Years	Dry Years
Current	\$12,318,000	\$16,848,000
Future	\$13,692,000	\$18,731,000

Source: BBC Research & Consulting, 2024; *Shoshone Power Plant Water Rights Yield Assessment*, Hydros Consulting, 2023; *SCPP 2024 Kick-off Webinar*, Upper Colorado River Commission System Conservation Pilot Program (SCPP), October 27, 2023.

As shown in Figure II-11, for the average yield of 24,200 AF based on current demands, the annual benefit of the Shoshone WRs is estimated to be about \$12.3 million. At the other end of the range, during dry years and incorporating anticipated growth in water demands, the annual benefit increases to about \$18.7 million.

Estimated Present Values of Drought Management Benefits from the Shoshone WR.

The present value perpetual Shoshone WRs for drought management varies depending on both the yield and replacement costs (as described above). BBC has again utilized the USBR’s selected discount rate of 2.75 percent for 2024. Figure II-12 summarizes the present values of the perpetual Shoshone WRs benefit for drought management. The estimated present value ranges from \$448 million based on current demands to \$498 million based on anticipated future demands. As in the other present value calculations in this report, the present value calculation is based on the average yield across all types of water years (wet, dry and average).

Figure II-12.
Present Value of Perpetual Shoshone WR Benefit for Drought Management (\$ Millions)

Yield Scenario	2.75% Discount Rate
	\$509 per AF
Current	\$447.9
Future	\$497.9

Source: BBC Research & Consulting, 2024; *Shoshone Power Plant Water Rights Yield Assessment*, Hydros Consulting, 2023; *SCPP 2024 Kick-off Webinar*, Upper Colorado River Commission System Conservation Pilot Program (SCPP), October 27, 2023.

The Shoshone WRs are a valuable resource for drought management across both the Upper and Lower Colorado River Basins. Replacing the water yield afforded by these water rights would require significant investment in reducing consumptive use, with annual costs ranging from \$12.3 million to \$18.7 million depending on the yield scenario (average years versus dry years) and the timeframe (current demands versus future demands). The long-term benefit of maintaining the Shoshone WRs for drought management is significant, as the present value ranges from \$448 million to \$498 million, depending on the timeframe.

The Shoshone WRS are a key element in ensuring the stability of water management during future drought conditions, and maintaining these water rights aligns with federal efforts focused on climate resilience, water management, and conservation.

Estimated Combined Values of the Shoshone WRs for the Federal Government

The preceding sections of this report have described and quantitatively estimated the benefits from the Shoshone WRs for federal interests including the continued success of the Recovery Program, reducing salinity concentrations in the Colorado River, and promoting balance between the consumptive use demands on the Colorado River and available water supply.

Additive Nature of the Estimated Values in this Report

Importantly, the benefits attributable to the Shoshone WRs are additive because of the unique nature of the water rights. While the value assigned to ensuring sufficient flows through the 15-Mile Reach was based on the costs of leasing instream flows to the Recovery Program, the water leased for that purpose does not have the same pristine nature and very low salinity levels as the natural flows that support the demands of the Shoshone WRs, which flows are introduced at the top of the Colorado River Basin in Grand County. The value assigned to the reduction in salinity due to the Shoshone WRs was based on the costs of salinity removal efforts, but those efforts do not provide additional flows through the 15-Mile Reach or help to balance water supply and demand in the Colorado River system. The value assigned to the additional flow in the Colorado River system due to the Shoshone WRs for drought management was based on the cost of an equivalent reduction in consumptive use through programs that compensate irrigators for fallowing, deficit irrigating or changing their crops. While those programs may offer some reduction in salinity, they are not intended to provide flows for endangered species in the 15-Mile Reach. Additionally, the values assigned to the additional flow in the Colorado River system are also additive to the values assigned to the benefits of the 15-Mile Reach given the broader scope of the System Conservation Pilot Program in providing system benefits that expand beyond and are not targeted toward the 15-Mile Reach. For example, additional flows from the System Conservation Pilot Program or other similar future program may come from alternate river basins, i.e. the Gunnison, Yampa, Green, and/or White River and would therefore not benefit the 15-Mile Reach.

Combined Annual Value of Shoshone WRs

Figure II-13 combines the estimated annual values of the Shoshone WRs in providing critical water supplies for the Recovery Program, in reducing salinity concentrations in the Colorado River, and in helping to balance overall water supply and demand from the Colorado River. The low end of the estimates uses the Recovery Program leasing rate. The high end of the estimates uses the Garfield County water leasing rate.

The average composite annual value for the benefits from the Shoshone WRs based on current water demands ranges from about \$14.7 million to about \$15.1 million. With projected future increases in demand from the Colorado River, the average composite annual value of the Shoshone WRs ranges from about \$16.3 to about \$16.7 million.

Annual values during dry years are considerably higher, ranging from about \$20.1 million to \$20.6 million with current demands and to about \$22.3 million to \$22.9 million with future growth in demands.

Figure II-13.
Combined Annual Shoshone WRs Benefit for the Recovery Program, Salinity Management and Drought Management (2024 \$)

Yield Scenario	Annual Hydrology			
	Average Yield		Dry Years	
	Low	High	Low	High
Current	\$14,675,000	\$15,062,000	\$20,072,000	\$20,602,000
Future	\$16,313,000	\$16,743,000	\$22,315,000	\$22,904,000

Combined Present Value of Shoshone WRs

Figure II-14 provides the estimated combined present value of the Shoshone WRs under current water demand conditions. The estimated current present value of the benefits from the Shoshone WRs is between \$534 million and \$548 million.

The low end for the range of present values for Recovery Program flows reflects the Recovery Program water leasing rate to calculate the present value. The high end of the range of present values for Recovery Program flows was calculated based on the more recent Garfield County leasing rate.

The present value for drought management reflect the \$509 per AF rate for drought management from SCPP in the Upper Colorado Basin.

Figure II-14.
Combined Current Present Value of the Shoshone WRs Benefits for the Recovery Program, Salinity Management, and Drought Management (\$ Millions)

Value Component	Low	High
Recovery Program Flows	\$38.7	\$52.8
Salinity Reduction	\$47.0	\$47.0
Drought Management	\$447.9	\$447.9
Total	\$533.6	\$547.7

Figure II-15 provides the estimated future present value of the benefits from the Shoshone WRs with anticipated future growth in water demands. The estimated future present value of the benefits from the Shoshone WRs is between \$593 million and \$609 million.

The bases for the low and high estimates of the future present value of the benefits are the same as described previously for the current present value estimates; the only difference between the values shown in Figure II-15 and the values shown in Figure II-14 is due to the greater yield of the combined Shoshone WRs with the anticipated future growth in water demands.

Figure II-15.
Combined Future Present Value of the Shoshone WRs Benefits for the Recovery Program, Salinity Management, and Drought Management (\$ Millions)

Value Component	Low	High
Recovery Program Flows	\$43.1	\$58.7
Salinity Reduction	\$52.3	\$52.3
Drought Management	\$497.9	\$497.9
Total	\$593.2	\$608.8

Other Benefits of the Shoshone WRs for the Federal Government

In addition to these quantifiable benefits linked to the additional flows provided by the Shoshone WRs, there are other important benefits from the continued exercise of the water rights.

A recent letter from the Bureau of Land Management's District Manager to the General Manager of the Colorado River District discussed the importance of the Shoshone WRs for maintaining the Outstandingly Remarkable Values in three reaches of the Colorado River determined to be eligible for designation into the National Wild and Scenic Rivers System and the importance of water-based recreation for the local and state economies. The letter notes that outdoor recreation on BLM-administered lands in the Kremmling Field Office and Colorado River Valley Field Office contributes about \$146 million annually to the state and local economy and supports over 1,100 jobs. In addition, outdoor recreation on lands managed by the White River National Forest (WRNF) has been estimated to support about 22,000 jobs and to have an annual economic impact of about \$1.6 billion. The WRNF is the most visited national forest in the United States.¹⁶

In addition, increased flows downstream into Lake Powell and Lake Mead provide broad strategic benefits that are difficult to quantify but remain essential to the function of the Colorado River system. Flows, including those from the Shoshone WRs, contribute to maintaining reservoir levels, supporting hydropower production, and ensuring water availability for Lower Basin states. Preserving more flow into these reservoirs is a benefit that reinforces the stability of the entire Colorado River Basin.

¹⁶ Letter from Greg Larson, BLM District Manager to Andy Mueller, Colorado River District General Manager. October 4, 2024.

Conclusions

The Colorado River flows provided by the Shoshone WRs in Western Colorado and downstream provide crucial benefits at the local, state, and federal levels. Specific benefits to the federal government—as indicated by areas in which the USBR has provided federal funding—include:

- The recovery of threatened and endangered aquatic species and ESA compliance within the 15-Mile Reach;
- reduction in salinity concentrations in the Upper Colorado River Basin and downstream; and
- avoiding reductions in Colorado River flows, supporting drought management in the Upper and Lower Basins of the Colorado River.

Based on hydrologic analysis of daily flows using the State of Colorado's Upper Colorado River Basin and its Baseline Data Set, Shoshone WRs provide an annual average of over 24,000 AFY of flows through the 15-Mile reach and downstream. With anticipated future growth in water demands, the continued exercise of the Shoshone WRs is expected to provide an annual average of almost 27,000 AF of flows in the Colorado River.

Dry year yields are substantially greater. On average, during dry year conditions, the Shoshone WRs currently provide over 33,000 AF of flows based on current demands. With growth in future demands, the average dry year yield is expected to increase to almost 37,000 AF. In an extraordinarily dry year such as 2012, the Shoshone WRs can increase the flow in the Colorado River at the 15-Mile Reach by over 41,000 AFY.

The benefits of protecting these flows in perpetuity are substantial. Under current water demand conditions, the annual benefits to the Federal government average between \$14.7 and \$15.1 million dollars. During dry years, the average benefits increase to between \$20.1 and \$20.6 million per year. These benefits will grow with future growth in water demands. During exceptionally dry years the annual benefits are even greater.

These annual benefits correspond to a net present value of \$534 million to \$548 million under current conditions. With growing demands in the future, the net present value may reach between \$593 million and \$609 million.

Biological and Recreational Resources Dependent on Colorado River Flows Through Glenwood Canyon

September 2024



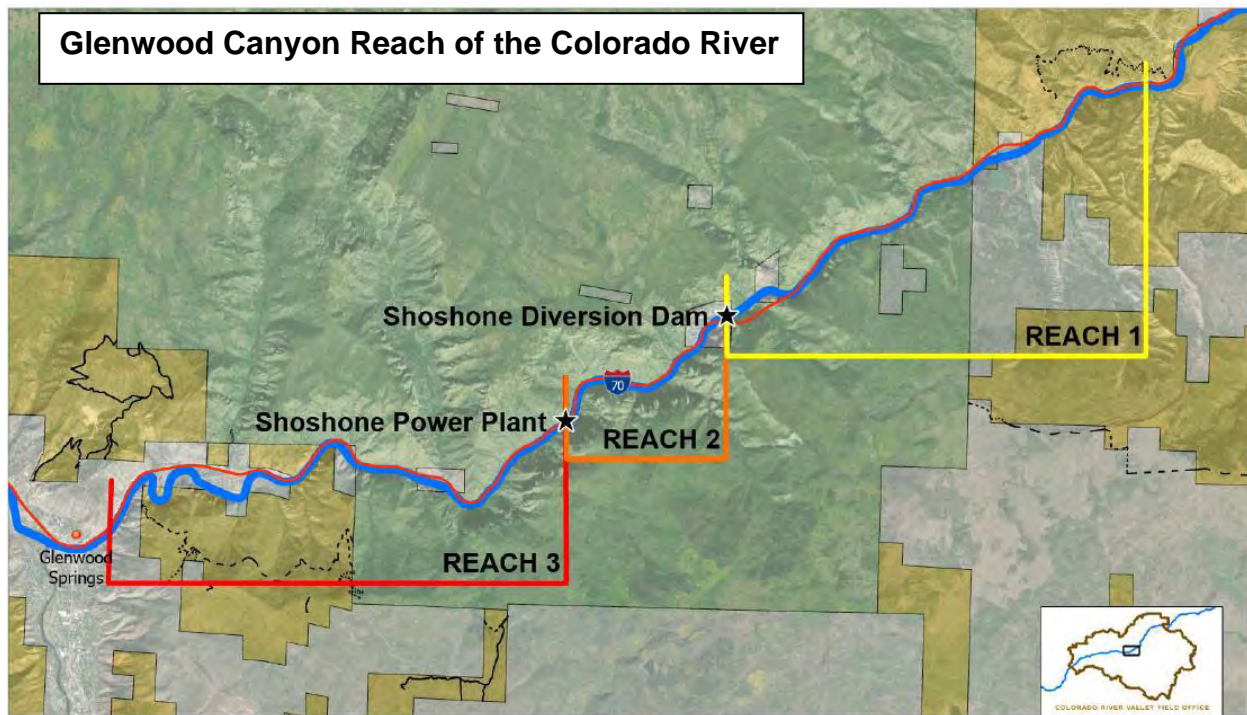
Introduction

This document provides an executive level summary of the natural environment supported by Colorado River flows in Glenwood Canyon, and qualitatively describes the relationship of that natural environment to physical infrastructure and operations of Excel's Energy's Shoshone Power Plant. This document also describes other water-dependent values upstream and downstream from Glenwood Canyon that are highly dependent on consistent flows through Glenwood Canyon. This document does not attempt to quantify natural resource benefits or impacts associated with operation of the Shoshone Power Plant, which would require intensive study of the river channel morphology, hydrology, fish populations, and riparian communities.

This document incorporates biological and recreation information available to the Bureau of Land Management (BLM) and White River National Forest (WRNF), including information from other resource management agencies. Even though this document incorporates information from other agencies, it does not purport to represent any formal position that any agency may take regarding proposed changes to land management or streamflow management in Glenwood Canyon.

Background – Land and Water Management

The Colorado River flows west/southwest through Glenwood Canyon for approximately 18 miles from west of Dotsero, Colorado to Glenwood Springs, Colorado. The river within this reach is naturally confined by a steep and narrow limestone canyon, and further constricted by a four-lane Interstate highway, railroad, and pedestrian bike path. Other infrastructure located within the river corridor includes power lines, two Colorado Department of Transportation (CDOT) rest areas, Excel Energy's Shoshone Hydropower Plant and Dam, the CDOT operations center at Hanging Lake Tunnel, Hanging Lake trailhead, the small community of No Name, and the privately owned Bair Ranch.



Glenwood Canyon is a popular destination for recreation, including but not limited to walking/jogging, biking, whitewater rafting, fishing, and viewing the scenic river corridor and riparian communities. Several small tributaries and two larger streams that contain significant fisheries, Grizzly Creek, and No Name Creek, flow into the Colorado river within this reach. In 2020, the river corridor was impacted by the Grizzly Creek Fire that burned the entire length of the canyon. Rain-induced post-fire debris flow events have impacted the river channel, highway, pedestrian bike path, and the Shoshone Power Plant since the fire.

Despite extensive human modification of the river corridor, the river still supports a regionally significant natural environment that draws many visitors to the canyon. The natural environment supports native and sport fish populations, Rocky Mountain bighorn sheep, and riparian plant communities that are adapted to the ecological constraints within the canyon. Colorado Parks and Wildlife (CPW) periodically monitors fish and big game populations in the canyon but inventories of other biological attributes, including non-game species, have been limited.

The majority of the canyon is National Forest Systems Lands managed by the White River National Forest, and in partnership with CDOT. The BLM manages lesser amounts of lands within the river corridor at each end of Glenwood Canyon. Together the WRNF and BLM emphasize management of visitation and recreation infrastructure while also supporting the ecological function of the Colorado River. In addition to further clarifying the recreational use of the Canyon, the general physical and biological attributes associated with the Canyon are outlined below.



Glenwood Canyon at the Shoshone Dam and Tunnels

In Glenwood Canyon, the Shoshone Hydropower Plant has been in existence for over 100 years and is one of the most senior water rights in the Colorado River watershed within Colorado. This senior water right assures that stream flows make it to the point of diversion when a priority call is made. The hydropower operation consists of three primary components – the Shoshone Dam, which backs up water to the point of diversion, a pipeline from the point of diversion, which operates via gravity flow, and the Shoshone Power Plant, which receives water from the pipeline. When fully operational, the powerplant can place a priority call for two water rights that are diverted to the penstocks of the powerplant, one water right for 1,250 cubic feet per second (cfs) under a 1905 priority and another water right for 158 cfs under a 1940 priority.

In 2016, multiple parties, including the U.S. Bureau of Reclamation, the Colorado Division of Water Resources, water districts, and water users, signed a 40-year agreement referred to as the “Shoshone Outage Protocol.”¹ The protocol is designed to maintain the flow regime on the Upper Colorado River, even when the Shoshone Power plant is not calling for water due to operational constraints. The agreement calls for deliveries to the powerplant of 1250 cfs from March 25 to November 10 and 950 cfs from the November 11 to March 24. The agreement includes limits on the volume of water to be delivered to the powerplant each year and it also includes provisions that alter the rate and volume of water delivered to the powerplant during drought conditions.

Wild and Scenic Rivers Management

In 2014, BLM and WRNF amended their respective resource management plans and forest plans to include Wild and Scenic Rivers management prescriptions for Glenwood Canyon and for segments of the Colorado River upstream from Dotsero to Kremmling. Pursuant to study guidance found in the 1968 Wild and Scenic Rivers Act, the agencies determined that the river segments are free flowing (free of impoundments and large diversions), with the exception of the portion of Glenwood Canyon that is occupied by the diversion dam and reservoir associated with the Shoshone Power Plant. The agencies also determined that the river segments support Outstandingly Remarkable Values (ORVs), which are defined as river-related values that are unique or exemplary within the region of comparison. Given those findings, the agencies concluded four river segments are eligible for inclusion in the National Wild and Scenic Rivers System. The river segments analyzed and the ORVs identified are as follows:

Name of Segment	Outstandingly Remarkable Values
Colorado River – Gore Canyon (Segment 4)	Scenic, Recreational (Fishing, Floatboating, and Scenic Driving), Geologic, Wildlife, Historic
Colorado River – Pumphouse to State Bridge (Segment 5)	Scenic, Recreational (Fishing, Floatboating, and Scenic Driving), Geologic, Wildlife, Historic
Colorado River – State Bridge to Dotsero (Segment 6)	Scenic, Recreational (Floatboating, and Scenic Driving), Botanical, Wildlife
Colorado River – Glenwood Canyon (Segment 7)	Recreational (Whitewater Boating, Scenic Viewing, Hiking), Scenic, Geologic

As part of the 2014 agency evaluation of whether the river segments are suitable for inclusion in the National Wild and Scenic Rivers System, the agencies received an alternative management plan proposal from the Upper Colorado River Wild and Scenic Stakeholder Group (SG) which is designed to protect and enhance the ORVs. The SG plan was adopted by BLM and WRNF planning decisions on June 25, 2015, with the objective of assisting the two agencies in meeting management requirements under the Wild and Scenic Rivers Act for eligible stream segments on the Colorado River. Specifically, the SG plan was adopted to monitor, protect, and enhance the ORVs identified in BLM and WRNF Eligibility Reports for Segments 4 through 7.

By design, the SG plan focuses on the most highly flow dependent ORVs, specifically recreational float-boating (in segments 4-7) and recreational fishing (in segments 4-6). The

¹ Shoshone Outage Protocol Agreement Number 13XX6C0129 dated June 27, 2016.

intent of adopting the SG plan was that it will complement, and be coordinated with, BLM and WRNF land use authorities and land use decisions, enabling the federal agencies to better fulfill management requirements under the Wild and Scenic Rivers Act. The SG plan offers the benefit of monitoring streamflow through the Wild & Scenic segments, and then supplementing this with coordinated, cooperative, and voluntary water deliveries coordinated by the SG, when available. The intent of the SG plan is to balance permanent protection of the ORVs, certainty for the stakeholders, water project yield, and flexibility for waters users.

It is important to note that the SG Plan² relies on the existence of the Shoshone Power Plant water rights as one of its Tier 1 Long-Term Protection Measures:

Existing senior water rights: The Shoshone and Cameo groups of senior water rights generally control the administrative call within the Colorado River Basin. These water rights are located downstream of the subject stream reaches; therefore, an administrative call during dry or average conditions by these water rights can curtail diversions from upstream junior water rights or require the release of water from storage to replace those junior diversions. This administrative call generally results in stream flow through the subject stream segments in amounts greater than would exist in the absence of the administrative call. (Page 36)

Fisheries Summary

The Colorado River within the canyon has three distinct reaches resulting from the presence of Excel Energy facilities: Reach 1 upstream of the Shoshone Dam, Reach 2 from Shoshone Dam to the Shoshone Power Plant outlet, and Reach 3 downstream from the Shoshone Power Plant return flow outlet.

Reach 1, upstream of the dam, is characterized by a flattened/reduced river gradient. The impounded water substantially reduces water velocities, resulting in high sediment deposition above the dam. Aquatic habitat diversity and complexity is reduced due to a lack of riffle-run sequence habitat characteristic of a typical free flowing river. In addition, the dam is a physical barrier to movement of aquatic organisms both upstream and downstream when it is not bypassing river flows and a flow velocity barrier to upstream movement when water is being bypassed. This results in fragmentation of habitat.

Reach 2 encompasses the 2.5 miles of river between the Shoshone Dam and the Shoshone Power Plant return flow outlet. During seasonal low flow periods, the reach is substantially dewatered when the plant is operating. Flows are highly variable throughout the year depending on if the plant is in operation or not. During operations, habitat in the river channel is weakly connected by small inflows of groundwater and tributary streams that fill pools and flow through the large boulder and rock substrate. This reach contains both the lower and higher gradient sections that provide a complexity of habitat when the native flows are allowed to bypass the dam. Habitat persists even during low flow periods, though wetted area in the stream channel is substantially reduced.

Reach 3 begins where native flows are returned to the river during operation of the Shoshone Power Plant and extends downstream to the city of Glenwood Springs. The river regains its natural character with a mix of riffle, run, and deep pool habitats that all contribute to improved channel complexity and diversity.

² https://www.upcowildandscenic.com/uploads/1/3/5/3/135388668/amended_and_restated_sg_plan_july_2024.pdf



Shoshone Powerplant

Below is a brief biological summary of the Colorado River within Glenwood Canyon based on fish sampling data, incidental aquatic invertebrate notes, and riparian habitat assessments by BLM and WRNF.

Fishery surveys on the Colorado River are conducted annually by CPW in cooperation with the BLM and WRNF. These surveys include reaches in and near Glenwood Canyon. Based on these surveys, the following fish are considered resident to the Colorado River in Glenwood Canyon:

Sportfish

Brown Trout, Rainbow Trout, Cutthroat Trout, Rainbow-Cutthroat hybrids, and Mountain Whitefish.



Rainbow Trout



Brown Trout



Mountain Whitefish

Native Fishes

Three native species, including Flannelmouth Sucker, Bluehead Sucker, and Roundtail Chub, are referred to the “Three Species” because they are the subject of a multi-state, multi-agency conservation agreement. Other native species include Colorado River Cutthroat Trout, Sculpin, and Speckled Dace.



Flannelmouth Sucker



Roundtail Chub

Invasive/Nonnative Fishes

White Sucker, Longnose Sucker, and Hybrid Suckers

As mentioned previously, the Reach 1 fishery is impacted by the Shoshone Dam, which impounds water, reduces gradient, reduces water velocities, and allows the deposition of fine sediment, resulting in decreased habitat complexity and diversity. The silting in of river substrates and the loss of riffle/run sequences limits macroinvertebrate productivity, native sculpin habitat, and juvenile fish refugia areas. Consequently, fish productivity within the reach is reduced because of limited food supplies. In addition to macroinvertebrate production, riffles and runs provide important fish spawning habitat for desirable native and sport fishes.

Reach 2 is impacted by the hydropower operations via reduced and highly variable flows depending on hydropower plant operational status. When the plant is operating, and during natural seasonal low flow periods, sediment transport is inhibited, wetted habitat is reduced, and channel/flow connectivity is impaired. The highly variable flow rates limit aquatic invertebrate productivity, an important food source for resident fish. Variable flows also can impact fish spawning activities within the reach due to impaired availability of and accessibility to preferred spawning habitat.

In Reach 3, where the natural river flow regime is reestablished, the river harbors a robust sportfish fishery comprised of Brown Trout, Rainbow Trout, and Mountain Whitefish. Despite the threats posed from invasive fish species, native Flannelmouth Sucker and Bluehead Sucker are regularly detected in the Colorado River in and adjacent to Glenwood Canyon, along with Roundtail Chub, Sculpin, and Speckled Dace. The benefits from the hydropower return flows include increased riffle, run, and pool complexes, coupled with abundant large boulders. With flows sufficient for effective sediment transport, this reach contains diverse, high-quality habitat for aquatic species. The resiliency of the aquatic ecosystem is sustained with the greater abundance of riffle habitat that improves macroinvertebrate and resident fish productivity.

Fish species composition is likely similar within the three reaches, but species relative abundance, particularly of fish species that prefer higher gradient and reduced sediment loads (Sculpin, Trout, and Mountain Whitefish), are likely reduced in Reaches 1 and 2 due to the previously mentioned modification of flow rates and channel composition. Species such as Sculpin are particularly sensitive to increases in sediment deposition as they live within the interstitial spaces amongst larger river substrates. Trout and Mountain Whitefish require clean gravel and cobble substrates for spawning and rearing of juveniles.

Importance of Flows to Federally Listed Fishes

In addition to the local fish community, Shoshone water rights help support flows important to four downstream fish species federally listed under the Endangered Species Act: Bonytail, Colorado Pikeminnow, Humpback Chub, and Razorback Sucker. Specifically, flows help support important habitat located in the “15-mile reach” of the Colorado River located from the town of Palisade to the Gunnison River confluence in Grand Junction. This reach is particularly vulnerable to very low flows as substantial water withdrawals occur just above Palisade for agricultural and other uses. This report does not attempt to quantify the timing or magnitude of flows that benefit the 15-mile reach from exercise of the Shoshone water rights.

Shoshone Reach Instream Flow Habitat Data Analysis

Freshwater Consulting, LLC, under contract to the Colorado River Water Conservation District, completed an aquatic habitat analysis for the portion of Glenwood Canyon affected by water diversions to the Shoshone Power Plant.³ The objectives were to determine the current state of the aquatic habitat and aquatic ecosystem in the Shoshone Reach and determine expected changes to the aquatic habitat and aquatic ecosystem due to hydrologic change if the Shoshone Power Plant water rights were wholly or partially dedicated to instream flow use.

BLM and USFS aquatic resources staff reviewed the report and determined the following:

³ Shoshone Reach Instream Flow Habitat Data Analysis, Habitat Simulations and Habitat Evaluation of the Colorado River from the Shoshone Diversion to the Shoshone Power Plant Outfall, William J. Miller, PhD, Freshwater Consulting, LLC, August 2024.

- The study utilized broadly accepted scientific procedures for two dimensional hydraulic modeling.
- The habitat suitability criteria used for the fish species of interest, which include multiple species of trout and flannemouth sucker, appear to be appropriate and incorporate data from multiple river locations in Colorado.
- The study selected cross section and modeling locations with habitat types that are generally representative of Glenwood Canyon, including pools, riffles, rapids and runs.
- The key study conclusions, listed below, appear to be well supported by the habitat modeling results:
 - For older life stages of trout, Mountain Whitefish and Flannemouth Sucker, the highest habitat availability is at flows that range from 750 cfs to 1,500 cfs.
 - Usable fish habitat gradually declines from 1,500 to 3,000 cfs, but there is still significant habitat available. At higher flow rates, habitat for trout fry decreases significantly.
 - Fish habitat availability quickly declines as flows decrease below 750 cfs.
- The study correctly notes that periphyton, algae, and benthic macroinvertebrates are important food resources for higher trophic levels, and that such resources are significantly impacted by no flow or low flow events caused by diversions to the Shoshone Power Plant.
- The study correctly notes that flow variability, including flood and drought events, are critical for maintaining the overall functioning of aquatic ecosystems, including the riparian communities along the river.
- BLM and USFS concur that any increases in base flows through the reach impacted by Shoshone Power Plant diversions are likely to improve and stabilize aquatic habitat.

Aquatic Invertebrates

A variety of macroinvertebrate species inhabit the Glenwood Canyon. Of primary interest are the EPT taxa (Ephemeroptera (Mayflies), Plecoptera (Stoneflies), and Tricoptera (Caddisflies), as the presence and abundance of these taxa reflect the health of aquatic systems. These and other aquatic invertebrates provide important high value food sources for resident fish, birds, and bats and are an important component of the riverscape food web.



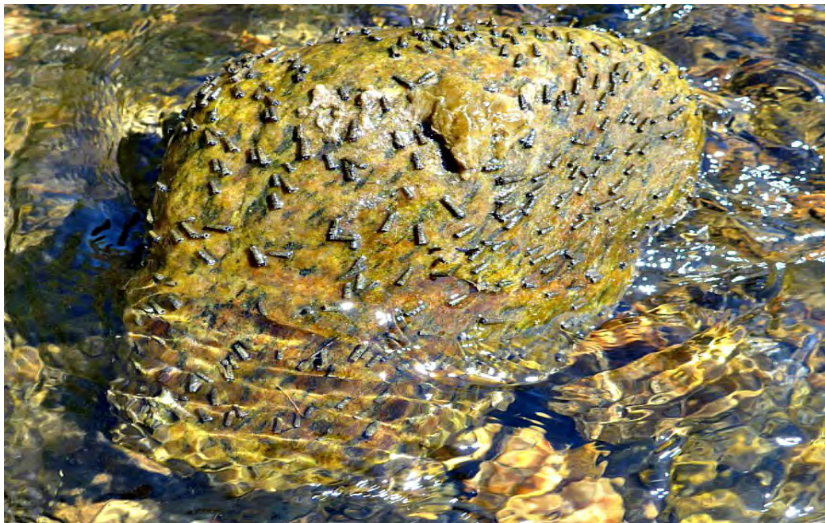
Adult Stonefly



Adult Mayfly

Like fish, macroinvertebrate diversity and density, particularly for EPT taxa, are likely higher in Reach 3 below the Shoshone Power Plant where flow is reestablished, because the river contains less fine sediment and increased riffle habitat important for macroinvertebrate productivity. Macroinvertebrate productivity is likely reduced within Reach 2, because of reduced and highly variable flows depending on hydropower operations. Because of the dam, Reach 1 contains very few riffles, and the reduced river gradient allows fine sediments to settle out. A lack of riffle habitat and increased sediment deposition favors sediment tolerant taxa and reduces overall macroinvertebrate densities and diversity within the reach. EPT taxa are particularly sensitive to increased sediment loading and require clean, well oxygenated substrates in which to thrive.

Reduced macroinvertebrate densities can negatively affect the riverscape food web. As with fish, robust macroinvertebrate sampling would be informative regarding perceived differences in species composition and densities within the three reaches.



Rock Covered in Caddisfly Cases

Riparian Vegetation

Riparian vegetation expression is limited within Glenwood Canyon due to several factors, but the most prominent factor is that the reach is within a steep, narrow canyon controlled by bedrock. This geologic context results in a riverscape that contains only a narrow band of alluvial aquifer

on each side of the river that can support riparian vegetation. The canyon contains only short, disjunct reaches supporting significant floodplain acreage. Other factors limiting riparian vegetation extent include confinement from the interstate highway, railroad, bike path, and other previously noted infrastructure.



Glenwood Canyon Riparian Vegetation

Where present, riparian vegetation provides river cover and shading; increased bank armoring and stabilization; habitat for terrestrial insects an important food source for fish, birds, and bats; bird nesting habitat; and scenic and aesthetic values.

Primary riparian vegetation species noted within the canyon include narrowleaf cottonwood, chokecherry, red-osier dogwood, box elder, willow, wild rose, skunkbush, riparian grasses, sedges, and rush. Riparian species composition appears similar within all three reaches, but densities vary throughout the canyon.



Colorado River and Riparian Vegetation – Glenwood Canyon

Despite the natural and human induced constraints limiting the amount and spatial extent of riparian vegetation within the steep canyon, where riparian vegetation exists, it supports scenic attributes, valued ecological functions, and important wildlife habitat. BLM has completed Proper Functioning Condition riparian condition assessments on the lands it manages within Reaches 1 and 3. Given the geological and human induced limitations within the canyon, both BLM-managed riparian segments were found to be in Proper Functioning Condition.

Recreation

Recreation use in Glenwood Canyon and Colorado River segments located upstream between Kremmling and Dotsero relies heavily on flows called by the Shoshone Power Plant water rights. Visitors to these stream reaches are attracted by boatable flows and scenic canyon environments that remain largely in natural condition. Riparian communities along the river provide scenic interest, camping, fishing, and resting locations, as well as habitat for watchable wildlife. In the river segments between Kremmling and Dotsero, certain reaches provide outstanding opportunities for fishing from boat or from shore. In Glenwood Canyon and near Pumphouse and Radium upstream, trail systems parallel the river, providing hikers and bicyclists the opportunity to enjoy wildlife and river corridor views. The Upper Colorado River Scenic Byway also passes through this corridor, providing visitors with scenic driving opportunities.

Kremmling to Dotsero

BLM manages the public lands along with river between Kremmling and Dotsero as the Upper Colorado River Special Recreation Management Area (SRMA). BLM's broad management objectives for the SRMA include delivering personal and social benefits associated with outdoor recreation; protecting fish, wildlife, and plants from public use impacts; generating community stewardship of recreation resource and natural resources; and maintaining tourism employment and revenue for the local economy. BLM achieves these objectives by dividing the river corridor into various management zones and managing each zone for targeted experiences and recreation benefits. To support these objectives, BLM manages nine formal recreation sites between Kremmling and Dotsero, which include facilities such as parking, boat ramps, restrooms, campgrounds, public water supplies, and trailheads.



Private rafting trip taking out at BLM recreation site in Upper Colorado River SRMA.

Visitation to BLM recreation sites is recorded annually in the BLM’s Recreation Management Information Systems (RMIS) database. The use at a specific site is captured as “visits” which equates to one person entering onto lands or waters managed by the BLM for the purposes of recreation. A “visitor day” is defined as a visitor spending 12 hours in an area. A family of four camping for three days would count as 12 visitor days. These visitation numbers are derived from multiple methods including records from recreation permits, campground fee envelopes, data from traffic counters, and simple observation. While technically open year-round, visitation to the campgrounds is concentrated in the summer season, generally May through September.

Visitation tracking in RMIS follows the federal fiscal year (FY), which runs from October 1 through September 30 of the following year. Within the SRMA, there were 241,417 visits in FY2020, 242,679 recreational visits in FY2021, and 257,007 visits in FY2022. Visits by recreational users more than doubled over the three-year period and averaged 238,034 visits within the SRMA. This increase in recreational use is consistent with other public lands across Colorado.

Table 1. Estimated Annual Visitation to Upper Colorado River SRMA in Visitor Days

Upper Colorado River SRMA	FY20	FY21	FY22	Average
Kremmling Field Office	149,173	175,203	180,459	168,278
Colorado River Valley Field Office	65,244	67,476	76,548	69,756
Total Annual Visitation	214,417	242,679	257,007	238,034

BLM cooperates with the Upper Colorado River Wild and Scenic Stakeholders Group to collect data concerning the number of visitor days associated with float trips. Between May 1 and September 30, 2022, a total of 42,836 visitor days were logged for commercial outfitters who were taking clients on float boating trips.⁴ While the exact percentage of visitor days associated with commercial float trips varies from year to year, the 2022 surveys revealed that approximately 45% of visitor days were associated with commercial float boating trips, while approximately 55% of visitor days were associated with privately-run float boating trips.

⁴ Upper Colorado River Wild & Scenic Stakeholders Group – 2022 Annual Monitoring Report.



Visitors experiencing a quiet section of the Colorado River within the SRMA.

Using this data and visitor distribution, BLM estimates there were approximately 53,272 visitor days during 2022 that were associated privately-run boating trips. If visitor days for commercial trips and privately-run boating trips are combined, BLM estimates the number of visitor days for both commercial and private boating trips for 2022 was approximately 96,000.

Much of the visitor use in the SRMA is supported by commercial outfitters, each of whom operates under a Special Recreation Permits issued by BLM. The total number of Special Recreation Permits issued to outfitters for operations within the SRMA is shown in Table 2.

Table 2. BLM Special Recreation Permits for Upper Colorado River SRMA.

Number of Special Recreation Permits	Type of Recreation Use Authorized
2	Kayaking / Canoeing
24	Fishing
50	Rafting / Floating / Rowing

Overall, outdoor recreation types on BLM-administered lands in the Kremmling Field Office and Colorado River Valley Field Office contributes \$145.7 million and over 1,100 jobs annually, paying \$50.4 million in labor income to Colorado’s economy.⁵ Public lands play an important role in stimulating the local economy by providing opportunities for recreation. Communities adjacent to public lands can benefit economically from visitors who spend money in hotels, restaurants, gas stations, gift shops, and elsewhere.

⁵ BLM 2023. Valuing America’s Public Lands 2023. Internet website: <https://www.blm.gov/about/data/socioeconomic-impact-report-2023>

Glenwood Canyon

WRNF manages the public lands along a majority of the Glenwood Canyon section of the Colorado River. This is the largest canyon on the upper Colorado River with rugged scenic walls rising over 1,300 feet on either side. The 2002 White River National Forest Land and Resource Management Plan provides Management Area direction for this area with a title of *Recreation Rivers-Designated and Eligible* and a theme of *Recreation Rivers are managed to protect and perpetuate eligible and designated recreation river segments*. These areas are managed to protect and perpetuate eligible river segments in their current condition so that their recreation river qualities are not diminished.

WRNF manages the Glenwood Canyon portion of the river as one segment, which starts at the national forest boundary on the eastern end of Glenwood Canyon and extends downstream to the national forest boundary near the west end of Glenwood Canyon. The infrastructure that supports the recreational activities in the canyon includes the Glenwood Canyon Recreation Path, two (2) boat ramps at Shoshone and Grizzly Creek, respectively, and rest areas, trailheads, parking areas, and restrooms at Hanging Lake, Grizzly Creek, and No Name rest areas, with a parking area and restroom at Bair Ranch rest area.



Visitors enjoy one of the many rapids in Glenwood Canyon

Overall visitation on the WRNF managed stretch of the Colorado River, through Glenwood Canyon, is tracked following the federal fiscal year (FY) from October 1 through September 30 of the following year. Estimated visitation includes commercial boater service days along with private boat data collected by WRNF staff at the Shoshone and Grizzly Creek boat ramps throughout the high use summer season, running from late June through late August.

Table 3. Actual and estimated visitation on the Colorado River in Glenwood Canyon based on a 70-day high use season (late June-Late August).

Glenwood Canyon	FY20	FY21	FY22
Commercial	43,089 (actual)	52,131 (actual)	53,687 (actual)
Estimated Private Use	4,138* (estimated 16,092)	1,456** (estimated 6,370)	1,609*** (estimated 3,633)
Total Combined Estimate	59,181	58,501	57,320

*18 days of private data collected,

**16 days of private data collected

***31 days of private data.

In 2018, WRNF conducted an Environmental Assessment to determine the capacity limit for commercial use of the Shoshone Rapids Section of the Colorado River in Glenwood Canyon. Through this process it was determined that 71,500 service days for commercial rafting and 750 service days for commercial kayaking, with a pool of 1,100 service days, and temporary use authorized on a requested basis by institutional type user groups, accounted for a total capacity limit of 73,350. There are currently 68,000 service days allocated to priority special use permit outfitter and guides.

These flow-dependent activities rely heavily on the amount of water in this stretch of the river. Based on input from the outfitters and experience, these commercial operations typically cease when river flows drop below 1,200 cfs. The floating visitor experience diminishes drastically once flows drop below this level.

The Shoshone rapids section of Glenwood Canyon is regionally significant to river recreation, as reliable flows create consistent Class II - IV whitewater conditions for boaters when most other popular rivers in the area have reduced flows, either by natural or controlled means. These dependable flows also contribute to the viability of long-standing outfitter's seasonal business operations and offerings to National Forest visitors.

The total number of outfitter and guide operations or educational institutions that are authorized to operate under a Special Use Permit by USFS to conduct commercial or educational activities on or along this portion of the river are outlined in Table 4.

Table 4. Number and types of 2024 USFS special use permits.

Number of permits	Types of permits	Total Priority Service Days
9	Rafting	66,977
3	Kayak	365
2	Fishing	150
3	Educational Institutions	340

Overall, WRNF directly supports 22,000 jobs with an economic impact of \$1.6 billion based on data from 2019 and is considered the most visited national forest in the country.⁶ Based on visitation studies conducted on a five-year cycle, forest visitation increased from 12.5 million visits in 2017 to 18.4 million visits in 2022⁷. While 11.5 million of those 2022 visits were from ski areas, the remaining 6.5 million visits were non-ski area visits. The Colorado River and public lands in Glenwood Canyon play a significant role in sustaining the local economy by providing opportunities not only directly related to recreation but also indirectly in the local communities where visitors support numerous local businesses and service providers.



Rafting the Colorado River in Glenwood Canyon.

Summary

The river-related natural environment in Glenwood Canyon has evolved in response to, and is dependent upon, the historical infrastructure and flow regime associated with operation of the Shoshone Power Plant water right. Any significant changes to the historical operation of the water right would result in corresponding changes to the natural environment, especially if the priority call associated with the water right were not exercised, resulting in increased diversions upstream. The Shoshone Outage Protocol⁸, an operational agreement signed by Bureau of Reclamation,

⁶ FY19 Economic Contributions from National Forests and Grasslands. USDA Forest Service, Ecosystem Management Coordination, Social Science and Economics. 2019.

⁷ USDA Forest Service. National Visitor Use Monitoring Data 2017 and 2022.

⁸ Shoshone Outage Protocol Agreement Number 13XX6C0129, dated June 27, 2016.

the State of Colorado, multiple local governments, and multiple entities with Colorado River water rights, recognizes the role that the water right plays in preservation of the natural environment in Glenwood Canyon, as well as the natural environment in river locations upstream and downstream. Quantification of the potential impacts associated with modified or terminated operation of the Shoshone Powerplant water right would require a detailed analysis of the historic water right call regime, hydrologic variability, and modeling of the in-channel and riparian habitat in Glenwood Canyon.

Operation of the Shoshone Power Plant water rights also has significant positive impacts both upstream and downstream from the plant. Downstream, operations of the water rights contribute to the flow rates necessary to support threatened and endangered fish species in the 15-Mile Reach near Grand Junction. Upstream, operation of the water rights supports Outstandingly Remarkable Values in three reaches of Colorado River that have been determined to be eligible for designation into the National Wild and Scenic Rivers System. Operation of the water rights also supports economically significant recreation use within BLM's Upper Colorado River SRMA and WRNF Glenwood Canyon Management Areas.

Final Report (CA23044)

**Shoshone Reach Instream Flow Habitat Data Analysis, Habitat Simulations and
Habitat Evaluation of Colorado River from the Shoshone Diversion to the Shoshone
Power Plant Outfall**

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September 30, 2024

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Executive Summary

This report documents the evaluation of instream flows for the purpose of protecting and enhancing aquatic resources in the Shoshone Reach of the Colorado River between the point of diversion for the Shoshone Water Rights at the Shoshone diversion dam and the Shoshone Power Plant outfall. The objectives were to determine the current state of the aquatic habitat and aquatic ecosystem in the Shoshone Reach and determine expected changes to the aquatic habitat and aquatic ecosystem due to hydrologic change. The hydrologic change would be from a potential dedication of the Shoshone Hydropower Plant water rights which include a senior right for 1,250 cfs and a junior right of 158 cfs for a total of 1,408 cfs to an instream flow use. This change in water right would allow the total 1,408 cfs to remain in the river as a dedicated instream flow rather than diverted through the hydropower plant.

The instream flow analysis used the general guidelines from the Instream Flow Incremental Methodology (IFIM) which was developed by the US Fish and Wildlife Service in the late 1970s and early 1980s. IFIM is a multi-disciplinary methodology based on ecosystem principles and includes analysis of hydrology, habitat suitability criteria for species of interest, channel hydraulics and predictions of hydraulic-habitat as a function of discharge. In addition, the data from an IFIM approach can be used to interpret other ecosystem responses to change in stream flow. IFIM is specifically designed to evaluate and compare alternative flow regimes. The IFIM approach has been applied to other rivers and streams throughout Colorado.

The Colorado River in the Shoshone Reach is confined on the right by the interstate highway and on the left by the railroad. Habitat within the Shoshone Reach includes rapids, high gradient riffles, deep pools and runs. The Shoshone Reach is approximately 2.4 miles long and has an elevation drop of 170 feet from the diversion dam to the Shoshone Power Hydropower Plant outfall.

One study site was selected based on habitat characteristics that were generally representative of the non-rapid sections of the reach. The site included multiple repeats of riffle, pool and run habitat. The confined, steep gradient river channel does not allow safe access for in-channel measurements at all sections of the Shoshone Reach. The final decision on study site location from those areas deemed representative was determined during the field measurements and based on representativeness of the site and safety for personnel.

Two flow regimes were compared for this analysis, which were existing flows and future flows. Existing flows for the Shoshone Reach were calculated by subtracting the amount of water diverted for hydro power production from the flow at the Dotsero gage. The future flows for the Shoshone Reach were the flows that would have been diverted at the power plant but instead allowed to remain in the channel through the Shoshone Reach. The analysis included the comparison of the existing flow regime to the future flow regime for hydrology in average, dry and wet years. The existing flow regime in the

reach includes days of zero flow when the hydropower plant is operating and total river flow is equal to or less than 1,408 cfs. The proposed future flow regime would not have zero flows and the water currently diverted for hydropower production would remain in the river.

A two-dimensional hydraulic model was developed to simulate stream hydraulics for flows from 50 cfs up to 3000 cfs. Specific flows of 50, 250, 700, 1,020, 1,250, 1,400 and 3000 cfs were simulated. The model was calibrated to the field measured flow of 1,020 cfs. Predictions from the simulated flows for wetted area, depth, and velocity were used in the hydraulic habitat analysis.

The species of interest and habitat suitability criteria for the hydraulic habitat analysis were determined in consultation with Colorado Parks and Wildlife and Colorado Water Conservation Board. The species selected were Rainbow Trout, Brown Trout, Flannelmouth Sucker and Mountain Whitefish. Habitat suitability criteria came from existing data sets that were previously used in other IFIM studies in Colorado.

Wetted area predictions were used to evaluate other biota that were not specifically modeled with habitat suitability criteria. These biota included the lower trophic levels of algae and macroinvertebrates that provide food resources for fish. The wetted area for the existing flow regime has many days at or near zero area due to diversion for hydro power production. The loss of wetted area results in partial or total mortality of algae and macroinvertebrates and the loss of food resources for fish. The loss of wetted area also requires fish to move out of the reach or be stranded. Research in other portions of the Colorado River has demonstrated that 1.5 to 2 months are required for algae and macroinvertebrate productivity to recover to the density and biomass that was present prior to the loss. The future flow regime does not have zero flow days and has stable consistent wetted area in all year types. These stable flows would allow macroinvertebrates to complete their annual life cycles and provide stable habitat area for algae and macroinvertebrates.

The hydraulic-habitat analysis predicted the maximum habitat availability for fish species at flows from 700 cfs to 1,400 cfs depending on the species. The zero flow days with the existing conditions results in total loss of habitat over extended periods of time. This habitat loss coupled with the concurrent loss of food productions results in substantial impacts to fish species in the Shoshone Reach. Future condition flows result in habitat conditions that are near the maximum potential habitat for the Shoshone Reach for all fish species. The future conditions result in stable flows during base flow periods that provide stable habitat and stable food resources for the fish species in the Shoshone Reach.

Based on the available hydrology and the habitat-discharge functions, the future flows (the Shoshone Hydropower Plant water rights which include a senior right for 1,250 cfs and a junior right of 158 cfs for a total of 1,408 cfs plus the bypassed/shepherded flows, which can result in a total flow of up to approximately 2,500 cfs to 3,000 cfs at the Dotsero Gage) would provide a substantial increase in habitat and benefit aquatic biota

during summer, fall, winter, and early spring as compared to the existing conditions. These flows up to approximately 2,500 cfs to 3,000 cfs therefore will help to preserve and improve the natural environment in the Shoshone Reach.

There also are indirect benefits to other sections of the Colorado River from the Shoshone Hydropower Plant water rights. These water rights are administered at the Dotsero Gage upstream from the Shoshone Reach, however, the water is conveyed from the upper sections of the Colorado River upstream of the Dotsero gage downstream to the Shoshone Reach and benefits all of the intervening reaches of the upper Colorado River. Similarly, the Colorado River downstream of the Shoshone Reach benefits from the Shoshone Hydropower Plant water rights.

In summary, the future conditions with the Shoshone Hydro Power Plant water right in place as an instream flow in the Shoshone Reach would result in the following:

- Stable base flow conditions with no zero flow days.
- Stable wetted area during future conditions in late summer, fall, winter and spring for better conditions for macroinvertebrates and algae which are food sources for fish species.
- Average year hydraulic-habitat conditions in summer and winter base flows that provide from 81% to 99% of the potential maximum hydraulic habitat.
- Continuation of indirect benefits upstream and downstream of the Shoshone Reach from water delivered to the Shoshone Reach.
- Flows from 1,400 to 3,000 cfs provide additional benefit to the aquatic habitat in the Shoshone Reach.
- Overall improved instream conditions to preserve and enhance the aquatic habitat.

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Introduction

This report documents the evaluation of instream flows for aquatic resources in the Shoshone Reach of the Colorado River between the point of diversion for the Shoshone Water Rights at the Shoshone diversion dam and the Shoshone Power Plant outfall (Figure 1). Habitat within the Shoshone Reach includes rapids, high gradient riffles, deep pools and runs. The objectives were to determine the current state of the aquatic habitat and aquatic ecosystem in the Shoshone Reach and determine expected changes to the aquatic habitat and aquatic ecosystem due to hydrologic change. The hydrologic change would be from a potential dedication of the Shoshone Hydropower Plant water rights which include a senior right for 1,250 cfs and a junior right of 158 cfs for a total of 1,408 cfs to an instream flow use. This change in water right would allow the total 1,408 cfs to remain in the river rather than diverted through the hydropower plant.

The report and analysis included input of data from hydraulic model simulations and calculation of habitat area by life stage for each simulated flow. Hydraulic and habitat model simulations included analysis for a range of flows (50, 250, 700, 1,020, 1,250, 1,400 and 3,000 cfs). A two-dimensional hydraulic model was developed for a single study site in the reach (River Restoration 2023). The modeled site was approximately 1,850 feet long and included multiple habitat types found within the Shoshone Reach (Figure 1). The species of interest for the Shoshone Reach study were determined in consultation with Colorado River Water Conservation District (River District) and other entities (Colorado Parks and Wildlife (CPW) and the Colorado Water Conservation Board (CWCB)) as determined by River District staff. Habitat suitability criteria for the species of interest were used in previous studies on what is now the Upper Colorado River Wild and Scenic Alternative Management Plan section of the Colorado River (Miller and Swaim 2011; See also Appendix A this report) with modifications as determined by CPW staff. Hydrology data for habitat time series analysis was provided by the River District.

This study followed the general guidelines of the Instream Flow Incremental Methodology (IFIM) (Bovee et al. 1998). IFIM is a multi-disciplinary approach to evaluating instream flow alternative management scenarios and includes components of hydrology, river hydraulics, and biological data. River hydraulics include simulation of a range of discharges to predict change to the wetted area, depth and velocity that may affect the aquatic biota. The output of the combination of hydraulic model results with habitat use data is generally referred to as hydraulic-habitat. Biological data analysis included evaluation of wetted area as it may affect aquatic biota such as periphyton, macroinvertebrates and available fish habitat.

Study Area

The Colorado River in the Shoshone Reach is subject to several human induced factors. The river channel is bordered by Interstate Highway 70 on river right and the railroad on river left. River discharge is impacted by large headwater reservoirs, transbasin diversions, and diversions for off-channel uses. The Shoshone Reach study area extends from the diversion dam near the Hanging Lake Trailhead parking lot adjacent to I-70 downstream to the Shoshone Power Plant outfall (Figure 1). The total distance for the Shoshone Reach is approximately 2.4 miles. The Shoshone Reach has sections of rapids, high gradient riffles, runs and deep pools. The overall gradient is steeper than the upstream reaches of the Colorado in non-canyon reaches. The river elevation drops over 170 vertical feet over the 2.4-mile distance with extremely steep gradients in areas with rapids (Figure 2).

The total area for each major habitat type (riffle, pool and run) for the Shoshone study reach was approximated from the aerial images from Google Earth Pro based on surface characteristics. The Shoshone reach is dominated by high gradient riffle and rapids with smaller proportions of pools and runs (Table 1). The study site was selected based on the presence of multiple habitat types and the ability to safely obtain the data needed for the hydraulic and habitat models. The study site within the Shoshone Reach has multiple

repeats of habitat types of riffle, run and pool habitat that are representative of the lower gradient, non-rapids habitat within the Shoshone Reach (Figure 3). The Shoshone Reach supports multiple fish species of trout, native suckers, mountain whitefish and sculpins (Kendall Bakich CPW, personal communication 2024; CPW file data). These same species have been collected by CPW upstream and downstream of the Shoshone Reach in the Colorado River. There are no quantitative data on fish populations in the Shoshone Reach due to the river conditions that restrict safe access for population sampling efforts. Shoreline sampling by CPW in 2023 showed the presence of Brown Trout and Rainbow Trout. In addition to fish, the river also supports the lower trophic levels of periphyton, algae, and benthic macroinvertebrates. These trophic levels are important food resources for the higher trophic levels and are dependent on continuous river flow for completing their life cycle. The periphyton supports benthic invertebrates and fish, benthic macroinvertebrates support fish species.

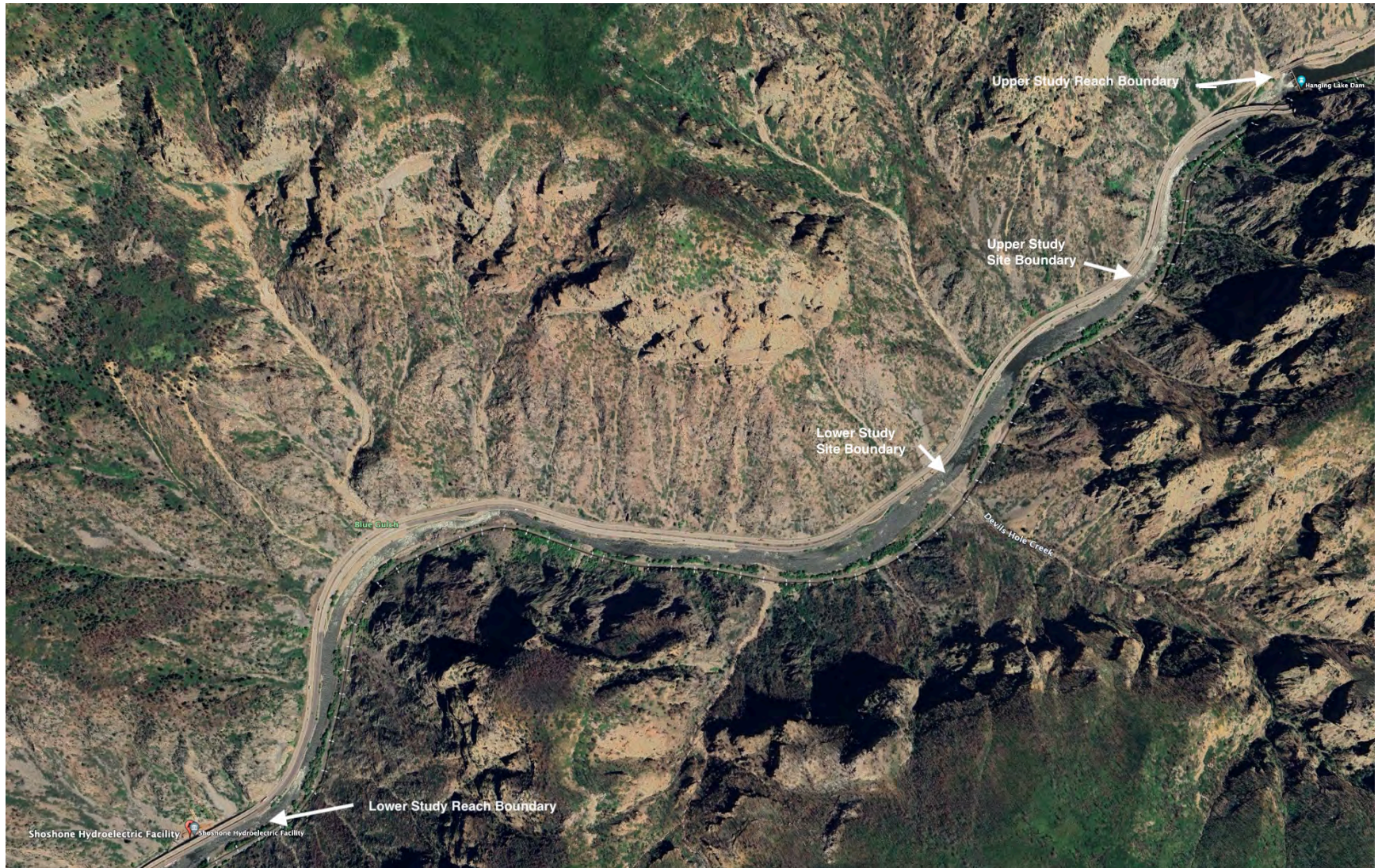


Figure 1. Shoshone Reach study area and study site. Colorado River flows from upper right to lower left. Source: Google Earth Pro July 17, 2023.

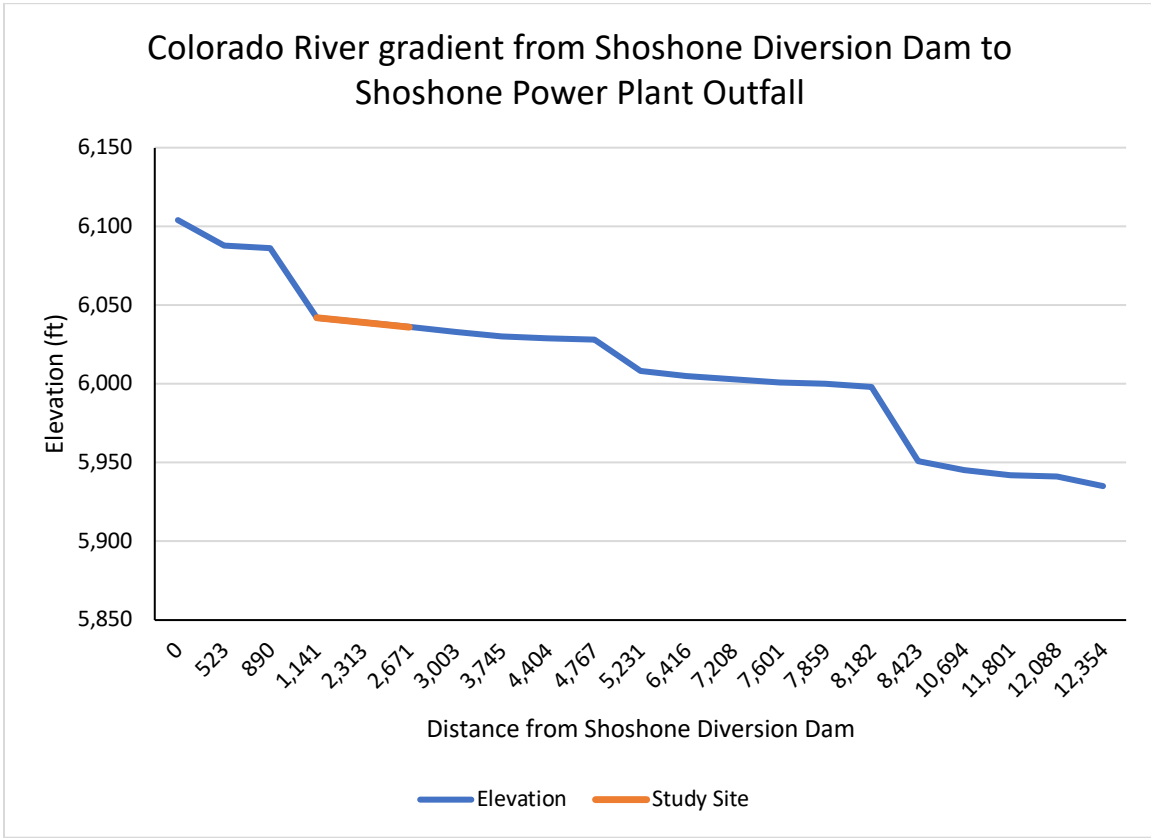


Figure 2. Approximate gradient of Colorado River in the Shoshone Reach (Shoshone diversion dam to Shoshone Power Plant outfall) Source: Google Earth Pro Aerial Image July 19, 2023.

Table 1. Habitat type and percentage for Shoshone Reach, Colorado River (source: Google Earth Pro aerial images July 19, 2023).

Habitat Type	Summed length (ft)	Percent
Riffle	5363	42%
Rapid	5045	39%
Run	332	3%
Pool	2121	16%
Total	12861	100%



Figure 3. Aerial image of Shoshone Reach Study Site with approximate delineation of habitat types.
Source: Google Earth Pro Aerial Image July 19, 2023.

Methods

There are several methodologies available to evaluate riverine habitat (Annear et al. 2004; Stalnaker et al. 1995). These include simple standard setting methods such as R2Cross up to more complex methods that evaluate multiple parameters to better address complex water management problems. The Instream Flow Incremental Methodology (IFIM) is a multidisciplinary methodology and was developed to evaluate complex water management problems (Bovee, 1982; Bovee et al. 1998; Stalnaker, 1995). IFIM includes sound ecological principles in the methodology (Bovee et al. 1998). The IFIM approach has been used in other instream flow evaluations in Colorado including the Colorado River, Dolores River, Cache La Poudre River and South Platte River basins.

The general approach to evaluating instream habitat in the Shoshone Reach follows the guidelines of IFIM. The analysis sequence includes collection of field data for stream topography, bathymetry, and hydraulic parameters, and fish habitat use data. These field data are the input parameters for hydraulic modeling and habitat suitability analysis. The hydraulic model output and habitat suitability are combined to calculate habitat area as a function of discharge for a range of flows. This function is combined with hydrology scenarios to determine change in habitat over time (Figure 4). In addition to the data used for fish habitat, hydraulic model results for wetted area were used to infer changes to other non-modeled biological conditions such as changes to habitat for benthic macroinvertebrates.

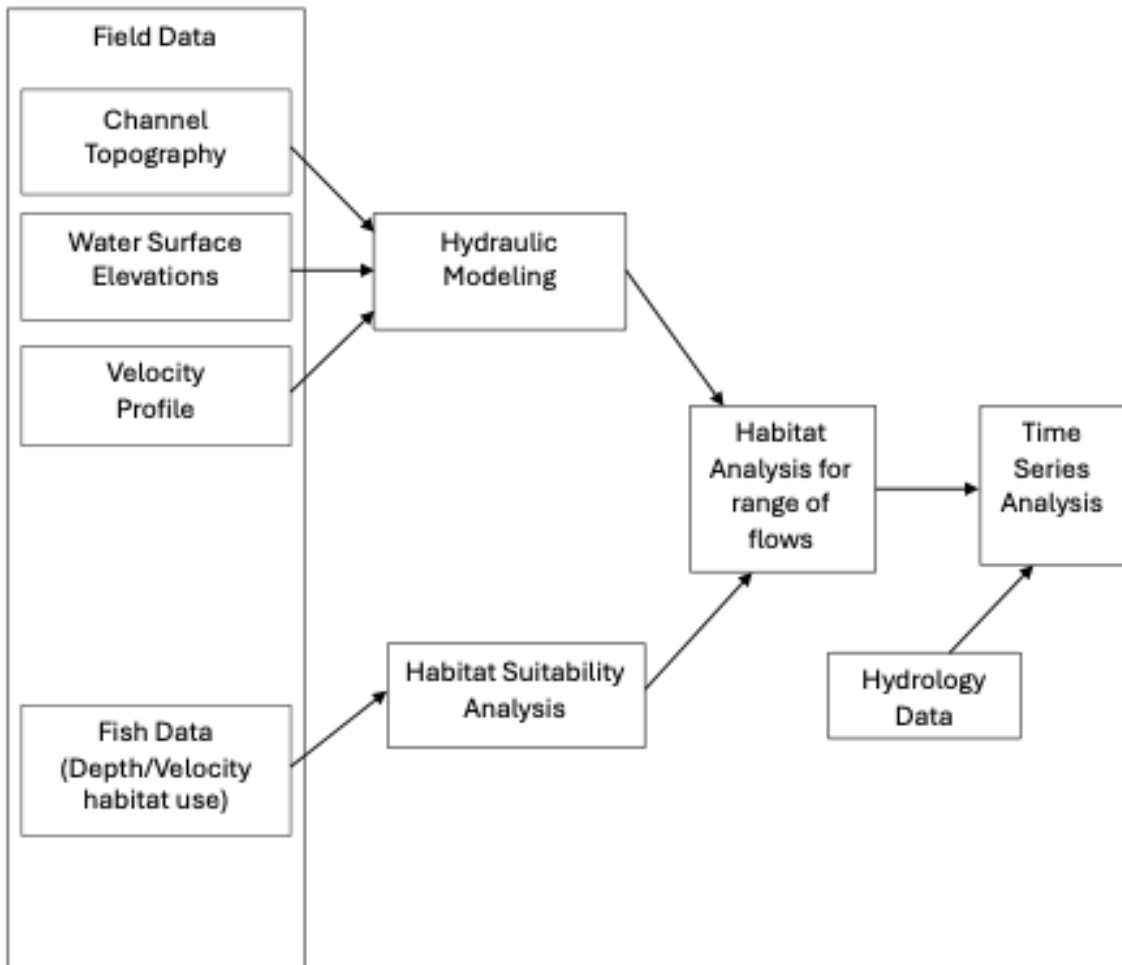


Figure 4. Flow chart of analysis sequence for instream flow study.

Two-Dimensional Hydraulic Modeling

Two-dimensional hydraulic modeling was completed by River Restoration (River Restoration 2023, See Appendix B and Appendix C). The 2-D model uses the georeferenced field data collected from the site. Data inputs include site topography, substrate, and flow impediments; a stage-discharge relationship at the downstream end of the site; and calibration and validation data throughout the site. The survey data was used to develop a grid system to represent the stream geometry as a mesh. Model mesh was approximately 4 ft by 4 ft for the site (River Restoration 2023). This mesh was combined with the hydraulic data to simulate water depths and depth averaged velocities for the range of flow conditions for 50, 250, 700, 1,020, 1,250, 1,400, and 3,000 cfs. The water depth and depth averaged velocity from the hydraulic model are required to be consistent with the data collected for the fish habitat use, which also is water depth and depth averaged velocity.

Hydrology

The River District provided the hydrology time series for the Shoshone Reach. The hydrology data included hydrology from actual gage data using the USGS Colorado River near Dotesero gage (Dotesero Gage) located just upstream of the Shoshone Reach over a period of record of 1973-2003. The data are presented as an irrigation year (Nov 1-Oct 31) with three typical hydrologic conditions based on the following years: Wet – 1997, Average – 2000, and Dry - 2001. The years were selected to get a range of hydrologic conditions from wet to dry and also were years the Shoshone Hydropower plant operated. The hydropower plant operation data was needed so “existing” conditions in the Shoshone Reach could be evaluated. Actual gage data is the “future” or proposed condition of the Shoshone Reach for each of these sample years, assuming the scenario that the Shoshone Water Rights are not used for hydro-power generation

purposes but are instead being exercised by the CWCB for instream flow purposes, causing all flow to go through the Shoshone Reach. Existing conditions were assumed to be historical flow at Dotsero Gage flow less 1,408 cfs to mimic the typical historical operations of the Shoshone Power Plant of diverting all available flow up to 1,408 cfs as described further below. The three sample year types for existing and future conditions were used in the habitat time series.

Water Right Administration

The Dotsero Gage (USGS 09070500) is an administrative point utilized by the Colorado Division of Water Resources (“DWR”) to measure all streamflow in the river at the location of the gage. In addition, DWR has historically relied on the Dotsero Gage as the point of administration for the Shoshone Water Rights. DWR uses the Dotsero Gage to measure both the amount of un-depleted, natural flow as well as the amount of bypassed flow associated with shepherded releases from reservoirs located upstream of the gage. For purposes of this report, the “natural flow” includes the amount of water divertible by the Shoshone Water Rights when those water rights are in priority but does not include any bypassed water or releases from upstream reservoirs administered for downstream water use below the Shoshone Reach. Those bypass flows (i.e., shepherded releases), which are also administered at the Dotsero Gage, are those reservoir releases made for the purposes of increasing streamflow at certain downstream locations in excess of the natural flow that would exist at these locations but for the bypass water, such as releases for irrigators in the Grand Valley or for environmental flows to benefit the 15-Mile Reach.

Importantly, DWR does not administer the shepherded bypass water at the Dotsero Gage to satisfy any calls for administration of the senior and junior Shoshone Water Rights. Instead, DWR accounts only for the available natural flow at the Dotsero Gage whenever a Shoshone Call is placed to determine whether upstream junior water rights must be curtailed to ensure that sufficient natural flow is available for beneficial use at the Shoshone Power Plant where such water is diverted from the river. Similar operating

conditions have been assumed for the future-conditions hydrology in this Report such that if the Shoshone Water Rights are utilized for instream flow purposes the Shoshone Call would be based solely on the amount of natural flow as measured at the Dotsero Gage, not including the amount of shepherded bypass water. Thus, the Shoshone Reach could have flows greater than 1,408 cfs at certain periods when the Shoshone Call has been placed but is not being fully satisfied. This is because DWR administers the Shoshone Call based solely on available natural flow at the Dotsero Gage but does not administer any shepherded bypass water to satisfy the call even though such bypass water does eventually flow through the Shoshone Reach for downstream beneficial uses.

Habitat Suitability Curves

Species habitat suitability criteria are required for the hydraulic-habitat analysis. Habitat suitability criteria that accurately reflect the habitat requirements of the species of interest are essential to conducting meaningful and defensible habitat analyses (Bovee 1982). A previous study in the Colorado River from Kremling to Dotsero, Colorado (Miller and Swaim 2011) incorporated habitat suitability criteria for the same species of interest as in this study (Table 2). The habitat suitability criteria include adult trout, adult Mountain Whitefish, and adult Flannemouth Sucker. Other species considered for this analysis were Bluehead Sucker and Mottled Sculpin. Habitat suitability criteria were not available for Mottled Sculpin. Bluehead Sucker were not explicitly modeled in the study due to a lack of sufficient number of data observations, however, the data that was available shows an overlap in the depth and velocity used with Flannemouth Sucker (Miller 2024).

Table 2. Species of interest for habitat analysis.

Common Name	Scientific Name
Rainbow Trout	<i>Oncorhynchus mykiss</i>
Brown Trout	<i>Salmo trutta</i>
Mountain Whitefish	<i>Prosopium williamsoni</i>
Flannelmouth Sucker	<i>Catostomas latipinnus</i>

The habitat data for the species of interest came from several sources and have been used in previous studies on the Colorado River (Miller and Swaim 2011). The data for adult trout was collected by direct observation at several locations in rivers in Colorado. The data was collected by personnel from Colorado Division of Wildlife (now CPW) and US Fish and Wildlife Service in 1988 and 1989 (Colorado Division of Wildlife 1989). Those observations were used to develop habitat preference suitability indices for depth and velocity and corrected for habitat presence (Wilding 2012).

Criteria for Mountain Whitefish used for this analysis came from Bovee (1978). The criteria for adult Flannelmouth Sucker were updated in early 2024 from a combination of data from radio telemetry studies on the Colorado River near Grand Junction, existing data from a range of rivers and literature review of habitat and population studies (Miller 2024). Additional habitat criteria for Flannelmouth Sucker were incorporated into the final suitability criteria as documented by Miller (2024). The habitat suitability criteria for Flannelmouth Sucker are also being used as a proxy for Bluehead Sucker criteria for this study. Bluehead Sucker feed by scaping on hard substrates and are known to feed in faster riffle habitat with cobble and boulders whereas Flannemouth Sucker feed on softer substrates in somewhat slower velocities so the habitat response shown for Flannelmouth Sucker may approximate habitat response to flow for Bluehead Sucker but not fully depict all areas suitable for Bluehead Sucker. The suitability indices for all species are listed in Appendix A.

Habitat Modeling

The habitat modeling for this analysis will follow the concepts of IFIM (Bovee 1982, Stalnaker et al. 1995). IFIM requires hydraulic data and simulations; habitat use data expressed as habitat suitability criteria; and hydrology data for a range of stream discharge conditions. The 2-D hydraulic analysis and simulations were described above.

Habitat suitability modeling for each species of interest was accomplished through a spreadsheet model. The spreadsheet instream habitat model relies on inputs from both the two-dimensional hydraulic modeling and the habitat suitability criteria described above. Data corresponding to flow depths and depth averaged velocities provided by the two-dimensional hydraulic modeling were developed for each flow rate within the study site. Specific habitat criteria developed from the suitability analyses described above were then used to calculate habitat area. Multiple data sets of usable habitat were generated, corresponding to each species and flow of interest. The usable habitat area for each species of interest is the result of combining the hydraulic simulations for each flow with the habitat suitability function for each species. Summation of total habitat for each species and simulated flow results in a habitat-discharge relationship by species that becomes input for the habitat-time series analysis.

The habitat–discharge relationships are a set of theoretical functions based on channel shape and hydraulics. The actual habitat realized by the species is a function of the discharge at the site over time combined with the habitat–discharge function and results in the habitat time series.

Habitat Time Series

The actual habitat experienced by the fish in any river depends on the flow regime of the river. The relative abundance of habitat conditions over time is an integral part of the comparison of flow regimes. Generally, the habitat time series is the comparative

analysis used for the decision point in IFIM. Habitat time series produces the data needed to compare a range of flow conditions over time and to compare different flow scenarios. The habitat-discharge relationships for each study site were used as input data for the habitat time series. This analysis allowed a comparison between the existing flow regime and alternate flow regimes to determine available habitat with each time series.

Habitat time series evaluations were conducted on two flow regimes representing the existing hydrologic condition and the potential future condition with water flowing in the Shoshone Reach. For each flow regime assessed, we conducted both hydrology and habitat time series analysis for wet, average and dry hydrology to calculate both flow and habitat statistics. These values allowed a direct comparison of the changes that occur in both flow and habitat under a range of conditions. These tabular data were displayed for each flow scenario to represent the spatial habitat distributions.

Habitat time series was completed using a spreadsheet format that combines the hydrology over time with the habitat use as a function of discharge. These values are converted to area of habitat for the study site and then area of habitat for the Shoshone Reach to compare change in habitat over time for each flow of interest.

Results

The study components include results from the hydraulic model for depth, velocity, and wetted area at each simulated flow, available hydraulic-habitat at each modeled flow and comparison of daily habitat for a range of hydrologic year types. Wetted area is used to infer changes to the non-modeled biological data and to more fully understand the range of conditions that may be available to fish species. The hydraulic-habitat analysis provides the data needed to determine change in available habitat at specific discharges and provides the data to evaluate change in habitat with changes to hydrology on a daily time step.

The hydraulic model mesh and hydraulic parameters provide the basic physical data for the analysis. These data include the area for wetted channel area for each flow. The wetted area for the study site has the sharpest decline in area as the flow declines from 250 cfs to 50 cfs (Figure 5). Flows higher than 250 cfs have a gradual increase in wetted area up to the highest simulated flow of 3,000 cfs.

Wetted area or wetted channel perimeter is a measure of the total aquatic habitat available under varying flow levels and can also be used as an indicator of stream food web function. Primary and secondary trophic levels (algae and benthic macroinvertebrates, respectively) are positively correlated to stable wetted area (Rees et al. 2008). Many of the key macroinvertebrates such as Mayflies, Stoneflies, and Caddisflies, have annual life cycles and require continuous flow for a year or more to complete their life cycles. Any disruption or loss of habitat due to loss of wetted area during a single year results in either a decrease or total loss in productivity and directly impacts the food resources available to other species. A day or days of zero flow can eliminate primary and secondary food productivity due to mortality of algae and macroinvertebrates and take weeks to return to previous levels (Rees et al. 2008).

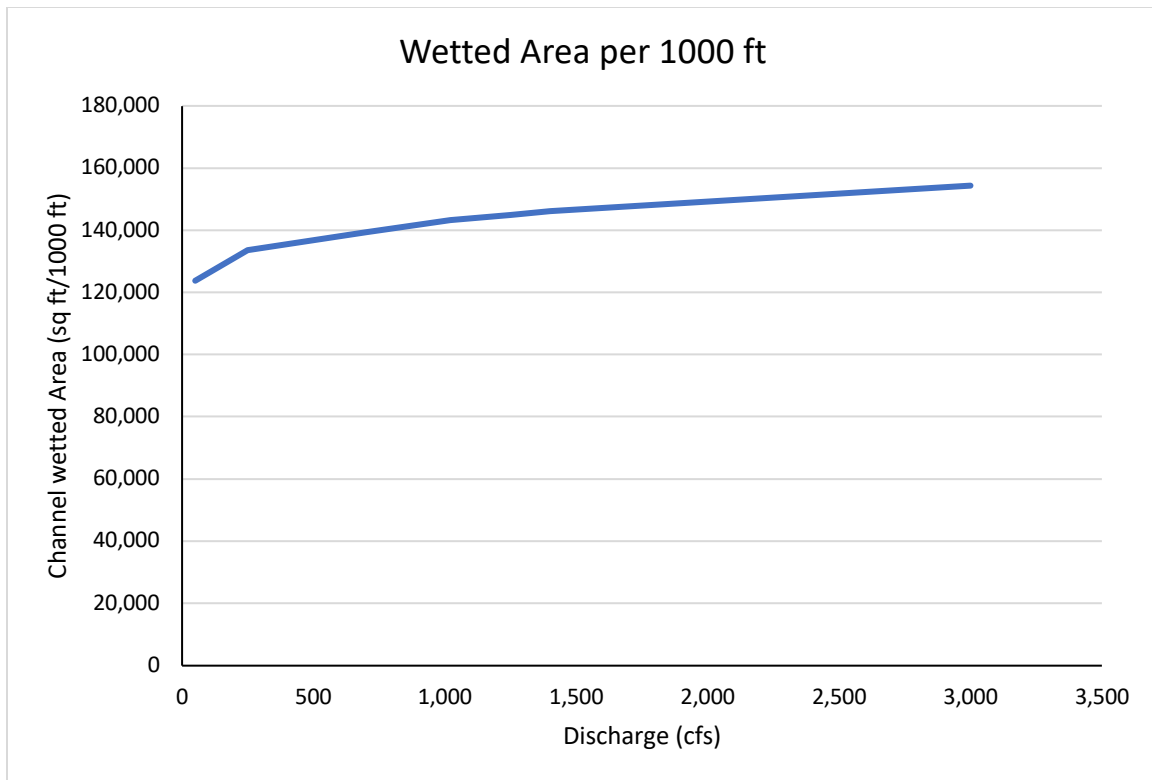


Figure 5. Shoshone Reach Colorado River channel wetted area as a function of discharge.

The hydrology for the reach was graphed to display the comparison between the existing conditions and future conditions for average (Figure 6), dry (Figure 7) and wet (Figure 8) hydrologic conditions. There are extended periods of zero flow days, particularly in winter, for the existing conditions in all hydrologic years. The number of zero flow days are 235, 183 and 134 with existing conditions for dry, average, and wet hydrologic years, respectively. Peak flows during runoff range from approximately 2,500 cfs in dry years to approximately 14,000 cfs in wet years for existing conditions. The base flows under future conditions (when the Shoshone Hydropower Plant is offline) are lowest in winter with flows ranging from approximately 750 cfs in dry years to approximately 1,000 cfs in average and wet years. There are no zero flow days in future conditions. This is a substantial change in flows during base flow periods under future conditions compared to the existing hydrologic conditions in all hydrologic years.

The hydrologic time series comparing existing and future conditions demonstrates that the existing flows result in a total loss of wetted area in all sample year types (Figure 9, Figure 10, Figure 11). Daily flows greater than 3,000 cfs (the highest flow in the 2-D model) were not plotted to limit the data analysis to the range of the hydraulic model. There are also sporadic losses to wetted area during late summer into the fall for existing conditions. There are extended periods of total loss of wetted area from late fall through spring for existing conditions. The loss of wetted area is most impactful to the algae and benthic macroinvertebrates. These species are not as mobile as fish species and require longer times to recolonize the channel after flows return. The general annual life cycle for macroinvertebrates includes adult emergence and egg deposition in late spring through summer, eggs hatch and nymph stages mature from summer through the next spring to early summer when adults emerge and the cycle repeats. Loss of wetted area, either partial or complete, results in a loss of food resource productivity and loss of habitat for mobile fish species. Stable wetted area as shown in the future condition's hydrology time series with the 1,408 cfs water right in the Shoshone Reach is beneficial to primary and secondary trophic levels and fish habitat. In addition, the bypassed/shepherded flow that is added to the 1,408 cfs water right provides an additional amount of wetted area (approximately 4% at 3,000 cfs) and is beneficial to the aquatic ecosystem. The additional wetted area provides more area for macroinvertebrate emergence. The shoreline areas with large substrate provide velocity refuge habitat for fish. The benefit to the lower trophic levels would provide improved ecological conditions for the higher trophic levels and result in more robust ecological conditions in the Shoshone Reach.

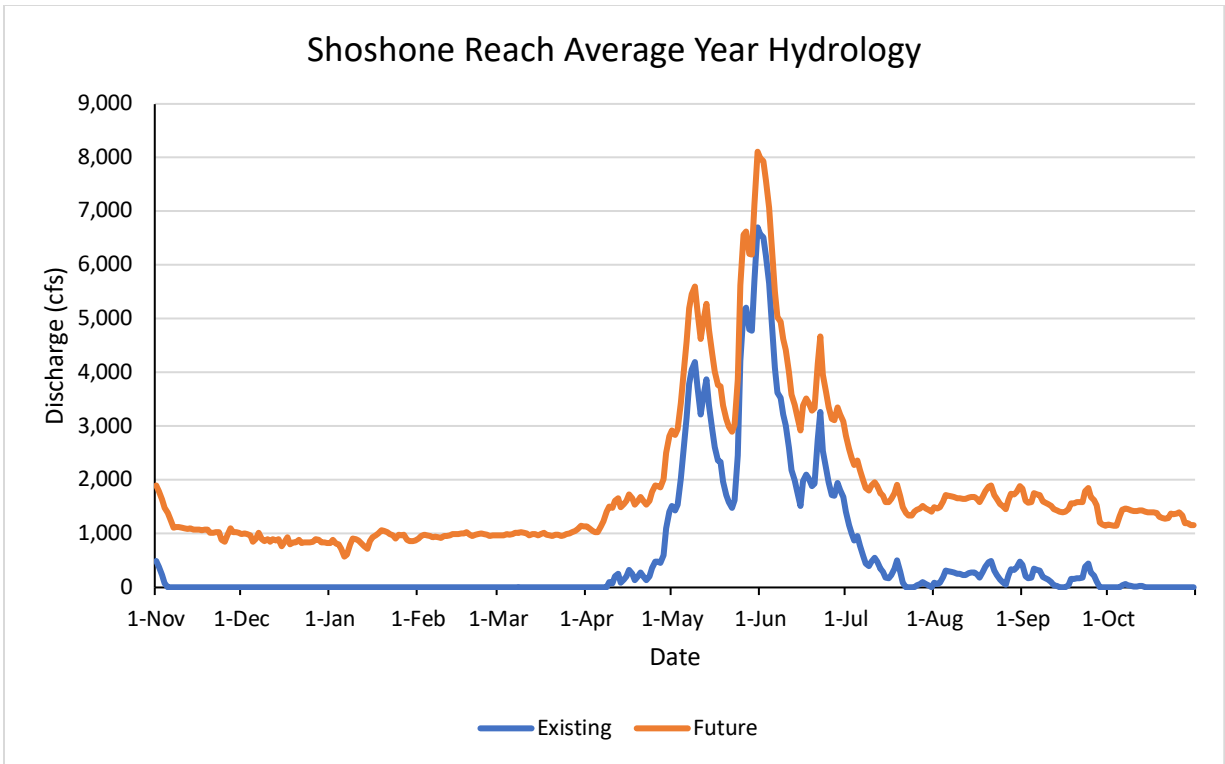


Figure 6. Shoshone Reach, Colorado River comparison of existing and future average year (2000) hydrology.

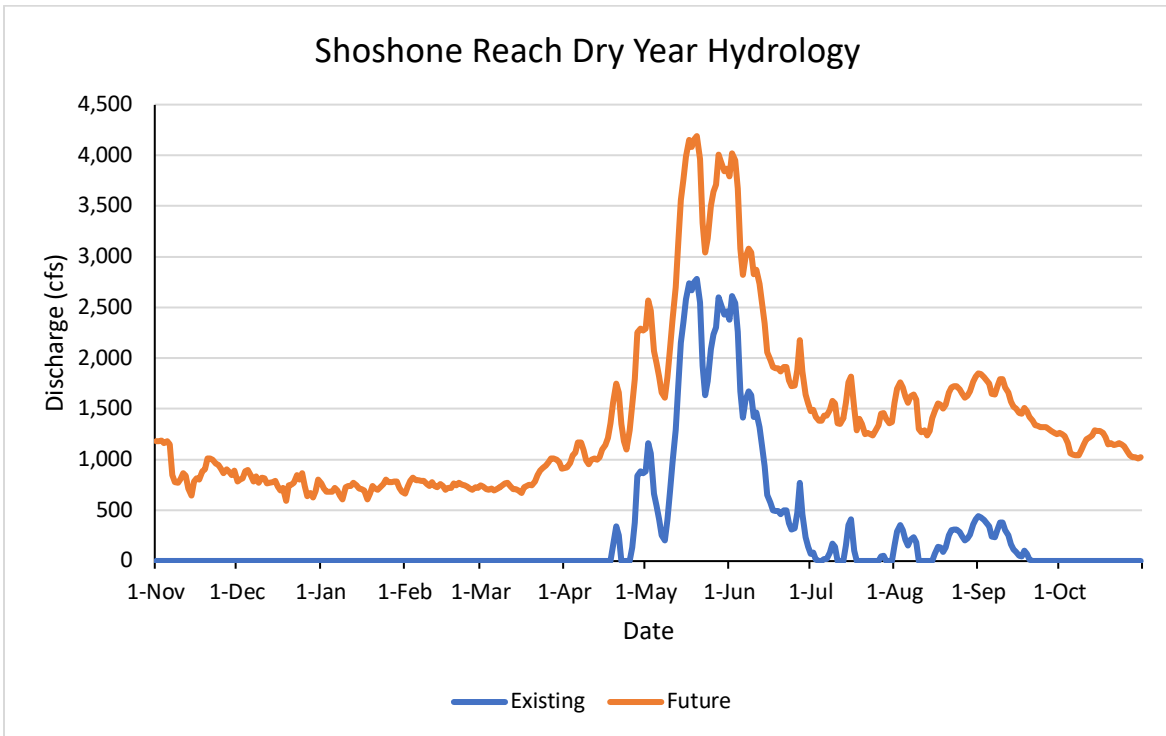


Figure 7. Shoshone Reach, Colorado River comparison of existing and future dry year (2001) hydrology.

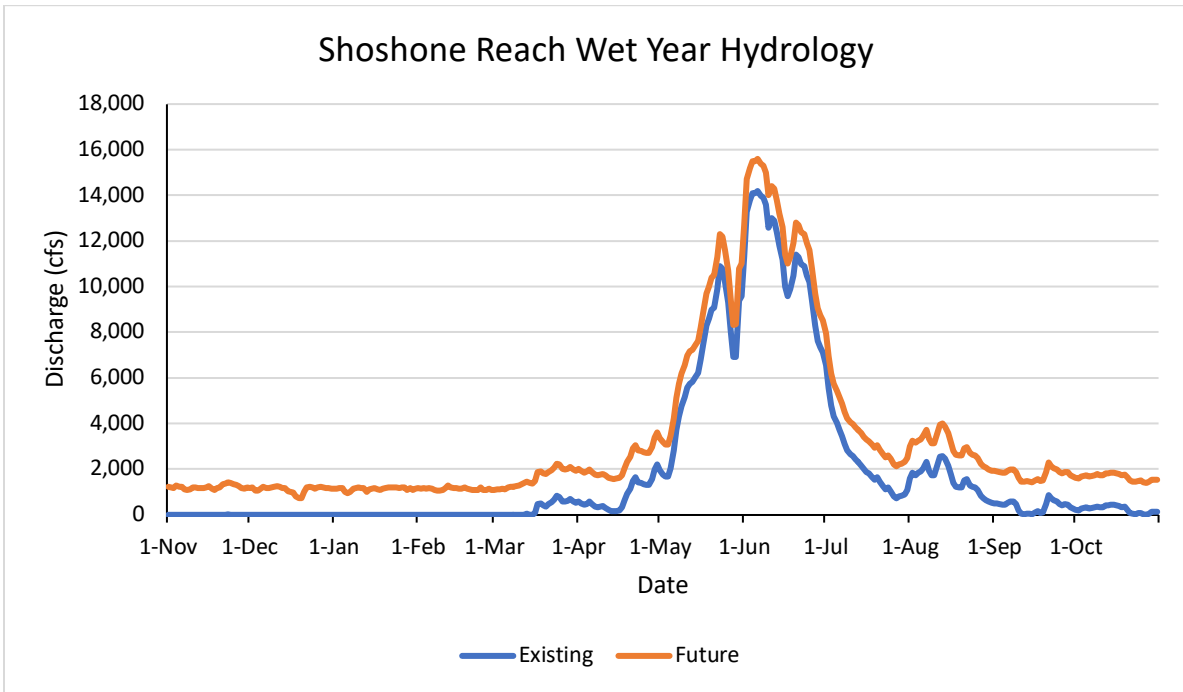


Figure 8. Shoshone Reach, Colorado River comparison of existing and future wet year (1997) hydrology.

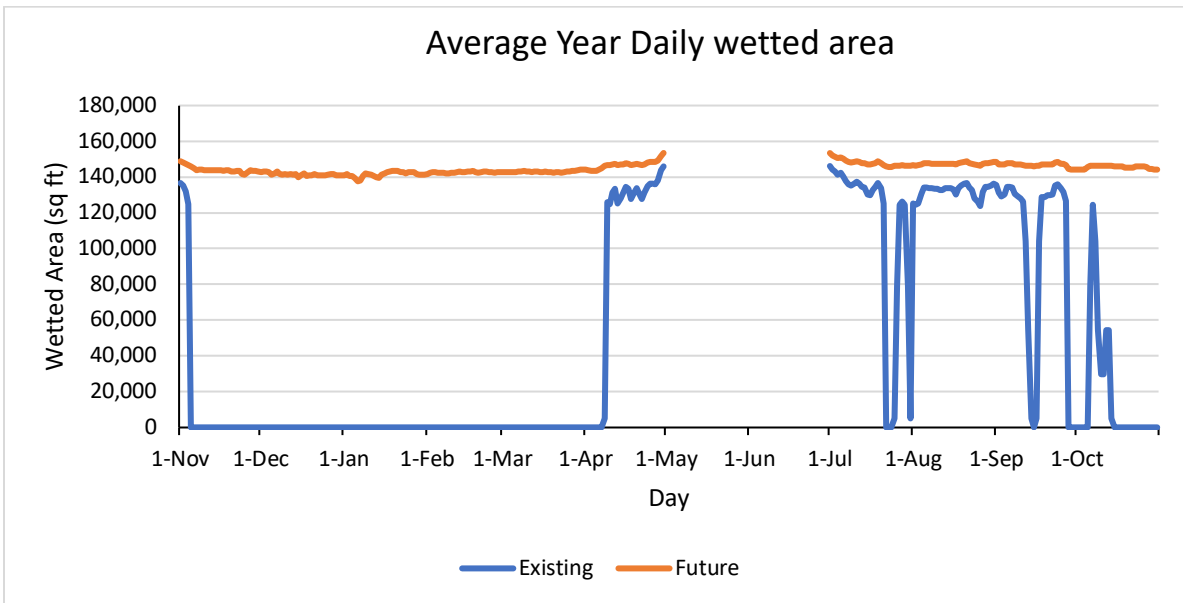


Figure 9. Shoshone Reach average year (2000) daily wetted area comparison of existing and future conditions.

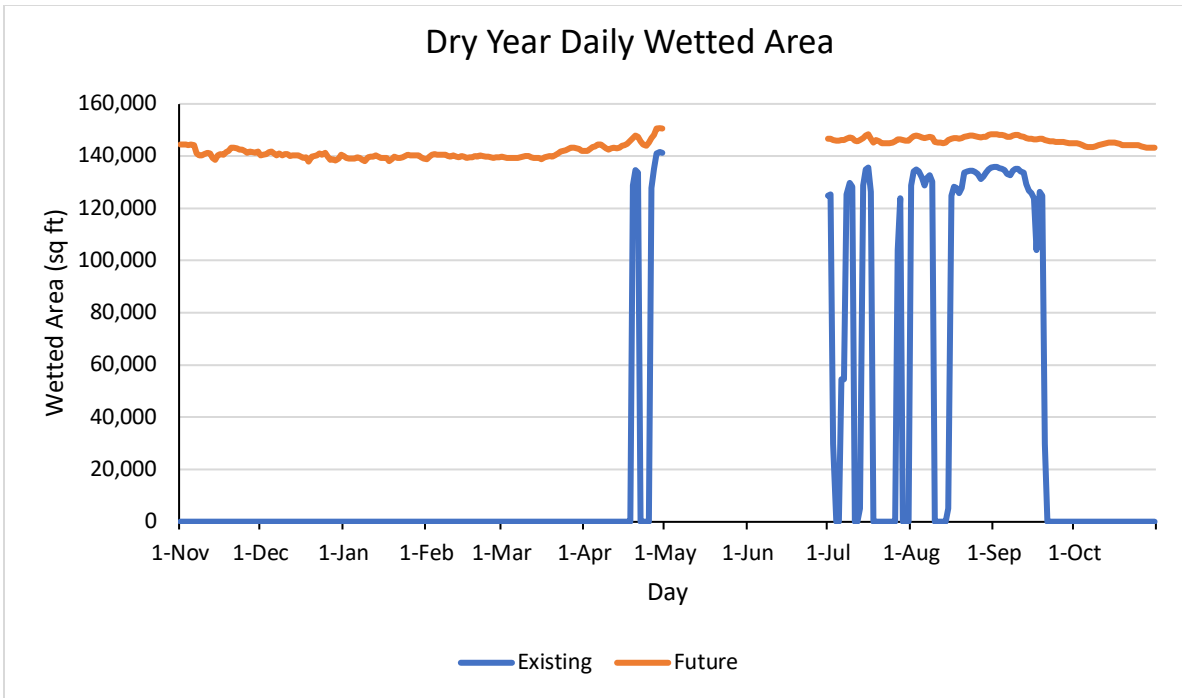


Figure 10. Shoshone Reach dry year (2001) daily wetted area comparison of existing and future conditions.

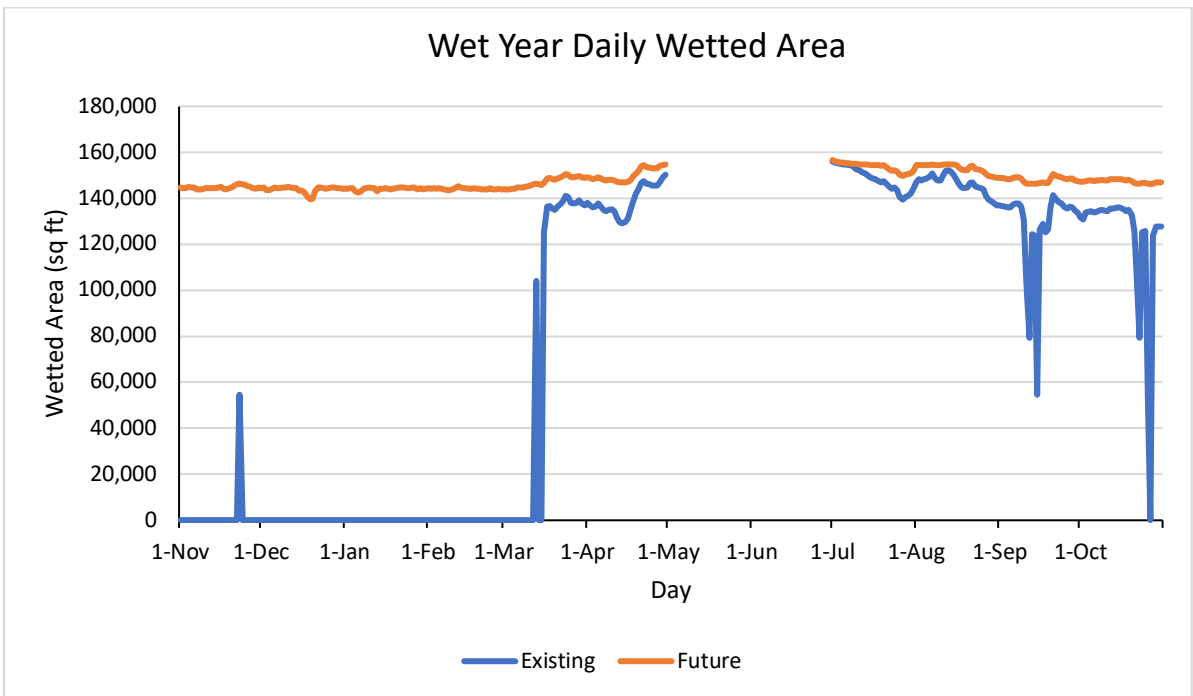


Figure 11. Shoshone Reach wet year (1997) daily wetted area comparison of existing and future conditions.

Habitat Modeling Results

Habitat for each species is a function of both habitat quantity and habitat quality. These characteristics vary with discharge. Habitat area with IFIM is an indicator of usable habitat for each species but does not directly reflect population level changes due to other contributing factors that determine population change. The amount of usable habitat area is an indication of aquatic conditions for the species and can reflect long-term population trends. Small short-term changes in habitat area (other than zero flows) should not be equated with a one-to-one correspondence to short term change in population.

The model results for Rainbow Trout, Brown Trout, Mountain Whitefish and Flannelmouth Sucker show the highest habitat availability at flows that range from 700 cfs to 1,400 cfs (Figure 12, Figure 13). Habitat availability declines quickly as flow decreases from 700 cfs likely caused by decline in wetted area and less suitable depth and velocity characteristics. There is a gradual decline in habitat availability as flow increases up to 3,000 cfs. The reduction in habitat at high flows is likely due to higher water velocities that are less suitable for the species. There is still usable habitat available for fish species as flows increase from 1,500 cfs to 3,000 cfs.

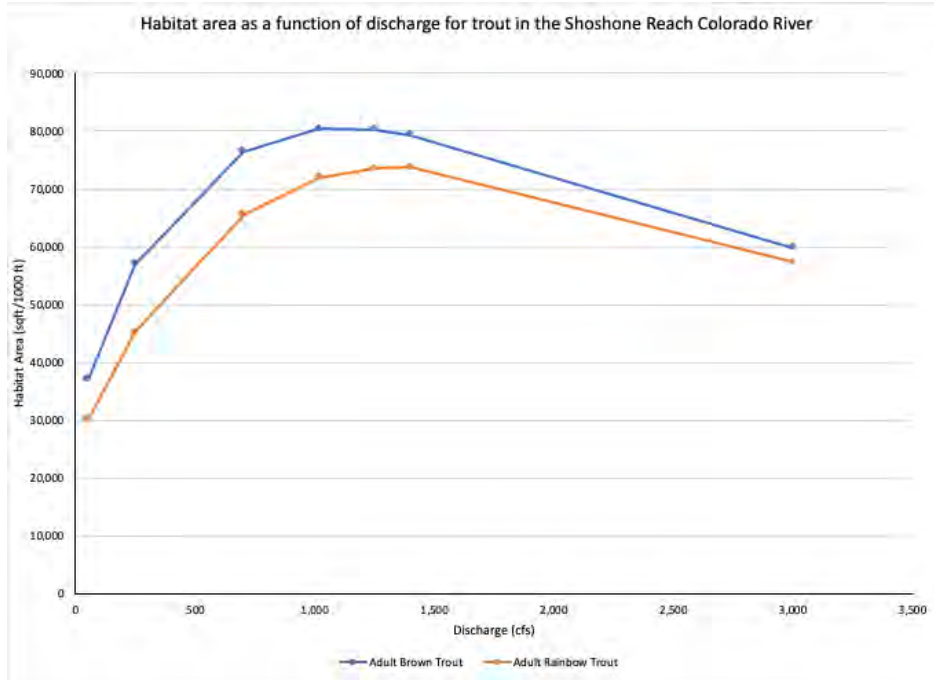


Figure 12. Habitat area as a function of discharge for trout in the Shoshone Reach Colorado River.

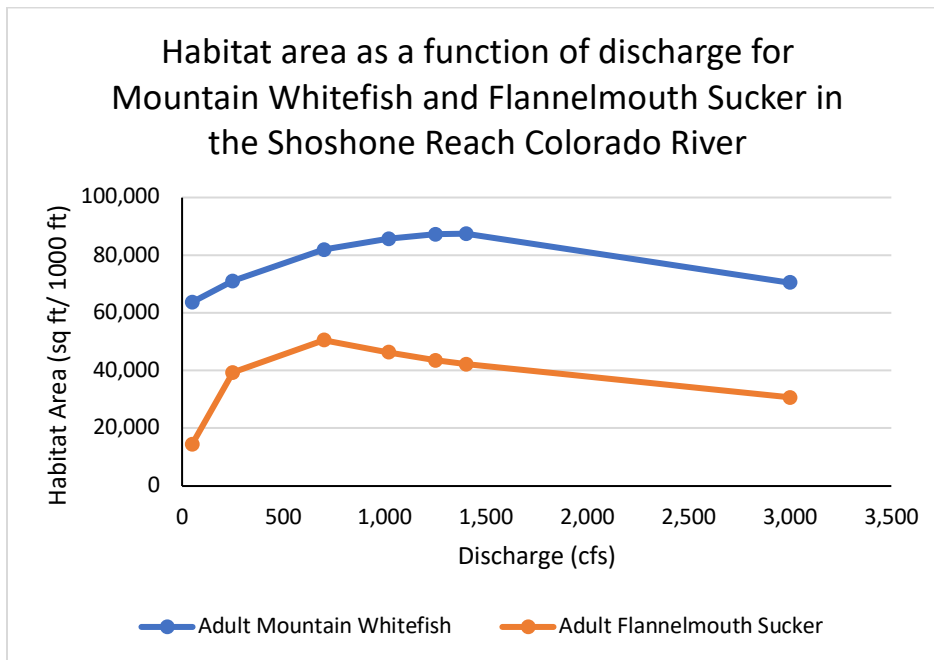


Figure 13. Habitat area as a function of discharge for Mountain Whitefish and Flannelmouth Sucker in the Shoshone Reach Colorado River.

Bypassed/sheperded flows at the Dotsero Gage may increase the discharge up to approximately 2,500 cfs to 3,000 cfs. These bypass/shepherded flows add to the wetted area, which benefits macroinvertebrates while maintaining usable habitat for fish species. The additional wetted area when flows are approximately 2,500 cfs to 3,000 cfs would also provide areas of velocity refuge habitat for fish species in the large boulders and rip-rap present in the reach.

There is a substantial amount of suitable habitat at flows of 3,000 cfs for all species. The amount of habitat for each species and life stage at 3,000 cfs compared to the maximum potential habitat area for each species ranges from 61% up to 81% of the maximum (Table 3). The higher baseflows in winter and late summer to fall are also beneficial to fish. The future condition winter base flow in average years would provide 93% to 99% of the maximum potential habitat for fish species. The future condition late summer to fall base flows in average years would provide 81% to 98% of the potential habitat for fish species (Table 3).

Table 3. Percent of habitat area provided by 3000 cfs and winter and summer average year base flows compared to maximum potential habitat by species.

Species and life stage	Percent of habitat area at 3000 cfs compared to maximum potential habitat	Percent of habitat area at average year winter base flow (973 cfs) compared to maximum potential habitat	Percent of habitat area at average year summer base flow (1581 cfs) compared to maximum potential habitat
Adult Brown Trout	74%	99%	98%
Adult Rainbow Trout	78%	96%	98%
Mountain Whitefish	81%	97%	98%
Flannelmouth Sucker	61%	93%	81%

Habitat Time Series Results

The actual habitat conditions experienced by the fish depend on the daily flows in the Shoshone Reach. These variations are shown in the time series plots of habitat. The data for dry, average, and wet year types were used to display the daily change in habitat for those hydrologic conditions.

The habitat-discharge functions were combined with hydrology data for the Shoshone Reach to display habitat over time for dry, average, and wet years. The existing flows range from zero during many days to nearly 14,000 cfs during wet year peak flows. Daily habitat at flows greater than 3,000 cfs (the highest flow in the 2-D model) were not plotted to limit the data analysis to the range of the hydraulic model. Flows higher than 3,000 cfs generally occur during runoff from May through June. The current zero flow days in the Shoshone Reach occur when the total river flows are 1,408 cfs or less which is the full capacity of the Shoshone Hydroelectric Plant. The future flow regime, if the Shoshone Plant is offline and the Shoshone Water Rights are exercised for instream flow purposes would allow the flow to remain in the Shoshone Reach channel downstream of the diversion dam. Such a flow regime would result in a substantial increase in habitat with no days of zero flow for all species in average, dry and wet hydrologic conditions (Figure 14-Figure 25). The future flows result in stable habitat conditions during all year types for all species.

The intermittent nature of the existing flow patterns with days of zero flow among the days of higher flows does not provide productive habitat. When all flow is diverted the Shoshone Reach experiences drying or zero flow which results in a loss of periphyton and macroinvertebrates. Those lower trophic levels provide the food base for the fish species in the reach. Studies on the 15-Mile Reach of the Colorado River near Grand Junction, Colorado demonstrated that the periphyton and macroinvertebrate communities require approximately two months of continuous flow to reach the same pre-disturbance biomass and density (Rees et al. 2008). The loss of the food resources is a negative impact to the fish within the Shoshone Reach. Loss of the food resources in late summer

when fish are feeding to prepare for winter could result in a substantial impact to fish condition and population size. Therefore, under the future flow regime the entire aquatic ecosystem in the Shoshone Reach would be improved with the stable flows and absence of zero flow days. The future flow regime provides consistently stable base flows at levels that provide a substantial increase in habitat for all species compared to existing conditions. Average year hydrology for future conditions show that winter and summer base flows provide 80% or more of the total maximum potential suitable habitat (Table 3).

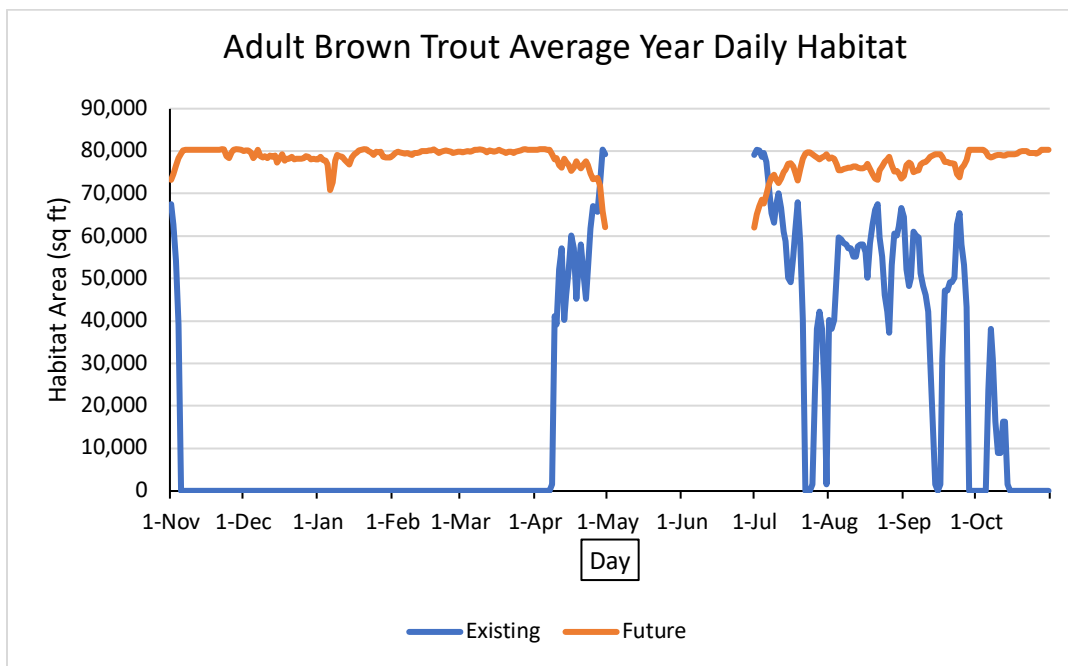


Figure 14. Adult Brown Trout average hydrologic year daily habitat for existing and future conditions.

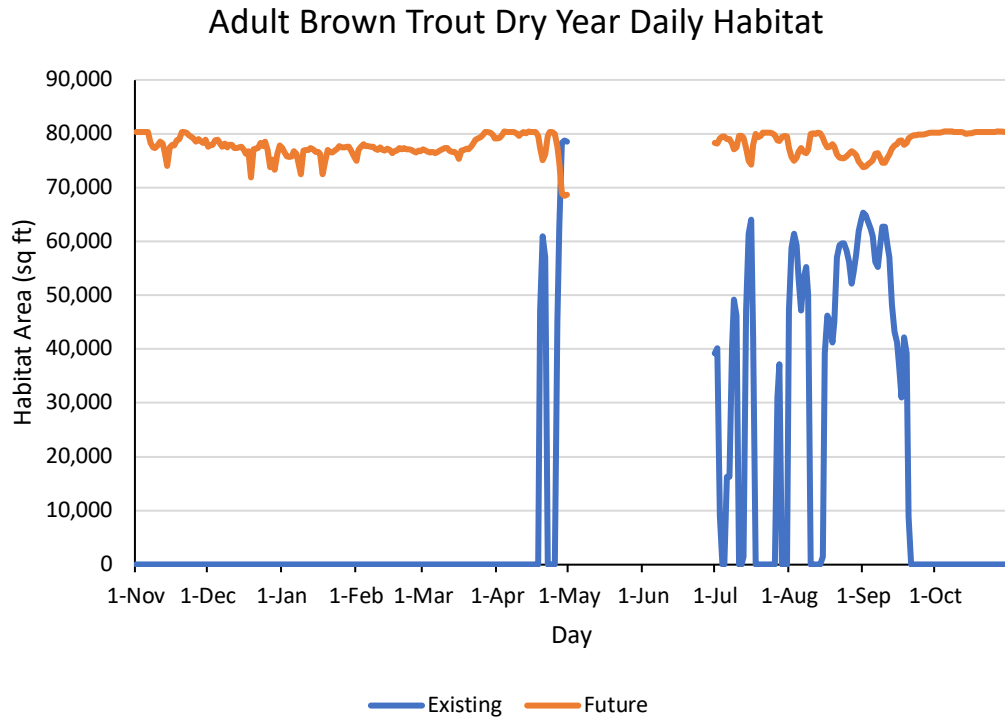


Figure 15. Adult Brown Trout dry hydrologic year daily habitat for existing and future conditions.

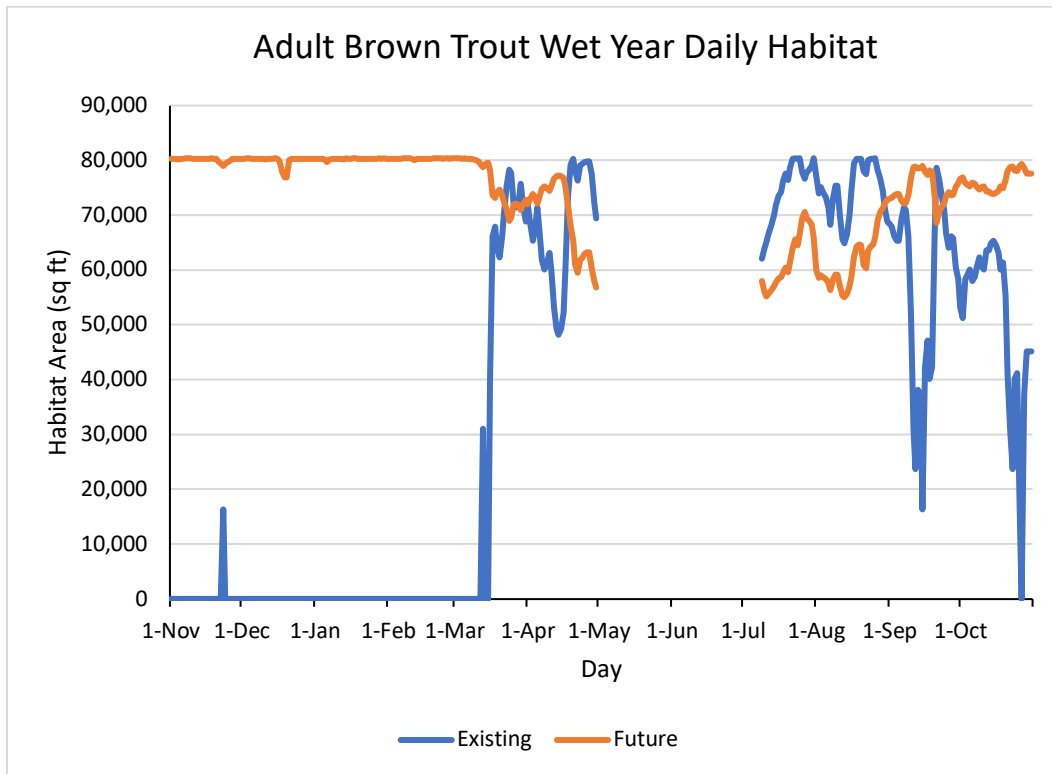


Figure 16. Adult Brown Trout wet hydrologic year daily habitat for existing and future conditions.

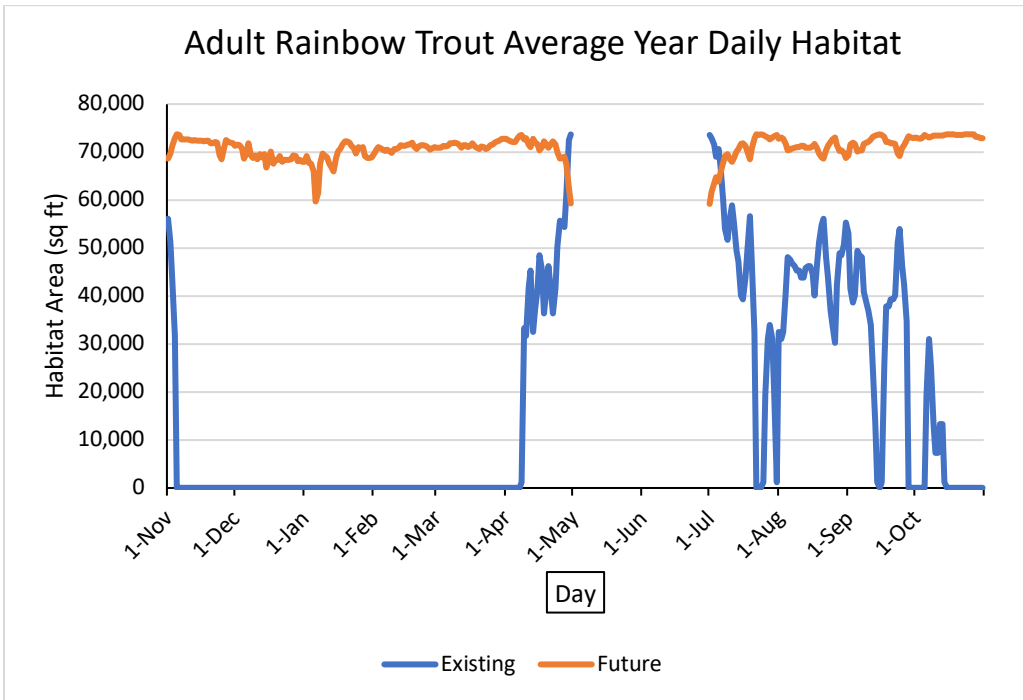


Figure 17. Adult Rainbow Trout average hydrologic year daily habitat for existing and future conditions.

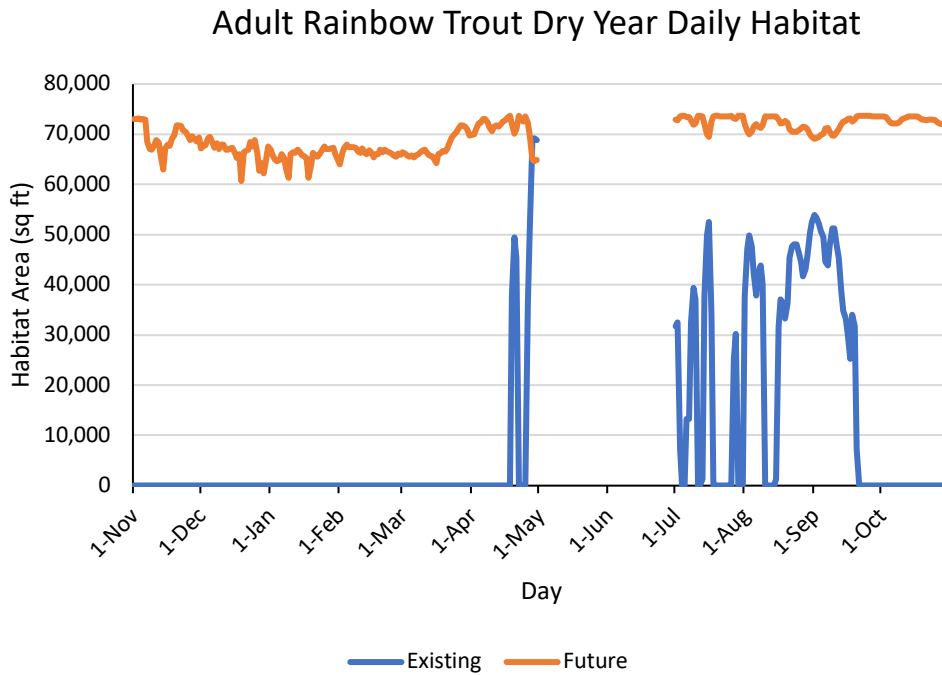


Figure 18. Adult Rainbow Trout dry hydrologic year daily habitat for existing and future conditions.

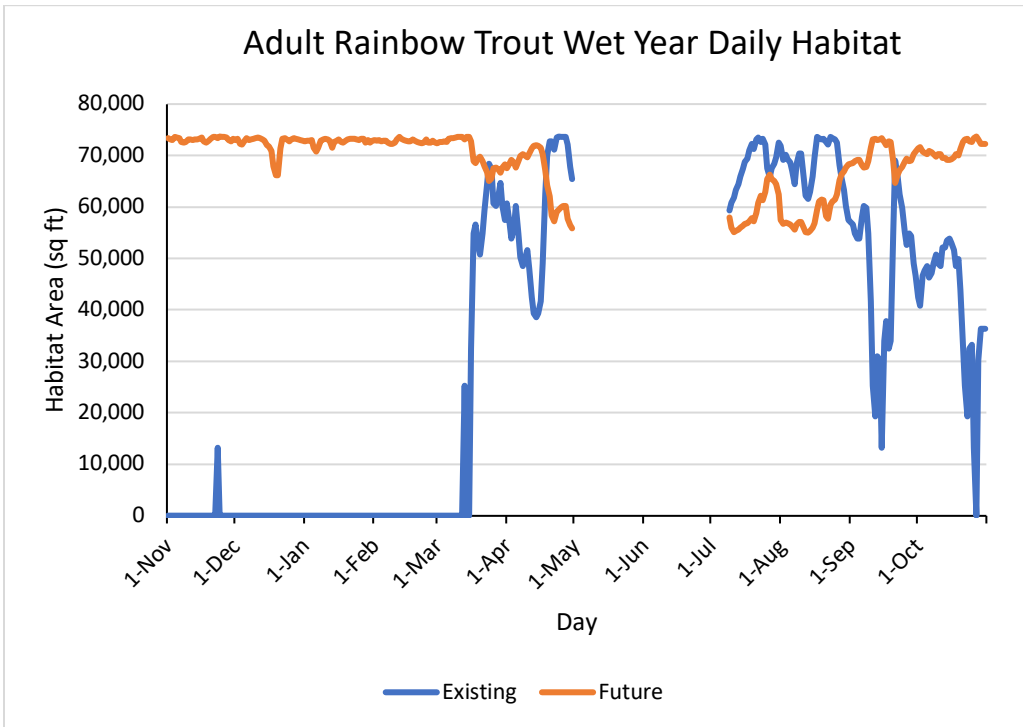


Figure 19. Adult Rainbow Trout wet hydrologic year daily habitat for existing and future conditions.

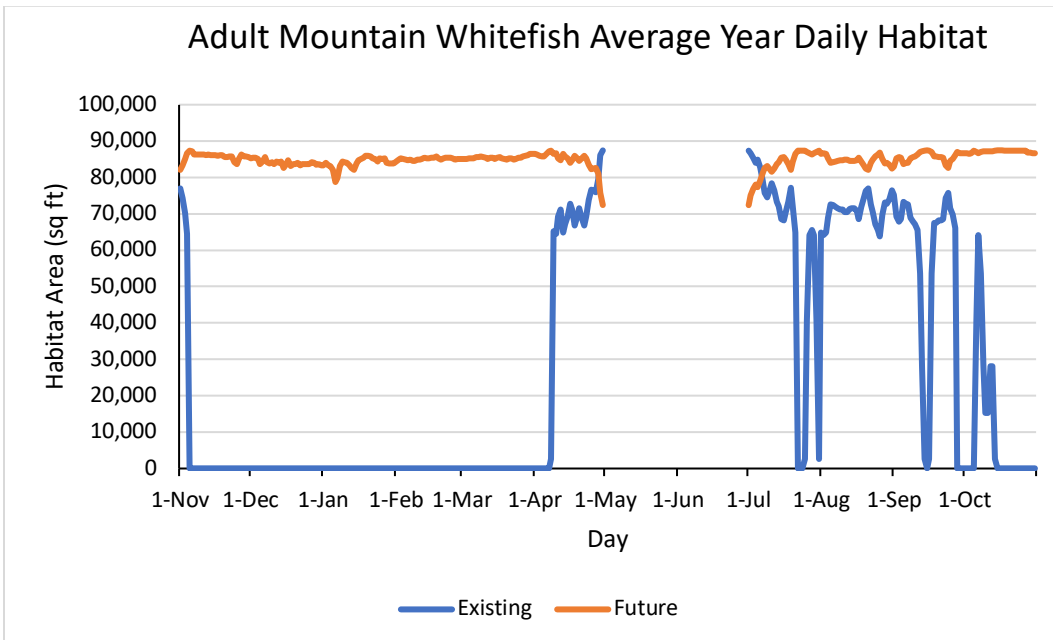


Figure 20. Adult Mountain Whitefish average hydrologic year daily habitat for existing and future conditions.

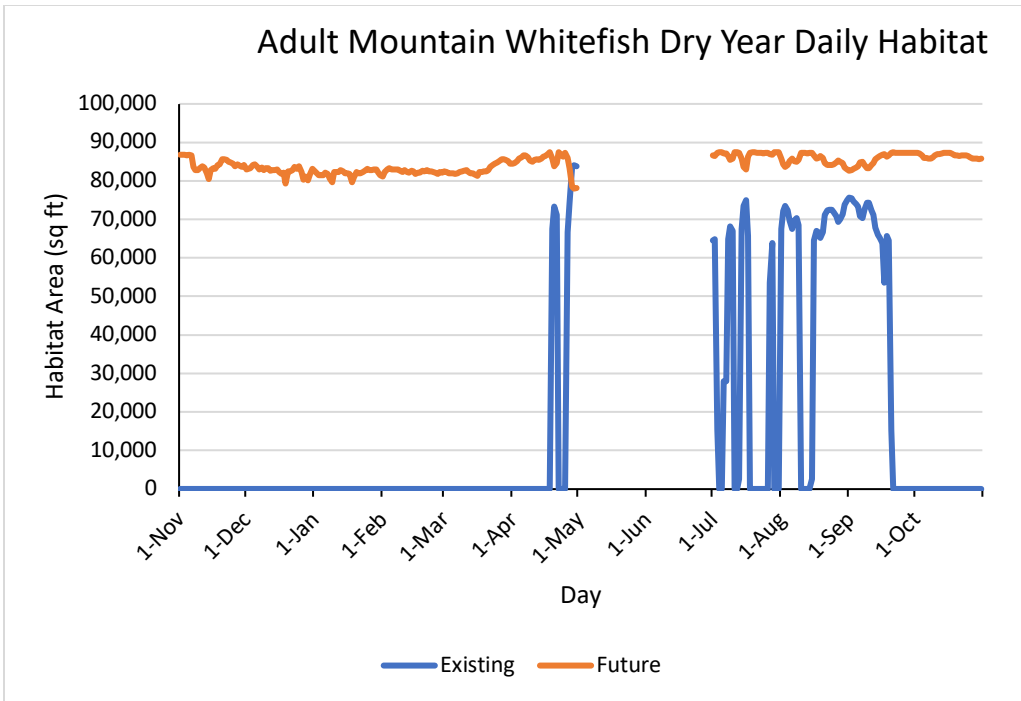


Figure 21. Adult Mountain Whitefish dry hydrologic year daily habitat for existing and future conditions.

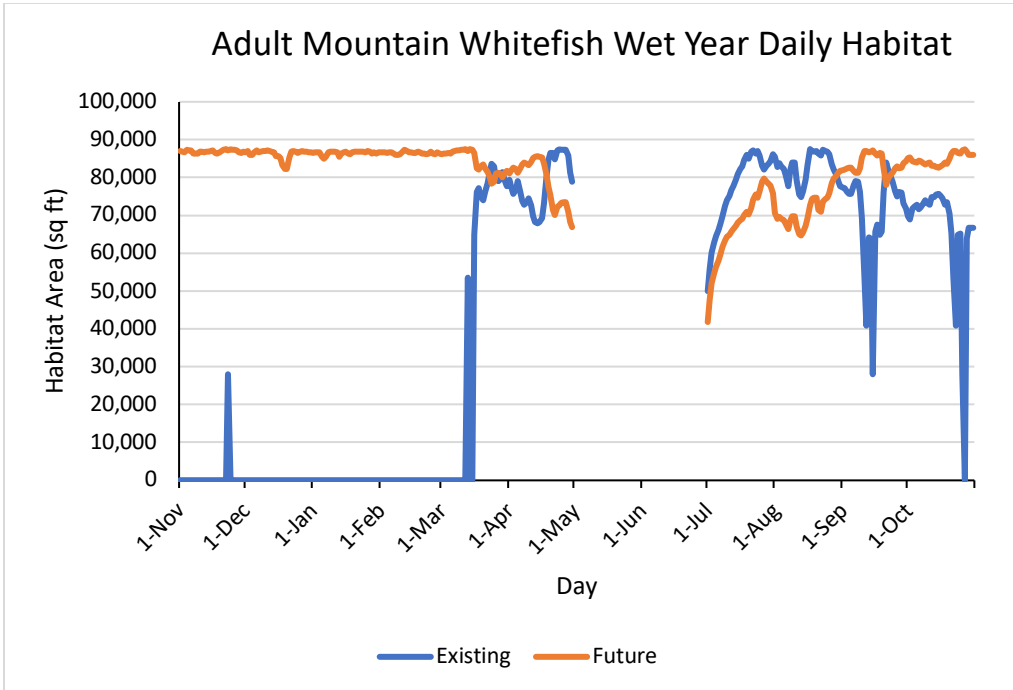


Figure 22. Adult Mountain Whitefish wet hydrologic year daily habitat for existing and future conditions.

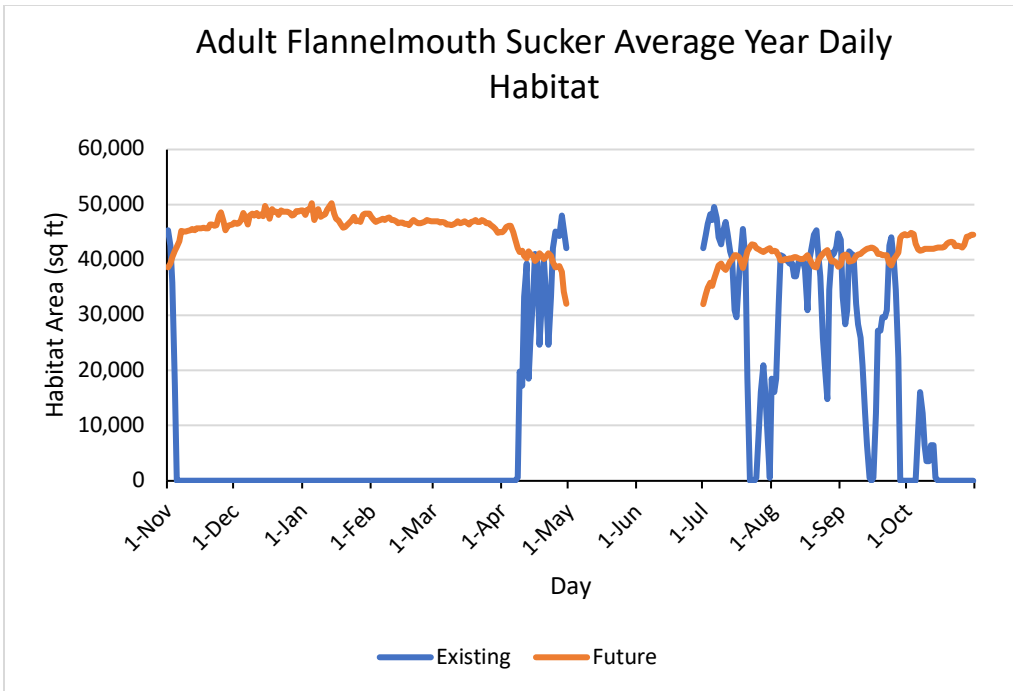


Figure 23. Adult Flannelmouth Sucker average hydrologic year daily habitat for existing and future conditions.

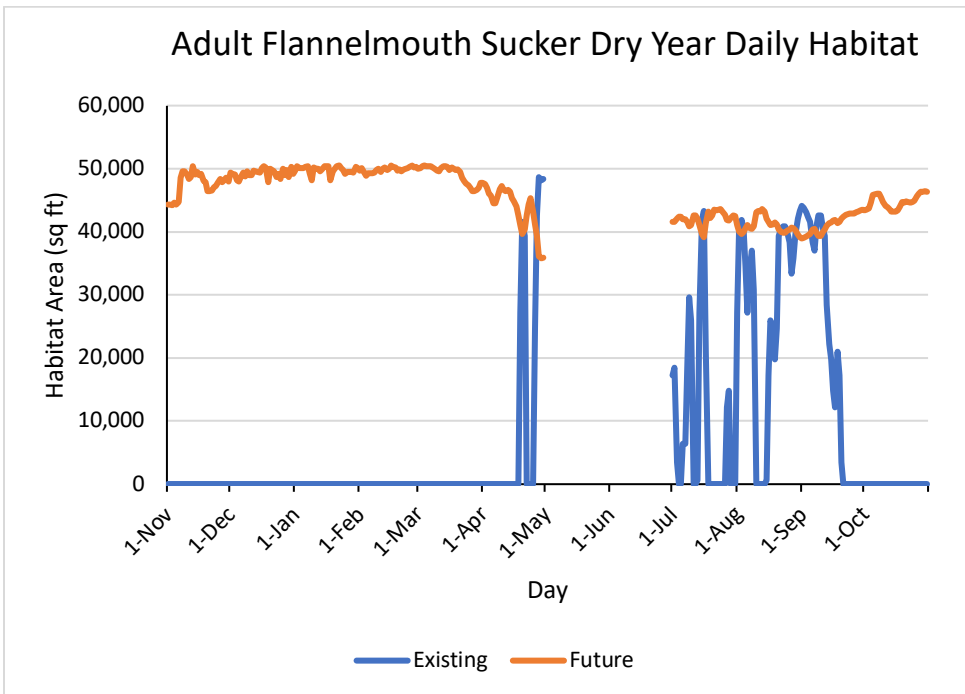


Figure 24. Adult Flannelmouth Sucker dry hydrologic year daily habitat for existing and future conditions.

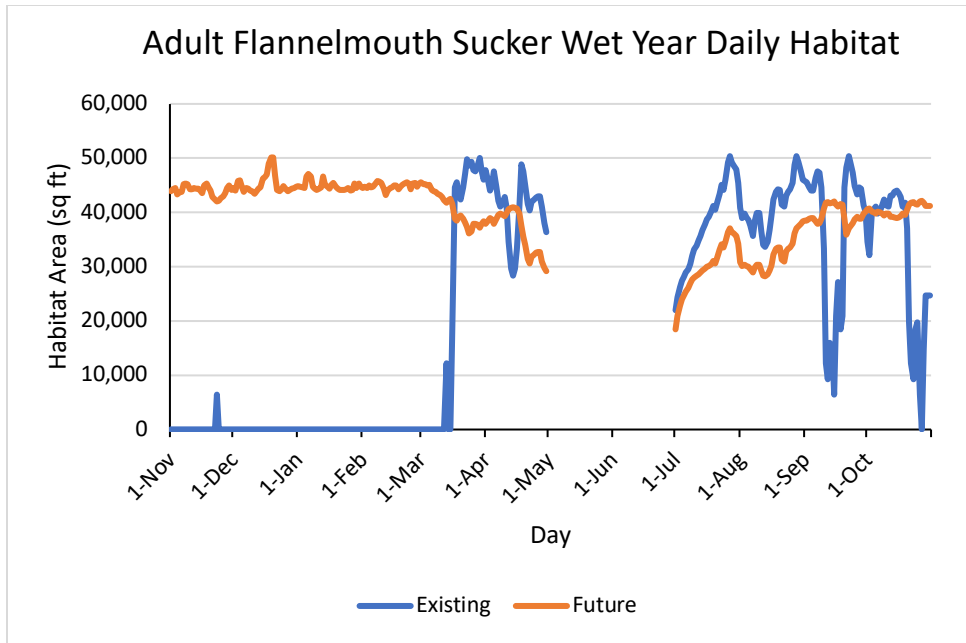


Figure 25. Adult Flannelmouth Sucker wet hydrologic year daily habitat for existing and future conditions.

Aquatic Ecosystem Considerations

Instream flow analysis with IFIM is grounded on ecological principles including flow regime (hydrology), habitat structure, water quality, food sources (trophic considerations), and biotic conditions (Bovee et al. 1998). While IFIM can provide quantitative hydraulic-habitat data from the analysis, these data require interpretation based on other ecological functions. These ecological functions are depicted in hierarchical fashion with the stream function pyramid as developed by Stream Mechanics (Figure 26). Data for all the biological conditions in the Shoshone Reach has not been collected due to logistical limitations, however, biological conditions can be inferred from data collected upstream and downstream of the reach and general knowledge on how riverine aquatic ecosystems function.

The biota in the Colorado River ecosystems and the Shoshone Reach are adapted to a snowmelt-runoff flow regime. The biological adaptation is the response to changes in the physical environment to high runoff flows and low base flows (Lytle and Poff, 2004). Another important component of river ecosystem function is connectivity. Consistent, non-interrupted flow is important to connect longitudinal river reaches and allow migration for long distance directed movement such as spawning migration or localized movement of resident fish species (Annear et al. 2004; Cathcart et al. 2015; Thompson and Hooley-Underwood 2019). Colorado River native sucker larvae (Flannelmouth Sucker and Bluehead Sucker) drift downstream after hatch and upstream migration of mature life stages is needed to maintain populations. Maintaining longitudinal connectivity is important to maintaining these native sucker populations. These two sucker species occur upstream and downstream of the Shoshone Reach. A continuous flow in the Shoshone Reach would help to maintain longitudinal connectivity.

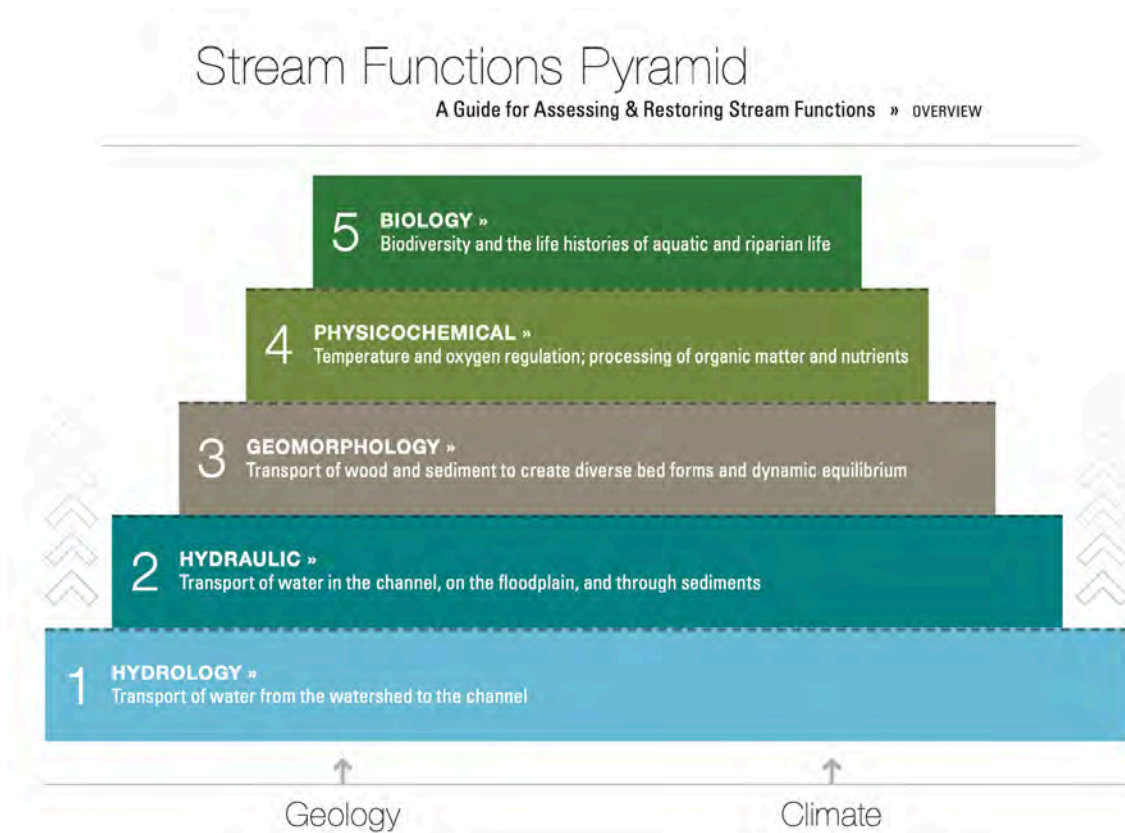


Figure 26. Stream Functions Pyramid showing hierarchical relationship of functions. (Source: Stream Mechanics <https://stream-mechanics.com>)

Physical components of riverine systems that affect the biota both in the riparian and instream areas include hydrology, geomorphology, and water quality. Hydrology within snowmelt riverine systems usually have spring or early summer peak flows with base flows occurring in summer through fall and winter. The species in the Colorado River are adapted to a snowmelt runoff hydrograph and have adapted their life histories to these events. Fish species use the deeper pools and velocity shelters provided by large boulders and other large instream objects as refuge habitat during high flows.

Base flows are important to maintaining stream productivity and available habitat for both macroinvertebrates and fish. Stable base flows provide consistent habitat conditions and allow long term habitat for less mobile species such as macroinvertebrates. The existing flow regime in the Shoshone Reach does not include stable base flows which are present in the Colorado River upstream and downstream from the Shoshone Reach. The higher, stable future condition base flow could also have a beneficial effect on water temperature in the Shoshone Reach. There are areas with hot springs in this canyon reach of the Colorado River. Higher summer base flow would provide more flow volume and deeper habitats which could provide thermal refuge for aquatic species in the Shoshone Reach.

Conclusions

The Colorado River in the Shoshone Reach is confined by canyon or steep topography throughout the reach and is bounded on the north by the interstate highway and on the south by the railroad. Canyon-bound confined reaches have steeper gradients and larger bed material on the river bottom than the lower-gradient meandering reaches in other sections of the river. These confined reaches have less lateral space for floodplains and less lateral channel movement than lower gradient meandering reaches.

Hydrology in the reach is typical of snowmelt-dominated rivers. Peak flows occur during May and June. Stable flows during non-runoff months provide the conditions needed for

productive food sources for fish and other trophic levels. The existing flow regime in the Shoshone Reach has both sporadic times in summer of zero flow and extended winter periods of zero flow. Zero flow is detrimental to primary and secondary trophic levels, is a negative impact to species that rely on these trophic levels for food and eliminates fish habitat which results in outmigration of fish or mortality. The stable flow regime and stable wetted area under the future conditions are beneficial for productivity at all trophic levels.

Habitat for most species and life stages is most abundant at flows between 700 and 1,400 cfs. Habitat abundance for most species and life stages decreases rapidly at flows less than 700 cfs. There is a gradual decrease in habitat as flows increase from 1,400 cfs to 3,000 cfs when the bypassed/shepherded flows are present in late summer, however, there is still much greater habitat availability compared to the habitat availability for flow less than 700 cfs. The future condition summer and late summer wetted area is relatively stable for the flows from 1,400 cfs to 3,000 cfs and provides stable habitat for algae, macroinvertebrates and fish.

Based on the available hydrology and the habitat-discharge functions, the future flows (the Shoshone Hydropower Plant water rights which include a senior right for 1,250 cfs and a junior right of 158 cfs for a total of 1,408 cfs plus the bypassed/shepherded flows, which can result in a total flow of up to approximately 2,500 cfs to 3,000 cfs at the Dotsero Gage) would provide a substantial increase in habitat and benefit aquatic biota during summer, fall, winter, and early spring as compared to the existing conditions. These flows up to approximately 2,500 cfs to 3,000 cfs therefore will help to preserve and improve the natural environment in the Shoshone Reach. The higher continuous summer base flow for future conditions would benefit all aquatic biota and eliminate the abrupt loss of food and habitat as seen during the zero flow days with existing condition flows. Stable winter flows would allow macroinvertebrates to complete their life cycles within the Shoshone Reach, which increases overall trophic productivity, and provide over winter habitat for all fish species.

There also are indirect benefits to other sections of the Colorado River from the Shoshone Hydropower Plant water rights. These water rights are administered at the Dotsero Gage upstream from the Shoshone Reach, however, the water is conveyed from the upper sections of the Colorado River upstream of the Dotsero gage downstream to the Shoshone Reach and benefits all of the intervening reaches of the upper Colorado River. Similarly, the Colorado River downstream of the Shoshone Reach benefits from the Shoshone Hydropower Plant water rights.

In summary, the future conditions with the Shoshone water right in place as an instream flow in the Shoshone Reach would result in the following:

- Stable base flow conditions with no zero flow days.
- Stable wetted area during future conditions in late summer, fall, winter and spring for better conditions for macroinvertebrates and algae which are food sources for fish species.
- Average year hydraulic-habitat conditions in summer and winter base flows that provide from 81% to 99% of the potential maximum hydraulic habitat.
- Continuation of indirect benefits upstream and downstream of the Shoshone Reach.
- Flows from 1,400 to 3,000 cfs provide additional benefit to the aquatic habitat in the Shoshone Reach.
- Overall improved instream conditions to preserve and enhance the aquatic habitat.

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Appendix A – Habitat Suitability Criteria for Trout, Flannelmouth Sucker and Mountain Whitefish.

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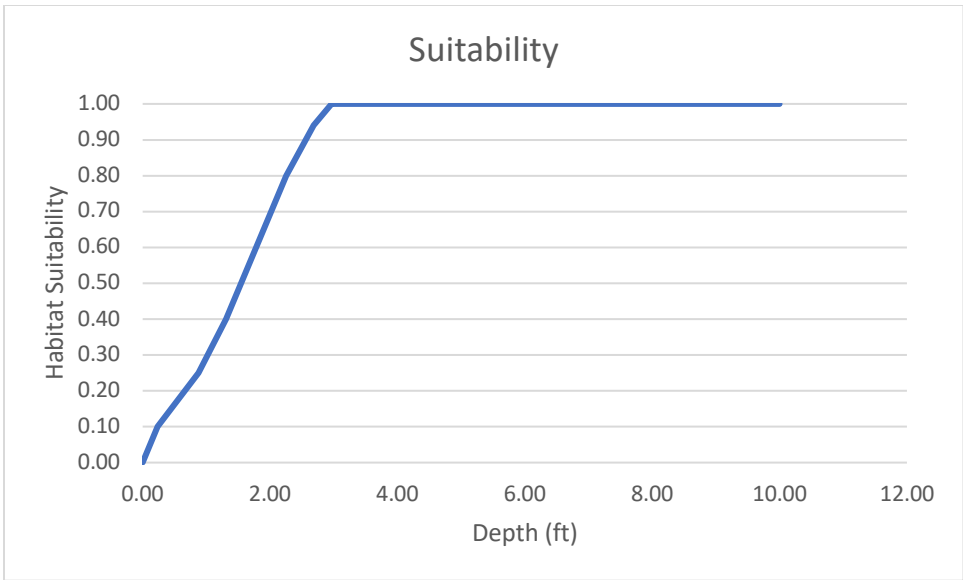


Figure A-1. Adult Brown Trout Depth Suitability Criteria.

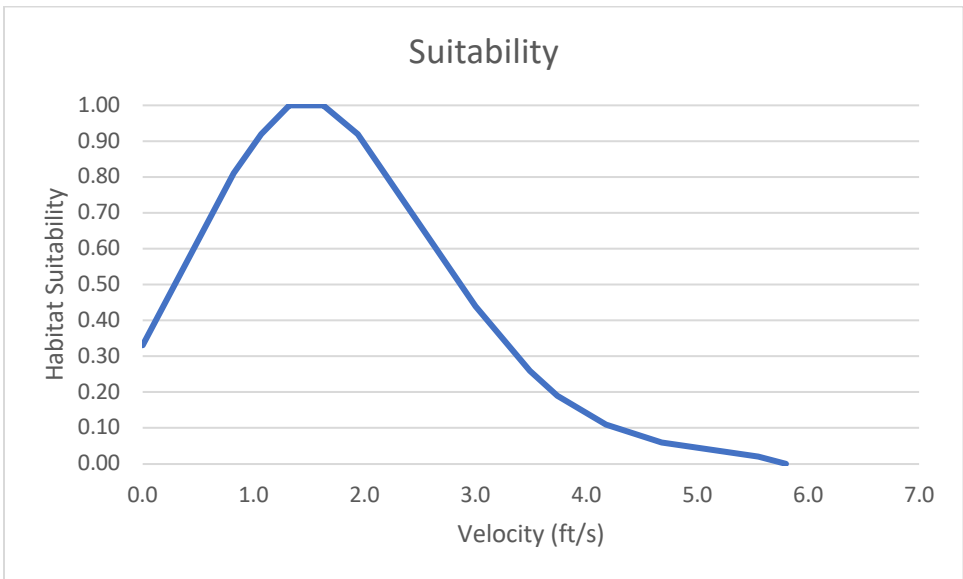


Figure A-2. Adult Brown Trout Velocity Suitability Criteria.

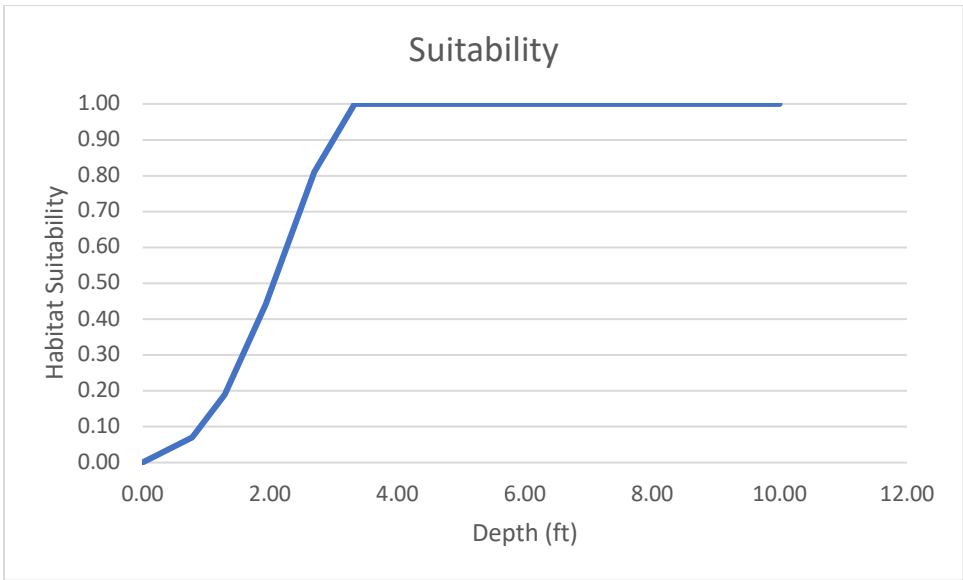


Figure A-3. Adult Rainbow Trout Depth Suitability Criteria.

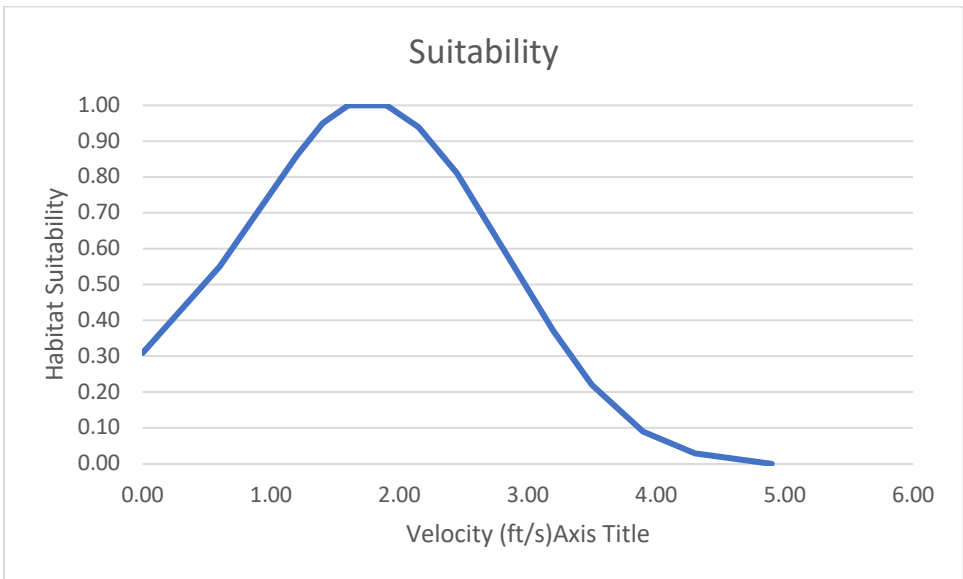


Figure A-4. Adult Rainbow Trout Velocity Suitability Criteria.

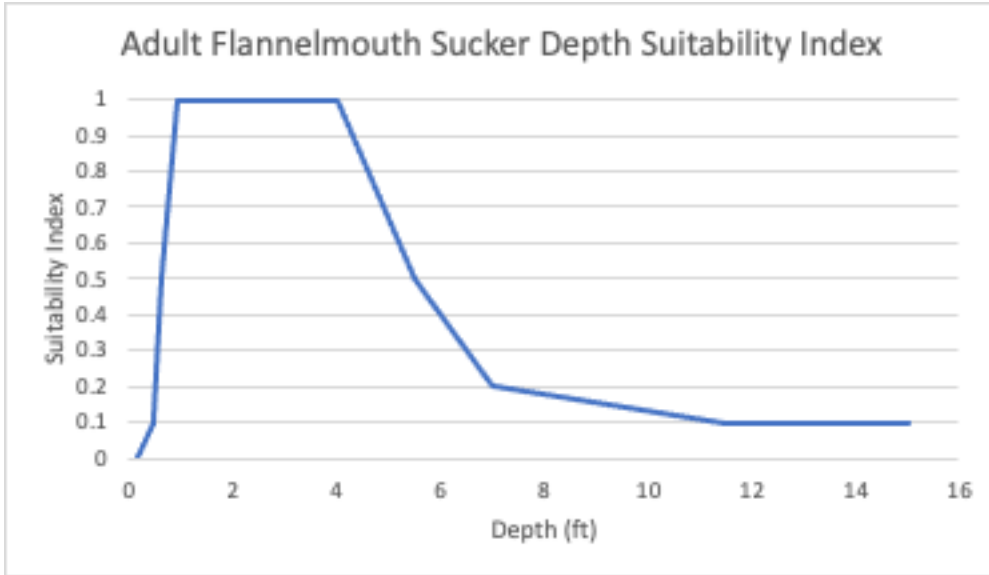


Figure A-5. Adult Flannelmouth Sucker Depth Suitability Criteria

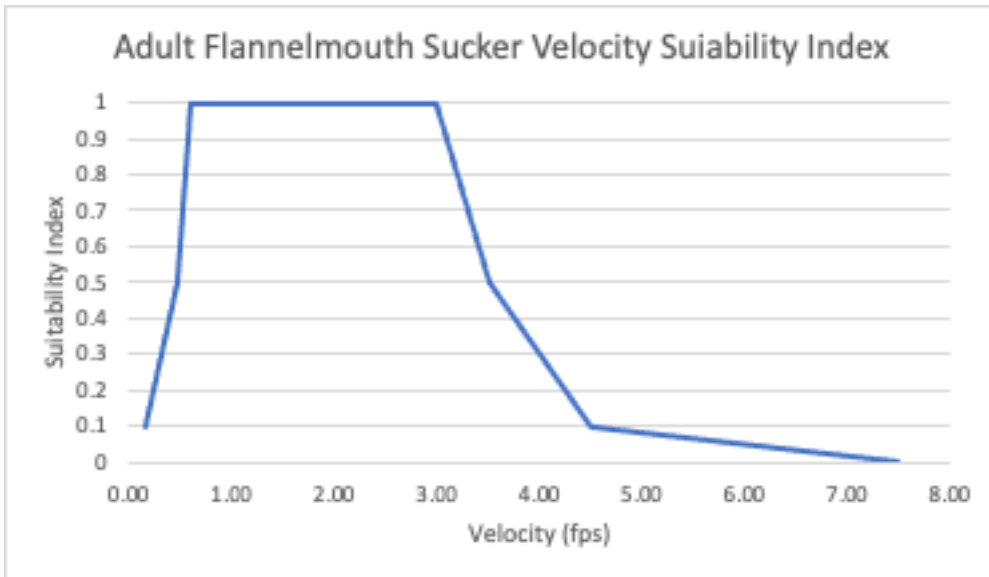


Figure A-6. Adult Flannelmouth Sucker Velocity Suitability Criteria

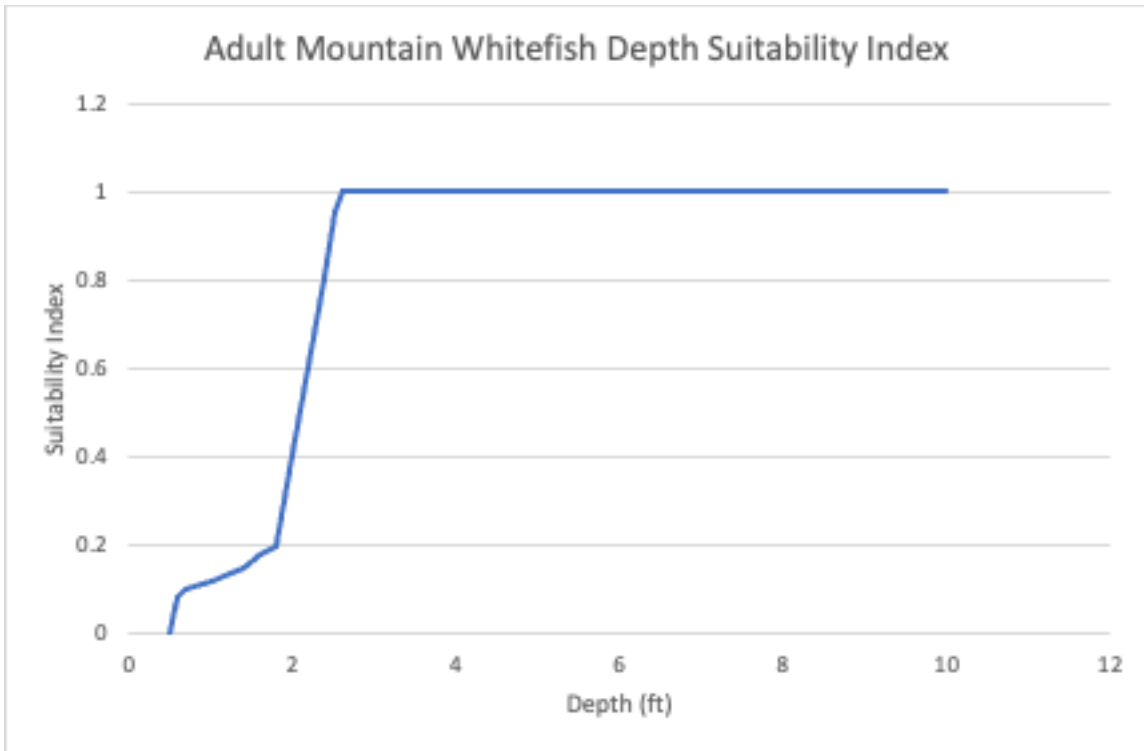


Figure A-7. Adult Mountain Whitefish Depth Suitability Criteria.

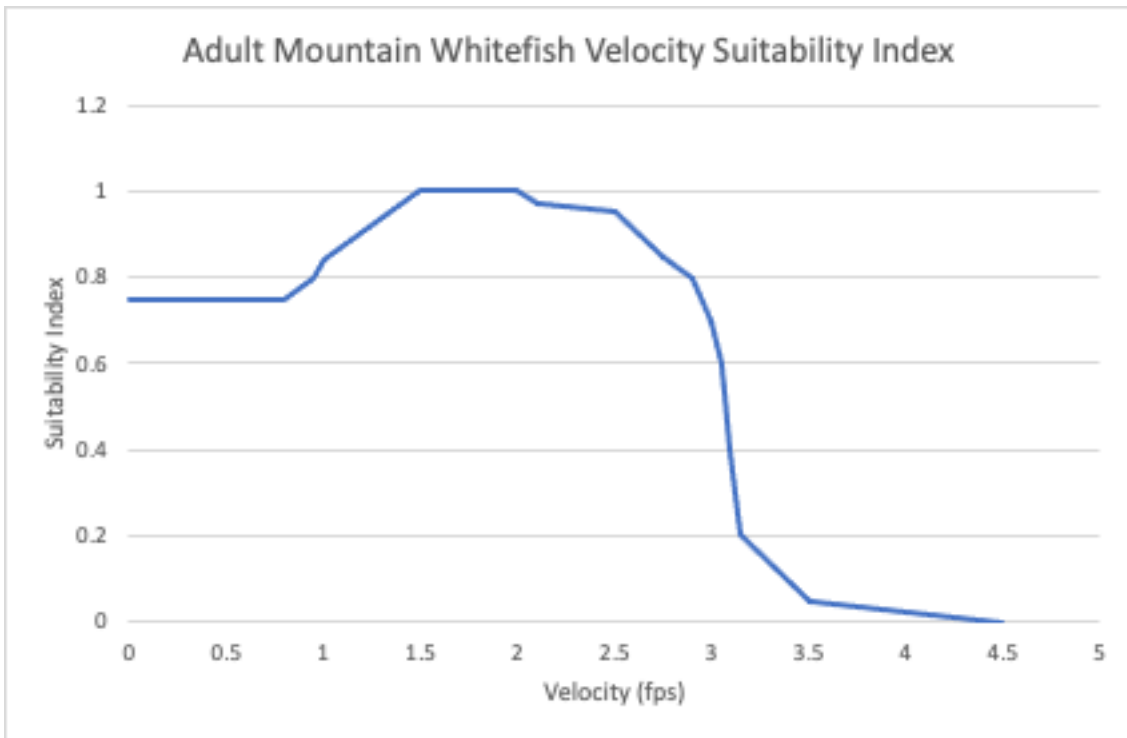


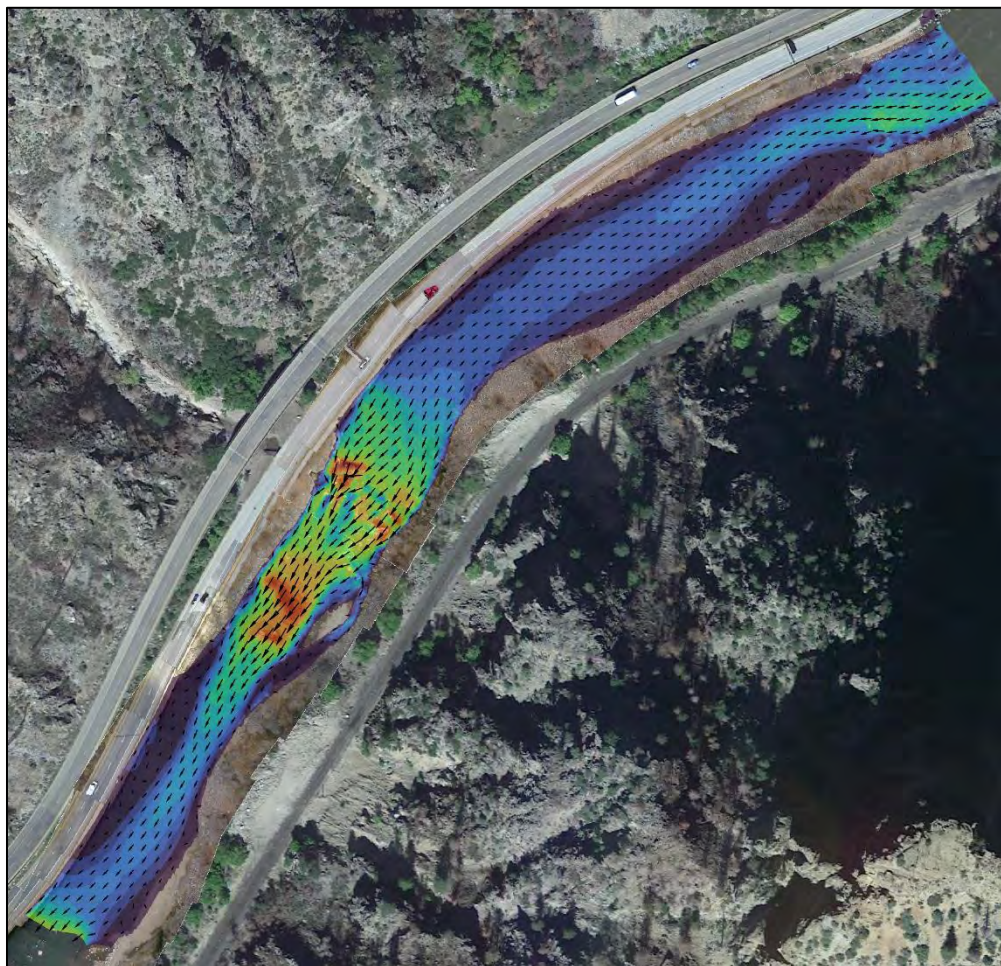
Figure A-8. Adult Mountain Whitefish Velocity Suitability Criteria.

Appendix B – Hydraulic Modeling Report

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GLENWOOD CANYON AQUATIC HABITAT STUDY COLORADO RIVER, COLORADO

HYDRAULIC MODELING REPORT – 2023



PREPARED BY RIVERRESTORATION.ORG, DECEMBER 2023



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RESULTS DATA APPENDICES

- GlenwoodCanyon_DEM_ft.tif
- 50cfs_results.xlsx
- 250cfs_results.xlsx
- 700cfs_results.xlsx
- 1020cfs_results.xlsx
- 1250cfs_results.xlsx
- 1400cfs_results.xlsx
- 3000cfs_results.xlsx

1. INTRODUCTION

A 2 dimensional (2D) hydrodynamic model was used to simulate a variety of low flow conditions for a study reach on the Colorado River in Glenwood Canyon. The model was based on a digital elevation model (DEM) developed from hydrographic survey data collected over an 1854 foot reach (Figure 1). The goal was to provide spatially discrete data and weighted values of water depth, velocity, shear stress, and a Froude value for use in a usable habitat analysis.

2. MODELING METHODOLOGY

2.1. Model Overview

Hydrographic survey data (see Glenwood Canyon Survey Report) was used to develop a DEM for the study reach. Point elevations and breaklines were used to characterize bed features like pools, rapids, and individual boulder features. This DEM is available in a geotiff format in the associated data appendices. This DEM was converted into an irregular 2D mesh with a cell sides targeted to a length of 4' within the channel using SMS software. Due to the SMS software interpolating an irregular mesh, a range of cell side lengths were modeled. Both three and 4 sided cells exist in the irregular grid, leading to a range in cell areas. These cells represent the elevations of the bed and provides calculations locations with discrete boundaries for a solver to calculate a depth-averaged result within. Depth-averaged two-dimensional velocity modeling simulates hydraulics in the streamwise and lateral directions, averaging values through the water column in the vertical. SRH-2D is a two-dimensional numerical model widely implemented for hydraulic applications and was used to simulate conditions within the project reach.

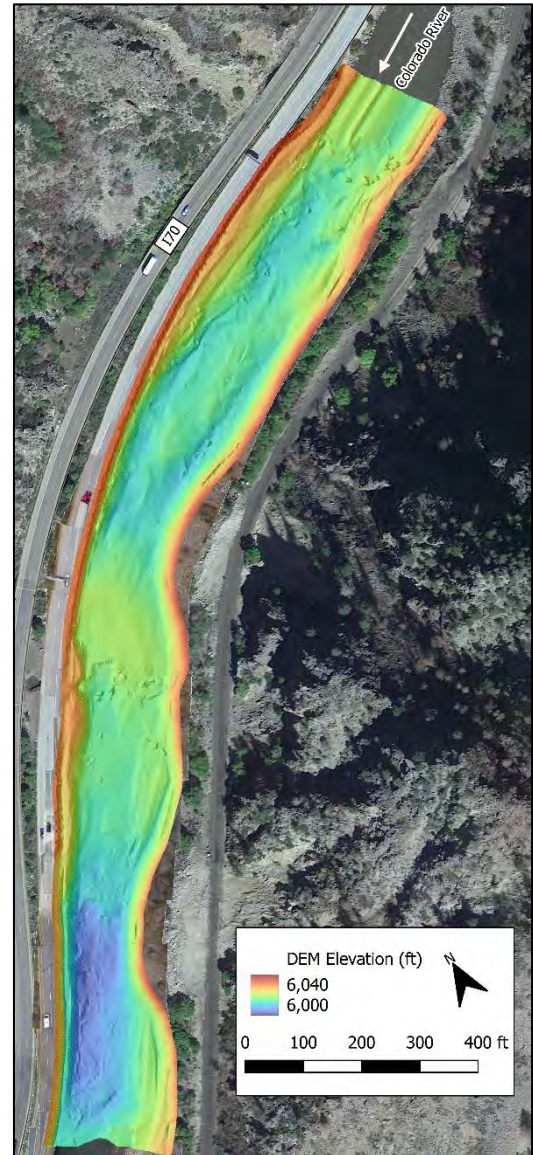


Figure 1. Glenwood Canyon model domain DEM

The SRH-2D model requires a spatially distributed friction element in addition to elevation for each cell. This can be provided in the form of a Manning’s n value layer. For the model, we used spatially discrete Manning’s n values based on the bed sediments observed during the survey. The final values for each area can be found in Figure 2, these values were adjusted within a reasonable range during the model calibration process, discussed below.

The upstream end of the 2D mesh was artificially extrapolated 100’ upstream. This is visible in Figure 1 where the channel geometry appears stretched. The extra 100’ was added to provide an area for the modeled inflow to non-uniformly distribute before entering the area of interest in the model domain. The extrapolated geometry was developed with the upstream cross section of survey data copied to the

upstream location and directly interpolated in between. Results provided from the modeling process used for the habitat analysis excluded all values in this extrapolated area.

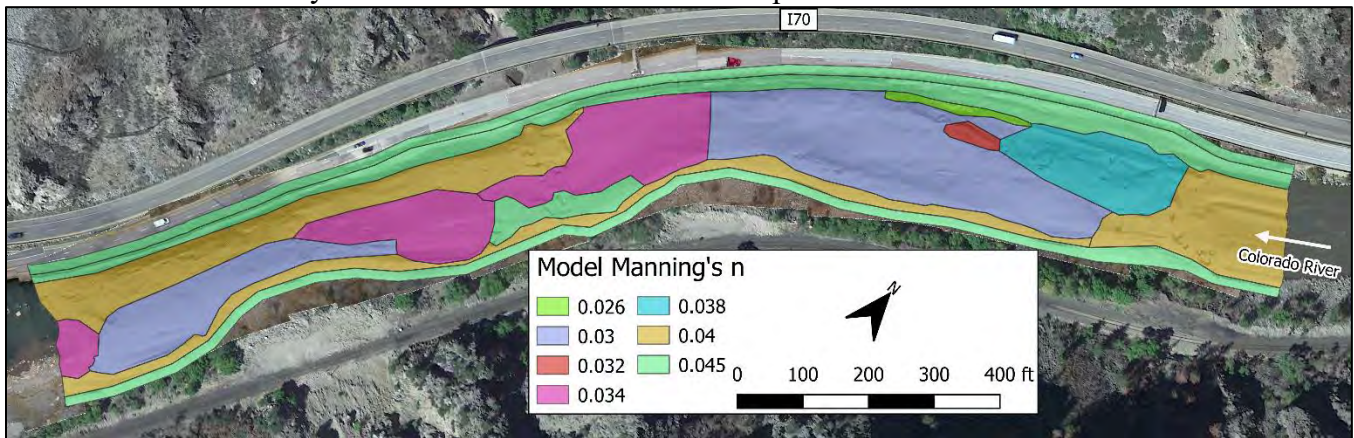


Figure 2. Final spatially distributed Manning’s n values used in the SRH-2D hydraulic model

SRH-2D requires an upstream and downstream boundary condition. A steady flow rate was used as the upstream boundary condition for each different flow of interest and the model time was run until a steady state was achieved throughout the model domain. A constant water surface elevation (WSE) was used as the downstream boundary condition for each flow. The downstream boundary in the model domain was set at the crest of a rapid, where the flow exited the pool and passed through the critical state. A known water surface elevation was measured for the survey flow (1020 cfs) and used during the calibration process (discussed below). A 1D critical flow area equation (Eq. 1) based on the geometry of the downstream section of the model was used to calculate the water surface elevation boundary condition for each additional flow of interest. Flows of interest for this study were: 50 cfs, 250 cfs, 700 cfs, 1020 cfs (survey flow), 1250 cfs, 1400 cfs, and 3000 cfs.

$$\text{Eq. 1} \quad Q = \left(\frac{\text{Area}^3 * g}{\text{Top Width}} \right)^{1/2}$$

2.2. Model Calibration

The 2D hydraulic model was calibrated to WSE points captured during the survey flow of 1020 cfs. Calibration consisted of adjusting Manning’s n values for different areas of the model within a reasonable range and adjusting the geometry of the DEM at observed control sections that were not sufficiently surveyed for bathymetric data. DEM adjustments were primarily focused on the grade controlling rapid in the middle of the survey area that impacted the large pool upstream and were a challenge to survey in great detail due to safety concerns in the field. The largest adjustment was made on the thalweg on the left side of the channel near the crest of each rapid, where conveyance needed to be increased to match the surveyed upstream water surface slope exiting the pool. After the calibration adjustments were made, the majority of the WSE calibration points were within +/- 0.2’ of the model result (Figure 3), which is in line with the expected vertical accuracy of the survey. The majority of the outliers from this range, and the largest outliers, were in the steepest section of the rapid. Here, any given WSE in the model represents a smaller area of the channel. Additionally, less consistent WSE in rapids in the field decreases the accuracy of a given survey value. The large pools and areas of more gradually varying WSE slope all were well matched within the model. Mannings ‘n’ values were held consistent for all model runs between 50 cfs and 3,000 cfs based on the calibration at 1,020 cfs.

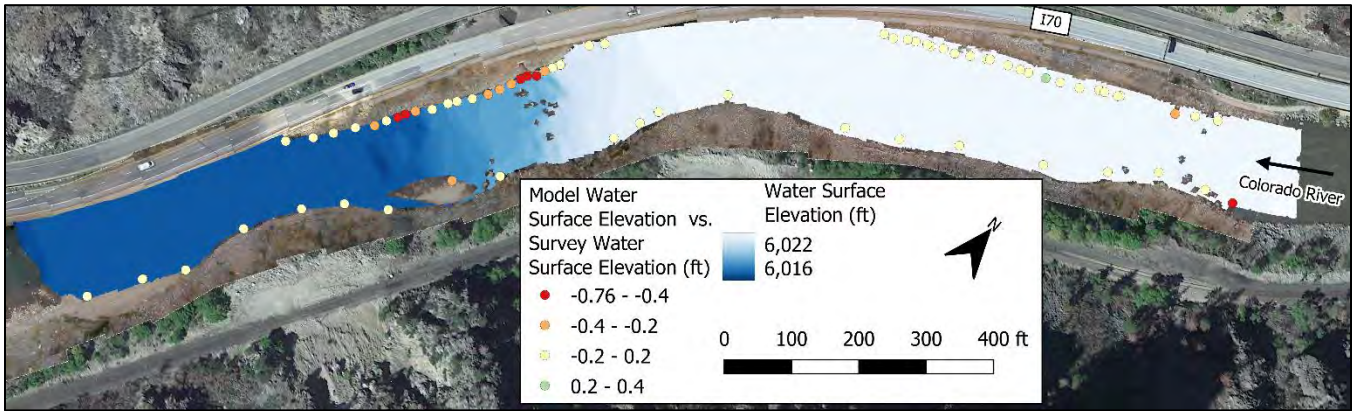


Figure 3. Model Calibration Results

3. RESULTS

3.1. Model Outputs

The model simulations were run until the flowrate into the model came to an equilibrium with the flow rate out of the model and was considered steady state. Results for each were then output for use in the habitat analysis. Results were sampled at the centroid location of each computation cell in the model 2D mesh (Figure 4). These cells represent areas ranging from less than 1 ft² to 70 ft², with the majority of the cells in the active channel between 5 ft² and 15 ft². Table 1 lists each of the hydraulic outputs that were sampled at the centroid of each cell.

Table 1. Model Outputs

Output	Unit
Cell Area	ft ²
Centroid X Coordinates	ft
Centroid Y Coordinates	ft
Bed Elevation	ft
Water Surface Elevation	ft
Water Depth	ft
Velocity in X direction	ft/s
Velocity in y direction	ft/s
Velocity Magnitude	ft/s
Froude Number	Dimensionless
Shear Stress	lb./ft ²

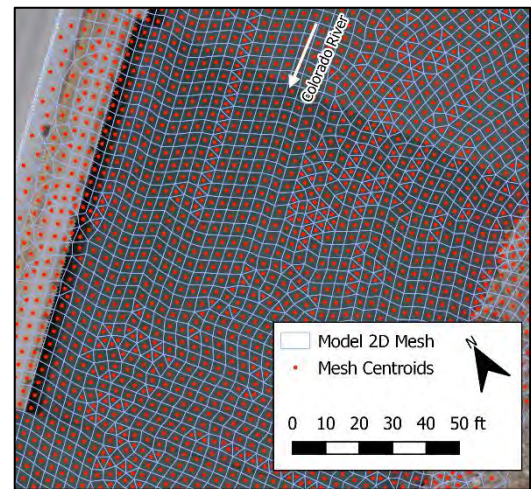


Figure 4. Glenwood Canyon model domain

3.2. Model Results Discussion

The model reach is bound on both sides by steep banks, including areas of vertical concrete in the highway embankment. Across the flow range evaluated the wetted flow area increased 23%. The largest changes in flow area occur around shallow areas of sand deposits near the up and downstream ends of the model as well as in some of the shallow cobble areas of the riffle in the middle of the model. The flow generally increases in velocity and depth as discharge increases (Figure 5). At the lowest modeled flow of 50 cfs

some unwetted areas emerge at the top of the rapid grade control that are larger than just single elevated boulders. At such extreme low flows, it may be reasonable to assume that some of the control section flow would be hyporheic flow between the large bed materials and infiltrate subsurface. The model also represents areas where the channel geometry is overhung by a suspended concrete bike path on the right bank in both pools. The modeled WSE in these areas remains several feet below the path elevations at the highest flow modeled for this analysis, 3000 cfs, but field observations have shown that extreme high flows in the river can reach these vertical obstructions, limiting the applicability of this model to flow levels less than or equal to 3,000 cfs.

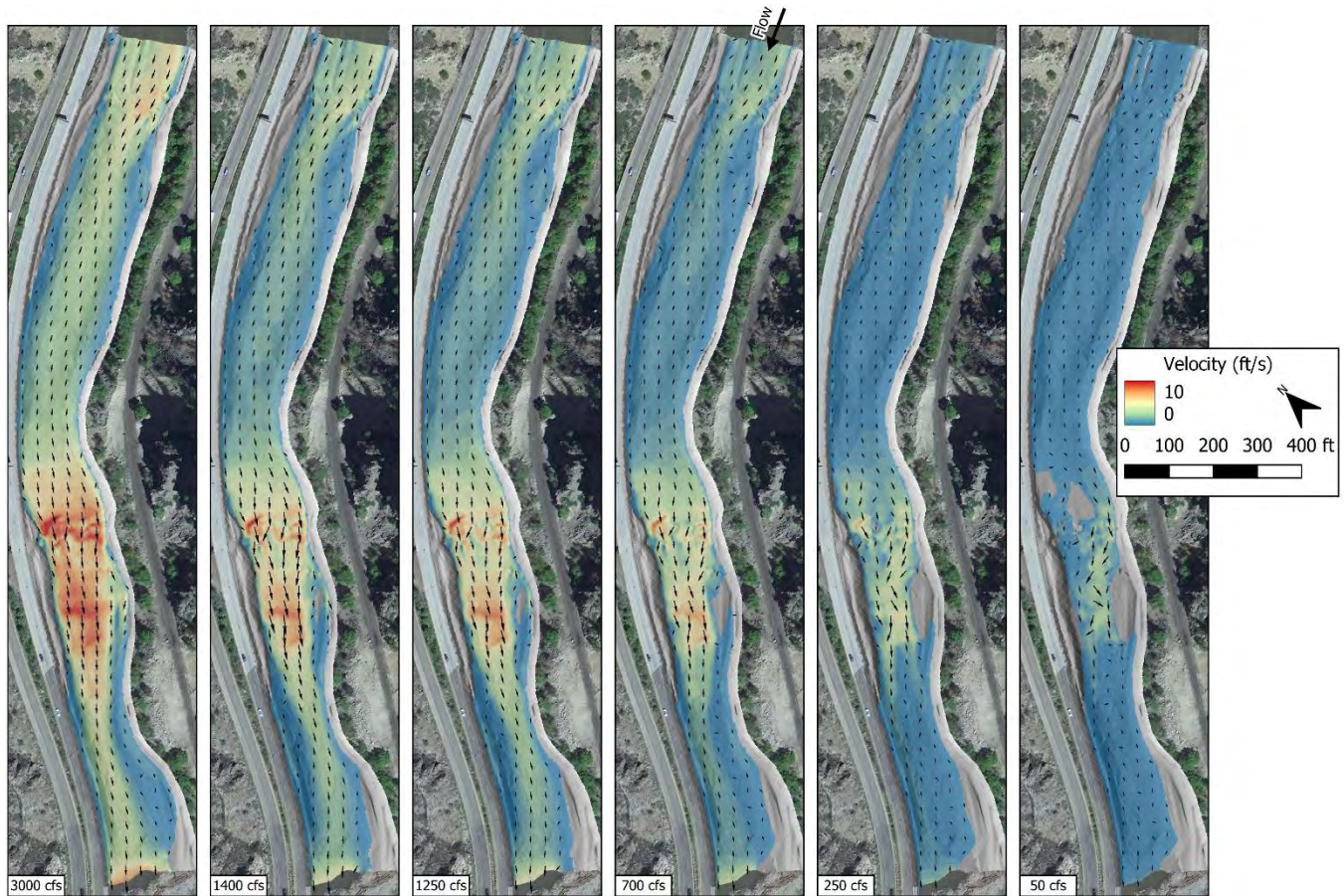


Figure 5. Model results showing velocity at the flows of interest

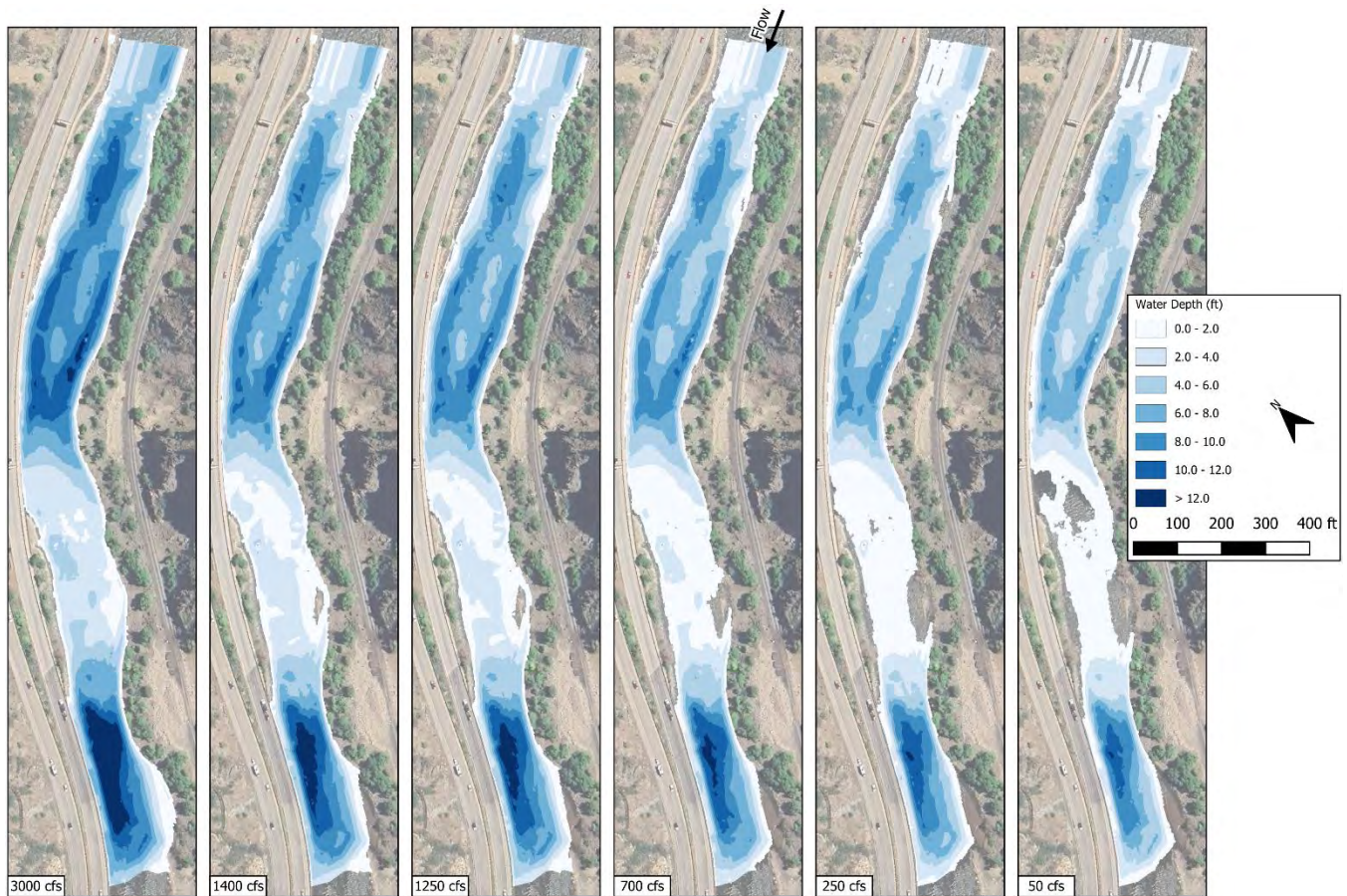


Figure 6. Model results showing depth at the flows of interest

4. SUMMARY

This report explains how survey data collected in Glenwood Canyon were used to create a calibrated 2D hydraulic model. This model was then used to predict hydraulic conditions of the study reach at a range of flows of interest to aquatic habitat at a resolution of approximately 4 ft x 4 ft. The model may have limitations at resolutions less than 4 feet length scale or at flows less than 50 cfs or greater than 3,000 cfs. Results available in the included data appendices can be used in an analysis of the available habitat within the study reach at the specified study flows.

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Appendix C – Hydrographic Survey Report

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GLENWOOD CANYON AQUATIC HABITAT STUDY COLORADO RIVER, COLORADO

HYDROGRAPHIC SURVEY REPORT – 2023



PREPARED BY RIVERRESTORATION.ORG, DECEMBER 2023



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RESULTS DATA APPENDICES

GlenwoodCanyon_DEM_ft.tif
SubstrateAreas_Polygons.shp

1. INTRODUCTION AND SURVEY METHODS

A hydrographic survey covering 1854 feet of the Colorado River in Glenwood Canyon was conducted on November 6th and 8th, 2023. The survey extent encompassed two pool sections divided by a boulder/cobble rapid and bounded by a rapid on the downstream end. Survey was conducted in the channel up the ordinary high water mark (OHWM) evident in the field. A combination of wading and boat-based survey was used to cover the areas of various depths and velocities (Figure 1). The survey was performed using a combination of RTK GNSS, Single Beam Echo Sounder (SBES), and total station. The survey was conducted using the NAD83 State Plane Colorado Central coordinate reference system (CRS) in US survey feet, vertical datum of NAVD88, and using the CONUS18 geoid model. Survey control was based on points provided by CDOT and tied in local control monuments via GNSS observations. Instruments utilized included Trimble R780 and R10 GNSS units, a boat mounted Ohmex SonarMite SBES, and a Trimble 5603 DR 200+ total station.

In addition to the bathymetric survey, the bed material was characterized at each topographic survey point throughout the survey reach and high-resolution ortho imagery was captured from 100' and 200' AGL throughout the reach.



Figure 1. Survey Area Overview Map



Figure 2. Survey Methods. GNSS rover (left) and boat mounted GNSS integrated SBES (right)

2. SURVEY CONTROL

The survey was based on control provided by CDOT for monuments recovered in the vicinity of the Hanging Lake rest area. Two control monuments were utilized with the coordinates provided in Table 1; Point 2528 was held as the location of the RTK GNSS base station during both days of the survey and point 2541 was used to check the initial base set up with RTK GNSS rovers. Eight additional control monuments were found and tied into the control network using 180 second RTK GNSS observations. These monuments were on the bike path that paralleled the survey reach and consisted of brass survey markers and “X” marks scrawled in the concrete placed by CDOT. These monuments were used for internal survey checks and as the basis for a total station set up and backsight but coordinates in Table 1 should not be considered survey control quality based on the limited GNSS constellation observed at the bottom of the Glenwood Canyon. Single beam sonar sound speed was adjusted in the field to match stadia rod depth measurements and integrated with either a total station prism or a RTK GNSS rover at different times to measure locations.

Table 1. Control Point information. NAD83 State Planes Colorado Central US Survey Feet, NAVD88, Geoid CONUS18. Coordinates are based on RTK GNSS survey holding 2528 and should not be considered survey control quality for future surveys.

Source	Point	Northing	Easting	Elevation	Description
CDOT	2528	1643610.52	2523096.51	6125.178	CDOT 1075--Type 5S IN CONC BIKE PATH
CDOT	2541	1644023.31	2523811.81	6117.827	CDOT 1075--Type 5S IN CONC BIKE PATH
GPS est.	193	1640379.889	2519661.18	6023.026	Brass Marker PT 193
GPS est.	194	1640815.124	2519923.869	6027.73	Brass Marker PT 194
GPS est.	195	1641175.599	2520304.564	6026.45	Brass Marker PT 195
GPS est.	196	1641401.255	2520778.948	6029.373	Brass Marker PT 196
GPS est.	300	1641308.444	2520530.666	6027.274	Concrete Scrawl X
GPS est.	301	1641008.418	2520098.404	6027.054	Concrete Scrawl X
GPS est.	302	1640601.825	2519781.121	6024.546	Concrete Scrawl X
GPS est.	303	1640170.93	2519540.383	6022.625	Concrete Scrawl X

3. SURVEY CONDITIONS

Site survey took place on November 6th and 8th, 2023. November 6th conditions were cold and clear while on November 8th, scattered snow showers fell throughout the day. The project reach is located approximately 8.5 miles downstream of USGS stream gage 09070500 on the Colorado River near Dotsero, CO. Shoshone Power Plant was shut down during survey and no diversions were expected between the gage and the site during data collection efforts. There are no major inflows between the project reach and gage, so the gage is assumed to well represent the project reach flows. Figure 3 shows the range of flows during the survey, as well as the slightly lower flows during the acquisition of aerial imagery.



Figure 3. Discharge of Colorado River near Dotsero, Colorado (USGS Gage 09070500) during survey and data acquisition

4. SURVEY RESULTS AND OBSERVATIONS

The survey reach was selected to represent hydraulic characteristics present in the pool/rapid Glenwood Canyon reach of the Colorado River. The survey included two pools divided by one cobble/boulder rapid and was bounded by rapids on the upstream and downstream ends. The rapids generally comprised of large colluvial, and mud and debris flow materials supplied to the main channel from tributaries. Bathymetric and topographic data points were collected to represent bed elevations throughout the survey reach. Information on bed materials including sediment classes and vegetation types were recorded with the points. Areas with depositional sediments and signs of recent maximum high water levels were also recorded, as were water surface elevations (WSE) throughout the reach for the survey flow. There were areas within the survey extent where water was too deep and swift to safely survey on foot or via boat, particularly in some areas around the rapid in the middle of the project reach. Survey was completed to allow for the most accurate interpolation possible in these areas. Additionally, aerial ortho-imagery was collected to help locate larger topographic features such as mid channel boulders.

Survey observations revealed that the bed material varied throughout the study reach. Longitudinal and lateral influences impacted the bed composition. Higher up elevations near the OHWM on each bank consisted of mechanically placed riprap rock materials supporting the highway on river right and railroad on river left (Figure 5). A substantial portion of the river right bank was a vertical concrete wall under a cantilevered bike path with riprap along the right toe (Figure 5). The midchannel consisted of areas of

boulder and large cobbles on the outside of the bend and through the rapids, and large areas of sand deposition on the inside of bends in the pools. Depositional sand included areas of transporting sand over boulders in the upstream pool and also large areas of sand dunes in each pool. A large sandy beach deposit was observed on the inside river left side of the downstream pool. The rapid in the middle of the survey reach and the rapid at the downstream end both consist of large cobble and boulder material (Figure 5) that was delivered from steep tributaries that were impacted by the Grizzly Creek Fire in 2020 and the subsequent debris flows during heavy rain in 2021. The crests of these rapids act as grade controls controlling the water surface elevation of the pools immediately upstream. Sand deposits transition to a lens of alluvially transported large cobble material on the upstream approach of each rapid crest. These cobble materials acted as the hydraulic grade control of each pool at the survey flow. Larger boulders deposited by the tributaries define the main drop in WSE across the rapids. A matrix of small boulders and large cobbles surround the largest boulders with minimal areas of finer depositional material through the rapids until the hydraulic gradient reaches the next pool elevation controlled by the downstream rapid crest and the flow slows. Figure 4 shows the different substrate areas that were identified during the survey overlaid on the final digital elevation model that was created.

Riprap banks throughout the reach were not densely vegetated, but a variety of riparian plant species including willows and cottonwoods were scattered on the banks in pockets around boulders and riprap. Willows, grasses, shrubs, and smaller trees dominated the right bank, while the left bank had more mature cottonwoods.



Figure 4. Substrate Areas and DEM



Figure 5. (Left) Looking downstream from the right bank at the rapid in the middle of the survey area. (Right) Aerial oblique drone photo looking downstream from near the upstream end of the survey area. The riprap and concrete nature of the banks can be seen.

5. BASE MAP AND DEM DEVELOPMENT

Survey data were post-processed to remove potential spurious data, mostly in the form of inaccurate SBES depth readings. Interpolation of some topographic data was required in areas that were unsafe to survey, but this was expected from the outset, and the majority of the survey extent was covered by on the ground field survey. A digital elevation model (DEM) was created for the entire surveyed project reach using a triangular irregular network (TIN) to connect surveyed points along with breaklines to represent the existing conditions in the field. Additional breaklines were included to represent boulder clusters and pour overs in rapids based on the collected aerial ortho-images. Elevations for some of these features had to be estimated based on nearby similar elevation features that were surveyed or nearby water surface elevations.

Field survey only took place up to the OHWM. For areas above this elevation, LiDAR data was added to the DEM. This LiDAR DEM data is publicly available data collected on flights in June of 2016 for the Colorado Water Conservation Board (<https://coloradohazardmapping.com/lidarDownload>). The data is formatted as a geotiff with 3 ft resolution. The LiDAR survey was carried out in the same coordinate reference system as this ground based survey; State Plane Colo. Central, NAD83, NAVD88. The LiDAR survey used the 12B geoid model as opposed to the more recent CONUS18 geoid model, but in the area of interest, this difference is not expected to have an impact. The LiDAR data inserted was well aligned with the surveyed ground elevations and required minimal editing of the DEM to mesh to two surfaces. Because the ground survey went to the elevation of the OHWM, the LiDAR based data inserted at elevations higher than this are not expected to have a meaningful impact on the flow levels of interest for this project.

A continuous bathymetric and topographic DEM surface was created using these data described above. This DEM was used in hydraulic modeling efforts, discussed in the Hydraulic Modeling Report.

6. SUMMARY

This survey was successful in collecting sufficient data to develop a detailed DEM of the study reach in Glenwood Canyon. The DEM developed from this survey and the bed material observations were used to model 2D river hydraulics, which is described in the Hydraulic Modeling Report. The data collection described in this report was sufficient for modeling 2D river hydraulics at, or finer than the target resolution for the habitat analysis which was specified as a 25 sqft computational cell size area.

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Freshwater Consulting LLC

JOINT MEMORANDUM

TO: United States Bureau of Reclamation

FROM: Bruce C. Walters, Colorado River Water Conservation District

Kirsten M. Kurath, on behalf of the Orchard Mesa Irrigation District and the Grand Valley Water Users Association

Frederick G. Aldrich, on behalf of the Grand Valley Irrigation Company

RE: The Shoshone Water Rights, the Orchard Mesa Check Case, and Green Mountain Reservoir’s Historic Users Pool “Surplus” Releases to the 15-Mile Reach

The Colorado River Water Conservation District and a coalition of West Slope governments, municipalities, and major water entities seek to secure the permanent protection of the river flow regime created by the historical exercise of the “Shoshone Water Rights” as part of the Shoshone Water Rights Preservation Project.¹ Ensuring the continuation of this critical flow regime also protects a number of associated benefits downstream of the Shoshone Power Plant, including the availability of water to the 15-Mile Reach in the Grand Valley.

The Shoshone Water Rights are a foundational component of the administration of the upper Colorado River, from the headwaters in Grand County, Colorado, downstream to the Colorado-Utah state line. Maintenance of the historical exercise of the Shoshone Water Rights is critical to the annual determination by a group of water users in the Grand Valley to declare a “surplus” of water stored in Green Mountain Reservoir’s Historic Users Pool (“HUP Surplus”). In most years, the HUP Surplus provides the single largest source of upstream storage available for release to supplement low flows in the 15-Mile Reach,² thereby supporting the substantial benefits to the 15-Mile Reach of the Colorado River Programmatic Biological Opinion. The continued maintenance of the historical flow regime created by the exercise and administration of the Shoshone Water Rights will ensure that the call attributable to the senior “Cameo” group of water rights in the Grand Valley (the “Cameo Call”) is reduced in amount and duration, reducing the amount of time that the Cameo Call “sweeps” the river just above the 15-Mile Reach and increasing the times during which there will be HUP Surplus available to benefit the 15 Mile Reach.

¹ As defined in the Check Case Stipulation, “Shoshone [Water] Rights” means the water rights decreed for and associated with the Shoshone Hydroelectric Power Plant, adjudicated for 1,250 c.f.s. on December 19, 1907, with an appropriation date of January 7, 1902, and adjudicated for 158 c.f.s. on February 7, 1956, with an appropriation date of May 15, 1929. *See* Stipulation, p. 3, ¶ 1.

² The “15-Mile Reach” is the reach of the Colorado River which extends, from the point at which the tailrace common to the Grand Valley Power Plant (and now the Vinelands Power Plant) and the OMID pumping plant returns to the Colorado River below the GVIC diversion dam, downstream to the confluence of the Colorado River and Gunnison River. *See* Stipulation, p. 2, ¶ 1.

History and Background.

In 1991, the Orchard Mesa Irrigation District (“OMID”), the Grand Valley Water Users Association (“GVWUA”), and the United States of America (“United States”) jointly filed a water court application in Case No. 91CW247, District Court, Water Division No. 5 (the “Check Case”). In the application, the co-applicants requested approval of an absolute water right associated with the historical operation of an appropriative right of exchange for the structure commonly referred to as the Orchard Mesa Check (the “Check”). *See* Decree, ¶¶ 6, 7.7. The Check provides a mechanism by which the water that is used by OMID, GVWUA and the United States to generate power and by OMID to lift water to a canal system on Orchard Mesa can be directed back upstream of the Grand Valley Irrigation Company’s (“GVIC’s”) diversion dam. *Id.*

Operationally, the exchange first involves the diversion of water out of the Colorado River at the Grand Valley Project’s diversion dam (the “Roller Dam”).³ *Id.* at ¶ 7.1. Once that water is diverted by GVWUA at the Roller Dam, it is then delivered through the Government Highline Canal and into the Orchard Mesa Power Canal for delivery to OMID’s pumping plant and/or the Grand Valley/Vinlands Power Plant. *Id.* at ¶¶ 7.2–7.6. Once used for power and pumping purposes, the return flow is conveyed from an afterbay to a point upstream via the Check channel into the Colorado River just above GVIC’s diversion dam, where the water may then be diverted by GVIC. *See* [Figure 1](#).⁴ The federal facilities, rights, and interests involved in the case are fundamental to the operation of the Check and the annual determination of whether a HUP Surplus exists.

The Check Case Stipulation.

In addition to formally adjudicating the long-standing Check exchange operation, the Check Case addressed several interrelated issues on a critically important stretch of the Colorado River for the four Colorado River Endangered Fish Species.

The 1996 Check Case Stipulation (the “Stipulation”)—which was expressly incorporated into the Decree—provides that the co-applicants (including the United States and GVIC) agree to: (1) reduce the overall demand of the Cameo group of water rights from 2,260 c.f.s. to 1,950 c.f.s., and (2) annually make a declaration as to whether a HUP Surplus exists for supplementing low flows in the 15-Mile Reach. More particularly, because Check operations can reduce the amount of water released from the 66,000 acre-feet HUP on an annual basis, the Stipulation also implements the Green Mountain Reservoir HUP Operating Criteria (the “Operating Criteria,” Decree, Ex. D),

³ The Roller Dam is located on the Colorado River just above Plateau Creek and is operated by GVWUA in conjunction with the Bureau. Some of the water diverted by the Roller Dam is also delivered to GVWUA, Palisade Irrigation District, and Mesa County Irrigation District via the Government Highline Canal.

⁴ With respect to [Figure 1](#), the Check channel is referred to as the “bypass channel.” In addition, although [Figure 1](#) shows 310 c.f.s. going to the Vinlands Power Plant in this graphic, the United States’ power right is decreed for 400 c.f.s. during the irrigation season and there are certain conditions when the full 400 c.f.s. water right can be diverted to the power plant.

which criteria contemplates the existence of “HUP Surplus” water (i.e., the volume of water, if any, in excess of the amount of water necessary to meet the demands of HUP beneficiaries). Under the Operating Criteria, HUP Surplus water is delivered to the 15-Mile Reach through non-consumptive use contracts with Grand Valley entities.

As it relates to the Shoshone Water Rights, the Stipulation sets forth terms and conditions under which the co-applicants and GVIC agree to forgo placing an administrative call against upstream HUP beneficiaries provided the following three conditions are met:

- (1) The Check structure is physically operable;
- (2) There is at least 66,000 acre-feet of water available in Green Mountain Reservoir for the benefit of HUP beneficiaries when Green Mountain Reservoir ceases to be in-priority for its initial fill (i.e., at the end of the reservoir’s fill season); and
- (3) The Shoshone Water Rights continue to be exercised in “a manner substantially consistent with their historical operations[.]”

See Stipulation, pp. 5–6, ¶¶ 3.b., 3.b.(1)–3.b.(3).

Thus, per the Stipulation, if any one of the three conditions are not met during the period extending from April 1 through October 31, then the Operating Criteria *and* the Stipulation’s non-curtailment provisions with respect to HUP beneficiaries may be declared inoperative by the concurrence of any of the three Co-Applicants and GVIC. *Id.* at p. 6, ¶ 3.b.(5). The Stipulation provides that the immediate impact of an “inoperative” declaration is that “no water in the HUP shall be deemed to be surplus to the needs of the HUP beneficiaries.” *Id.* In other words, if the third condition in the Stipulation is not satisfied (i.e., the Shoshone Water Rights are no longer exercised in “a manner substantially consistent with their historical operations”), then the HUP Surplus could not be relied on as the single largest source of stored water available to supplement low flows in the 15-Mile Reach.

Conclusion.

The permanent protection of the river flow regime created by the historical exercise of the Shoshone Water Rights is necessary to continue the critical benefits to the 15-Mile Reach created by the operation of all the terms of the Check Case. Any failure to operate the Shoshone Water Rights “in a manner substantially consistent with historical operations,” could trigger a potential loss of the benefits that the HUP Surplus provides to all Colorado River water users within the state.

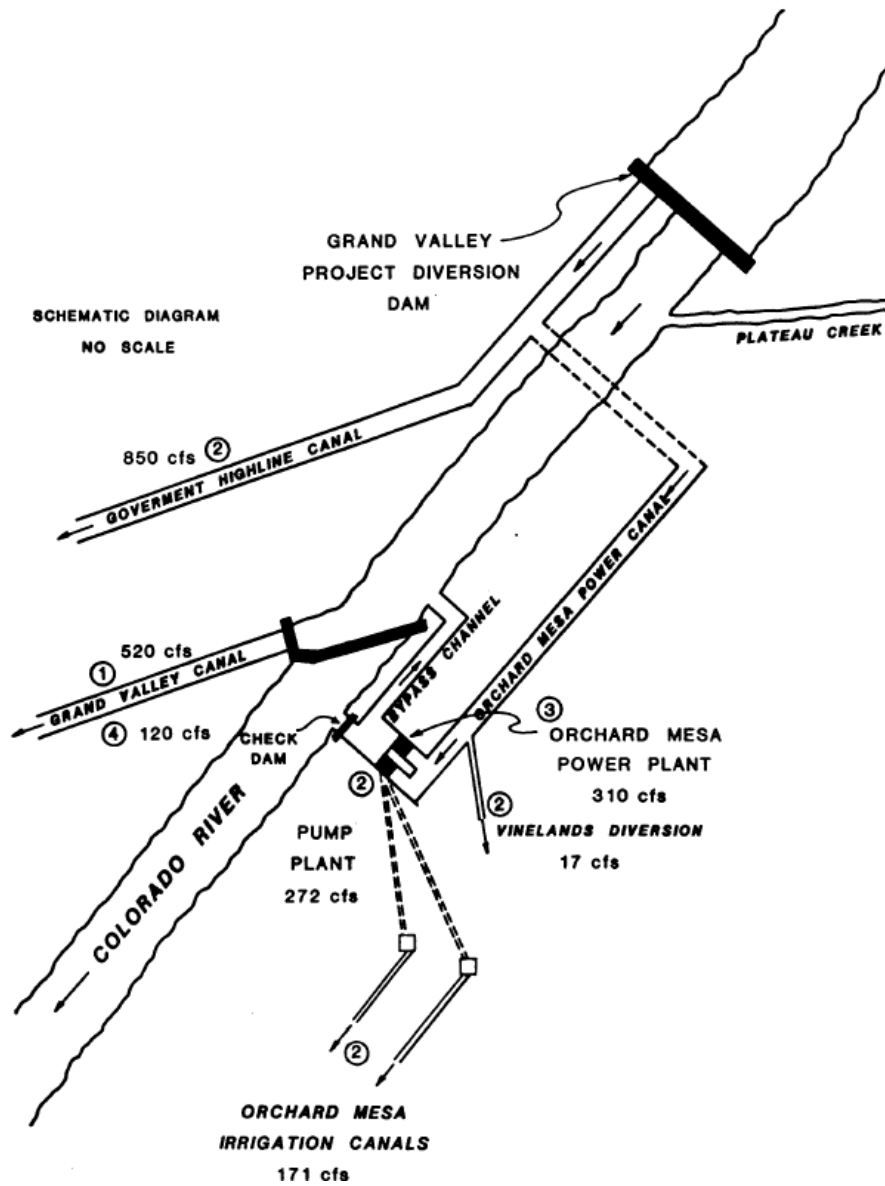


Figure 1: "Proposed Solution to the Orchard Mesa 'Check' Problem," prepared by the Colorado River Water Conservation District in cooperation with the Grand Junction Projects Office, U.S. Bureau of Reclamation, Case No. 91CW247, District Court, Water Division 5 (October 7, 1988).



COLORADO RIVER DISTRICT

PROTECTING WESTERN COLORADO WATER SINCE 1937

MEMORANDUM

TO: WAYNE PULLAN, UPPER COLORADO RIVER BASIN REGIONAL DIRECTOR
ED WARNER, AREA MANAGER WESTERN COLORADO AREA OFFICE
JEFFREY RIEKER, AREA MANAGER EASTERN COLORADO AREA OFFICE
ROD SMITH, ATTORNEY, OFFICE OF THE SOLICITOR

FROM: ANDY MUELLER, GENERAL MANAGER
PETER FLEMING, GENERAL COUNSEL

SUBJECT: BACKGROUND FOR THE SHOSHONE PERMANENCY PROJECT

DATE: MAY 30, 2024

Dear Mr. Pullan, Mr. Warner, Mr. Rieker, and Mr. Smith:

The Colorado River Water Conservation District (“Colorado River District”), on behalf of a diverse and growing coalition of West Slope local governments and water users, wishes to thank the United States Bureau of Reclamation (the “Bureau”) for its interest in and consideration of a future funding request for the Shoshone Permanency Project. The Shoshone Permanency Project is the culmination of several decades' worth of effort by the Colorado River District and its West Slope partners to secure the permanent protection of the river flow regime created by the historical exercise of two water rights, the 1902 Senior Shoshone Water Right in the amount of 1,250 c.f.s., and the 1929 Junior Shoshone Water Right in the amount of 158 c.f.s. (together, the “Shoshone Water Rights”). We appreciate the Bureau’s engagement with respect to the Shoshone Permanency Project to date and hope that this memorandum is helpful in describing the background and foundational agreements that set the framework for this critical legacy project.

I. PROJECT BACKGROUND

The historical use of the Shoshone Water Rights has occurred at the Shoshone Power Plant, located on the Colorado River in Glenwood Canyon, approximately eight miles upstream of its confluence with the Roaring Fork River within the City of Glenwood Springs, Colorado. The Shoshone Power Plant is owned and operated as a run-of-the-river hydroelectric enterprise by Public Service Company of Colorado (“PSCo”), a subsidiary of Xcel Energy, Inc. (“Xcel”). In 1907, the Senior Shoshone Water Right was adjudicated with an appropriation date of January 1, 1902, in the

amount of 1,250 c.f.s. Subsequently in 1956, the Junior Shoshone Water Right was adjudicated with an appropriation date of May 5, 1929, in the amount of 158 c.f.s. The Shoshone Water Rights are administered as non-consumptive use water rights, meaning that all water diverted from the stream to power the Shoshone Power Plant's turbines quickly returns to the river after a short trip through the plant's penstocks and turbines. Historically, the administration (or "call") of the Shoshone Water Rights for PSCo's use at the Shoshone Power Plant commands the flow of the Colorado River and its tributaries by exercising the more senior Shoshone Water Rights against upstream junior water rights. In other words, when an administrative call is placed by PSCo for the Shoshone Water Rights, upstream junior water rights are precluded from storing or diverting water without providing sufficient replacement water to cover stream depletions as needed to prevent injury.

II. KEY PROVISIONS OF THE COLORADO RIVER COOPERATIVE AGREEMENT AND SHOSHONE OUTAGE PROTOCOL AGREEMENT

Over the years, PSCo's operations at the Shoshone Power Plant—and, by extension, its exercise of the Shoshone Water Rights—have occasionally been interrupted by natural disasters and the need for repairs and maintenance. When the power plant is not operating, the Shoshone Water Rights either cannot be exercised or can be exercised only at a reduced rate of flow. In such instances, water becomes available for diversion in priority by upstream junior water rights, in turn, resulting in less flow in the Colorado River and its tributaries upstream of Shoshone. As a result of the frequency and duration of these outages, and the negative impacts the outages have on the flow regime of the Colorado River, the Colorado River District and numerous other West Slope governments and water users realized a pressing need to achieve permanent management of the historical flow of the Colorado River associated with a "call" for water whenever the Shoshone Water Rights are in priority.

In 2013, the Colorado River District, together with numerous other West Slope governments, entered into the Colorado River Cooperative Agreement ("CRCA") with the City and County of Denver, acting by and through its Board of Water Commissioners ("Denver Water"). The CRCA established a long-term partnership between Denver Water and the West Slope concerning numerous and far-ranging goals and actions, aimed at benefitting water supply, water quality, recreation, and the environment on both sides of the Continental Divide. A fundamental component of the CRCA's goals and actions involved a consensus among the signatories as to the need for long-term protection of the river flow regime created by a call for 1,250 c.f.s. of water attributable to the Senior Shoshone Water Right, which the CRCA defines as the "Shoshone Call" or "Shoshone Call Flows." The concept of permanent protection of Shoshone Call Flows is expressly defined in Article VI.C. of the CRCA as "Permanency of Shoshone Call Flows." In addition to the CRCA parties' agreement to work together to achieve permanent management of the Shoshone Call Flows, certain of the CRCA parties (the Colorado River District, Denver Water, and Middle Park) also agreed to operate their systems as if the Shoshone Call were in effect whenever the Shoshone Power Plant is subject to a shutdown for repair, maintenance, or other reasons. This

concept of temporary system operations to replicate flows when the Shoshone Power Plant is not operating is defined in Article. VI.B. of the CRCA as the “Shoshone Outage Protocol” or “ShOP.”

While the “Permanency of Shoshone Call Flows” and “ShOP” concepts are related, the terms and conditions of the CRCA, and the numerous interrelated agreements which followed in the wake of the CRCA, clearly distinguish these two concepts. More particularly, ShOP always was intended to be a temporary or stop-gap measure to preserve only the senior 1,250 cfs water right. The CRCA makes the distinction clear by emphasizing that the parties agree to support a permanent solution (i.e., Shoshone Permanency). Aside from the plain text of the CRCA itself, the subsequent Shoshone Outage Protocol Agreement (“ShOP Agreement”), entered on June 27, 2016, which includes Reclamation, the Colorado Division of Water Resources (“DWR”), and the Northern Colorado Water Conservancy District (“Northern”) specifically recognizes the temporary nature of the ShOP arrangement. As more particularly described below, the ShOP Agreement was intended to address the situation caused by outages at the Shoshone Power Plant, but was not intended to (and did not) achieve permanent management of the flow regime of the Colorado River as historically influenced by the Shoshone Call.

In the years since it was executed, the Shoshone Outage Protocol, as defined in the CRCA and the ShOP Agreement, has been a useful, but temporary solution for protecting river conditions during outages at the Shoshone Power Plant. However, the ShOP Agreement is, by design, term-limited and a temporary solution to a problem requiring a permanent fix, and, even under current conditions, the ShOP concept falls short of protecting the Shoshone Call Flows in several significant respects:

1. The ShOP Agreement is limited to a 40-year term (32 years remaining) and cannot be made permanent without formal agreement between the ShOP signatories. Perhaps more importantly, it is our understanding that Reclamation cannot enter a permanent ShOP agreement without an Act of Congress. Furthermore, according to the ShOP Agreement, the Bureau may terminate its participation in the agreement at any time by providing notice to the parties.
2. The ShOP Agreement does not provide sufficient protection of the historical flow regime created by the exercise of the Shoshone Water Rights. By its terms, the ShOP Agreement is limited to the protection of a target flow of 1,250 c.f.s. attributable to the Senior Shoshone Water Right during the irrigation season, and the protection of only 900 c.f.s. during the non-irrigation season, a reduction from the year-round 1,408 c.f.s. demand of the Shoshone Power Plant associated with the senior and junior water rights.
3. The ShOP Agreement does not provide the certainty of a state water court decree and is vulnerable to changes in administrative interpretations. While DWR is a party to the ShOP Agreement, the current position of the State and Division Engineers is that their administration of water rights is informed solely by decrees entered by state water courts.

Perhaps more importantly, while a new upstream junior water right would be subject to curtailment by the Shoshone Water Rights, the new junior would not be subject to ShOP. This means that not only would the new junior water right not be required to participate in ShOP but that the junior could intercept (i.e., “pick off”) the water contributions of the ShOP participants, including ShOP releases from Reclamation’s Green Mountain Reservoir.

4. The obligations and rights of the signatories in the ShOP Agreement are not uniformly applied with respect to the signatories. For instance, the ShOP Agreement outlines several exclusions for when each signatory is excused from participation in ShOP operations during dry conditions, which means that ShOP is either not implemented or is implemented at a reduced level of participation when the Shoshone flows would otherwise provide the most benefit. Additionally, some parties to the agreement reserved the right to terminate their participation in ShOP under certain circumstances.
5. The ShOP Agreement is enforceable only amongst the signatories who have agreed to voluntarily participate.
6. Under the express terms of ShOP, the Green Mountain Reservoir 52KAF Replacement Pool is not available for Reclamation’s participation in ShOP. Thus, even in wet years like 2023, Green Mountain Reservoir’s ability to participate in ShOP is limited and was not sufficient to meet even the limited ShOP goals of 1,250 cfs during the summer season and 900 cfs during the non-irrigation season. Furthermore, if the Shoshone call is not preserved and the power plant is permanently decommissioned, this will result in changes to the operation of Green Mountain Reservoir that the River District believes would conflict with the intent of Senate Document 80. The shortages caused by this exception imbedded in ShOP will be exacerbated in the driest of years, exactly the time when the entire Colorado River system needs every drop of water available.

Therefore, in summary:

- The CRCA clearly and unambiguously distinguishes between the “Shoshone Outage Protocol” concept and the “Permanency of Shoshone Call Flows” concept, and further defines the respective obligations of the CRCA signatories (including Denver Water) regarding these two distinct concepts.
- The ShOP Agreement is consistent with the CRCA’s interlocking provisions regarding the “Shoshone Outage Protocol” but does not, and is not intended to, achieve Permanency of Shoshone Call Flows as defined in the CRCA.

- The agreements which followed the CRCA and the ShOP Agreement are consistent with those prior agreements in clearly demarcating between the concepts of ShOP and Shoshone Permanency.

III. AGREEMENTS WITH FRONT RANGE ENTITIES

The CRCA's clear distinction between "ShOP" and "Permanency of Shoshone Call Flows" has been memorialized in a series of important agreements with Front Range governments and entities that demonstrate a joint commitment to achieve the permanent management of the flow of the Colorado River created by the Shoshone Call. A summary of those agreements, a majority of which were agreed to after the execution of the CRCA, is set forth below and a detailed account is contained in Appendix A:

Denver Water:

- As a signatory to the CRCA, Denver Water is obligated to work with the other signatories to devise and implement a mechanism to preserve the flows attributable to the Senior Shoshone Call on a permanent basis regardless of whether the Shoshone Power Plant remains operational.

Northern Colorado Water Conservancy District:

- Pursuant to the Intergovernmental Agreement dated December 31, 2012 ("2012 NW IGA"), between Northern Water, Grand County, Middle Park Water Conservancy District, and the Colorado River District, Northern Water agreed to negotiate in good faith regarding the permanent management of the Colorado River to address flow changes that occur during a Shoshone Outage.

The Municipal Subdistrict, Northern Colorado Water Conservancy District:

- Pursuant to the Windy Gap Firming Project Intergovernmental Agreement between the Subdistrict, Grand County, Middle Park, the Northwest Colorado Council of Governments, and the River District, fully executed in 2016 ("WGFP IGA"), the Subdistrict agreed to negotiate in good faith regarding the permanent management of the Colorado River to address flow changes that occur during a Shoshone Outage.

City of Aurora:

- Pursuant to the Intergovernmental Agreement, effective July 31, 2018, between the City of Aurora, Busk-Ivanhoe, CRWCD, Basalt WCD, Eagle County, Pitkin County, GVWUA, OMID, and Ute WCD ("Busk-Ivanhoe Agreement"), Aurora agreed to not oppose Shoshone Permanency as to the Senior Shoshone Water Right subject to certain conditions spelled out in the agreement.

City of Colorado Springs:

- In accordance with the Settlement Agreement Concerning Water Rights, effective in 2024, between the City of Colorado Springs, CRWCD, Summit County, the Town of Breckenridge, GVVUA, OMID, and Ute WCD (“Blue River Settlement Agreement”), Colorado Springs agreed to not oppose Shoshone Permanency or an agreement between a West Slope entity or entities, the Colorado Water Conservation Board, and any other entity entered into for the purpose of adding instream flow as an additional use of the Senior Shoshone Water Right, subject to terms similar to those agreed by Aurora.

IV. CONCLUSION

For more than 20 years, the Colorado River District and 19 other western Colorado governments and water entities have been working together to find a way to permanently preserve the Shoshone flows. We are now on the cusp of the unprecedented alignment of multiple factors that presents a real opportunity to finalize this long-standing goal. We look forward to our continued engagement with Bureau staff as we collectively seek to ensure a sustainable future for the Colorado River Basin.

V. APPENDIX A: DETAILED REFERENCE OF FRONT RANGE AGREEMENTS

Denver Water:

- **As a signatory to the CRCA, Denver Water is obligated to work with the other signatories to devise and implement a mechanism to preserve the flows attributable to the Senior Shoshone Call on a permanent basis regardless of whether the Shoshone Power Plant remains operational.**

CRCA

- Article VI (Shoshone Call) (p. 35)
 - Art. VI.A.4 – “The Signatories [including Denver Water] also agree to cooperate to achieve *permanent management of the flows of the Colorado River as described in Art. VI.C*, whether or not the Shoshone Power Plant remains operational.”
 - Art. VI.C (Permanency of Shoshone Flows)
 - Art. VI.C.1 – “It is the goal of the Signatories to achieve permanent management of the flow of the Colorado River so that the flow mimics the Shoshone Call Flows,¹ whether or not the Shoshone Power Plant remains operational.”
 - Art. VI.C.3. (p. 38)
 - “The Signatories agree to use their best efforts to work with Xcel Energy, other diverters, Reclamation and the State of Colorado

¹ “Shoshone Call Flows” is defined in Art. VI.A.2. (p. 35) of the CRCA to mean “the river flow regime created by the Senior Shoshone Call.”

water administration officials to devise and implement a mechanism or combination of mechanisms that will permanently preserve the Shoshone Call Flows.

ShOP

- Art. III.A. - “This Agreement will remain in effect for 40 years unless terminated sooner pursuant to paragraph III.B[.]” (p. 5).
- Art. VIII - “Nothing in this [ShOP] Agreement shall be interpreted to constitute compliance with, or satisfaction of, the obligations of Article VI.C [Permanency of Shoshone Call Flows] of the Colorado River Cooperative Agreement between Denver Water and seventeen West Slope entities.”

Northern Colorado Water Conservancy District:

- **Pursuant to the Intergovernmental Agreement dated December 31, 2012 (“2012 NW IGA”), between Northern Water, Grand County, Middle Park Water Conservancy District, and the Colorado River District, Northern Water agreed to negotiate in good faith regarding the permanent management of the Colorado River to address flow changes that occur during a Shoshone Outage.**

2012 NW IGA

- Paragraph 3 (p. 4) “Shoshone Outage Protocol and Permanent Shoshone Solution. The Parties agree to work cooperatively to implement a stipulated resolution of the Shoshone Outage Protocol, consistent with Exhibit 2 [Draft Administrative Protocol]. Northern Water agrees that it will participate in good faith in negotiations to achieve permanent management of the flow of the Colorado River to address certain flow changes that result during a Shoshone Outage.”

ShOP

- Art. III.A. - “This Agreement will remain in effect for 40 years unless terminated sooner pursuant to paragraph III.B[.]” (p. 5).
- Art.IV.C.2. – “This agreement meets the requirement of the first sentence of Paragraph 3 of the Intergovernmental Agreement between Northern Water, Grand County, Middle Park, and the River District fully executed in 2016 [2012 NW IGA].”
- Art. VIII - “Nothing in this [ShOP] Agreement shall be interpreted to constitute compliance with, or satisfaction of, the obligations of Article VI.C [Permanency of Shoshone Call Flows] of the Colorado River Cooperative Agreement between Denver Water and seventeen West Slope entities.”

The Municipal Subdistrict, Northern Colorado Water Conservancy District:

- **Pursuant to the Windy Gap Firming Project Intergovernmental Agreement between the Subdistrict, Grand County, Middle Park, the Northwest Colorado Council of**

Governments, and the River District, fully executed in 2016 (“WGFP IGA”), the Subdistrict agreed to negotiate in good faith regarding the permanent management of the Colorado River to address flow changes that occur during a Shoshone Outage.

WGFP IGA

- Art. IV.K.4. (p. 21)
 - “The Subdistrict agrees that it will participate in good faith negotiations to achieve permanent management of the flow of the Colorado River to address certain flow changes that result during a Shoshone Outage.”

City of Aurora:

- **Pursuant to the Intergovernmental Agreement, effective July 31, 2018, between the City of Aurora, Busk-Ivanhoe, CRWCD, Basalt WCD, Eagle County, Pitkin County, GVVUA, OMID, and Ute WCD (“Busk-Ivanhoe Agreement”), Aurora agreed to not oppose Shoshone Permanency as to the Senior Shoshone Water Right subject to certain conditions spelled out in the agreement.**

Busk-Ivanhoe Agreement

- Art. VI, Shoshone Outage Protocol and Shoshone Permanency (p. 24)
 - Art. VI, ¶ 30 (ShOP Agreement); ¶ 32 (Term of ShOP Agreement); and ¶ 33 (Aurora ShOP Agreement) (pp. 24-26)
- Art. VI, ¶ 34 – Shoshone Permanency (p. 27)
 - “Shoshone Permanency” is defined to mean “permanent protection of the flow regime created by operation of the [Shoshone Power Plant] regardless of whether the [Power Plant] continues to operate in the future.”
 - “Aurora agrees to not oppose Shoshone Permanency” in accordance with the conditions set forth in paragraphs 34.1 through 34.6.
 - Aurora’s agreement that it “will not oppose an agreement between a West Slope entity or entities, the CWCB, and any other entity entered for the purpose of adding instream flow as an additional use of the Senior Hydropower Right[.] Aurora’s non-opposition to any such CWCB Agreement and ISF decree shall be contingent on inclusion of the following terms in the CWCB Agreement and ISF Application:
 - (1) 2007 Call Relaxation Agreement will be made permanent and applicable to any ISF use; and
 - (2) Inclusion of provision re: “in the event of a curtailment . . . resulting from enforcement of the Colorado River Compact. . . .”
 - “Aurora agrees to participate in good faith discussions and negotiations with the West Slope Parties, the CWCB, and any other parties regarding the addition of instream flow uses to the Junior Hydropower Right.”

City of Colorado Springs:

- **In accordance with the Settlement Agreement Concerning Water Rights, effective in 2024, between the City of Colorado Springs, CRWCD, Summit County, the Town of Breckenridge, GVVUA, OMID, and Ute WCD (“Blue River Settlement Agreement”), Colorado Springs agreed to not oppose Shoshone Permanency or an agreement between a West Slope entity or entities, the Colorado Water Conservation Board, and any other entity entered into for the purpose of adding instream flow as an additional use of the Senior Shoshone Water Right.**

Blue River Settlement Agreement

- Paragraph 10.6. Shoshone Permanency
 - Colorado Springs agrees to not oppose Shoshone Permanency in accordance with the conditions set forth in paragraphs 10.6.1. through 10.6.6. (pp. 31-33).
 - (p. 32) “Colorado Springs will not oppose an agreement between a west slope entity or entities, the Colorado Water Conservation Board (“CWCB”), and any other entity entered into for the purpose of adding instream flow as an additional use of the Senior Hydropower Right (“CWCB Agreement”). In addition, Colorado Springs may become a party to any water court application seeking such instream flows (“ISF Application”) but will not oppose the entry of a final water court decree for the purpose of adding instream flow as an additional use of the Senior Hydropower Right. Colorado Springs’ non-opposition to any such CWCB Agreement and ISF decree shall be contingent on inclusion of the following terms in the CWCB Agreement, ISF Application, and any resulting ISF Decree. Colorado Springs’ non-opposition to any such CWCB Agreement and ISF decree shall be contingent on inclusion of the following terms in the CWCB Agreement, ISF Application, and any resulting ISF Decree:

¶ 10.6.4.1. [same Compact curtailment language found in the Busk-Ivanhoe Agreement @ ¶ 34.4 (p. 28)].

Attachments Available Upon Request:

- The Colorado River Cooperative Agreement, dated September 26, 2013
- The Shoshone Outage Protocol Agreement Number 13XX6C0129, dated June 27, 2016
- The Northern Water Intergovernmental Agreement, dated December 31, 2012
- Windy Gap Firming Project Intergovernmental Agreement, effective 2016
- Busk-Ivanhoe Agreement, July 31, 2018
- Blue River Settlement Agreement, effective 2024

COLORADO RIVER COOPERATIVE AGREEMENT

This Agreement is entered into among the following listed Signatories, to become effective upon the first business day at least seven days after the last Signatory has signed this Agreement. The Effective Date of this Agreement is the 26th day of September, 2013. The Signatories acknowledge the mutual exchange of consideration in entering into this Agreement.

City and County of Denver, acting by and through its Board of Water Commissioners (Denver Water)
Board of County Commissioners, County of Eagle
Board of County Commissioners, County of Grand
Board of County Commissioners, County of Summit
Colorado River Water Conservation District
Middle Park Water Conservancy District
Clinton Ditch and Reservoir Company
Eagle Park Reservoir Company
Eagle River Water and Sanitation District
Upper Eagle Regional Water Authority
Grand Valley Water Users Association
Orchard Mesa Irrigation District
Ute Water Conservancy District
Palisade Irrigation District
Mesa County Irrigation District
Grand Valley Irrigation Company
City of Glenwood Springs
City of Rifle

This Colorado River Cooperative Agreement consists of the 51-page agreement dated May 15, 2012 (pages 44, 45, 50, and 51 dated January 7, 2013); Attachments A through T, which have varying dates; and the CRCA Addendum dated April 5, 2012.

ARTICLE VI
Shoshone Call

A. Shoshone Call.

1. The Shoshone Power Plant, which is owned and operated by Public Service Company of Colorado, d/b/a/ Xcel Energy (“Xcel”), is located on the mainstem of the Colorado River in Glenwood Canyon. The Shoshone Power Plant produces hydroelectric energy by means of two water rights, the 1902 Shoshone Senior Right in the amount of 1250 cfs and the 1929 Shoshone Junior Right in the amount of 158 cfs (together, “Shoshone Water Rights”).
2. When the Shoshone Power Plant is operating, the Shoshone Water Rights command the flow in the river by exercising the Senior Shoshone Call against upstream junior water rights. When the Senior Shoshone Call is on, upstream reservoirs cannot store water and junior water rights cannot divert unless they provide an equal volume of replacement water to the stream. Over the years, many water users have come to rely on the river flow regime created by the Senior Shoshone Call (“Shoshone Call Flows”).
3. Whenever the Shoshone Power Plant is subject to a shutdown for repair, maintenance, or other reasons (“Shoshone Outage”), the Shoshone Call cannot be exercised, and Shoshone Call Flows may not be present in the river.
4. The Signatories agree that a Shoshone Outage could adversely affect water users and recreation interests on the Colorado River. Accordingly, the Signatories agree to implement the operational procedures described in this section during a Shoshone Outage (the “Shoshone Outage Protocol”) to mitigate such potential adverse effects. **The Signatories also agree to cooperate to achieve permanent management of the flows of the Colorado River as described in Article VI.C, whether or not the Shoshone Power Plant remains operational.**

B. Shoshone Outage Protocol.

- I. Outage During Irrigation Season. If a Shoshone Outage occurs during the period from March 25 through November 10 (Irrigation Season) and results in a flow of the Colorado River at the Dotsero Gauge below 1,250 cfs (not including any water released for endangered fish species purposes), then the River District, Middle Park and Denver Water agree that they will operate their systems as if the Senior Shoshone Call were on the River, resulting in a flow of not more than 1250 cfs at the Dotsero Gauge (not including any water released for endangered fish species purposes). The Shoshone Outage Protocol

**SHOSHONE OUTAGE PROTOCOL
AGREEMENT NUMBER 13XX6C0129
INCLUDING THE**

**UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION,
THE STATE OF COLORADO, DIVISION OF WATER RESOURCES,
THE CITY AND COUNTY OF DENVER, ACTING BY AND THROUGH ITS BOARD OF
WATER COMMISSIONERS,
THE COLORADO RIVER WATER CONSERVATION DISTRICT,
THE MIDDLE PARK WATER CONSERVANCY DISTRICT,
THE NORTHERN COLORADO WATER CONSERVANCY DISTRICT,
THE MUNICIPAL SUBDISTRICT, NORTHERN COLORADO WATER
CONSERVANCY DISTRICT,
THE GRAND VALLEY WATER USERS ASSOCIATION,
THE ORCHARD MESA IRRIGATION DISTRICT, AND
THE GRAND VALLEY IRRIGATION COMPANY**

THIS AGREEMENT is made this 27th day of June, 2016, and includes the **UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION** (Reclamation), the **STATE OF COLORADO DIVISION OF WATER RESOURCES (DWR)**, **THE CITY AND COUNTY OF DENVER** acting by and through its **BOARD OF WATER COMMISSIONERS** (Denver Water), the **COLORADO RIVER WATER CONSERVATION DISTRICT** (River District), the **MIDDLE PARK WATER CONSERVANCY DISTRICT** (Middle Park), the **NORTHERN COLORADO WATER CONSERVANCY DISTRICT** (Northern Water), the **MUNICIPAL SUBDISTRICT, NORTHERN COLORADO WATER CONSERVANCY DISTRICT** (Subdistrict), the **GRAND VALLEY WATER USERS ASSOCIATION**, the **ORCHARD MESA IRRIGATION DISTRICT**, and the **GRAND VALLEY IRRIGATION COMPANY**, hereinafter collectively referred to as the "Parties".

I. EXPLANATORY RECITALS

The following statements are made in explanation:

- A. When the Shoshone Power Plant is operating, the Shoshone Call can command the flow in the Colorado River and its tributaries in certain stream conditions by exercising the Shoshone Water Rights against upstream junior water rights. When the Shoshone Call is being administered, junior water rights cannot store or divert water without providing replacement water to offset their depletions to the river system as necessary to prevent injury.
- B. Whenever the Shoshone Power Plant is subject to a shutdown for repair, maintenance, or other reasons, the Shoshone Call cannot be exercised, and river flows may drop.
- C. Certain Parties desire to keep the flow regime of the Colorado River as it has been historically influenced by the Senior Shoshone Call.

AGREEMENT NUMBER 13XX6C0129

- AA. “Start of Fill Date” is the date between April 1 and May 15 fixed annually by the Secretary of the Interior as the start of fill of Green Mountain Reservoir.
- BB. “Windy Gap Project” and “Windy Gap Firming Project” shall have the meanings defined in the Windy Gap Firming Project Intergovernmental Agreement (“WGFP IGA”).
- CC. “Winter Season” is the period from November 11 of any calendar year through March 24 of the next calendar year.

III. TERM OF AGREEMENT

- A. This Agreement will remain in effect for 40 years unless terminated sooner pursuant to paragraph III.B, below. Any of the Parties have the right to request renewal of this agreement for an additional 40-year term upon written request to all other Parties on or before two years prior to the expiration of this agreement. The Parties agree to negotiate any requests for renewal in good faith.
- B. This Agreement may be terminated upon written mutual agreement of all Parties.
- C. This Agreement may be amended at any time by written consent of all Parties hereto.
- D. Notwithstanding paragraph III.B, Reclamation may, at any time, terminate its participation in this Agreement for just cause upon providing written notice to all other Parties.

IV. DESCRIPTION OF SHOSHONE OUTAGE PROTOCOL ACTION BY PARTIES

- A. Actions by the River District, Middle Park and Denver Water.
 - 1. This Section IV.A is an Agreement between the River District, Middle Park and Denver Water. Other parties are not bound by this Section IV.A.
 - 2. Outage During the Non-Winter Season. If a Shoshone Outage occurs during the Non-Winter Season and results in a flow of the Colorado River at the Dotsero Gauge below 1,250 cfs (not including Shepherded Streamflow Reservoir Releases), then the River District, Middle Park and Denver Water agree that they will operate their water resources as if the Senior Shoshone Call was being administered in order to result in a flow of not more than 1,250 cfs at the Dotsero Gauge (not including Shepherded Streamflow Reservoir Releases).
 - 3. Denver Water, the River District, and Middle Park will not participate in the Shoshone Outage Protocol during periods of certain very dry Non-Winter Seasons that meet the definition of a Water Shortage in accordance with this paragraph IV.A.3. For the purposes of this paragraph IV.A, a Water Shortage exists when the following two conditions exist:

AGREEMENT NUMBER 13XX6C0129

1. Northern Water agrees to the operation by Reclamation of Green Mountain Reservoir, as contemplated by this Agreement and will not object to the operation of Green Mountain Reservoir in the manner described in this Agreement, unless any person or entity (other than the Municipal Subdistrict or Northern Water):
 - a. Objects, in any judicial or administrative forum, to the operation of Green Mountain Reservoir in the manner described in the Shoshone Protocol Agreement; or
 - b. Asserts, in any judicial or administrative forum, that an historic or a future operation of Green Mountain Reservoir or the Colorado-Big Thompson Project including, without limitation, the performance of this Shoshone Outage Protocol in accordance with this Agreement, is in violation of Senate Document No. 80 or the Blue River Decree.
2. This Agreement meets the requirements of the first sentence of Paragraph 3 of the Intergovernmental Agreement between Northern Water, Grand County, Middle Park, and the River District fully executed in 2016.
3. Nothing in this Agreement shall create, modify, alter or amend the contractual relationships between Reclamation and Northern Water.

D. Actions by Reclamation.

1. Subject to the provisions of paragraph IV.G.4 of this Agreement, Reclamation will participate in the Shoshone Outage Protocol when either of the following conditions are met:
 - a. The Shoshone Outage occurs between the Start of Fill Date and the End of Fill Season and Reclamation projects with 90% probability that a total of 154,645 AF will be accounted toward the volumes of water calculated in accordance with paragraphs II.A.3.b.i through II.A.3.b.v of the Green Mountain Reservoir Administrative Protocol prior to the Green Mountain Reservoir End of Fill Season, and that Reclamation projects with a 90% probability that after the End of Fill Season any volume of Bypassed Storage Water Owed To Green Mountain Reservoir by the Cities will be available to Reclamation pursuant to the Green Mountain Reservoir Administrative Protocol.or;
 - b. The Shoshone Outage occurs after the End of Fill Season and a total of 154,645 acre feet have been accounted toward the volumes of water identified in paragraphs II.A.3.b.i through II.A.3.b.v of the Green Mountain Reservoir Administrative Protocol and that any Bypassed Storage Water

during such periods that a Shoshone call reduction is in effect pursuant to the terms of the 2007 Shoshone Agreement (copy attached for reference).

V. SEVERABILITY AND REFORM

Wherever possible each provision of this Agreement shall be interpreted and implemented in such manner as to be effective and valid under applicable law. If any provision or portion of this Agreement is determined to be invalid or unenforceable, the remaining provisions shall remain in full force and effect unless the remaining provision's effectiveness is explicitly dependent upon the invalid or unenforceable provision. The Parties agree to reform this Agreement to replace any such invalid or unenforceable provision with a valid and enforceable provision that comes as close as possible to the intention of the stricken provision. The provisions of this Agreement shall be reasonably and liberally construed to achieve the intent of the Parties.

VI. COMPENSATION

Consideration for the actions pursuant to this Agreement is in providing greater certainty in the administration of water rights, and in the resolution among some of the Parties of certain unresolved issues. There will be no charge for water released under this agreement.

VII. GREEN MOUNTAIN RESERVOIR

Subject only to the express exceptions provided herein, the Parties agree not to challenge Reclamation's operation of Green Mountain Reservoir under this Agreement as inconsistent with Senate Document 80 or the Green Mountain Reservoir Operating Policy. The Parties will work in good faith to address any conflicts that may arise between the operations contemplated by this Agreement and the Green Mountain Reservoir Administrative Protocol. Any conflict that may arise shall be resolved in a manner that is consistent with Senate Document 80, the Blue River Decree, the Green Mountain Reservoir Operating Policy, and the Green Mountain Reservoir Administrative Protocol.

VIII. COLORADO RIVER COOPERATIVE AGREEMENT

Nothing in this Agreement shall be interpreted to constitute compliance with, or satisfaction of, the obligations of Article VI.C of the Colorado River Cooperative Agreement between Denver Water and seventeen West Slope entities.

IX. NO WAIVER

The Parties agree that nothing contained in this Agreement including, but not limited to, any Party's forbearance in the exercise of any Party's right to divert, store, and beneficially use water pursuant to its decrees, is intended nor shall it be construed to give rise to any claim, defense, or theory of acquiescence, bar, merger, issue or claim preclusion, promissory estoppel, equitable estoppel, waiver, laches, unclean hands or any other similar position or defense concerning the operation of such Parties' water rights.

Intergovernmental Agreement between the Northern Colorado Water Conservancy District, Grand County, Middle Park Water Conservancy District and Colorado River Water Conservation District (referred to collectively as the “Parties”).

The Parties agree as follows:

1. Delivery of 5,412.5 acre feet of water from Granby Reservoir

- a. The Parties agree that the Colorado-Big Thompson Project should be operated by an unprejudiced agency in a fair and efficient manner, equitable to all parties having interests therein, and in conformity with Paragraphs (a) through (l) of the “Manner of Operations of Project Facilities and Auxiliary Features” of Senate Document No. 80. The Parties agree that Reclamation has been designated as the agency to oversee the operation of the Colorado-Big Thompson Project.
- b. The Parties agree to support and not challenge the implementation of the Granby 5412.5 Contract(s).
- c. The Parties agree that Northern Water shall enter into a contract for the delivery of C-BT Project Water to an entity or entities in Mesa County, Colorado for municipal recreational use in the amount of 5,412.5 acre feet annually.
 - i. The Parties agree that the contract is subject to the written concurrence of the United States, which concurrence will be at the end of the contract.
 - ii. The Parties do not object to the inclusion of the following language to implement the United States’ concurrence (such language is general background language that is not intended to modify, change, or amend the applicable law):
 1. The United States hereby concurs with the [description of specific contract].
 2. As the owner of Granby Reservoir and the Colorado-Big Thompson Project, the United States, Department of the Interior, Bureau of Reclamation (“Reclamation”), hereby concurs with and approves this contract among the Northern Colorado Water Conservancy District and the [applicable West Slope municipal entities].
 3. Reclamation hereby confirms its determination that the contract is consistent with all applicable legal authority and maintains the appropriate balance amongst all parties having interests in the Colorado-Big Thompson Project operations required by Senate

3. Shoshone Outage Protocol and Permanent Shoshone Solution. The Parties agree to work cooperatively to implement a stipulated resolution of the Shoshone Outage Protocol, consistent with Exhibit 2 [Draft Administrative Protocol]. Northern Water agrees that it will participate in good faith in negotiations to achieve permanent management of the flow of the Colorado River to address certain flow changes that result during a Shoshone Outage.
4. Wild & Scenic Commitment. Northern Water shall pay \$200,000.00 and the River District shall pay \$100,000.00 to the Endowment Fund of the Upper Colorado River Wild and Scenic Stakeholder Group for use to protect Wild and Scenic resources identified in the Colorado River from Kremmling to No Name. Northern Water's contribution provided herein shall satisfy its obligation to contribute endowment funds for Wild and Scenic purposes under this Agreement. The River District's contribution provided in this Agreement and the River District's contribution provided for in the WGFP IGA shall satisfy the River District's obligation to contribute endowment funds for the Upper Colorado River Wild & Scenic Stakeholder Group. Northern Water will contribute 80% of the amount contributed by the River District, not to exceed \$20,000 annually adjusted annually by the Denver-Boulder-Greely CPI-U, for annual operating costs of the Upper Colorado River Wild and Scenic Stakeholder Group.
5. CWCB Instream Flow. Northern Water will not oppose the entry of decrees in Cases No. 11CW159, 11CW160, 11CW161, Water Division No. 5 consistent with the draft decree dated September, 2012 and stipulation attached as Exhibit 3 to this Agreement, and in accordance with the applicable law for a CWCB instream flow on the Colorado River mainstem from the confluence of the Blue and Colorado Rivers to a point immediately upstream of the confluence of the Eagle and Colorado Rivers provided the right is subject to substantively the same terms and conditions as are set forth in the Findings of the CWCB in declaring its intent to appropriate dated July 12, 2011.
6. Grand County RICD. Northern Water will not oppose the entry of a decree in Case No. 10CW298 consistent with the draft decree dated September 20, 2012 and stipulation attached as Exhibit 4 to this Agreement.
7. Compact Curtailment Plan. The Signatories agree to cooperate in good faith toward the development of a plan to avoid and address a potential curtailment of existing Colorado water rights under the provisions of the 1922 Colorado River Compact and the 1948 Upper Colorado River Compact.
8. No Opposition to Colorado River Cooperative Agreement. Northern Water agrees not to oppose or otherwise interfere with the efforts to obtain such court decrees and approvals as are necessary to implement Articles I.B.1.f.; I.B.1.g; I.B.2.b;I.B.2.c; I.B.2.e; I.B.4; III.A.3.b;III.A.4; III.B.7; III.B.8; III.B.14; III.E.1.b; III.E.9; III.E.10; III.E.11; III.E.13;III.E.15; III.E.17; III.E.20; IV.A.1; IV.G; V; and VI of the Colorado River Cooperative Agreement, to the extent that the court decrees and approvals, including applications for reasonable diligence or to make absolute in whole or in part the

conditional water rights in Case No. 11CW152 or the implementation of these court decrees and approvals do not adversely affect the yield of the Colorado-Big Thompson Project, materially increase the cost of operations of the Colorado-Big Thompson Project, or adversely affect the operation of the Colorado-Big Thompson Project.

9. No Opposition to Windy Gap Firming Project IGA. Northern Water will not interfere with the management and delivery of Windy Gap Project Water stored in the C-BT Project if the management and delivery of Windy Gap Project Water is pursuant to the WGFP IGA and the Amendatory Contract between Northern Water, the Subdistrict, and the United States.
10. Grand Lake Clarity. Northern agrees that it will participate in implementing a solution to achieve the State Clarity Standard for Grand Lake, and along with Grand County, will use its influence and authority to see that the Bureau of Reclamation does the same.
11. Temperature Standards. Northern Water will not independently propose changes to State Water Quality Control Commission temperature standards for the reaches affected by the WGFP without first working through the Cooperative Effort.
12. No Waiver. The Parties do not agree:
 - a. Whether amendment of the Blue River Decree or Senate Document No. 80 is required to authorize the storage of C-BT Project water in Chimney Hollow Reservoir;
 - b. Whether a change of water right is required to allow the storage of Windy Gap Firming Project Water or C-BT Project water in Chimney Hollow Reservoir; or
 - c. Whether Section 390b(d) of the Water Supply Act of 1958 requires Congressional approval for the Windy Gap Firming Project.
 - d. Notwithstanding these disagreements, the West Slope Parties will not object to, litigate or otherwise dispute in any forum the storage of C-BT Project water in Chimney Hollow Reservoir or the storage of Windy Gap Firming Project water in Chimney Hollow Reservoir in accordance with, and subject to the following provisions:
 - i. The total active volume of C-BT Project water stored in the combination of Granby Reservoir and Chimney Hollow Reservoirs will not exceed 465,568 acre-feet. For the purposes of this Paragraph, the amount of C-BT Project water in storage in Granby Reservoir shall be the amount of C-BT Project water stored above the invert of the Farr Pumping Plant Intake and below the normal high water line.
 - ii. In any year in which the April 1st or subsequent projection by Northern Water anticipates a spill at Granby Reservoir, C-BT Project water then in storage in Chimney Hollow Reservoir shall not be released to satisfy delivery requirements to Colorado-Big Thompson Project Allottees if such release would allow the capture and storage of additional C-BT Project water in Granby Reservoir.

Windy Gap Firing Project Intergovernmental Agreement (WGFP IGA)

The Municipal Subdistrict, Northern Colorado Water Conservancy District and its Windy Gap Firing Project Water Activity Enterprise, Board of County Commissioners of Grand County, Colorado, Middle Park Water Conservancy District, Colorado River Water Conservation District and Northwest Colorado Council of Governments enter into this Windy Gap Firing Project Intergovernmental Agreement (“WGFP IGA”) as of the latest date of execution of this WGFP IGA by the Parties.

I) Definitions.

- A. “1980 and 1985 Agreements” are the April 30, 1980 “Agreement Concerning the Windy Gap Project and the Azure Reservoir and Power Project” (“1980 Agreement”) and the March 29, 1985 “Supplement to Agreement of April 30, 1980” (“1985 Agreement”).
- B. “Accounting Year” for the Middle Park Water Apportionment will begin on August 1st and end on July 31st the following calendar year. Middle Park’s Accounting Year shall become effective on August 1 following execution of this WGFP IGA.
- C. “Active Storage” for Chimney Hollow Reservoir is that reservoir capacity contained between the invert of the reservoir outlet works and the normal high water line in Chimney Hollow Reservoir, or in the case of Alternative Reservoirs, the total capacity available for storage and release for the benefit of the WGFP.
- D. “Amendatory Contract” is the Amendatory Contract for the Introduction, Storage, Carriage, and Delivery of Water for Municipal Subdistrict, Northern Colorado Water Conservancy District, Colorado-Big Thompson Project, Colorado dated March 1, 1990 among Reclamation, the Subdistrict and Northern Water and any amendments, replacements, or supplements thereto necessary to implement the WGFP.
- E. “Carryover Balance” is a portion of a Water Apportionment that is available for use pursuant to this WGFP IGA that can be stored for multiple years.
- F. “Carryover Balance Limitation” is the maximum total Carryover Balance that can be credited to Middle Park or Grand County at any point in time.
- G. Chimney Hollow Reservoir (“Chimney Hollow Reservoir”) is that reservoir located on the East Slope identified in the Final Environmental Impact Statement for the Windy Gap Firing Project as the proposed action and any reservoir or reservoirs on the East Slope that are constructed as an alternative or in addition to the reservoir identified in the Final

- 2) The Windy Gap Project and WGFP will operate in accordance with the Shoshone Outage Protocol from July 16-April 14 of each year. Prior to WGFP Completion, the Windy Gap Project and WGFP may operate in accordance with the Shoshone Outage Protocol during the period of April 15-July 15 on a voluntary cooperative basis. Following WGFP Completion, the Windy Gap Project and WGFP will operate in accordance with the Shoshone Outage Protocol during the period April 15 – July 15 at any time during this period when the combined amount of Windy Gap Project Water stored in Chimney Hollow Reservoir and Windy Gap Project Water stored on behalf of WGFP Participants in Granby Reservoir is greater than 50% of the Active Capacity of Chimney Hollow Reservoir.
 - 3) Participation in the Shoshone Outage Protocol by the Windy Gap Project and WGFP during the period of April 15-July 15 will be limited to a total maximum volume of foregone pumping equal to 10,000 acre feet (30 days with one pump running) in one year, a total of 20,000 acre feet (60 days with one pump running) in any 3 consecutive year period, and a total of 30,000 acre feet (90 days with one pump running) in any 5 consecutive year period.
 - 4) The Subdistrict agrees that it will participate in good faith in negotiations to achieve permanent management of the flow of the Colorado River to address certain flow changes that result during a Shoshone Outage.
- L. Cooperative Effort for Aquatic Environment. The Subdistrict and the WGFP Enterprise, Grand County, Middle Park, and the River District agree to participate in the Learning by Doing Cooperative Agreement (“Cooperative Agreement”) as defined in the Intergovernmental Agreement for The Learning by, Doing Cooperative Effort which is attached as Exhibit 1 but which is not a part of or incorporated within this WGFP IGA. Any amendments to the Cooperative Agreement shall not require amendment or modification of this WGFP IGA.
- M. Colorado River Cooperative Agreement. The Subdistrict and the WGFP Enterprise agree not to oppose or otherwise interfere with the efforts to obtain such court decrees and approvals as are necessary for the Colorado River Cooperative Agreement to the extent that the court decrees and approvals do not adversely affect the WGFP or Windy Gap Project. The Subdistrict further agrees that it will not divert water that would not have been available but for the actions of the Management Committee or Grand County pursuant to the Learning by Doing process.
- N. Wild and Scenic. Within one year of issuance of an acceptable permit for the WGFP, the Subdistrict shall pay \$50,000 and the River District shall pay \$25,000 to the Endowment Fund of the Upper Colorado River Wild and Scenic Stakeholder Group for use to protect Wild and Scenic resources

**Agreement and Intergovernmental Agreement between Aurora, CRWCD,
Basalt WCD, Eagle County, Pitkin County, Grand Valley Water Users
Association, Orchard Mesa Irrigation District, and the Ute WCD**

DATE FILED: August 3, 2018 10:07 AM
FILING ID: A5163D429A3C5
CASE NUMBER: 2009CW142

This Agreement and Intergovernmental Agreement (the “Agreement”) is entered into as of the Effective Date herein below defined, by and between:

- The City of Aurora, Colorado, a Colorado municipal corporation of the Counties of Adams, Arapahoe, and Douglas, acting by and through its Utility Enterprise ("Aurora") and,
- Busk Ivanhoe, Inc., a Colorado mutual ditch company (“B-I Inc.”), and
- The Colorado River Water Conservation District (“CRWCD”) and,
- The Basalt Water Conservancy District (“BWCD”) and,
- The Board of County Commissioners of Eagle County (“Eagle”) and,
- The Board of County Commissioners of Pitkin County (“Pitkin”) and,
- The Grand Valley Water Users Association (“GVWUA”) and,
- Orchard Mesa Irrigation District (“OMID”) and,
- The Ute Water Conservancy District acting by and through the Ute Water Activity Enterprise (“Ute”).

Individually these entities are sometimes hereinafter referred to as a “Party” and collectively as the “Parties.” The CRWCD, BWCD, Eagle, Pitkin, GVWUA, OMID and Ute are collectively referred to as the “West Slope Parties.”

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6.	Non-assignability and No Subleases.....	5
7.	No Waiver of Governmental Immunity	6
8.	Force Majeure.....	6
9.	No Water Quality Objections.....	6
10.	SEO & DEO.....	6
11.	Future Cooperation	6

29. BWCD Support of Box Creek Reservoir and No Changes to Busk-Ivanhoe Agreements. In view of the agreements in this Section III, BWCD specifically acknowledges Aurora is working toward developing a water reservoir in Lake County, Colorado referred to as the Box Creek Reservoir, generally described in Exhibit B. BWCD agrees to acknowledge its support for Aurora's development of Box Creek Reservoir in writing in the form of Exhibit C, attached, as may be requested by Aurora. This Agreement does not change, modify, revise or amend any other contract or agreement between any of the Parties and B-I Inc. Aurora agrees that it will not request B-I Inc. to perform any illegal operations or activities. The Parties acknowledge this Agreement does not change, modify, revise, amend, replace, displace or supersede any currently existing contract or agreement between Aurora, B-I Inc., the Busk-Ivanhoe Water System Authority or Pueblo Water concerning the Busk-Ivanhoe System.

IV. Shoshone Outage Protocol & Shoshone Permanency

30. ShOP Agreement. The Shoshone Power Plant is a mainstem hydroelectricity plant with generation facilities located adjacent to the mainstem of the Colorado River downstream from its confluence with Shoshone Creek and west of Exit 125 of Interstate Highway 70 ("SPP"). The SPP is currently owned and operated by Public Service Company of Colorado, d/b/a Xcel Energy ("PSCo"). The SPP has a senior hydropower water right with a 1902 Appropriation for 1250 cfs ("Senior Hydropower Right") and a junior hydropower water right with a 1929 Appropriation for 158 cfs ("Junior Hydropower Right"). The Senior Hydropower Right and the Junior Hydropower Right are collectively referred to for purposes of this Agreement as the "SPP Water Rights." Several entities,¹ some of whom are parties to this Agreement entered into an Agreement dated June 27, 2016 referred to as the Shoshone Outage Protocol (US Bu Rec Agreement No. 13XX6C0129) ("ShOP Agreement"). The parties to the ShOP Agreement 1) recognized when the SPP is operating its river call it can command the flow of the Colorado River and certain tributaries in certain stream conditions by exercising the Senior Hydropower Right against upstream junior water rights; 2) recognized whenever the SPP is not operating because of repairs, maintenance or other reasons, the SPP river call cannot be exercised and upstream junior water rights would be able to divert water; 3) recognized a desire of some to maintain the flow regimen of the Colorado River as historically influenced by the Senior Hydropower Right; and 4) agreed among themselves to implement certain operating procedures during times when the SPP was not operating. Included within the ShOP Agreement were provisions when certain parties thereto would not divert under their water rights per the operating procedures.

31. Aurora Ownership.

31.1 The Parties acknowledge Aurora is the owner of one-half of the Homestake System which system includes, inter alia, the Homestake water rights first decreed in Eagle County District Court Case No. CA-1193 with Appropriation dates of 1952. The Parties

¹ US Bureau of Reclamation, Colorado Division of Water Resources, Denver Water Board, CRWCD, Middle Park WCD, Northern Colorado WCD & its Municipal Subdistrict, Grand Valley Water Users Association, Orchard Mesa Irrigation District and the Grand Valley Irrigation Company

further acknowledge that as a one-half owner of the Homestake System Aurora cannot bind, and is not binding, the owner of the other one-half of the Homestake System, Colorado Springs-Utilities, to any of the provisions hereof. In view of the forgoing Aurora agrees that, subject to the further terms and provisions herein stated, it will subject its one-half of the Homestake water rights to the terms herein following. The Parties acknowledge this Agreement does not change, modify, revise, amend, replace, displace or supersede any currently existing contract or agreement between the City of Colorado Springs and Aurora concerning the Homestake System (“Homestake Agreements”).

31.2 The Parties acknowledge Aurora is the owner of two-thirds of the outstanding shares of the Fremont Pass Ditch Company (“FPDC”) which Company owns Columbine Ditch water rights decreed in Civil Action No. 963, District Court for Eagle County, WD-5, 90CW340, 09CW187 and 09CW188. The Parties further acknowledge that as a two-thirds owner of the FPDC Aurora cannot bind, and is not binding, the owner of the other one-third of the FPDC, the Climax Molybdenum Company (“CMC”), to any of the provisions hereof including anything that may interfere with CMC’s rights under any FPDC operating agreement, contracts or practices. Those CMC rights include, inter alia, the right to use all of the water available by the FPDC rights within any given year. In view of the forgoing Aurora agrees that, subject to the further terms and provisions herein stated, it will subject its two-thirds of the FPDC water rights, when the same are not otherwise available to CMC, to the terms herein following.

32. Term of Aurora ShOP Agreement. The initial term of Aurora’s agreement regarding its one-half of the Homestake water rights and two-thirds of the FPDC water rights in accordance with the ShOP Agreement as herein specified (“Aurora ShOP”) will be until June 27, 2056. This period will commence immediately following the Initiation Date as described in Section I. of this Agreement.

33. Aurora ShOP Agreement. Under this Aurora ShOP, if the SPP is not calling because of repairs, maintenance or other reasons and flow at the Dotsero Gauge is less than or equal to 1,250 cfs (not including Shepherded Stream Flow Reservoir Releases²) Aurora agrees to operate its one-half of the Homestake water rights and two-thirds of the FPDC water rights as if the Senior Hydropower Right was calling for a flow of 1,250 cfs at the Dotsero Gauge. Aurora agrees that if it acquires or appropriates any water rights that are junior to and legally and physically subject to the Senior Hydropower Right call, then Aurora will operate such right pursuant to the Aurora ShOP in accordance with the terms of this Agreement.

² The Parties adopt the definition of Shepherded Streamflow Reservoir Releases and considerations thereof as set forth in the ShOP Agreement. In the ShOP Agreement Shepherded Streamflow Reservoir Releases are defined as those reservoir releases made for the reservoir owners’ purposes of increasing stream flows either at the Shoshone Power Plant, in the 15-Mile Reach, or at other stream locations at the rates and volumes of the reservoir releases, provided such releases are made for decreed beneficial uses for instream or in-channel purposes at any such locations including, but not limited to, endangered fish species purposes within the 15-Mile Reach. The 15-Mile Reach is the reach of the Colorado River which extends from the point at which the tailrace common to the Grand Valley Power Plant and the Orchard Mesa Irrigation District pumping plant returns to the Colorado River below the Grand Valley Irrigation Company diversion dam, downstream to the confluence of the Colorado River and Gunnison River.

further acknowledge that as a one-half owner of the Homestake System Aurora cannot bind, and is not binding, the owner of the other one-half of the Homestake System, Colorado Springs-Utilities, to any of the provisions hereof. In view of the forgoing Aurora agrees that, subject to the further terms and provisions herein stated, it will subject its one-half of the Homestake water rights to the terms herein following. The Parties acknowledge this Agreement does not change, modify, revise, amend, replace, displace or supersede any currently existing contract or agreement between the City of Colorado Springs and Aurora concerning the Homestake System ("Homestake Agreements").

31.2 The Parties acknowledge Aurora is the owner of two-thirds of the outstanding shares of the Fremont Pass Ditch Company ("FPDC") which Company owns Columbine Ditch water rights decreed in Civil Action No. 963, District Court for Eagle County, WD-5, 90CW340, 09CW187 and 09CW188. The Parties further acknowledge that as a two-thirds owner of the FPDC Aurora cannot bind, and is not binding, the owner of the other one-third of the FPDC, the Climax Molybdenum Company ("CMC"), to any of the provisions hereof including anything that may interfere with CMC's rights under any FPDC operating agreement, contracts or practices. Those CMC rights include, inter alia, the right to use all of the water available by the FPDC rights within any given year. In view of the forgoing Aurora agrees that, subject to the further terms and provisions herein stated, it will subject its two-thirds of the FPDC water rights, when the same are not otherwise available to CMC, to the terms herein following.

32. Term of Aurora ShOP Agreement. The initial term of Aurora's agreement regarding its one-half of the Homestake water rights and two-thirds of the FPDC water rights in accordance with the ShOP Agreement as herein specified ("Aurora ShOP") will be until June 27, 2056. This period will commence immediately following the Initiation Date as described in Section I. of this Agreement.

33. Aurora ShOP Agreement. Under this Aurora ShOP, if the SPP is not calling because of repairs, maintenance or other reasons and flow at the Dotsero Gauge is less than or equal to 1,250 cfs (not including Shepherded Stream Flow Reservoir Releases²) Aurora agrees to operate its one-half of the Homestake water rights and two-thirds of the FPDC water rights as if the Senior Hydropower Right was calling for a flow of 1,250 cfs at the Dotsero Gauge. Aurora agrees that if it acquires or appropriates any water rights that are junior to and legally and physically subject to the Senior Hydropower Right call, then Aurora will operate such right pursuant to the Aurora ShOP in accordance with the terms of this Agreement.

² The Parties adopt the definition of Shepherded Streamflow Reservoir Releases and considerations thereof as set forth in the ShOP Agreement. In the ShOP Agreement Shepherded Streamflow Reservoir Releases are defined as those reservoir releases made for the reservoir owners' purposes of increasing stream flows either at the Shoshone Power Plant, in the 15-Mile Reach, or at other stream locations at the rates and volumes of the reservoir releases, provided such releases are made for decreed beneficial uses for instream or in-channel purposes at any such locations including, but not limited to, endangered fish species purposes within the 15-Mile Reach. The 15-Mile Reach is the reach of the Colorado River which extends from the point at which the tailrace common to the Grand Valley Power Plant and the Orchard Mesa Irrigation District pumping plant returns to the Colorado River below the Grand Valley Irrigation Company diversion dam, downstream to the confluence of the Colorado River and Gunnison River.

33.1 During Aurora ShOP Operations defined in paragraph 33 above, Aurora agrees that, with respect to its one-half interest in the Homestake Project, the West Slope parties to the 2010 Consolidated Water Exchange Agreement between Aurora, CRWCD and others (the “2010 Consolidated Exchange Agreement”) may operate exchanges into the 4,000 acre foot portion of West Slope credit available pursuant to the 2010 Consolidated Exchange Agreement at Homestake Reservoir. If the 4,000 acre foot West Slope credit available pursuant to the 2010 Consolidated Exchange Agreement at Homestake Reservoir is full or if the West Slope parties to that agreement do not operate under that exchange, then Aurora will operate its one-half of the Homestake water rights and two-thirds of the Fremont Pass Ditch Company water rights as if the Senior Hydropower Right was calling for a flow of 1,250 cfs at the Dotsero Gauge set forth in paragraph 33 above.

33.2 Voluntary Lease During Aurora ShOP operations. If the 4,000 acre foot West Slope credit available pursuant to the 2010 Consolidated Exchange Agreement at Homestake Reservoir is full during Aurora ShOP operations, then Aurora may choose to lease from the CRWCD, on a one-year spot-market basis (i.e., if-available), up to 500 acre feet from the CRWCD’s Wolford Mountain Reservoir water marketing pool for replacement purposes by Aurora. The CRWCD agrees that, due to the unique nature of this Agreement and the mutual compromises included herein, the rate of any such lease shall not be greater than two times the CRWCD’s then-current spot-market lease rate for in-basin municipal use. The form of such lease will be generally consistent with the CRWCD’s then-current standard form contract, the current version of which is attached for example purposes only as Exhibit D attached to this Agreement. The Parties agree to not oppose Aurora’s efforts to use water leased pursuant to this paragraph 33.2 by exchange or substitute supply for replacement purposes in accordance with the priority system.

33.3 Drought Exception to Aurora ShOP. If the following two conditions exist (“Drought Triggers”) as of April 1, and for the duration of such period that both conditions exist, Aurora will not be required to follow the Aurora ShOP: 1) the “most probable” forecast of streamflow prepared by the Natural Resources Conservation Service (or such other forecast as the CRWCD and Aurora agree to use) indicates the April – July undepleted streamflow at the Colorado River near Dotsero Gauge will be less than or equal to the eighty-five percent (85%) of average; and 2) Aurora’s total system storage is at or below sixty percent (60%) of total capacity on April 1 and has not reached eighty (80%) of total capacity at any time thereafter. For purposes of this Agreement, Aurora’s total system storage is defined as set forth on Exhibit E to this Agreement.

33.4 “Paper-fill” Accounting during Aurora ShOP Operation. The Parties acknowledge the Colorado State Engineer’s administrative practice of “Paper-fill” accounting. Generally, under this administrative practice, if a storage facility is in-priority and can store water but the operator(s) thereof choose not to store water, then the State Engineer or his/her designee account for the water storage right as though water was physically placed into storage or otherwise diverted. The Parties acknowledge that pursuant to the Colorado State Engineer’s current administration regarding ShOP Agreement operations, bypasses made in the current year are only accounted for under that year’s storage volume and are not accounted for under the storage volume in the next Homestake Reservoir Water Year (November –

October 31). If future administrative actions by the Colorado State Engineer require that bypasses under the Aurora ShOP made in the then-current year are accounted against the Homestake Reservoir storage decree under both the current year and following years' storage volume, then, if as a result of Aurora's operations under Aurora ShOP, the "Paper-Fill" accounting against Aurora's Homestake water rights exceeds 500 A-F in the then-current storage season, the Aurora ShOP Operation will be excused for the remainder of that storage season and the subsequent year(s) to the extent of and so long as such "Paper-Fill" that exceeds 500 A-F. Alternatively, Aurora may choose to lease from any West Slope supplier or the CRWCD's Wolford Mountain Reservoir water marketing pool, on a one-year spot-market basis (i.e., if-available), up to the amount of any Paper-fill for the then current storage season for exchange and replacement purposes by Aurora so that Aurora may divert and store water at its facilities and so that water will be released from Wolford Mountain Reservoir or other sources as a component of achieving the flow related goals of the Aurora ShOP. The CRWCD agrees that, due to the unique nature of this Agreement and the mutual compromises included herein, the rate of any such lease shall not be greater than two times the CRWCD's then-current spot-market lease rate for in-basin municipal use. The form of such lease will be generally consistent with the CRWCD's then-current standard form contract, the current version of which is attached for example purposes only as Exhibit D attached to this Agreement. The Parties agree to not oppose Aurora's efforts to use water leased pursuant to this paragraph 33.4 by exchange or substitute supply for replacement purposes in accordance with the priority system.

33.5 Aurora agrees that it will not divert or exchange any of the water released or bypassed by any party pursuant to the ShOP Agreement or otherwise operate its system or water rights in a manner that will diminish the benefit of the ShOP Agreement to the stream system of the flows of up to 1,250 cfs at the Dotsero Gauge.

34. Shoshone Permanency. CRWCD, BWCD, Eagle, GVWUA, OMID and Ute (in addition to other western slope entities who are not parties to this Agreement) seek to achieve permanent protection of the flow regime created by operation of the SPP regardless of whether the SPP continues to operate in the future ("Shoshone Permanency"). Aurora agrees to not oppose Shoshone Permanency as follows:

34.1 Aurora will not oppose a sale or other form of transfer of interest by PSCo of its SPP and/or SPP Water Rights, including any contractual interest therein, to the CRWCD or any other West Slope entity or consortium containing West Slope entities for the purpose of achieving Shoshone Permanency.

34.2 Aurora will not seek to acquire or participate in the acquisition of the SPP and/or the SPP Water Rights. Except as may occur with respect to a potential acquisition of the SPP and/or SPP Water Rights or interest therein by a West Slope entity consistent with paragraph 34.1, above, Aurora will not support the acquisition of the SPP and/or the SPP Water Rights itself or by any other entity.

34.3 The Parties recognize the existence of that certain 2007 Agreement Concerning Shoshone Call between the City and County of Denver, acting by and through its Board of

Water Commissioners (“Denver Water”) and PSCo (the “2007 Call Reduction Agreement”). The 2007 Call Reduction Agreement provides, that under certain defined drought conditions, Denver Water is entitled to pay PSCo to reduce (or “relax”) the call of the SPP Water Rights. The Parties further recognize that Article VI.E.2 of the 2012 Colorado River Cooperative Agreement provides that Denver Water, with the support of the West Slope signatories, may request PSCo to amend the 2007 Call Reduction Agreement to “relax” the call of the SPP Water Rights to 704 cfs, during extreme drought conditions, for an expanded period during the winter months subject to certain terms and conditions described in CRCA Article VI.E.2.a-e (“CRCA Winter Call Reduction”). Aurora agrees that it will not seek or support any additional “relaxation” of the SPP Water Rights, except as expressly provided for in paragraphs 34.4.1. and 34.4.2. below.

34.4 Aurora will not oppose an agreement between a West Slope entity or entities, the CWCB, and any other entity entered for the purpose of adding instream flow as an additional use of the Senior Hydropower Right (“CWCB Agreement”). In addition thereto, Aurora will not oppose the entry of a final water court decree for the purpose of adding instream flow as an additional use of the Senior Hydropower Right (“ISF Application”). Aurora’s non-opposition to any such CWCB Agreement and ISF decree shall be contingent on inclusion of the following terms in the CWCB Agreement and ISF Application:

34.4.1 The 2007 Call Reduction Agreement, including any future amendment providing for a CRCA Winter Call Reduction, will be made permanent and made applicable to any ISF use of the Senior Hydropower Right.

34.4.2 In the event of a curtailment, or valid threat or expectation thereof, resulting from a call upon the waters of the State of Colorado resulting from enforcement of the Colorado River Compact and/or the Upper Colorado River Basin Compact, the Parties to the CWCB Agreement will work cooperatively with flexibility among themselves and other water users, including Aurora, toward a goal of minimizing or avoiding desperate adverse impacts to entities on either side of the Continental Divide.

34.5 Aurora recognizes that the West Slope Parties, upon acquiring any interest in the SPP Water Rights, may also request that instream flow uses be added as an additional use to the Junior Hydropower Right. Aurora agrees to participate in good faith discussions and negotiations with the West Slope Parties, the CWCB, and any other parties regarding the addition of instream flow uses to the Junior Hydropower Right. Any agreement with the CWCB and any water court decree adding instream flow uses to the Junior Hydropower Right will at a minimum be subject to the terms identified in paragraphs 34.4.1 and 34.4.2 above. Additionally, the West Slope Parties agree to diligently meet and negotiate in good faith with Aurora regarding the inclusion of Aurora’s Drought Exceptions, described in paragraph 33.3, to any final agreement with the CWCB for any instream uses of the SPP Water Rights in excess of 1,250 cfs.

34.6 After instream flow use has been added as an alternate use of the Senior Hydropower Right and/or Junior Hydropower Right, the CRWCD agrees that, during a drought period that meets the drought conditions described in paragraph 33.3, above, Aurora may choose to lease from any West Slope supplier or the CRWCD's Wolford Mountain Reservoir water marketing pool, on a one-year spot-market basis (i.e., if-available), up to the amount of any shortage in fill for the then current storage season for replacement purposes by Aurora. The CRWCD agrees that, due to the unique nature of this Agreement and the mutual compromises included herein, the rate of any such lease shall not be greater than two times the CRWCD's then-current spot-market lease rate for in-basin municipal use. The form of such lease will be generally consistent with the CRWCD's then-current standard form contract, the current version of which is attached for example purposes only as Exhibit D attached to this Agreement. The Parties agree to not oppose Aurora's efforts to use water leased pursuant to this paragraph 34.6 by exchange for replacement purposes in accordance with the priority system. The lack of water available for lease by the CRWCD to Aurora on a spot-market basis pursuant to this paragraph 34.6 shall not excuse operation of Aurora's water rights in accordance with the priority system as junior to, and subject to, the call of the SPP Water Right being exercised for instream flow purposes.

35. Other Provisions. As hereinafter described the following agreements are made.

35.1 Some of the Parties are among the numerous entities that comprise the Upper Colorado River Wild and Scenic Alternative Management Plan Stakeholder Group ("UPCO SG"). The Parties agree to support the recognition of the ShOP and Shoshone Perannency provisions of this Agreement as a cooperative measure and/or long term protective measure submitted by the Parties that are members of the UPCO SG for the benefit of river Segment 7 (immediately downstream of the confluence of the Eagle and Colorado Rivers to one-half mile east of No Name Creek).

35.2 The Parties, except any Party that is a permitting authority for the Eagle River MOU process³, will not to seek as a condition of any Eagle River MOU permitting process minimum base flows in the Colorado River at the current location of the Dotsero Gauge in excess of the total of the SPP water rights described in paragraph 30. However, this provision shall not prevent the Parties from advocating for high flow season channel maintenance and channel flushing flows.

V. Diligence Détente

36. Diligence Cases. The Parties either individually or through association have interests in certain conditionally decreed water rights that arise in Water Division 5 as more thoroughly described as follows:

³ The Eagle River MOU is a 1998 agreement between Aurora, Colorado Springs, CRWCD, Cyprus Metals Company (Climax), and the Vail Consortium (Eagle River W&SD, Upper Eagle Regional Water Authority and Vail Associates Inc.) that, *inter alia*, proposes certain joint use projects.

**SETTLEMENT AGREEMENT
CONCERNING
WATER RIGHTS**

Effective March 1, 2024

This Agreement is made among the City of Colorado Springs, acting through its enterprise, Colorado Springs Utilities (“Colorado Springs”), the Colorado River Water Conservation District (“CRWCD”), the County of Summit (“Summit County”), the Town of Breckenridge, the Grand Valley Water Users Association, the Orchard Mesa Irrigation District, and the Ute Water Conservancy District, acting by and through the Ute Water Activity Enterprise, and collectively referred to as the Parties.

RECITALS

A. Colorado Springs has filed an application for a finding of reasonable diligence for its conditional water storage rights for Spruce Lake Reservoir, Mayflower Lake Reservoir, and Lower Blue Lake Reservoir, which is now pending in Case No. 15CW3019, District Court, Water Division 5. The West Slope Parties (defined below) have filed statements of opposition in Case No. 15CW3019.

B. Colorado Springs has filed an application for a finding of reasonable diligence for its conditional appropriative rights of exchange for its 2003 Homestake-Blue River Exchange, which is now pending in Case No. 18CW3041, District Court, Water Division 5. Summit County has filed a statement of opposition to that application.

C. Summit County has filed an application for a finding of reasonable diligence for its conditional water rights for Swan River Reservoir and Lower Mohawk Reservoir in Case No. 16CW3015, District Court, Water Division No. 5. Colorado Springs has filed a statement of opposition to that application.

D. Each Party to this Agreement owns water rights in the Colorado River Basin and believes that settlement of their respective claims in Cases Nos. 15CW3019, 16CW3015, and 18CW3041, on the terms set forth in this Agreement, will protect their water rights or provide other material benefits to them.

AGREEMENT

In consideration of the foregoing introductory statement, the keeping and performance of the promises contained herein, and other valid consideration to each of the Parties, which is hereby acknowledged and confirmed, the Parties agree as follows:

1. Definitions.

For the purposes of this Agreement, the following terms shall have the following meanings, unless the context clearly requires otherwise:

1.1. “1929 Blue River Water Rights” means the Colorado Springs’ Continental-Hoosier System water rights adjudicated to the East Hoosier Ditch and the West Hoosier Ditch in Civil Action No. 1710 by the Summit County District Court by decree entered on October 26, 1937.

under certain defined drought conditions, Denver Water is entitled to pay PSCo to reduce (or “relax”) the call of the SPP Water Rights. The Parties further recognize that Article VI.E.2 of the 2012 Colorado River Cooperative Agreement (“CRCA”) provides that Denver Water, with the support of the west slope signatories, may request PSCo to amend the 2007 Call Reduction Agreement to “relax” the call of the SPP Water Rights to 704 c.f.s., during extreme drought conditions, for an expanded period during the winter months subject to certain terms and conditions described in CRCA Article VI.E.2.a-e (“CRCA Winter Call Reduction”). Colorado Springs agrees that it will not seek or support any additional “relaxation” of the SPP Water Rights, except as expressly provided for in paragraph 10.6.4.1 below.

10.6.4. Colorado Springs will not oppose an agreement between a west slope entity or entities, the Colorado Water Conservation Board (“CWCB”), and any other entity entered into for the purpose of adding instream flow as an additional use of the Senior Hydropower Right (“CWCB Agreement”). In addition, Colorado Springs may become a party to any water court application seeking such instream flows (“ISF Application”) but will not oppose the entry of a final water court decree for the purpose of adding instream flow as an additional use of the Senior Hydropower Right. Colorado Springs’ non-opposition to any such CWCB Agreement and ISF decree shall be contingent on inclusion of the following terms in the CWCB Agreement, ISF Application, and any resulting ISF Decree:

10.6.4.1. In the event of a curtailment of Colorado water rights, or an imminent threat thereof, resulting from the State of Colorado’s obligations under the Colorado River Compact and/or the Upper Colorado River Basin Compact, the Parties will work cooperatively to implement this Agreement consistent with any duly adopted final rules or regulations of the State Engineer adopted for purposes of fulfillment of Colorado’s commitments under either or both compacts, and that are in force, any appeal notwithstanding.

10.6.5. Colorado Springs recognizes that the West Slope Parties, upon acquiring any interest in the SPP Water Rights, may also request that instream flow uses be added as an additional use to the Junior SPP Water Right. Colorado Springs agrees to participate in good faith discussions and negotiations with the West Slope Parties, the CWCB, and any other parties regarding the addition of instream flow uses to the Junior Hydropower Right. Any agreement with the CWCB and any water court decree adding instream flow uses to the Junior Hydropower Right will at a minimum be subject to the terms identified in paragraph 10.6.4.1, above. Additionally, the West Slope Parties agree to diligently meet and negotiate in good faith with Colorado Springs regarding the inclusion of Colorado Springs’ drought exceptions described in paragraph 10.5.6 above, into

Springs' efforts to use water leased pursuant to this paragraph by exchange or substitute supply for replacement purposes in accordance with the priority system.

10.5.8. If the Colorado State Engineer or Division Engineer is requiring carry forward of "Paper-fill" storage from one Water Year to the next Water Year as described above, the Parties will apply good faith efforts to find a mutually acceptable permanent solution to ending this administrative practice.

10.5.9. Colorado Springs agrees that it will not divert or exchange any of the water released or bypassed by any party pursuant to the 2016 USBR ShOP Agreement or the ShOP provisions of the Busk Ivanhoe Agreement, as the same exist on the date of this Agreement, or otherwise operate its system or water rights in a manner that will diminish the stream flows that result from implementation of the 2016 USBR ShOP Agreement and the ShOP provisions of the Busk Ivanhoe Agreement up to 1,250 c.f.s. at the Dotsero Gauge.

10.5.10. Colorado Springs will give its consent to and agree to be bound by (1) future amendments to, or extensions of the 2016 USBR ShOP Agreement or the ShOP provisions of the Busk Ivanhoe Agreement; and (2) any future ShOP agreements with other parties or other parties' agreements to bypass water, provided that such agreements do not impose any greater curtailment on Colorado Springs' water rights than the limitations imposed on Colorado Springs' water rights by the Colorado Springs ShOP provisions of paragraphs 10.5.1 to 10.5.9 of this Agreement. Such consent must be in writing signed by Colorado Springs and by the CRWCD.

10.6. Shoshone Permanency. The West Slope Parties seek to achieve permanent protection of the stream flow conditions that result from the exercise of the SPP Water Rights when the SPP is in operation, regardless of whether the SPP continues to operate in the future ("Shoshone Permanency"). Colorado Springs agrees to not oppose Shoshone Permanency as follows:

10.6.1. Colorado Springs will not oppose a sale or other form of transfer of interest by PSCo of its SPP and/or SPP Water Rights, including any contractual interest therein, to the CRWCD or any other west slope entity or consortium containing west slope entities for the purpose of achieving Shoshone Permanency.

10.6.2. Colorado Springs will not seek to acquire or participate with others in the acquisition of the SPP and/or the SPP Water Rights.

10.6.3. The Parties recognize the existence of that certain 2007 Agreement Concerning Shoshone Call between the City and County of Denver, acting by and through its Board of Water Commissioners ("Denver Water") and PSCo (the "2007 Call Reduction Agreement"). The 2007 Call Reduction Agreement provides that

under certain defined drought conditions, Denver Water is entitled to pay PSCo to reduce (or “relax”) the call of the SPP Water Rights. The Parties further recognize that Article VI.E.2 of the 2012 Colorado River Cooperative Agreement (“CRCA”) provides that Denver Water, with the support of the west slope signatories, may request PSCo to amend the 2007 Call Reduction Agreement to “relax” the call of the SPP Water Rights to 704 c.f.s., during extreme drought conditions, for an expanded period during the winter months subject to certain terms and conditions described in CRCA Article VI.E.2.a-e (“CRCA Winter Call Reduction”). Colorado Springs agrees that it will not seek or support any additional “relaxation” of the SPP Water Rights, except as expressly provided for in paragraph 10.6.4.1 below.

10.6.4. Colorado Springs will not oppose an agreement between a west slope entity or entities, the Colorado Water Conservation Board (“CWCB”), and any other entity entered into for the purpose of adding instream flow as an additional use of the Senior Hydropower Right (“CWCB Agreement”). In addition, Colorado Springs may become a party to any water court application seeking such instream flows (“ISF Application”) but will not oppose the entry of a final water court decree for the purpose of adding instream flow as an additional use of the Senior Hydropower Right. Colorado Springs’ non-opposition to any such CWCB Agreement and ISF decree shall be contingent on inclusion of the following terms in the CWCB Agreement, ISF Application, and any resulting ISF Decree:

10.6.4.1. In the event of a curtailment of Colorado water rights, or an imminent threat thereof, resulting from the State of Colorado’s obligations under the Colorado River Compact and/or the Upper Colorado River Basin Compact, the Parties will work cooperatively to implement this Agreement consistent with any duly adopted final rules or regulations of the State Engineer adopted for purposes of fulfillment of Colorado’s commitments under either or both compacts, and that are in force, any appeal notwithstanding.

10.6.5. Colorado Springs recognizes that the West Slope Parties, upon acquiring any interest in the SPP Water Rights, may also request that instream flow uses be added as an additional use to the Junior SPP Water Right. Colorado Springs agrees to participate in good faith discussions and negotiations with the West Slope Parties, the CWCB, and any other parties regarding the addition of instream flow uses to the Junior Hydropower Right. Any agreement with the CWCB and any water court decree adding instream flow uses to the Junior Hydropower Right will at a minimum be subject to the terms identified in paragraph 10.6.4.1, above. Additionally, the West Slope Parties agree to diligently meet and negotiate in good faith with Colorado Springs regarding the inclusion of Colorado Springs’ drought exceptions described in paragraph 10.5.6 above, into

any final agreement with the CWCB for any instream uses of the SPP Water Rights in excess of 1,250 c.f.s.

10.6.5.1. After instream flow use has been added as an alternate use of the Senior Hydropower Right, the CRWCD agrees that, during a drought period that meets the drought conditions described in paragraph 10.5.6, above, Colorado Springs may choose to lease from any west slope supplier or the CRWCD's Wolford Mountain Reservoir water marketing pool, on a one-year spot-market basis (i.e., if available), up to the amount of any shortage in fill for the then current storage season for replacement purposes by Colorado Springs. The CRWCD agrees that, due to the unique nature of this Agreement and the mutual compromises included herein, the rate of any such lease shall not be greater than two times the CRWCD's then-current spot-market lease rate for in-basin municipal use. The form of such lease will be generally consistent with the CRWCD's then-current standard form contract, the current version of which is attached for example purposes only as Exhibit 6. The Parties agree not to oppose Colorado Springs' efforts to use water leased pursuant to this paragraph by exchange for replacement purposes in accordance with the priority system. The lack of water available for lease by the CRWCD to Colorado Springs on a spot-market basis pursuant to this paragraph shall not excuse operation of Colorado Springs' water rights in accordance with the priority system as junior to, and subject to, the call of the SPP Water Right being exercised for instream flow purposes.

10.6.6. If the West Slope Parties provide written notice to Colorado Springs that they do not intend to acquire an interest in the SPP Water Rights and do not intend to pursue a change of use of the SPP Water Rights for instream flow purposes as contemplated in paragraph 10.6 (inclusive of subparagraphs) of this Agreement, then Colorado Springs will agree to enter an amended ShOP Agreement with the same terms and conditions provided in paragraph 10.5 (inclusive of subparagraphs) of this Agreement, except as follows:

10.6.6.1. The term of an amended ShOP Agreement will be perpetual.

10.6.6.2. In the event of a curtailment of Colorado water rights, or imminent threat thereof, resulting from the State of Colorado's obligations under the Colorado River Compact and/or the Upper Colorado River Basin Compact, the Parties agree that implementation of an Amended Perpetual ShOP Agreement must be consistent with any duly adopted final rules or regulations of the State Engineer that are in force, any appeal notwithstanding.

10.7. Other Provisions.

STATE OF COLORADO)
COUNTY OF EAGLE) SS

IN THE DISTRICT COURT.

In the matter of the application of the)
Glenwood Light and Water Company a Cor-)
poration, for the adjudication of its)
priority of right to the use of water)
for domestic and other purposes from)
Grizzly Creek in Water District No. 83,) No. 422-477-555
Garfield County, Colorado;) FINDINGS AND DECREE.
and)
In the matter of the adjudication of)
priorities of water rights in Water Dis-)
trict No. 83, in the State of Colorado,)
for beneficial purposes other than)
Irrigation.)

Now on this 27th day of February A.D. 1911, this matter coming on for hearing and adjudication before the Court upon the petition of the Central Colorado Power Company, one of the claimants herein, to make final and absolute its decree heretofore rendered concerning the Glenwood Power Canal and Pipe Line and upon the Supplemental Statement of Claim of said Company as to said Glenwood Power Canal and Pipe Line, pursuant to an order made by this Court entered on the 14th day of November A.D. 1910, said The Central Colorado Power Company appearing by J.E. Adams and C.E. Taylor, its Counsel Frank W. Allen and John Thomas appearing by C.S. Rowe, their Counsel and the Town of Glenwood Springs appearing by E.J. De Lan, Esq., Its Counsel and to the claims of the Central Colorado Power Company having been duly considered and dismissed by the Court and there being no objections or exceptions to the hearing of the evidence concerning said Glenwood Power Canal and Pipe Line or to the entry of the findings and decree concerning the same hereinafter referred to; said hearing having been commenced on Monday the 27th day of February A.D. 1911 at 10 o'clock A.M. at the Court House at Red Cliff, Eagle County, Colorado, pursuant to said order of this Court, dated November 14th 1910, and

It further appearing to the Court and the Court doth Find that notice thereof was given in manner and form and within the time as provided in said order by the Clerk of this Court by publishing said notice in not less than one public newspaper in each of the counties

*This is
just a readjudication
of part of 466
0349*

into which Water District No. 53, State of Colorado, extends, namely; the counties of Eagle, Grand, Routt, and Garfield; that said notice contained a copy of said order of November 14th 1910 and was published in such papers not less than once each week, until four successive weekly publications had been made; the last of which was made and published in each case upon a day previous to the day fixed for the commencement of said hearing; that the said notice so published in Eagle County was published in the Eagle County Blade; that the said notice so published in Grand County was published in the Kremlin News and Middle Park times; that said notice so published in Routt County was published in the Steamboat Pilot; that said notice so published in Garfield County was in the Glenwood Post; that each and all of said newspapers are published ~~in~~ within the State of Colorado, having been published continuously and uninterruptedly in each of said counties during a period of more than twenty-six ^{consecutive} weeks prior to the first publication of each of said notices and were and are newspapers within the meaning and requirements of the laws of the State of Colorado; and

It further appearing to the Court and the Court doth find that said notice was also served upon all such parties to this action who have filed statements of claim or claims in this proceeding, claiming priority or priorities of right to the use of water for beneficial purposes in said Water District No. 53 at least ten days prior to the time of said hearing; that the only party or parties who have filed any statement or statements of claim or claims in this proceedings and who thereby entitled to notice other than posting or publication were and are The Glenwood Light and Water Company and the Town of Glenwood Springs and D. Broughton; that said parties and each thereof were duly served with said notice within the time and in accordance with the provisions of said order; and

It further appearing to the Court and the Court doth find that ten printed copies of said notice were posted in ten public places in said water district not less than twenty days from the day so appointed which copies were posted or caused to be posted by said The Central Colorado Power Company; and

It further appearing to the Court and the Court doth find that each and all of said notices as given, published, posted and served were in all things given, published, posted and served within the time and in the manner provided by said order of November 14th 1910, and that all persons and associations and corporations entitled to notice of this proceeding were duly and regularly notified thereof in the manner provided by law and in accordance with the orders of this Court; and the Court having heard the evidence adduced as well as having considered the evidence heretofore taken in the matter and being fully advised in the premises, as to

THE GLENWOOD POWER CANAL AND PIPE LINE,

the Court doth find:

That heretofore and on to-wit: the 4th day of August A.D. 1903, a decree of this Court was duly made and entered of record in a certain proceeding then pending in said Court, entitled: "In the matter of the application for the adjudication of priority of right to the use of water for the DeNemur Canal and Pipe Line and its extension from the Grand River, for power and manufacturing purposes in Water District No. 137", that in said proceeding there was duly adjudicated and decreed to the said canal and pipe line for the use and benefit of the owners thereof, their heirs and assigns for said purposes, 8500 cubic feet of water per second of time of the waters of the Grand River, with priority dating from January 7, 1903, to be diverted into said canal and pipe line through the headgate thereof, conditioned however, that the final completion of said canal and pipe line, and auxiliary works in connection therewith, and the application of the waters aforesaid to said beneficial purposes, should be completed and consummated with all due diligence, and within a reasonable time.

That thereafter, and on to-wit: the 9th day of December A.D. 1907, a decree of this Court was duly made and entered of record in this proceeding, among other things regarding to the Glenwood Power Canal and Pipe Line, for the use and benefit of the owners thereof, 1250 cubic feet of water per second of time with priority No. 2 dating from the 7th

day of January, 1902, for power, mining, milling, manufacturing, lighting, heating and traction purposes, conditioned, however, that the work of construction thereon should be diligently and continuously prosecuted and the waters of said Grand River to be diverted by means of said canal and pipe line, should be applied to the beneficial uses aforesaid within a reasonable time; that part of the waters decreed as aforesaid to the DeRemer Canal and Pipe Line, was and is used at the Glenwood Power Canal and Pipe Line, the headgate of which pipe lines are substantially at the same point, as will more fully appear from said proceedings.

That it was provided in the decree of the Glenwood Power Canal and Pipe Line, that it should not be taken to operate as a denial or dismissal of the rights theretofore adjudicated to the DeRemer Canal and Pipe Line,

That the work of construction upon said canal and pipe lines and each thereof was at all times diligently and continuously prosecuted until the completion thereof; that 1350 ~~500~~ cubic feet of water per second of time has been diverted and used in the County of Garfield and State of Colorado by means of said Glenwood Power Canal and Pipe Line, (formerly a part of the DeRemer Canal and Pipe Line) and applied to the beneficial purposes aforesaid, within the State of Colorado, with all due diligence and within a reasonable time, by reason whereof said claimant is entitled to a final order and decree of this Court, making absolute the decrees of heretofore rendered, the said decrees to be for 1350 cubic feet of water per second of time of the waters of the Grand River and its Tributaries to be diverted by means of said Glenwood Power Canal and Pipe Line for ^{power,} for mining, milling, and manufacturing, lighting, heating and traction purposes, with priority No. 2 dating from the 7th day of January, 1902, in said Water District No. 53.

That said Glenwood Power Canal and Pipe Line, as constructed and completed is as follows:

The name of said canal and pipe line is the Glenwood Power Canal and Pipe Line.

The name of the owner thereof is the said Central Colorado Power Company, a Colorado corporation.

The Postoffice address of said company is Denver, Colorado.

The headgate of said Glenwood Power Canal and Pipe Line is located at a point on the right bank being the northerly bank of the Grand River in the county of Garfield, State of Colorado, from which stream the said canal and pipe line derives its supply of water, at a point whence the north quarter corner of Section Thirty (30), Township Five (5) South, Range Eighty-seven (87) West 5th P.M. bears north $83^{\circ} 45' 30''$ East 2414.84 feet.

The general course thereof is westerly from said headgate.

That said canal and pipe line consists of a diverting dam located upon the Grand River at the headgate thereof; a gravity line; a pressure pipe line consisting of two pipes running from the gravity line to the power house at the lower end of said pipe line where electrical power is generated by means of water passing through said Glenwood Power Canal and Pipe Line, All in Garfield County, Colorado, and thence transmitted and used by means of transmission and distribution lines and other electrical appliances to various parts of the State.

The length of said gravity line is 12,493 feet and consists of a tunnel with concrete walls and floor 16 feet 8 inches in width and 12 feet high, inside measurement; the grade thereof is five-tenths (5) feet per Thousand (1000) feet.

The length of said pressure line as constructed is 257 feet and the grade thereof is a fall of 165 feet in said Distance; each section of said line as constructed consists of a pipe 108 inches in interior diameter.

The purposes for which the water is used and to be used is for power, mining, milling, manufacturing, lighting, heating and traction purposes.

The carrying capacity of said canal and pipe line is 1300 cubic feet of water per second of continuous flow.

The date of the appropriation of water by original construction of said canal and pipe line is the 7th day of January A.D. 1902 and the amount of water appropriated by and under said construction is 1250 cubic feet of water per second of time.

The work of construction upon said Glenwood Power Canal and Pipe Line was commenced under the name of the DeRemor Canal and Pipe Line on the 6th day of January 1902, by J.R. DeRemor and others, the grantors by

nense conveyances of said claimant The Central Colorado Power Company.

On the 10th day of April A.D. 1902 The Grand River Power and Transmission Company duly located The Grand River Power and Transmission Company's Canal and Pipe Line appropriating 300 cubic feet of water per second of time. The Central Colorado Power Company is grantee and present owner thereof.

The said DeRemer Canal and Pipe Line and the Grand River Power and Transmission Company's pipe line and other projects and the rights of way and water rights for said canals and pipe lines and projects have been acquired and are now owned by said The Colorado Power Company and are now a part of said Glenwood Power Canal and Pipe Line.

The said Glenwood Power Canal and Pipe Line has its headgate substantially at the same point and the line thereof substantially along the line of the said DeRemer Canal and Pipe Line, for which a right of way was granted by the United States to J.R. DeRemer and others under Section 5 of the Act of Congress of July 26, 1866 (U.S.R.S) Section 2339) and the laws, rules and regulations supplementary thereto and passed in furtherance of the purposes of said Act; which right of way was on the 20th day of August, 1905, approved by the Secretary of the Department of the Interior of the United States and was thereafter granted to and acquired by said The Central Colorado Power Company with the approval of the Secretary of the Interior and is now owned by said The Central Colorado Power Company.

The said Glenwood Power Canal and Pipe Line also has its headgate substantially at the same point and the line thereof substantially along the line of said The Grand River Power and Transmission Company's Canal and Pipe Line, for which a right of way was granted by the United States to said company under Section 9 of the Act of Congress of July 26, 1866 (U.S.R.S. Section 2339) and laws, rules and regulations supplementary thereto and passed in furtherance of the purposes of said Act; which right of way was on the 19th day of November, 1905, approved by the Secretary of the Department of the Interior of the United States and was thereafter granted to and acquired by said The Central Colorado Power Company with the approval of the Secretary of the Interior and is now owned by said The Central Colorado Power Company.

The work of construction upon said Glenwood Power Canal and Pipe Line was continuously and diligently prosecuted at a great cost and difficulty and was completed on or about May 24th, 1909, and water diverted through said canal and pipe line and used for beneficial purposes aforesaid and ever since said time the water from the Grand River has been and is now being used by means of said canal and pipe line for such beneficial purposes to the extent of 1250 cubic feet of water per second of time and by reason thereof the decrees concerning said canal and pipe line are hereby ratified confirmed and ~~approved~~ approved to the extent of 1250 cubic feet of water per second of time of the Grand River with priority No. 2 dating from January 7th 1908.

The work necessary for the construction of said canal and pipe line has been of great difficulty and performed at an outlay of great cost and expense and among other things has consisted of expensive surveys and re-surveys for the purposes of determining the most feasible and practical route and location thereof; as well as the building of tunnels and costly engineering construction; that the Grand River at and near the point of diversion thereof is walled in by masses of almost perpendicular solid rock and the route of said canal and pipe line passes through precipitous cliffs and solid walls of granite rock all of which it was necessary to overcome in the construction of said canal and pipe line, and that all of the work thereon was necessary as a part and in furtherance of the completion of said canal and pipe line.

Wherefore, as to the Glenwood Power Canal and Pipe Line it is hereby ORDERED, ADJUDGED AND DECREED, that said Glenwood Power Canal and Pipe Line is entitled to priority No. 2. It is claimed and owned by The Central Colorado Power Company, organized and existing under the laws of the State of Colorado, and is a part of said company's water power system. The water to be diverted by means thereof is used and to be used for power, mining, milling, manufacturing, lighting, heating and traction purposes to the extent of 1250 cubic feet of water per second of time, continuous flow through said canal and pipe line for said purposes, to be taken from the Grand River through said canal and pipe line from its headgate located on the right bank, being the northerly bank, of the Grand River, from which it derives its supply of water, at a point whence the north Quarter Corner

of Section 30, Township 6 South, Range 97 West, 5th P. M. bears north 33° 45' 20" East 2414.64 feet, running thence in a generally westerly direction from said headgate and the decrees heretofore entered concerning said Glenwood Power Canal and Pipe Line are hereby ratified, confirmed and approved to the extent of 1250 cubic feet of water per second of time of the Grand River with priority No. 2 dating from January 7, 1902.

And it is hereby,

FURTHER ORDERED, ADJUDGED AND DECREED, that there be allowed to flow into said canal and pipe line from said Grand River for the beneficial uses and purposes aforesaid and for the use and benefit of the party or parties lawfully entitled thereto and under by virtue of the appropriation by original construction at any and all times, during any and all seasons 1250 cubic feet of water per second of time, the appropriation of which water took effect on and said priority No. 2 dates from the 7, of January 1902.

Provided However, that after the waters of the Grand River shall have been used for the beneficial purposes aforesaid by means of said canal and pipe line, the said waters shall be returned to the stream not less than two miles above the Town of Glenwood Springs, in Garfield County, Colorado.

IT IS FURTHER ORDERED by the Court that each and every person interested in or claiming any ditch, canal or reservoir in this proceeding whether as to the decrees heretofore rendered or as to this supplementary decree shall receive from the Clerk of this Court, on the payment of the sum of \$3.50 for each certificate and a further sum of 20¢ per folio for the matters contained therein a certificate under the Seal of the Court showing the date or dates and the amount or amounts of the appropriation adjudged in favor of such ditch, canal, flume, pipe line or reservoir under and by virtue of the construction, extension and enlargements thereof severally; also specifying the number of said ditch, canal, flume or pipe line and of each priority to which the same may be entitled by reason of such construction, extension and enlargement, if any.

Done in open Court at Red Cliff, Eagle County, Colorado, this 27th day of February A. D. 1911.

By the Court,

Chas. Cavender,

Judge.

Decrease award for 15/1956

SHOSHONE HYDRO PLANT DIVERSION - NO. 2

That under former decree of the Court said ditch was numbered 1 and awarded a priority for 1,250.0 cubic feet of water per second of time under and by virtue of the original construction; that said ditch under this decree is entitled to Priority No. 328 for 158.0 cubic feet of water per second of time under and by virtue of the first enlargement; that the date of initiation of said appropriation was the 15th day of May, 1929; that the name and post office address of the claimant is Public Service Company of Colorado, a Colorado corporation, 900 15th Street, Denver, Colorado; that said diversion system is used in the manufacturing and generation of electrical energy and the source of supply is the Colorado River;

That the method of diversion consists of a diversion dam, tunnel and penstocks utilized by said claimant for the generation of electricity and the diversion dam is located on the Colorado River in Garfield County, State of Colorado, in Section 30 of Township 5 South, Range 87 West of the 6th Principal Meridian. The adit or headgate of the tunnel (formerly DeRamer Canal and Pipe-line) is located on the right bank, being the northerly bank, of the Colorado River in the County of Garfield, State of Colorado, whence the North quarter corner of Section Thirty (30), Township Five (5) South, Range Eighty-seven (87) West of the 6th Principal Meridian bears North 23°48'20" East 2,414.64 feet, more or less;

That there be allowed to flow into said ditch and diversion system from said Colorado River for the use aforesaid and for the benefit of the party entitled thereto under and by virtue of the first enlargement, Priority No. 328 for 158.0 cubic feet of water per second of time relating back to and dating from the 15th day of May, 1929;

That said Priority No. 328 hereby awarded, to the extent of 158.0 cubic feet of water per second of time, is hereby made absolute and unconditional.

1,250.0
 158.0

 Total - 1,408.0 C.F.

75TH CONGRESS }
1st Session }

SENATE

{ DOCUMENT
No. 80 }

COLORADO-BIG THOMPSON PROJECT

SYNOPSIS OF REPORT

ON

COLORADO-BIG THOMPSON PROJECT, PLAN OF
DEVELOPMENT AND COST ESTIMATE PRE-
PARED BY THE BUREAU OF RECLAMA-
TION, DEPARTMENT OF THE
INTERIOR

RECEIVED

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LEGAL DIVISION
BOARD OF WATER COMMISSIONERS



PRESENTED BY MR. ADAMS

JUNE 15, 1937—Ordered to be printed without illustrations

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1937

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LETTER OF TRANSMITTAL

FEBRUARY 3, 1937.

From Senior Engineer Porter J. Preston.

To Chief Engineer.

Subject: Colorado-Big Thompson project.

1. Transmitted herewith is a synopsis of the report of plan of development and cost estimate of the Colorado-Big Thompson project.

2. The plans and designs upon which the estimates are based are shown in the full report to follow this synopsis.

3. The detail estimates have been worked out in the Denver office under the following divisions:

Canals: H. R. McBirney.

Reservoirs: K. B. Keener.

Power: L. N. McClellan.

Hydraulics: E. B. Debler.

4. The field work was done under the supervision of M. E. Bunger.

5. The economic study was carried on by R. L. Parshall, senior irrigation engineer, Bureau of Agricultural Engineering, United States Department of Agriculture. This study is later proposed to be issued as a separate document.

PORTER J. PRESTON.

Revised synopsis of report submitted June 11, 1937.

v

LETTERS OF SUBMITTAL

JUNE 11, 1937.

HON. HAROLD L. ICKES,
Secretary of the Interior.

MY DEAR MR. SECRETARY: There is attached hereto the portion of the report on the Colorado-Big Thompson project in Colorado covering the principles and stipulations governing the construction and operation of said project for the protection of the rights and interests dependent on the Colorado River in Colorado.

The provisions contained therein have been considered by the Northern Colorado Water Users' Association, representing the irrigation and other interests on the eastern slope in Colorado, and we respectfully submit that they are satisfactory and meet the approval of said association.

We ask that acknowledgment be made of this communication.

Respectfully yours,

NORTHERN COLORADO WATER USERS' ASSOCIATION,
CHAS. HANSEN, *President.*
MOSES E. SMITH, *Vice President.*
THOMAS A. NIXON, *Attorney.*

JUNE 11, 1937.

HON. HAROLD L. ICKES,
Secretary of the Interior.

MY DEAR MR. SECRETARY: There is attached hereto the portion of the report on the Colorado-Big Thompson project in Colorado covering the principles and stipulations governing the construction and operation of said project for the protection of the rights and interests dependent on the Colorado River in Colorado.

The provisions contained therein have been considered by the Western Slope Protective Association, representing the irrigation and other interests on the western slope in Colorado, and we respectfully submit that they are satisfactory and meet the approval of said association.

We ask that acknowledgment be made of this communication.

Respectfully yours,

THE WESTERN SLOPE PROTECTIVE ASSOCIATION,
SILMON SMITH, *Secretary.*
CLIFFORD H. STONE, *Director.*
A. C. SUDAN,
Special Representative of Grand County.

SYNOPSIS OF REPORT, COLORADO-BIG THOMPSON PROJECT

OUTLINE OF CONSTRUCTION AND OPERATING CONDITIONS

The Colorado-Big Thompson project in Colorado contemplates the diversion of surplus waters from the headwaters of the Colorado River on the Pacific or western slope to lands in northeastern Colorado on the Atlantic or eastern slope greatly in need of supplemental irrigation water.

To accomplish this diversion, the following features are required:

ON COLORADO RIVER

(1) Storage on the Blue River in what is called Green Mountain Reservoir located about 16 miles southeast of Kremmling, Colo., where the Blue enters the Colorado River. This reservoir is to be used to replace water diverted to the eastern slope that would be required by prior rights along the Colorado River.

(2) A hydroelectric plant below the Green Mountain Dam to utilize the flow of the Blue River and water stored in the reservoir for the generation of electrical energy.

(3) A storage reservoir located on the Colorado River about 6 miles northeast of Granby, Colo., to be known as Granby Reservoir. This reservoir will store the flow of the Colorado at this point as well as water diverted from Willow Creek, a tributary of the Colorado and Strawberry and Meadow Creeks, tributaries of the Fraser River.

(4) A diversion dam located about one-half mile below the junction of the North Fork and Grand Lake outlet and about 3 miles south of the village of Grand Lake. This dam will create a lake known as Shadow Mountain Lake which will have the same elevation as Grand Lake and will aid in supplying the transmountain diversion tunnel with water pumped from Granby Reservoir. This lake together with Grand Lake is to be kept at nearly constant level.

(5) An electrically driven pumping plant on the shore of Granby Reservoir, where water will be pumped into a canal feeding Shadow Mountain and Grand Lakes. The length of the canal is $4\frac{1}{2}$ miles.

(6) An outlet channel at the east end of Grand Lake connecting the lake with the portal of a transmountain diversion tunnel and provided with control features that will regulate the level of Grand Lake within a fluctuating range of 1 foot.

(7) A transmountain diversion tunnel under the Continental Divide 13.1 miles in length extending from Grand Lake to a point in Wind River about 5 miles southwest of Estes Park village.

ON EASTERN SLOPE

(8) A conduit 5.3 miles in length extending from diversion tunnel outlet to penstock of a power plant on the Big Thompson River just below Estes Park village. This conduit will be made up of buried

pipe, siphons, tunnels, and open canal. It will be entirely concealed through the area authorized to be taken into Rocky Mountain National Park.

(9) The waste rock from the tunnel is to be terraced and landscaped and all structures connected with the tunnel will be constructed to blend into their natural surroundings.

(10) A power plant known as power plant no. 1 constructed along the Big Thompson River just below the village of Estes Park utilizing the western slope water.

(11) Four additional power plants down the Big Thompson Canyon to utilize all available fall and also all water available for power in the Big Thompson River in addition to the western slope water diverted.

(12) A diversion dam on Big Thompson River about 12 miles west of Loveland to divert the water by means of a canal 9 miles in length to a storage reservoir known as Carter Lake.

(13) Carter Lake Reservoir located 8 miles northwest of Berthoud, Colo., to store water brought over during winter months. Water is released from this reservoir through a 4-mile canal into the Big Thompson River and through a 9-mile canal into the St. Vrain River for irrigation purposes.

(14) A siphon across the Big Thompson River, 9 miles west of Loveland, Colo., and a canal 10 miles in length to convey water from the fourth power plant to a storage reservoir, located about 5 miles west of Fort Collins, known as Horsetooth Reservoir.

(15) A canal from Horsetooth Reservoir to the Cache La Poudre River and extended north to a pumping plant which lifts water high enough to serve the North Poudre Canal.

(16) A storage reservoir near the mouth of Buckhorn Creek to be known as Arkins Reservoir, supplied from a canal diverting from the Big Thompson River just below the last power plant. It is to be used to aid in balancing the demands for power and irrigation, also storing excess water available in the Big Thompson River. Water will be released from the reservoir for supplemental irrigation in the South Platte area.

(17) Transmission lines connecting the Valmont steam plant of the Public Service Co. with all the hydroelectric plants contemplated, also connecting with the transmountain tunnel portals and the Granby and North Poudre pumping plants. The line connecting power plant no. 1 and Granby pumping plant will run east, and south of the outside boundaries of the Rocky Mountain National Park, crossing the Continental Divide at Buchanan Pass.

In order to carry out the construction, operation, and maintenance of the project as outlined above, it will be necessary to comply with the following requirements as agreed to by representatives of the eastern and western slopes in Colorado and here made as a part of this report.

MANNER OF OPERATION OF PROJECT FACILITIES AND AUXILIARY FEATURES

The construction and operation of this project will change the regimen of the Colorado River below the Granby Reservoir. The project contemplates the maximum conservation and use of the waters of the Colorado River, and involves all of the construction features

heretofore listed. In addition thereto certain supplemental construction will be necessary. This will be for the primary purpose of preserving insofar as possible the rights and interests dependent on this water, which exist on both slopes of the Continental Divide in Colorado. The project, therefore, must be operated in such a manner as to most nearly effect the following primary purposes:

1. To preserve the vested and future rights in irrigation.
2. To preserve the fishing and recreational facilities and the scenic attractions of Grand Lake, the Colorado River, and the Rocky Mountain National Park.
3. To preserve the present surface elevations of the water in Grand Lake and to prevent a variation in these elevations greater than their normal fluctuation.
4. To so conserve and make use of these waters for irrigation, power, industrial development, and other purposes, as to create the greatest benefits.
5. To maintain conditions of river flow for the benefit of domestic and sanitary uses of this water.

In order to accomplish these purposes the project should be operated by an unprejudiced agency in a fair and efficient manner, equitable to all parties having interests therein, and in conformity with the following particular stipulations:

(a) The Green Mountain Reservoir, or similar facilities, shall be constructed and maintained on the Colorado River above the present site of the diversion dam of the Shoshone power plant, above Greenwood Springs, Colo., with a capacity of 152,000 acre-feet of water, with a reasonable expectancy that it will fill annually. Of said capacity, 52,000 acre-feet of water stored therein shall be available as replacement in western Colorado, of the water which would be usable there if not withheld or diverted by said project; 100,000 acre-feet shall be used for power purposes; and all of said stored waters shall be released under the conditions and limitations hereinafter set forth.

(b) Whenever the flow in the Colorado River at the present site of said Shoshone diversion dam is less than 1,250 cubic feet per second, there shall, upon demand of the authorized irrigation division engineer or other State authority having charge of the distribution of the waters of this stream, be released from said reservoir as a part of said 52,000 acre-feet, the amount necessary with other waters available, to fill the vested appropriations of water up to the amount concurrently being diverted or withheld from such vested appropriations by the project for diversion to the eastern slope.

(c) Said 100,000 acre-feet shall be stored primarily for power purposes, and the water released shall be available, without charge, to supply existing irrigation and domestic appropriations of water, including the Grand Valley reclamation project, to supply all losses chargeable in the delivery of said 52,000 acre-feet of water, and for future use for domestic purposes and in the irrigation of lands thereafter to be brought under cultivation in western Colorado. It shall be released within the period from April 15 to October 15 of each year as required to supply a sufficient quantity to maintain the specified flow of 1,250 cubic feet per second of water at the present site of said Shoshone diversion dam, provided this amount is not supplied from the 52,000 acre-feet heretofore specified. Water not required for the above purposes shall also be available for disposal to agencies for the development of the shale oil or other industries.

(d) The cost of construction and perpetual operation and maintenance of said reservoir or reservoirs shall be a charge against the project and shall be paid from revenues collected from this project as may be provided in contracts between the Secretary of the Interior and the beneficiaries of the project in eastern Colorado, and any other contracting parties.

(e) In the event said reservoir or reservoirs are not maintained with a capacity of 52,000 acre-feet, the Secretary of the Interior should withhold the diversion of water from the western to the eastern slope of Colorado until such storage capacity is made available.

(f) The Secretary of the Interior shall have the option to require the transfer to the United States of any and all rights initiated or acquired by the appropriation or use of water through the works of the project in eastern Colorado, at any time: *Provided, however,* That the title so taken shall be subject to a beneficial use of such water as may be provided in the repayment contract or contracts; and the rights to store water to the extent of said 152,000 acre-feet shall be initiated, acquired, and held by the appropriate authorities for use in western Colorado, for replacement of water diverted to the eastern slope, and for other purposes contemplated for this project.

(g) The Secretary of the Interior shall operate this project in accordance with the following stipulations as to priorities of water use as between the parties claiming or using project water and within the limits of his legal authority. Said 52,000 acre-feet of replacement storage in Green Mountain or other reservoirs shall be considered to have a date of priority for the storage and use of replacement water earlier than that of the priorities for the water diverted or stored for delivery to the eastern slope. The 100,000 acre-feet of storage in said reservoir shall be considered to have the same date of priority of appropriation as that for water diverted or stored for transmountain diversion.

(h) Said Green Mountain Reservoir, or such other replacement reservoirs as provided in paragraph (a) herein, as are planned as a part of the project, shall be constructed at the same time as the other parts of the project and shall be completed before any water is diverted to the eastern slope of the Continental Divide by means of said project.

(i) Inasmuch as the State of Colorado has ratified the Colorado River Compact, and inasmuch as the construction of this project is to be undertaken by the United States, the project, its operation, maintenance, and use must be subject to the provisions of said Colorado River Compact of November 24, 1922 (42 Stat. 171), and of section 13 of the Boulder Canyon Project Act, dated December 21, 1928 (45 Stat. 1057-1064). Notwithstanding the relative priorities specified in paragraph (g) herein, if an obligation is created under said compact to augment the supply of water from the State of Colorado to satisfy the provisions of said compact, the diversion for the benefit of the eastern slope shall be discontinued in advance of any western slope appropriations.

(j) An adequate system, as determined by the Secretary of the Interior, shall be provided for the irrigation of the lands in the vicinity of Kremmling, now irrigated by either natural or artificial means, and the installation made therefor shall be a part of this project. The rights to the use of water for the irrigation of these lands shall be considered to have a date of priority earlier than that of the rights to the use of water to be diverted through the works of this project to the eastern slope. This system shall be designed and built in a manner requiring the least possible continuing annual expense for operation

and maintenance but the cost thereof shall not exceed \$300,000; and said system shall be provided and in operation before any water is stored for transmountain diversion. In addition, the Secretary shall protect, add to, or improve the source of supply of domestic waters for the municipalities of Kremmling and Hot Sulphur Springs in the manner and to the extent which he may determine to be necessary to provide a source of supply not less than that now available for these municipalities. The cost of these features shall be included in the total project cost.

(k) To compensate Grand County for the loss of taxes through the transfer of property to the United States for the construction of this project, \$100,000 shall be paid to said Grand County. This payment shall be made in 10 annual installments of \$10,000 each, commencing upon the date when 10 percent of the total property in Grand County required for said project has been removed from taxation.

(l) The project and all of its features shall be operated in a manner determined by the Secretary of the Interior as necessary to provide the water to preserve at all times that section of the Colorado River between the reservoir to be constructed near Granby and the mouth of the Fraser River as a live stream, and also to insure an adequate supply for irrigation, for sanitary purposes, for the preservation of scenic attractions, and for the preservation of fish life. The determination of the need for and the amount and times of release of water from Granby Reservoir to accomplish these purposes shall be made by the Secretary of the Interior, whose findings shall be final.

In order to facilitate compliance with the stipulation in paragraphs (j), (k), and (l) hereof a representative may be selected and designated by the interests dependent thereon in Grand County, Colo., and when so designated he will be recognized as the official spokesman of said interests in all matters dealing with project operations affecting Grand County.

The principles and provisions expressed in these stipulations have been approved by the Western Colorado Protective Association, representing interests in western Colorado, and the Northern Colorado Water Users Association as evidenced by the letters hereto attached.

SUMMARY

The Colorado-Big Thompson project comprises 615,000 acres of irrigated lands, out of approximately 800,000 acres lying under the canal systems in the northern and northeastern portions of Colorado.

The water supply for the area is to be derived from a portion of 782 square miles of drainage area above Hot Sulphur Springs lying west of the Continental Divide in Grand County, Colorado, and varying in elevation from 8,050 to 14,000 feet.

HISTORY

The first irrigation in northeastern Colorado occurred about 1860 where the early settlers plowed out small ditches with sufficient grade and length to irrigate a few acres of land in the first bottom—i. e. lands not far above the high-water line of the streams and adjacent to them.

The first irrigation of the higher or second bench lands along the Cache La Poudre River was by the Old Union Colony, of Greeley, in

1870. This colony was organized by Horace Greeley, then editor of the New York Tribune, who will be remembered here especially for his advice to eastern young men to "Go west and grow up with the country."

This colony irrigated about 12,000 acres under their first project and it was a success from the start, due in a large measure to the fact that they were people of considerable means and were then able to finance themselves over the period required to bring raw prairie land into profitable cultivation.

This colony was soon followed by others along the Poudre at Fort Collins, on the Big Thompson, at Loveland and the St. Vrain near Longmont.

The difficulties experienced by these colonists in distributing the water between them led to the creation of Colorado's irrigation laws which have been copied by most of the irrigation States of the West.

This irrigated area of six hundred to eight hundred thousand acres was developed by means of individual initiative and by small scale cooperative enterprises. Today there are 6,400 irrigated farms, served by 124 canals and ditches and 60 storage reservoirs.

IRRIGATION USE

In the early days irrigation in this area was confined to growing crops to supply local needs, the lack of transportation contributing to high prices for the home-grown production and prohibiting shipping to distant points. The crops grown were mainly the grains and hay for local consumption, with some vegetables. Such irrigation corresponded with the run-off of the streams.

As mining developed in the State, Denver and other towns grew into cities, and after these cities were connected to the East by railroads the markets demanded a more diversified agriculture to supply their needs. Thus a gradual demand developed for late water which the streams could not supply.

This change created a need for storing the flood waters for late irrigation. From 1890 to 1910 was a period of reservoir construction, during which storage was provided for all the available water supply of the streams over and above the direct irrigation requirements for the area here under discussion. Much of this development took place during a decade of more than normal run-off on the eastern slope and also during a period expanding the agricultural area throughout the West.

Attempts to maintain the area under cultivation with the depleted run-offs during the past 10 years have spread the water supply to such an extent that much acreage has had an insufficient water supply to produce full crops or crops producing the higher values. Attempts have been made to supplement the individual farm water supply by the development of the underground sources by pumping from numerous wells throughout the region. This is lowering the water table and already is affecting the water supply of the lower South Platte Valley which receives its irrigation supply largely from return waters.

NEED OF SUPPLEMENTAL WATER

Under such conditions only the older water rights have any assurance of an adequate water supply, and in the dryer years the owners of junior rights are forced to confine their farming to crops that can

be matured by the early flood flow or that require a minimum amount of water. In years when the supply is not correctly estimated considerable loss results. Ordinarily the crops raised in this and other irrigated areas do not compete with those grown under rainfall conditions, but a shortage of water always leads to the raising of more of the competing crops. Such crops also cut the income of the irrigation farmer below what he can earn with the higher type, noncompetitive crops.

On fully three-fourths of the 615,000 acres in this area the water supply is inadequate, in spite of every effort to conserve, store flood water, or otherwise add to the water supply that has been within the financial ability of the farmer. This inadequacy is due not only to a development probably too large for the period when run-off of the streams was much higher than at present, but to the fact that the last 10 years have seen a very marked decrease in the stream flow. It must be emphasized that the additional water supply here contemplated is to be used for a supplemental supply and not to create a large new additional irrigated acreage.

There has been expended in this area to date for various types of irrigation works, including nearly \$750,000 for pumping plants, most of which have been installed in the last 10 years, about \$35,000,000 against which there is an outstanding indebtedness of only \$1,510,650. These people, however, have about reached their limit as individuals and mutual irrigation companies to provide for themselves a supplemental water supply so badly needed to make their present water supply secure and are obliged to seek Government aid to bring this about.

It has been conceded by a majority of the irrigation interests in this section of the State that the water supply in 1926 was ample for all their present acreage now irrigated. In order, therefore, to determine the normal shortage in acre-feet over a period of years a comparison of the supply in these years with that of 1926 was made and the difference obtained. These differences are set up in the following table:

TABLE 1.—Showing water districts, acreage irrigated, deficiencies 1925 to 1935 with tentative allocation of total supplemental supply

Water district no.	Area irrigated	1926 diversion, acre-feet	Average diversion, 1925-35	Difference, 1926, 11-year average required supplementary water in acre-feet	Tentative allocation of supplemental supply			
					Colorado-Big Thompson project water	Moffat and Jones Pass tunnel water return	Present seepage return, acre-feet	Total supplemental supply, acre-feet
(1)	(2)	(3)	(7)	(15)	(16)	(17)	(18)	(19)
3.....	213,640	530,000	398,000	132,000	104,000	-----	49,500	153,500
4.....	68,408	235,000	183,000	72,000	44,100	-----	21,000	65,100
5.....	81,806	113,000	94,000	19,000	38,800	-----	18,500	57,300
1.....	92,394	663,000	457,000	206,000	81,400	11,000	83,000	175,400
2.....	37,899	170,000	154,000	16,000	5,000	4,500	5,100	14,600
64.....	121,289	513,000	383,000	130,000	36,700	14,500	37,400	88,600
Total.....	615,436	2,224,000	1,649,000	575,000	310,000	30,000	214,500	554,500

It will be noted from column no. 15 that the total average shortage in this project area which comprises water districts 3, 4, 5, 1, 2, and 64 is 575,000 acre-feet. Column no. 16 is a tentative allocation of the proposed supplemental supply to the various districts. Column no. 18 is the estimated usable return flow that would arise from the addition of 310,000 acre-feet of new water to this area. Column no. 19 is the total usable supplemental supply amounting to 554,520 acre-feet, an amount within 5 percent of the 10-year average shortage. The sale or rental of supplemental water, when available, in the Poudre Valley has averaged \$4.50 per acre-foot over a period of years. In extreme cases it has sold as high as \$9 per acre-foot.

The deficiency in water supply for the period 1925 to 1934, inclusive, reflected a direct economic loss in crop production of approximately \$42,355,000.

The following shows the approximate annual loss in value of crops because of inadequate water supply:

Sugar beets.....	\$1, 900, 000
Alfalfa.....	948, 000
Small grain.....	470, 000
Beans.....	302, 000
Corn.....	228, 000
Potatoes.....	425, 000
All other crops.....	444, 000
Total.....	4, 700, 000

This average annual direct crop loss is about 19 percent of the \$24,800,000 estimated cost of the Colorado-Big Thompson irrigation project.

The crop loss in 1934, due to shortage of water, as compared to 1926, after variation in price and acreage factors had been accounted for, amounted to \$12,400,000, or just one-half the cost of the project.

The losses here given are the farm losses and do not include the losses that are due to processing, transporting, or handling of that quantity of production, which would add several million dollars to the loss of the community as a whole.

The effect of such inadequate water supply for the period 1925-35 is shown graphically on drawing no. 1 following.

SUPPLEMENTAL WATER SUPPLY

In 1929 the State engineers of Colorado, in cooperation with the Platte Valley Water Conservation League, and the United States Army engineers, made a comprehensive study of the water resources of the South Platte Basin in northeastern Colorado. This study included the Cache La Poudre River in water district no. 3, the Big Thompson River in water district no. 4, and the St. Vrain River in district no 5. The investigators determined the excess water available on these streams above present normal demands and also above the normal demands on the South Platte River proper below where these streams enter.

The investigators also determined the location, capacity, and cost of the most feasible reservoir sites for the storage of this excess water.

The results are shown in the following table and have been brought up to date by using the same demands for irrigation as set up in the report and using the water-supply records furnished by the State engineer's office.

Stream	Excess supply available for storage, average, 1913-35	Capacity proposed reservoir by Army engineers	Average annual yields at reservoirs	Total reservoir costs	Cost per acre-foot capacity	Cost per acre-foot yield
	<i>Acre-feet</i>	<i>Acre-feet</i>				
Cache La Poudre.....	30,000	52,000	25,500	\$2,747,000	\$72	\$147
Big Thompson.....	16,000	32,700	11,300	2,006,000	61	178
St. Vrain.....	16,000	30,000	14,000	2,186,000	73	156

From the foregoing table it is evident that there is not sufficient excess water available that originates in this area to supply the demands for supplemental water, and the cost of making use of what is available is prohibitive. It will be shown, however, that 16,000 acre-feet of this surplus is available for storage in the Colorado-Big Thompson project reservoirs on the eastern slope with no additional cost.

The water users in northeastern Colorado have now exhausted every possible source of obtaining supplemental water or augmenting their present supply either by storage, transmountain diversion within their individual cooperative means, and by pumping. Fortunately, however, there exists a surplus of water on the headwaters of the Colorado River west of this area and separated from it by the Continental Divide.

In the spring of 1935, \$150,000 was allocated to the Bureau of Reclamation to make surveys and prepare plans and cost estimates for bringing water from the headwaters of the Colorado River into the area in northeastern Colorado in need of supplemental water.

In August 1935 the Bureau of Reclamation started surveys for the project and previously there had been started a land classification to determine the irrigated and arable land in the Colorado River Basin in Colorado in order to arrive at the approximate amount of water now used in the area and how much might be used when full development has been made. Both surveys have been completed, insofar as this project is involved, and the following is the result of the land classification.

LAND CLASSIFICATION—COLORADO RIVER AREA

Since the quantity of water available for diversion from the headwaters of Colorado River might be limited now by the water rights of lands already irrigated, or might in the future limit in turn the development of lands in the Colorado Basin within the State, all the land on Colorado River and its tributaries above the Colorado-Utah line, except the Gunnison River area, has been classified to show the location and extent of irrigated lands and of lands capable of irrigation.

This classification was undertaken in all areas covered by former reports, supplemented by local information as to possible projects and by reconnaissance. For localities with no records of water supply it was assumed to exist unless the contrary was obvious, and doubtful areas were included rather than excluded from the classification. The land was measured by plane-table survey except some small isolated areas which were estimated.

Land that had customarily been irrigated was so classed, no matter how inadequate the supply. Land capable of irrigation was

tested according to a set of standards which fairly represent the experience on this area and others as to what constitutes arable land. Where pumping for irrigation was involved land was classified up to 200 feet above the source of supply.

The result of the survey of the irrigated and arable land appears in the following table.

It should be stated, that, as will be shown under the discussion of water supply which follows, the present irrigated area above the Utah State line does not limit the diversion possible at the location chosen. It is also true that the diversion when in operation, and replacing the summer flow of Colorado River in the manner contemplated by the project plan, will not limit the future development of all the arable land on Colorado River and its tributaries above Gunnison River.

Colorado River drainage—Gunnison excepted—Colorado (land classification according to streams)

Stream name	Irrigated	Arable	Total
<i>Acres</i>			
Colorado River:			
1. To Granby Dam.....	2,600	1,100	3,700
2. Granby Dam to Hot Sulphur Springs.....	1,300	350	1,650
3. Hot Sulphur Springs to Kremmling.....	3,200	1,200	4,400
4. Kremmling to Glenwood Springs.....	1,100	260	1,360
5. Glenwood Springs to Palisade.....	7,000	2,500	9,500
6. Palisade to State line.....	70,600	32,800	103,400
Total.....	85,800	38,210	124,010
Tributaries:			
Willow Creek.....	860	120	980
Fraser River.....	7,100	650	7,750
South Fork Colorado River.....	610	30	640
Small streams ¹	2,300	4,000	6,300
Williams Fork River.....	3,600	10,900	14,500
Troublesome Creek.....	4,200	7,200	11,400
Muddy Creek.....	4,900	5,100	10,000
Blue River.....	8,400	3,100	11,500
Small streams ²	610	570	1,180
Sheephorn Creek.....	1,200	50	1,250
Piney Creek.....	790	50	840
Egeria Creek.....	5,700	9,300	15,000
Cabin Creek area.....	5,700	2,600	8,300
Catamount Creek.....	1,000	10	1,010
Sweetwater Creek area.....	1,100	380	1,480
Eagle River.....	16,400	5,000	21,400
Small streams ³	930	60	990
Roaring Fork River.....	33,100	9,400	42,500
Garfield Creek.....	2,100	—	2,100
Elk Creek.....	3,000	130	3,130
Divide and Mam Creeks.....	13,700	9,100	22,800
Rifle Creek.....	11,100	3,200	14,300
Parachute Creek.....	1,700	370	2,070
Roan Creek.....	5,600	3,300	8,900
Plateau Creek.....	24,000	7,000	31,000
Small streams ⁴	10,200	3,000	13,200
Grand total.....	256,300	122,830	379,130

¹ Above Hot Sulphur Springs.

² Between Hot Sulphur Springs and Kremmling.

³ Between Kremmling and Glenwood Springs.

⁴ Between Glenwood Springs and Palisade.

WATER SUPPLY

The stream flow records at the different stations in the Colorado River Basin show the amount of water passing the stations after all present irrigation has taken place above, so there is no need for any further adjustment of stream flow to take care of water consumed in this irrigation.

It is assumed that all arable lands as shown will be irrigated some time in the future, notwithstanding the fact that quite a percentage

is so located that it would never be feasible to irrigate. It is also further assumed that reservoirs would be built on the tributaries to conserve a portion of the flood flows to make the irrigation of these arable lands possible.

With the above assumptions it has been found that in a year like 1931, with the run-off only 40 percent of the average for a 31-year period, and the lowest year of record, the Colorado-Big Thompson project would only have to supply approximately 53,000 acre-feet to replace water diverted by the proposed project that could have been used by the Colorado River water users for power and irrigation, provided the project was in operation at that time.

The average run-off of the Colorado for the years of record are: Hot Sulphur, 31 years, 523,000 acre-feet; Glenwood Springs, including Roaring Fork, 3,413,000 acre-feet, Fruita, 6,300,000 acre-feet. These amounts are exclusive of supply consumed in present irrigation of Colorado River Basin lands.

The following is the estimated amount of water available for diversion from the drainage area above the Colorado-Big Thompson collection system at 8,260 feet elevation.

YIELD OF GRANBY RESERVOIR

Stream-flow records available on the Colorado River near the Granby Dam site for the years 1908-11 and 1935-36, and on Willow Creek for the years of 1935 and 1936, were supplemented by estimates based on available stream-flow records on the Colorado River at Hot Sulphur Springs and Glenwood Springs to cover the 37-year period, 1900 to 1936, inclusive.

A capacity of 482,000 acre-feet was selected as the best capacity for the Granby Reservoir, considering cost and use. Of this capacity, 20,000 acre-feet were set aside for dead storage to reduce pumping lifts for waters delivered to Shadow Mountain Reservoir. A further objective is to keep to the lowest practicable area the exposure of reservoir bed when storage is exhausted. This leaves an active capacity of 462,000 acre-feet.

Reservoir operating studies are based on the following conditions:

(a) Recorded (or estimated) past flows of Colorado River at Shadow Mountain and Granby Dams reduced by 27 percent prior to 1906, and 13 percent thereafter, of the flow of the North Fork at Grand Lake to allow for increasing diversions by the Grand River ditch.

(b) Willow Creek diverted to reservoir to the extent of 90 percent of the flow of Willow Creek and other streams intercepted by the diversion canal from May to October, inclusive, of each year.

(c) Strawberry, Meadow, and Walden Hollow Creeks also diverted whenever practicable. The flow of these streams, together with some additional waters capturable from Willow Creek at times, are expected to offset evaporation and seepage losses in excess of present losses from the Granby and Shadow Mountain Reservoir sites.

(d) No releases from Granby Dam for any reason.

(e) Transmountain tunnel to be operated at full capacity from October 1 until March 31 following, with operations thereafter gaged to fit run-off conditions so as to avoid spills and yet concentrate flows in the period of July 15 to September 15, for the purposes of best

distribution in power production and to minimize reregulating storage requirements on the eastern slope. The computations assumed infallible forecasts of run-off.

(f) A minimum storage hold-over of 100,000 acre-feet on September 30 of each year to assure dependable power production in winter.

Under these conditions, a yield of 320,000 acre-feet of primary water is secured as follows:

Unit 1,000 acre-feet

Run-off year (October to September)	Inflow to Granby Reservoir		Tunnel diversion	Spills	Short-ages
	Colorado River	Willow Creek			
1899-1900	242.8	52.4	320.0		
1900-1901	246.9	53.4	320.0		
1901-2	164.9	34.7	255.1		64.9
1902-3	222.0	48.8	270.8		49.2
1903-4	253.5	51.2	304.7		15.3
1904-5	287.9	64.9	310.2		9.8
1905-6	292.4	58.7	320.0		
1906-7	381.0	78.3	320.0		
1907-8	190.6	25.6	320.0		
1908-9	323.8	91.5	320.0		
1909-10	200.1	32.5	320.0		
1910-11	268.5	53.6	320.0		
1911-12	350.4	79.3	320.0		
1912-13	215.4	40.3	320.0		
1913-14	371.0	85.1	320.0		
1914-15	223.2	43.8	320.0		
1915-16	249.5	47.8	320.0		
1916-17	348.3	79.7	320.0		
1917-18	322.9	81.2	356.4	18.7	
1918-19	189.6	36.4	320.0		
1919-20	361.2	78.4	345.6		
1920-21	347.9	90.7	368.6	70.0	
1921-22	196.8	39.5	320.0		
1922-23	280.3	60.2	320.0		
1923-24	262.2	54.4	320.0		
1924-25	202.6	36.7	320.0		
1925-26	346.4	70.0	320.0		
1926-27	275.0	54.8	320.0		
1927-28	317.5	61.9	338.3		
1928-29	297.1	61.2	358.3		
1929-30	247.4	42.9	320.0		
1930-31	171.5	36.6	320.0		
1931-32	243.9	48.0	320.0		
1932-33	239.6	54.5	320.0		
1933-34	128.9	26.2	320.0		
1934-35	209.2	41.8	252.5		67.5
1935-36	279.7	53.8	310.0		10.0
Average	263.6	55.4	318.7	2.5	5.5

Operating results cannot be expected to result so favorably. The operating conditions enumerated imply superhuman ability to forecast stream flow. Occasional releases will be required from Granby Reservoir although small in amount. Interruptions in tunnel operation cannot always be arranged so as to lose no water.

In view of these conditions, it is concluded that the firm yield of tunnel water from the Granby and Shadow Mountain Reservoirs should be taken as 300,000 acre-feet annually. Shortages of 5 percent may be expected on an average of once every 5 years and shortages of 25 percent may be expected on an average of once every 20 years. Secondary water may be expected to be available in some years in amounts up to 50,000 acre-feet.

EFFECT OF THE PROPOSED TRANSMOUNTAIN DIVERSION ON FUTURE WESTERN SLOPE DEVELOPMENT

Most of the diverted water is derived from the spring floods, when there is an excess of water over all present and future requirements along the Colorado River in the State. To permit full use of the inflow to the Granby Reservoir, Ranch Creek Reservoir may be constructed near Tabernash to store water locally surplus. The waters there conserved would in part be utilized to replace the waters withheld at Granby Dam, but the greater part of the conserved water would be used to augment irrigation supplies down to Hot Sulphur Springs and to maintain a satisfactory stream flow in this locality for recreational purposes.

With the region above Hot Sulphur Springs taken care of by the Ranch Creek Reservoir, the critical points along the Colorado River, from the standpoint of present and future use of water, are at Glenwood Springs, where the Shoshone power plant of the Public Service Co. uses present stream-flows up to 1,250 second-feet, and near Palisades at the head of the Grand Valley, where the Government high-line canal diverts water for irrigation and power purposes. The present irrigated area along the Colorado River between Palisades and the Colorado-Utah State line is 70,600 acres.

The additional arable area in this region, not now irrigated, is as follows:

	<i>Acres</i>
Under constructed canals.....	13,800
Pumping unit of Grand Valley project, for which canal capacity has been provided.....	10,000
Lands on Mack Flat, no present provision for water service.....	9,000
Total.....	32,800

Maximum irrigation demand at the head of the Grand Valley for the present irrigated area and for the additional area of 23,800 acres for which provision has been made in the constructed canals, is estimated as 1,700 second-feet, and this amount is being demanded in the pending adjudication proceeding.

With maximum irrigation demands there is a full water supply for the Orchard Mesa pumping plant and for the Grand Valley power plant. In the nonirrigation season the controlling requirement is for power with a total demand of 800 second-feet for power and for domestic needs under the higher canals. With the new area of 9,000 acres developed, the future demands are then estimated as 1,800 second-feet in the months of May to August, inclusive, tapering off uniformly to 800 second-feet on April 1 and on November 30.

In determination of the effect of the Colorado-Big Thompson transmountain diversion on the western slope, the past stream flows at Glenwood Springs and at the head of the Grand Valley were first depleted to show the resulting stream flows with the following developments:

(a) Full irrigation development of 276,000 acres of irrigated and arable lands along the Colorado River and tributaries above Palisades (the present irrigated area is 186,000 acres).

(b) Full development of Moffat Tunnel diversion from Fraser River and tributaries, Jones Pass diversion from Williams River, and Independence Pass diversion from the Roaring Fork, including

replacement storage so that these projects may divert all flows interceptible.

From the reconstructed flows, thus computed, there was subtracted the water estimated to be withheld at the Granby Reservoir site. The reductions in stream flow at Glenwood Springs and at the head of the Grand Valley, during those periods of each year when the resulting stream flows would be less than the future demands above described, then represents the effect of the project on the western slope if no replacement storage were provided. These computations were made for the years 1926 to 1936, inclusive, at Glenwood Springs, and for the entire period of record, 1902 to 1936, inclusive, at the head of the Grand Valley, with the following results:

Year	Shortages at Glenwood Springs (acre-feet)			Shortages at head of Grand Valley (acre-feet)		
	End of flood season, Oct. 31 ¹	Nov. 1 to flood season of following year ²	Total	Before flood season in spring ³	After flood season to Oct. 31	Total
1902.....	(4)	(4)	-----	6,000	39,000	45,000
1903.....	(4)	(4)	-----	3,000	12,000	15,000
1904.....	(4)	(4)	-----	None	2,000	2,000
1905.....	(4)	(4)	-----	None	14,000	14,000
1906.....	(4)	(4)	-----	None	None	None
1907.....	(4)	(4)	-----	None	None	None
1908.....	(4)	(4)	-----	None	6,000	6,000
1909.....	(4)	(4)	-----	None	None	None
1910.....	(4)	(4)	-----	None	12,000	12,000
1911.....	(4)	(4)	-----	None	1,000	1,000
1912.....	(4)	(4)	-----	None	None	None
1913.....	(4)	(4)	-----	None	7,000	7,000
1914.....	(4)	(4)	-----	None	None	None
1915.....	(4)	(4)	-----	None	9,000	9,000
1916.....	(4)	(4)	-----	None	None	None
1917.....	(4)	(4)	-----	None	None	None
1918.....	(4)	(4)	-----	None	1,000	1,000
1919.....	(4)	(4)	-----	None	7,000	7,000
1920.....	(4)	(4)	-----	2,000	None	2,000
1921.....	(4)	(4)	-----	None	None	None
1922.....	(4)	(4)	-----	None	None	None
1923.....	(4)	(4)	-----	None	None	None
1924.....	(4)	(4)	-----	None	4,000	4,000
1925.....	(4)	(4)	-----	None	None	None
1926.....	18,000	19,000	37,000	None	2,000	2,000
1927.....	7,000	32,000	39,000	None	None	None
1928.....	10,000	18,000	28,000	None	None	None
1929.....	None	20,000	20,000	None	None	None
1930.....	12,000	14,000	26,000	None	None	None
1931.....	37,000	16,000	53,000	1,000	27,000	28,000
1932.....	14,000	24,000	38,000	None	3,000	3,000
1933.....	23,000	21,000	44,000	5,000	15,000	20,000
1934.....	31,000	17,000	48,000	None	28,000	28,000
1935.....	20,000	15,000	35,000	2,000	11,000	13,000

¹ Encroachment on irrigation supplies.

² Encroachment on winter power waters.

³ These shortages occur in years of late run-off when irrigation requirements rise faster than stream flow.

Winter flows are always adequate Nov. 1 to Apr. 1.

⁴ Not computed.

DIVERSION PLAN AND STRUCTURES

REPLACEMENT

In order to protect the water users in the Colorado River Basin against any depletion of their water supply by diversions through the Continental Divide tunnel to northeastern Colorado, a storage reservoir is planned on the Blue River about 16 miles southeast of Kremmling, Colo. This reservoir is to be known as the Green Mountain.

The dam site is located in the E ½ of sec. 15, T. 2 S., R. 80 W., sixth principal meridian, near the head of a box canyon, between Green and Little Green Mountains, caused by the river cutting through a porphyry sill. The foundation bedrock consists of sedimentary rocks, either Dakota sandstone or Morrison shales, and the intrusive porphyry.

The irrigation outlet capacity is 1,000 cubic feet per second, and the power outlet capacity is 1,500 cubic feet per second. The spillway capacity is 25,000 cubic feet per second.

The reservoir will flood 2,100 acres of land and will have a capacity of 152,000 acre-feet.

From the water-supply studies it was found, assuming that full development had taken place in the Colorado River Basin and that the Big Thompson project had been in operation the last 35 years, that in the year 1931, the lowest year of dependable run-off record, the Colorado Basin users above Glenwood Springs would have been shorted 37,000 acre-feet for irrigation use and the Public Service Co. would have been shorted 16,000 acre-feet at their power plant at Shoshone during the nonirrigation season, or a total shortage of 53,000 acre-feet. Accordingly, 50,000 acre-feet of Green Mountain storage have been allocated to replacement purposes for which the water users in north-eastern Colorado will pay \$1,500,000. The remaining 100,000 acre-feet are allocated to power and will be paid for out of power revenues.

Since the average shortage for both power and irrigation for the last 10 years, the lowest 10 years of run-off record is 36,000 acre-feet. There would be the 16,000 acre-feet difference, and a portion of the 100,000 acre-feet let out for power that could be used by the Colorado Basin users to supply shortages that might occur in their irrigation use in years of extreme low run-off, these shortages not being caused by the transmountain diversion.

The total estimated cost of the dam and reservoir is \$3,776,032, \$2,276,032 of which will be paid for from power revenues.

GRANBY RESERVOIR AND STORAGE

The storage of Colorado River waters for the project is to be made in what is known as Granby Reservoir which is located in Tps. 2 and 3 N., Rs. 75 and 76 W., sixth principal meridian, in Grand County, Colorado. The reservoir basin occupies the valleys of Stillwater Creek, the south fork or Arapaho Creek, and the main Colorado River.

The damsite is located about 4 miles northeast of the town of Granby, Colo., in the NE¼ of sec. 11, T. 2 N., R. 76 W., in Grand County, Colo. It is located at the head of a short canyon which the river has cut through pre-Cambrian rocks forming a spur of the main Rocky Mountain mass. At the damsite the canyon at river-bottom level is 200 feet wide, while at elevation 8,275 it is 720 feet in width.

The dam is to be a combination earth and rockfill structure with a maximum height of 223 feet. The outlet capacity is 300 cubic feet per second and the spillway capacity is 12,000 cubic feet per second.

With the high-water line at elevation 8,275 feet the reservoir has a capacity of 482,860 acre-feet, and will flood an area of 6,943 acres.

This reservoir will not only intercept the flow of the Colorado at that point, but the flow of Willow Creek will be intercepted near Dexter, Colo., and brought into the reservoir through a canal of 1,000

cubic feet per second capacity. Willow Creek enters the Colorado about 2 miles below Granby Dam.

It is estimated that Willow Creek will supply an average of about 60,000 acre-feet per year, and that the total estimated cost of this diversion is \$733,203.

The storage in Granby Reservoir will also be augmented by the flow of Meadow and Strawberry Creeks, tributaries of Fraser River which enters the Colorado about 5 miles below the dam. The canal intercepting these two creeks will have a capacity of 500 cubic feet per second, and it is estimated they will produce an average of 12,000 acre-feet a year. The total estimated cost of this diversion is \$133,600.

If water supply records kept in the future show there is sufficient water supply left in the Fraser River below the City of Denver's diversion, a canal could be taken out of it just below the mouth of St. Louis Creek near the town of Fraser, Colo., and extend from there to Granby Reservoir, intercepting Ranch, Meadow, and Strawberry Creeks on the way. A small regulating reservoir should be built on Ranch Creek above where the Canal intercepts it.

NORTH FORK DIVERSION DAM AND SHADOW MOUNTAIN LAKE

In order to divert the water of the North Fork of the Colorado into Grand Lake and thence to the channel extending from it to the west portal of the Continental Divide tunnel, it is planned to construct a concrete overflow dam 35 feet in height, above streamed, across the North Fork about one-half mile below its junction with the Grand Lake outlet.

The dam site proper is located in the NW $\frac{1}{4}$ of sec. 19, T. 3 N., R. 75 W., and is a glacial morain cut through by the river.

The water backed up by this dam will form a lake called Shadow Mountain, the name of a nearby mountain, which will have a surface area of 1,356 acres. The elevation of this lake will be the same as Grand Lake and connected with it by means of the present outlet.

NORTH FORK DIVERSION DAM

The dam proper is a concrete gravity overflow spillway section, 90 feet long, with crest elevation at 8,370. This spillway is designed for maximum discharge of 1,800 cubic feet per second. On each side of the overflow section is a concrete gravity section containing three automatic siphon spillways on each side. The total spillway capacity is 9,400 cubic feet per second.

The total estimated cost is \$483,928.

GRANBY PUMPING PLANT

As stated before, the water surface elevation of Granby Reservoir is 8,275 and the water surface of Shadow Mountain and Grand Lakes is 8,369. In order to get the water stored in Granby Reservoir into Shadow Mountain Lake and available for delivery through the Continental Divide tunnel, a pumping plant is located on the north shore of Granby Reservoir about one-half mile above the junction of the South Fork with the Colorado. A granite spur juts out into the reservoir site at that point making it ideal for the intake tunnels and a shaft for the pump.

The proposed pumping plant will contain three motor-driven vertical-shaft pumping units having a total capacity of 900 cubic feet per second with full reservoir and 550 cubic second-feet at low water. At normal water surface the capacity will be 870 cubic feet per second.

Each pump will be driven by a 6,500-horsepower synchronous motor.

Power will be delivered to the plant from a 69,000-volt transmission line extending from power plant no. 1 just below Estes Park, around the Rocky Mountain National Park, and crossing the Continental Divide at Buchanan Pass about 5 miles south of the park boundary.

The water from the pumps empties into a canal of 900 cubic second-feet capacity and runs by gravity into Shadow Mountain Lake. It is planned to operate this canal all winter when temperatures get as low as 40° below zero. The latent heat in the water and the friction heat absorbed from the pumps will prevent this water from freezing and will keep quite an area open after the water reaches Shadow Mountain Lake.

The total estimated cost of the pumping plant is \$1,250,000.

The total estimated cost of the pump canal is \$417,553.

CONTINENTAL DIVIDE TUNNEL

The west tunnel portal is connected with Grand Lake by means of a channel constructed 67.5 feet in width and 15 feet in depth. At the lake end of this channel a permanent concrete barrier or weir will be placed with a crest elevation at 8,368 which would be the minimum elevation to which the water in Grand Lake could be drawn. Since the barrier is so constructed that it requires the water to be 1 foot in depth over it to supply the normal capacity of the tunnel, the normal elevation of Grand and Shadow Mountain Lakes would be 8,369 feet.

The present maximum fluctuation of Grand Lake is about 4 feet, or from an elevation of 8,368 in winter to 8,372 feet during the peak run-off from melting snow. The automatic control gates at the North Fork Diversion Dam and at tunnel inlet will so control the elevation of the water surface in Grand Lake that it would never fluctuate more than 1 foot.

The Continental Divide tunnel extends from the easterly end of Grand Lake to Wind River, southwest of Estes Park, with an azimuth of 242° 20' 30", and length of 69,023 feet. It is to be horseshoe shape 9.5 feet in diameter and lined throughout with a 9-inch concrete lining.

It will be located entirely in pre-Cambrian rock consisting of the Longs Peak and related granites and the gneisses and schists of the Idaho Springs formation. The granites are strong massive rocks. Gneisses predominate over schists and only a small proportion have prominent and continuous cleavage planes. The proportion of granite to gneiss and schist is approximately 4 to 1.

From a detailed geological survey of the tunnel and comparing it with conditions actually encountered in the Moffat Railroad tunnel, which was built under the Continental Divide for the Denver & Salt Lake Railroad, and about 25 miles due south of this one, it was estimated there would be only 400 feet of bad ground and 5,200 feet of ground needing support. However, for purposes of estimate, it was figured there would be 6,900 feet of bad ground and 17,500 feet of ground needing support.

The total estimated cost is \$7,271,371.

POWER CONDUIT NO. 1

Power conduit no. 1 extends from the east portal of the Continental Divide tunnel in Wind River to the penstock of power plant no. 1 on the northeast slope of Prospect Mountain.

Both ends of the Continental Divide tunnel are without the national-park boundaries but the area east of the east portal is authorized by Congress to be taken in, through that area. The water will be taken through a closed conduit consisting of a 10-foot reinforced concrete pipe completely buried. The total length of power conduit is 5.36 miles, of which 1.86 miles is closed conduit, 1.19 miles is concrete lined tunnel, 0.98 mile is siphon, and the remainder is open canal.

The total estimated cost of power conduit no. 1 is \$1,101,000.

POWER PLANT NO. 1

Power plant no. 1 will be located on the south bank of the Big Thompson River about one-half mile east of Estes Park. It will contain two 15,000 kilovolt-ampere generating units with auxiliaries. Each unit will consist of a vertical-shaft, single-runner, spiral-casing type hydraulic turbine operating under an effective head of 705 feet direct connected to a 15,000 kilovolt-ampere water-wheel type generator. A complete description with cost estimate will be found in Power and Pumping Summary.

Until there has developed a sufficient market for power to justify the construction of power plants nos. 2 and 3, the water will be turned into the Big Thompson at power plant no. 1 and carried by that stream to a diversion dam located in SE $\frac{1}{4}$ sec. 1, T. 5 N., R. 71 W., about midway between the present diversion dam and power plant for the town of Loveland, Colo.

POWER CANAL NO. 4

From this diversion dam the water will be carried in a canal of 750 cubic second-feet capacity on the south side of the stream a distance of 4.93 miles to a point just above the mouth of the Big Thompson Canyon. At this point a portion of the water will drop direct into the Big Thompson River to supply the supplemental water demands of that stream and a portion will be siphoned across to elevation 5,450 to supply the canal going to the Poudre River, which will be described later. Power plants nos. 4 and 4-A will be constructed at this point to take advantage of a fall of 550 feet into the Thompson and 358 feet to the Poudre Canal when the power market justifies.

CARTER LAKE SUPPLY CANAL

About 3.07 miles below the diversion dam mentioned above, a canal of 300 cubic feet per second takes off toward the south and supplies Carter Lake.

This canal is 8.78 miles in length, of which 7,040 feet is tunnel 1,878 feet siphon, and the remainder is open canal.

The estimated cost of this supply canal is \$710,629.

CARTER LAKE RESERVOIR

This site is located in Ts. 4 and 5 N., R. 70 W., of sixth principal meridian, about 1 mile north and 7 miles west of Berthoud, Colo.

The reservoir will occupy a valley about 2 $\frac{1}{4}$ miles long and from one-half to 1 mile wide. The northern portion of the area is a natural

basin called Carter Lake. This lake dried up during the last 5 drought years, for the first time within the memory of the white settlers.

The proposed maximum water surface in the reservoir is at elevation 5,760 with a capacity of 111,963 acre-feet. The area of high water line is 1,150 acres. For this water surface three dams will be required. Dam no. 1 is located at the natural outlet of the valley and will contain the outlet works for the reservoir; the other two dams will occupy saddles. These dams are earth and rock fill; the main dam is 243 feet high, and the saddles 43 and 48, respectively.

The capacity of the outlet to St. Vrain supply canal is 300 cubic feet per second, the outlet to the Big Thompson has a capacity of 1,000 cubic feet per second.

The total estimated cost of the reservoir is \$1,822,202.

ST. VRAIN FEEDER CANAL

A canal of 300 cubic feet per second capacity will extend from the small outlet of Carter Lake to the St. Vrain, reaching the St. Vrain high enough to supply all ditches.

The length of this canal is 9.76 miles with 3,445 feet in tunnel, 1,575 feet of siphons, and the remainder open canal.

The estimated cost of the St. Vrain feeder is \$368,951.

BIG THOMPSON FEEDER

About one-half mile below Carter Lake Dam a canal will be taken out of the draw leading from the dam, and will run into Cottonwood Creek, a tributary of the Big Thompson. This canal will have a capacity of 1,000 cubic feet per second and be 5.37 miles in length.

The cost is estimated at \$155,246.

HORSETOOTH SUPPLY CANAL

This canal starts at the end of a siphon across the Big Thompson from power conduit no. 4. This water will pass through power plant no. 4-A when constructed. The canal starts at elevation 5,450 with a capacity of 250 cubic feet per second. The structures, however, are designed for a capacity of 400 cubic feet per second on the theory that some time in the future it might be necessary to increase the capacity of the canal to that amount. The length of this canal is 9.88 miles, of which 12,863 feet is tunnel, 3,296 feet is siphons, and the remainder open canal.

The elevation of 5,450 was chosen because it not only puts the water above all present diversions on the Poudre River, but it afforded the most direct and economical route.

The estimated cost of this feeder is \$1,208,391.

HORSETOOTH RESERVOIR

The proposed Horsetooth Reservoir will occupy a valley 6 miles long and from one-quarter to three-quarters miles wide, extending in a north-south direction, formed by the erosion of soft red beds of Lykens formation between harder ridges of Lyons on the west and Dakota sandstone on the east. There are three natural outlets to the east through the Dakota hogback, namely, Soldier, Dixon, and

Spring Canyons, which are the sites of three proposed dams of the same names. The fourth proposed dam, Horsetooth, will cross the valley at the north end on a low saddle separating the valley from drainage to the north into the Poudre River. The outlet will be through the Horsetooth Dam saddle. There are no outlets through the other dams. The proposed water surface is at 5,400 feet in elevation which gives a capacity of 96,756 acre-feet. The area flooded will be 1,513 acres. The outlet capacity was designed for 1,200 cubic feet per second with reservoir full. This large capacity is necessary as the irrigation use requires that the entire amount of supplemental water be delivered at a rate that would supply it in 60 days.

The advantages of a reservoir at this point are: It is high enough to supply all users from the main Cache La Poudre River and is located close to it. It takes the place of 6 miles of canal through rough country and allows a canal of 250 cubic second-feet to be constructed from the Big Thompson instead of one for 1,000 cubic feet per second.

The estimated cost of the reservoir is \$3,625,021.

POUDRE FEEDER CANAL

From the outlet of Horsetooth Reservoir a canal of 1,000 cubic second-feet capacity will extend north to Lewstone Creek, a tributary of the Poudre. The water will run down this creek to the Poudre above all the diversions except the Poudre Valley.

POUDRE VALLEY FEEDER CANAL

A canal will extend from Lewstone Creek to the Poudre Valley Canal about 1 mile below its headgate, crossing the Poudre River in a siphon. This canal will have a capacity of 400 cubic feet per second to take care of the supplemental demands of the Poudre Valley Canal and also the demands of the North Poudre irrigation district. The total length of the two canals is 5.48 miles.

The cost of the Poudre Feeder and Poudre Valley Canals is estimated at \$632,843.46.

NORTH POUDRE FEEDER CANAL

It is planned to enlarge the Poudre Valley Canal for a distance of 3.58 miles from the point the supply canal enters to the location of the pumping plant for the North Poudre district. This will enlarge the canal from a capacity of 500 to 750 cubic feet per second and the estimated cost is \$11,436.

NORTH POUDRE PUMPING PLANT

This pumping plant, constructed on the banks of the Poudre Valley Canal, will consist of two 75 cubic second-feet capacity vertical synchronous motor driven single stage pumps, operating against an effective head of 187 feet.

The estimated cost is \$200,000.

NORTH POUDBRE FEEDER CANAL

This canal of 150 cubic second-feet capacity extends from the pressure outlets of the pumping plant to the North Poudre Canal, a distance of 9.98 miles.

The estimated cost is \$128,889.

ARKINS RESERVOIR

This reservoir is located on Buckhorn Creek, a tributary of the Big Thompson, in Tps. 5 and 6 N. R. 70 W., sixth principal meridian, and about 8 miles northwest of Loveland, Colo. The object of this reservoir is to provide storage for Colorado River waters brought over in the wintertime and to be used to supply supplemental water on the lower South Platte in water districts 1, 2, and 64. It will also serve in connection with the use of the 16,000 acre-feet of floodwater now available on the Big Thompson.

The bringing of more of the supplemental water over in the wintertime aids materially in the production of a maximum amount of power out of the waters of the Big Thompson River. For that reason the entire cost of the inlet to Arkins Reservoir and one-half the cost of the reservoir itself is assessed against power and paid for out of power revenues from plant no. 1.

The capacity of Arkins Reservoir is 50,000 acre-feet with a high water line at 5,275 feet elevation and floods 929 acres of land.

The dam site occupies a notch cut through the Dakota sandstone ridge by Buckhorn Creek.

The main dam is an earth- and rock-fill structure 155 feet in height with an outlet capacity of 650 cubic feet per second and a spillway of 10,000 cubic second feet capacity.

There is a saddle dam, in addition to the main dam of earth- and rock-fill construction, 50 feet maximum height, built across a saddle at the southern extremity of the reservoir.

The total estimated cost of the reservoir and dam is \$1,740,737.

The estimated cost of the Arkins Reservoir inlet is \$351,488.

This inlet diverts from the Big Thompson River just below the dam of the Handy Canal and follows around the north side of the river a distance of 2.33 miles to Arkins Reservoir.

ROCKY MOUNTAIN NATIONAL PARK

Every effort has been made in the survey and design of this project to not disturb the natural beauties of the Rocky Mountain National Park and its surrounding areas. The Continental Divide tunnel was lengthened 1.6 miles in order that its extremities should fall outside the boundaries of the park. The conduit leading from the east portal of the tunnel to power plant no. 1 is to be buried and the surface landscaped through the area authorized by Congress to be added to the park. The waste from the east portal of the tunnel placed in this area is to be terraced and planted with evergreen trees. The waste from the west portal is to be used to fill up some low areas and render the area suitable for the building of summer homes.

The approach to the Western Gateway of the Rocky Mountain National Park will be along the shores of Shadow Mountain Lake with

its fluctuation of only 1 foot instead of the swampy area that now breeds mosquitoes and exposes mud flats in low water.

The bill authorizing the creation of the Rocky Mountain National Park reserved the right for the Bureau of Reclamation to survey and construct an irrigation project within the boundaries of the park.

OPERATION OF THE SYSTEM

IRRIGATION PROJECT OPERATIONS

The system is planned and it is anticipated that it will be operated in a manner to have the water available in Carter Lake, Horsetooth and Arkins Reservoirs available by July 1, to the full capacity of those reservoirs, 256,000 acre-feet. The usual demand for supplemental water begins July 1 to 15 and extends to September 15 to 30. The outlets of the reservoirs are planned to deliver the water from the reservoirs in 60 to 75 days, including the water that must pass through them for direct delivery that may be in the way of being transferred from the Colorado River Basin to the eastern slope during the period of irrigation application. The balance of the 310,000 acre-feet, or 54,000 acre-feet, will be available for direct irrigation use as brought over during the above period or to some extent may be required prior to July 1.

The run-off of the waters of the Colorado River here contemplated to be used will largely be secured from the melting snows during May, June, and early July and stored in the Granby Reservoir. During the fall of that year, winter and spring of the following year, the water will be transferred from the Granby Reservoir through the Continental Divide tunnel at a uniform rate and restored in the Carter Lake, Horsetooth, and Arkins Reservoirs. This will permit a flow that is well suited to the development of firm power through the five power plants that will eventually be constructed along the Big Thompson as shown on the map of the general layout.

Granby Reservoir will act as a hold-over reservoir to carry the water from years of excessive run-off to years of subnormal flow.

POWER PROJECT OPERATION

Water will be carried through the Continental Divide tunnel at a uniform flow for the generation of power at the several power plants, except that the quantity will be reduced during the summer season when some water from the Big Thompson is available for power purposes in power plants nos. 2, 3, 4, and 4-A. At this period there will be little or no demand for power for pumping at the Granby pumping plant, which will permit the cutting down of the quantity of water to take care of the commercial power load.

It is planned to construct the Granby pumping plant and the Granby pump canal 150 percent of the capacity of the Continental Divide tunnel. This will permit the operation of the pumping plant at full capacity with off-peak power, and reduce the amount of pumping with firm power. The varying discharge of the pump ditch during the 24-hour period will be equalized by the Shadow Mountain and Grand Lakes, so that a uniform discharge will be maintained through the Continental Divide tunnel. The range in height of water surface in Shadow Mountain and Grand Lake to equalize this

flow will not exceed two-tenths of a foot, and will be greatest in the winter and early spring months.

There is an average of 16,000 acre-feet of surplus water on the Big Thompson available for storage in the system mainly in May and June. In order to take this water into the reservoirs it will be necessary to reserve capacity in the three reservoirs on the eastern slope until toward the latter part of June. The snowfall, the main source of this water supply, will be known well in advance so that operations of the several parts of the system, including the production of power at the several power plants, can be adjusted to take care of this water and hold back an equal amount in Granby Reservoir.

TENTATIVE PROJECT FINANCIAL SET-UPS

This proposed development consists of two projects: first, the irrigation project, and second, the power project.

It is planned that those features of the development that are used mainly for irrigation are grouped under the irrigation project set-up, while those used entirely, or are made of a greater capacity because of power development, are grouped in whole or in part in the power project set-up.

IRRIGATION PROJECT

The following major features with their appurtenant structures are given with the estimated field costs including 10 percent for engineering and 15 percent for contingencies. The full capacity of Arkins Reservoir is necessary to develop a larger portion of firm power than would otherwise be possible without it. At the same time, a reservoir of half its capacity or additional capacity in Horsetooth or Carter Lake Reservoirs would be necessary to provide capacity to deliver the irrigation water as needed. It is, therefore, deemed equitable to divide the cost of this reservoir equally between the irrigation and power projects.

The Green Mountain Reservoir, with a capacity of 152,000 acre-feet, is larger than is necessary to furnish replacement for a like amount of water diverted by the project above Granby Dam at a time when it would be required for irrigation, present and future, and to furnish the Shoshone power plant 1,250 second-feet or such lesser amount that they would be entitled to receive if the proposed project was not operating. From studies made, it appears that 50,000 acre-feet will be sufficient to replace all the water that the proposed project will take at a time when required for use lower down in the stream within the State. Therefore 52,000 acre-feet of the Green Mountain Reservoir capacity is allocated for replacement (including evaporation losses) and charged to the irrigation project. The balance of the capacity or 100,000 acre-feet is allocated to the power project and is to be paid for out of power revenues.

The following is a summary of the irrigation project costs:

Estimated cost chargeable to irrigation feature

Willow Creek feeder canal.....	\$733, 203
Granby Reservoir.....	2, 813, 703
Granby pumping plant.....	1, 250, 000
Granby pump canal.....	417, 553
North Fork diversion dam.....	483, 928
Continental Divide tunnel.....	7, 271, 371

Estimated cost chargeable to irrigation feature—Continued

Carter Lake supply canal.....	\$710, 629
Horsetooth supply canal.....	1, 208, 391
St. Vrain feeder canal.....	368, 951
Big Thompson feeder canal.....	155, 246
Poudre feeder canal.....	632, 843
Poudre Valley feeder canal.....	11, 436
North Poudre feeder canal.....	128, 889
North Poudre pumping plant.....	200, 000
Horsetooth Reservoir.....	3, 625, 021
Arkins Reservoir.....	1, 859, 323
Carter Lake Reservoir.....	1, 925, 253
Green Mountain Reservoir (52,000 acre-feet replacement) (100,000 acre-feet for power).....	3, 776, 032
Improvement of Colorado River above Kremmling to maintain fish- ing and to adjust the present irrigation system to the altered conditions.....	300, 000
Less the following items tentatively chargeable to power:	27, 871, 772
One-half cost of Arkins Reservoir.....	\$929, 661
Portion of cost of Green Mountain Reservoir for 100,000 acre-feet.....	2, 276, 032
	<u>3, 205, 693</u>
Cost of irrigation features.....	24, 666, 079
Say.....	24, 800, 000

REPAYMENT

Twenty-four million eight hundred thousand dollars upon 310,000 acre-feet at \$80 per acre-foot.

Two dollars per acre-foot on 40-year repayment basis.

In the above repayment is predicated upon the contracts to be made upon a basis of 310,000 acre-feet. Beside the 320,000 acre-feet available from the Colorado River drainage there is an average of 16,000 acre-feet available for storage on the Big Thompson, making 336,000 acre-feet in all, leaving 26,000 acre-feet for losses on the eastern slope and for the uncertain, heretofore mentioned in operations on the western slope.

The power costs are shown under the heading "Power and pumping system."

The construction of power plant no. 1 as shown in the power set-up is a necessary development in order to secure power for pumping purposes at the Granby pumping plant.

POWER AND PUMPING SYSTEMS

The ultimate power and pumping system is proposed to consist of the major pumping plant at Granby, power plant no. 1 near the town of Estes Park, power plant no. 2 near Drake post office, power plant no. 3 at Cedar Cove, power plants nos. 4 and 4-A near the mouth of the Big Thompson Canyon, and power plant no. 5 at the Green Mountain Reservoir. If conditions justify, there may also be a pumping plant on the Poudre River near the point where the proposed Poudre supply canal crosses the river. Power plant no. 5, Granby pumping plant, and power plant no. 1, would be interconnected by a single circuit 69,000-volt transmission line. Power plants nos. 1 to 4-A, inclusive, would be interconnected by two 115,000-volt transmission lines and these same lines would extend to one or more load centers where the power could be disposed of commercially.

The buildings for the power and pumping plants would be of reinforced concrete construction of suitable size to house the machinery and provide space for such facilities as would be required for efficient and economical operation. For scenic reasons, special care would be taken in the architectural design of the buildings to make them blend in with the beauties of the surrounding territory so as to be both as inconspicuous as possible and also as artistic as feasible without undue expenditure. An artist's sketch of one of these buildings is included with the report.

Following is a tabulation covering the essential data for each of the power and pumping plants:

Power plants

Plant designation	Effective head in feet	Turbine capacity in cubic feet per second	Power available in horse-power	Number of units	Size of each unit in horse-power	Installed power in kilowatts
No. 1.....	704	550	38, 800	2	20, 000	30, 000
No. 2.....	1, 195	550	65, 800	2	34, 000	50, 000
No. 3.....	328	550	18, 000	2	9, 000	13, 500
No. 4.....	550	400	22, 000	1	22, 000	16, 000
No. 4-A.....	381	250	9, 500	1	9, 500	7, 000
No. 5.....	225	1, 500	33, 800	2	17, 000	26, 000
Total installed power in kilowatts.....						142, 500

Pumping plants

Plant designation	Head in feet	Pump capacity in cubic feet per second	Capacity of each pump in cubic feet per second	Number of pumps	Rating of each motor in horse-power	Power required in kilowatts
Granby.....	130	870	290	3	6, 500	15, 000
Foudre.....	187	150	75	2	2, 000	3, 000
Total installed pumping, kilowatts.....						18, 000

POWER PLANT NO. 1

Power plant no. 1 will be located on the south bank of the Big Thompson River about one-half mile east of the village of Estes Park and will contain two 15,000 kilovolt-ampere generating units with auxiliaries. Each unit will consist of a vertical-shaft, single-runner, spiral casing type hydraulic turbine operating under an effective head of approximately 705 feet and direct connected to a 15,000 kilovolt-ampere water-wheel type generator with direct connected exciter and pilot exciter. Water would be supplied to each turbine through a steel penstock approximately 5,000 feet long, with synchronous bypasses provided so that the flow through the penstock can be discharged either through the turbines or the bypasses into the Big Thompson River. The bypasses will be mechanically connected to the turbine gate operating mechanism so that rapid governing of the units under varying load conditions can be effected without creating excessive water hammer. Trashracks with shut-off gates for

each penstock will be provided in the forebay structure. The headgates will be controlled from the power plant. A spillway will be provided to care for the flow when the headgates are closed and the penstocks inoperative. The plant will be equipped with all necessary auxiliaries, including a traveling crane for handling the large pieces of equipment. A small machine shop will be provided for making minor repairs. An outdoor type substation with self-cooled transformers will be provided for stepping the voltage up to 69,000 for transmission to the Granby pumping plant, and to 115,000 volts for transmission to commercial markets. The substation structure will be of the conventional structural steel type with high voltage oil circuit breakers, lightning arresters and necessary auxiliaries. The control of the oil circuit breakers will be from the main power plant switchboard. Operators' quarters, a warehouse, and a large machine shop for general project repairs will be provided in the vicinity of the power plant.

POWER PLANT NO. 2

Power plant no. 2 will be located about one-half mile northwest of Drake, on the south bank of the north fork of the Thompson River just above its junction with the Big Thompson. The plant will contain two 25,000-kilovolt-ampere generating units of the horizontal shaft type. The net head will be approximately 1,195 feet. Each unit will consist of a double overhung impulse wheel hydraulic turbine with the generator mounted in the center, between the two runners. A direct connected exciter and pilot exciter will be mounted at one end. Water will be delivered to the turbines through two steel penstocks about 4,150 feet long. Each penstock will be provided with two branches to the turbine nozzles and each branch will be provided with a synchronous bypass arranged so that the flow through the penstock can be discharged through either the nozzles of the bypasses to the river. The bypasses will be mechanically connected to the turbine nozzle operating mechanism so that rapid governing can be effected under varying load conditions without excessive water hammer. The head-gate structure will be provided with trash racks and sliding gates at the end of the penstocks and a spillway to care for the flow when the gates are closed. The plant will be complete with all necessary auxiliaries for station service requirements and with a crane for handling the machinery. A structural steel outdoor type substation will be provided with self-cooled transformers for stepping the voltage to 115,000 volts, and with outdoor type oil circuit breakers, lightning arresters, and other necessary auxiliaries. The operation of the substation will be handled from the main switchboard of the power plant. Quarters for the operators will be provided adjacent to the power plant.

POWER PLANT NO. 3

Power plant no. 3 will be located about one-half mile east of the Loveland power-diversion dam on the north bank of the Big Thompson River. The plant will contain two 6,500 kilovolt-ampere generating units, each consisting of a vertical hydraulic turbine direct connected to a generator with main exciter and pilot exciter. The effective head will be approximately 328 feet. Water from the head-gate structure will be delivered to the turbines through steel

pen stocks about 650 feet long. Each pen stock will be provided with a synchronous bypass arranged so that the flow through the pen stock can be discharged either through the turbines or the bypasses to the Big Thompson River, and to allow rapid governing of the units without excessive water-hammer. The head-gate structure will be provided with trash racks and sliding gates at the head of the pen stocks and a spillway to care for the flow when the gates are closed. The plant will be complete with all necessary auxiliaries for station-service operation, and with a crane for handling equipment. The plant will be provided with a structural-steel outdoor-type substation similar to that proposed for plant no. 2.

POWER PLANTS NOS. 4 AND 4-A

Power plant no. 4 will be located about 2 miles east of Cedar Cove on the south bank of the Big Thompson River, while power plant no. 4-A will be located a short distance upstream from plant no. 4, and at an elevation about 175 feet above the river. The capacity of plant no. 4 will be 16,000 kilovolt-amperes and of plant no. 4-A, 7,000 kilovolt-amperes. One unit only will be provided at each plant and will consist of a vertical-shaft, single-runner, spiral-casing type turbine direct connected to a vertical water wheel generator with direct connected main and pilot exciters. Plant no. 4 will have an effective head of about 550 feet, and plant no. 4-A, 380 feet. Plant no. 4 will receive its water through a single steel penstock about 1,960 feet long, and plant no. 4-A, through a similar pipe about 1,400 feet long. Each plant will be provided with synchronous bypasses similar to those in plants nos. 1 and 3. Plant no. 4 will discharge directly into the Big Thompson River. Plant no. 4-A will be siphoned under the river through a pressure tunnel to the proposed Poudre supply canal, but will have provisions so that if so desired, the water may be discharged directly into the Big Thompson River. The headgate structure will be provided with trashracks, sliding gates, and spillways similar to those in plants nos. 1, 2, and 3. A single outdoor structural steel type switchyard will be provided for the two plants. The equipment in this substation will be similar to that for plants nos. 1, 2, and 3. Plant no. 4-A will be remotely controlled from plant no. 4, so that the two plants can be operated with one set of operators. The plant will be complete with auxiliaries and cranes similar to that in other plants. Quarters for the operators will be provided in the vicinity of the plants.

POWER PLANT NO. 5

Power plant no. 5 will be located about 12½ miles southeast of Kremmling, on the east bank of the Blue River, immediately downstream from the dam forming the proposed Green Mountain Reservoir. The plant will contain two 13,000 kilovolt-ampere generating units of the vertical hydraulic-turbine driven type, with direct connected generator with main and pilot exciters. The plant will have a varying head depending upon reservoir water surface, but it is expected that the average head will be about 225 feet. The trashrack and intake structure will be located immediately upstream from the dam and a single steel penstock installed in the tunnel will conduct the water to the power plant. Each turbine will be provided with a

pressure regulator or relief valve to limit the water hammer under sudden change of load conditions. The plant will be complete with necessary auxiliaries for station service, a small machine shop for minor repairs, and a crane for handling equipment. An outdoor structural steel substation will be provided complete with equipment for stepping the voltage up to 69,000 volts for transmission and with oil circuit breakers and other necessary auxiliaries for the control and protection of the lines and equipment. The oil circuit breakers will be controlled from the main switchboard of the power plant. Quarters for operators will be constructed in the vicinity of the power plant.

GRANBY PUMPING PLANT

The Granby pumping plant will be located approximately 6 miles south of the village of Grand Lake on the north shore of the proposed Granby Reservoir. The plant will contain three motor-driven vertical-shaft pumping units having a total capacity of 900 second-feet at full reservoir, and 550 second-feet at low water. The total capacity at the normal water surface will be approximately 870 second-feet. The motors will be of the synchronous type and arranged for semi-magnetic operation. That is, the operator will be required only to close the main switch to the unit in order to place it in operation, and to open the same switch to discontinue operation. The motors will be equipped with direct connected exciters. The water from the Granby Reservoir will be delivered to the pumps through tunnels about 155 feet long. A channel in the reservoir will convey the water to the mouth of the intake tunnels in extreme low water. Water from each pump will be discharged through about 175 feet of tunnel, and 165 feet of steel pipe to the canal at elevation approximately 8,381. This canal, which will be approximately 4 miles in length, will discharge into the proposed Shadow Mountain Lake. The center line of each pump and propeller will be at approximately elevation 8,145, with the base of the motor driving the pump 135 feet above, or at elevation 8,280. Vertical shafts in the rock between the underground pump room and the motor room on the surface will accommodate the shafts connecting the pumps to the motors. Each pump will have a capacity of 290 second-feet when operating under a total dynamic head of 130 feet and will be driven by a 6,500-horsepower synchronous motor.

The entrances to the intake tunnels will be provided with trashrack and stop-log structures, and sliding gates will be installed at the intake and discharge of each pump. The intake gates will be located in the gallery adjoining the pump room and will be hydraulically operated. The discharge gates will be located at the head of the canal and will be of a type which will close automatically in the event power service is interrupted, so as to prevent water in the canal from running back down through the pump.

The pumping plant will be complete with auxiliary pumping units for unwatering the intake and discharge tunnels and the drainage sump. It will also be complete with all other necessary station auxiliaries, including a crane for handling the equipment. A small machine shop will be provided for making minor repairs. Quarters for the operators will be provided in the vicinity of the plant.

Power will be delivered to the plant from a 69,000-volt transmission line, through an outdoor structural steel type substation containing self-cooled transformers, together with all necessary protective appa-

ratus and auxiliaries. The operation of the substation will be handled from the main switchboard of the pumping plant.

POUDRE PUMPING PLANT

The Poudre pumping plant will be located on the Poudre Valley Canal at a point about 3 miles below the crossing of the proposed Poudre supply canal. It is proposed to have a capacity of 150 second-feet, composed of two 75-second-foot vertical synchronous-motor-driven single-stage pumps, operating against an effective head of 187 feet. The plant will be complete with all necessary auxiliaries, including a crane for handling the equipment. An outdoor substation will be provided for stepping the voltage down from transmission voltage to motor voltage. Due to the relatively short periods of operation, it is not probable that it will be necessary to construct operator's quarters at this plant.

TRANSMISSION SYSTEM

The transmission system will consist of a single 69,000-volt circuit connecting power plant no. 5 with the Granby pumping plant and power plant no. 1. Power plants nos. 1 to 4-A, inclusive, will be connected by two 115,000-volt lines and two 115,000-volt lines will continue to market. For the purpose of this report only, and to include a sufficient amount in the cost estimates for any probable transmission set-up, this market has been assumed as the Valmont steam plant of the Public Service Co. of Colorado. Power plant no. 4 will be connected with the Poudre pumping plant by one 34,500-volt transmission line. The number of lines and mileage involved in each are as shown in the following tabulation:

From—	To—	Number of lines	Number of miles	Voltage
Power plant no. 5	Ka Rose	1	36	69,000
Granby pumping plant	Grand Lake	1	10	69,000
Do.	Power plant no. 1	1	36	69,000
Power plant no. 1	Power plant no. 2	2	12	115,000
Power plant no. 2	Power plant no. 3	2	3	115,000
Power plant no. 3	Power plant no. 4	2	4	115,000
Power plant no. 4	Valmont	2	27	115,000
Do.	Poudre pumping plant	1	18	34,500

The line to the Poudre pumping plant would be a wood-pole line with pin-type insulators. All other lines would be of the wood-pole, H-frame type, with suspension insulators, and combining all of the most modern features for continuity of service, ease of maintenance, and long life. The line from power plant no. 1 to the Granby pumping plant will probably require special construction to give added strength in the mountainous region near the Continental Divide.

In order to provide power for construction, it is proposed that one of the first features of the project would be to build one of the permanent 115,000-volt circuits from the Valmont plant to plant no. 1, the permanent 69,000-volt lines from plant no. 1 to Granby pumping plant and from Ka Rose to the Green Mountain dam site, and an extension from the Granby Pumping Plant to the west portal of the pro-

posed tunnel. Initially this entire line would be operated at 69,000 volts, and under such operation would be adequate for all contemplated construction activities. In connection with supplying construction power it would also be necessary to install a substation at the Valmont steam plant to step voltage up to 69,000 volts for transmission. Preliminary studies indicate that it would be advisable to make this substation of approximately 5,000 kilovolt-ampere capacity.

The estimated cost of installing the facilities to provide construction power are as indicated in the following tabulation:

From—	To—	Miles	Cost	
			Per mile	Total
Valmont.....	Power plant no. 2.....	34	\$6,750	\$229,500
Power plant no. 2.....	Power plant no. 1.....	12	4,100	49,200
Power plant no. 1.....	Granby pumping plant.....	36	3,600	129,600
Granby pumping plant.....	Grand Lake.....	10	3,200	32,000
Ka Rose.....	Power plant no. 5.....	36	3,600	129,600
Total transmission lines.....		128		569,900
Substation at Valmont.....				\$61,300
Total to supply power for construction.....				631,200

The transmission system as provided to furnish construction power would be adequate for transmission of power to markets from power plant no. 1 or power plant no. 5 if either were built individually, but the additional complete system would probably be constructed when two or more plants are constructed. The additional costs of the lines involved in this construction are shown in the following tabulation:

From—	To—	Miles	Cost	
			Per mile	Total
Power plant no. 1.....	Power plant no. 2.....	12	\$4,100	\$49,200
Power plant no. 2.....	Valmont.....	34	6,750	229,500
Power plant no. 4.....	Poudre pumping plant.....	18	1,800	32,400
Total additional cost of permanent transmission system.....		64		311,100

In addition to the transmission lines required for the disposal of power, it may be necessary that the Government also construct a substation at the point of power disposal. As a market survey has not been conducted to establish the points at which this power can be disposed of, or the quantities involved at each point of disposal, it is assumed for the purpose of this report that the substations will average in cost \$10 per kilowatt of capacity. Assuming that provision is made to dispose of a peak capacity of 140,000 kilowatts, this will involve an additional expenditure of \$1,400,000.

POWER OUTPUT

Water supply studies indicate that with power plant no. 1 only constructed, there is available, above all requirements for pumping purposes, a constant power output at 100 percent load factor of 120,000,000 kilowatt-hours per year. Since the pumping plant capac-

ity proposed is sufficient to allow pumping to be done in 16 hours of each day it will be possible to handle peak commercial power requirements without undue interference. With this in mind, it has been assumed for the purpose of this report that a market can be found which has a load factor such that 60 percent of this power or 72,000,000 kilowatt-hours per year can be absorbed as firm energy. The balance of this energy, or 48,000,000 kilowatt-hours per year, plus about 40,000,000 kilowatt-hours additional, which is available during various parts of the year, is classed as secondary energy.

Since the Valmont steam plant of the Public Service Co. of Colorado has an installed capacity of 75,000 kilowatts, it appears that the 88,000,000 kilowatt-hours of secondary energy could be absorbed as a fuel saving measure if the price does not exceed fuel costs. Allowing 10 percent for line losses, this is equivalent to an average load of about 9,000 kilowatts.

FINANCIAL OPERATION OF POWER SYSTEM

It is contemplated that the initial power development would consist of the construction of power plant no. 1 only, together with such transmission lines and substations as are required to supply power to the Granby pumping plant and to commercial markets. The estimated construction cost of the strictly power features, as well as items which it is expected that power revenues will repay, is given below.

It is assumed that 5 mills per kilowatt-hour can be secured for firm energy and 1.8 mills per kilowatt-hour for secondary energy with delivery at the market. In each case 10 percent loss is allowed for transmission. The following gives the financial set-up for power plant no. 1, operation costs and returns.

While for the purpose of this report the allocation of construction cost to irrigation and power has been made on the basis set out below, it is understood that this allocation is not thereby fixed, and the same may be changed as further information may warrant until such time as the contract for repayment of the cost of the irrigation features has taken final form.

Power plant no. 1 construction costs

Power plant no. 1 near Estes Park.....	\$1, 778, 000
Conduit from east portal continental divide tunnel to power plant no. 1.....	1, 101, 000
Transmission lines connecting power plant no. 1 with Granby pumping plant—with Valmont and line to North Poudre pumping plant.....	440, 000
Commercial substation (30,000 kilowatts).....	300, 000
Headquarters at power plant no. 1 for operation of power system....	100, 000
Subtotal.....	3, 719, 000
Interest during construction, 3 percent.....	112, 000
Total repayable in 50 years with interest.....	3, 831, 000
One-half cost of Arkins Reservoir.....	929, 661
Portion of cost Green Mountain Reservoir, for 100,000 acre-feet allocated to power.....	2, 276, 032
Payable on 40-year basis without interest.....	3, 205, 693
Total cost power plant no. 1 including other items that are required to be accomplished with the initial development..	7, 036, 693

Annual revenues from power plant no. 1

From sale of 65,000,000 kilowatt-hours firm power, at \$0.005.....	\$325, 000
From sale of 79,000,000 kilowatt-hours secondary power, at \$0.0018.....	142, 000
From rental of water for power development to privately owned plants.....	20, 000
Gross annual income.....	487, 000

Annual operation and maintenance plus retirement of principal

Brought forward.....	\$487, 000
3.887 percent, on \$3,831,000, interest and retirement of investment on basis of 50 years.....	148, 000
Repayment of \$3,205,693 on basis of 40 years without interest.....	80, 000
Operation and maintenance of power plant.....	36, 000
Operation and maintenance Granby pumping plant.....	27, 000
Operation and maintenance of transmission lines.....	13, 800
Operation and maintenance conduit, tunnel, and canals.....	15, 000
Depreciation, 1.5 percent, on \$3,831,000.....	57, 000
General expense.....	18, 200
Total annual costs.....	395, 000
Annual surplus during 40 years repayment period of the non-interest-bearing obligation.....	92, 000

FULL POWER DEVELOPMENT

The results of this study indicate that the initial installation proposed is sufficient from a financial standpoint to return all necessary costs of operation and repayments.

There are five additional plants that can be developed in the future in a manner that will keep pace with the power requirements of the section that may be served and not have a large unearning investment tied up for some years.

The following is an estimate of the cost of the additional power plants that may be constructed in the future, but are not a part of the initial development.

Power plant no. 5.....	\$1, 190, 000
Green Mountain-Ka Rose transmission line.....	130, 000
Operators' quarters.....	60, 000
Substation (20,000 kilowatts).....	200, 000
Subtotal.....	1, 580, 000
Interest during construction, 3 percent.....	47, 400
	1, 627, 400

The above plant, together with plant no. 1, will produce: 113,000,000 kilowatt-hours firm power annually; 92,000,000 kilowatt-hours secondary power annually.

The following are the construction costs of developing power plants nos. 2, 3, 4, and 4-A with appurtenant structures:

Power plant no. 2.....	\$2, 325, 000
Power plant no. 3.....	665, 000
Power plant no. 4.....	760, 000
Power plant no. 4-A.....	420, 000
Power canal no. 2.....	2, 444, 000
Power canal no. 3.....	493, 000
Power canal no. 3-A.....	113, 000
Power canal no. 4.....	1, 194, 000
Operators' quarters.....	150, 000

COLORADO-BIG THOMPSON PROJECT

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Substations (90,000 kilowatt hours).....	\$900, 000
Additional transmission lines.....	311, 000
Subtotal.....	9, 775, 000
Interest during construction, 3 percent.....	293, 250
Total repayable in 50 years with interest.....	10, 068, 250
Arkins Canal feeder, payable in 40 years without interest.....	351, 000
Total power plants nos. 2, 3, 4, and 4-A.....	10, 419, 250
Total power plant no. 5.....	1, 627, 400
Total second-stage development.....	12, 046, 650
Primary development plant no. 1.....	7, 036, 693
Cost of full power development.....	19, 083, 243

The total salable output of the full development is estimated as follows, exclusive of that used for pumping:

	<i>Kilowatt-hours</i>
Firm power, annually.....	360, 000, 000
Secondary power, annually.....	200, 000, 000

¹ Out of an available production of 387,000,000 kilowatt-hours secondary power.

CONCLUSIONS

(1) There is a large area (615,000 acres) of irrigated land in north-eastern Colorado, the major portion of which has an inadequate water supply.

(2) The feasible storage possibilities with the available water supply in the drainage area has been exhausted.

(3) There is at least an available water supply of 310,000 acre-feet on the upper drainage area of the Colorado River that can be diverted to supplement the present water supply on the eastern slope.

(4) That the diversion of this quantity of water from the Colorado River watershed will not interfere with or encroach upon the present or future irrigation along the Colorado River and tributaries within the State, with the protection provided in the Green Mountain Reservoir.

(5) That the plan for the project here laid out appears entirely feasible from a construction point of view.

(6) That the cost of construction estimated at \$2 per acre-foot per annum over the repayment period of 40 years is less than storage water is now commanding and that it will increase the crop values five or more times this annual cost, showing its economic worth.

(7) That the power developments that may be made in the six power plants will produce a large quantity of cheap hydroelectric power that will materially benefit Colorado.

(8) That the revenues from the commercial power generated at power plant no. 1 will pay for the power features as set up under the initial power development, in addition to the power required for pumping at Granby pumping plant, and in lieu of the irrigation features used in power development, the operation of the system to a point where the water leaves the tailrace of the lower power plants can be taken care of by the power development.

(9) That the cost of the irrigation feature of the project is within the ability of the water users to pay.



COLORADO RIVER COOPERATIVE AGREEMENT

This Agreement is entered into among the following listed Signatories, to become effective upon the first business day at least seven days after the last Signatory has signed this Agreement. The Effective Date of this Agreement is the 26th day of September, 2013. The Signatories acknowledge the mutual exchange of consideration in entering into this Agreement.

City and County of Denver, acting by and through its Board of Water Commissioners (Denver Water)
Board of County Commissioners, County of Eagle
Board of County Commissioners, County of Grand
Board of County Commissioners, County of Summit
Colorado River Water Conservation District
Middle Park Water Conservancy District
Clinton Ditch and Reservoir Company
Eagle Park Reservoir Company
Eagle River Water and Sanitation District
Upper Eagle Regional Water Authority
Grand Valley Water Users Association
Orchard Mesa Irrigation District
Ute Water Conservancy District
Palisade Irrigation District
Mesa County Irrigation District
Grand Valley Irrigation Company
City of Glenwood Springs
City of Rifle

This Colorado River Cooperative Agreement consists of the 51-page agreement dated May 15, 2012 (pages 44, 45, 50, and 51 dated January 7, 2013); Attachments A through T, which have varying dates; and the CRCA Addendum dated April 5, 2012.

ARTICLE VI
Shoshone Call

A. Shoshone Call.

1. The Shoshone Power Plant, which is owned and operated by Public Service Company of Colorado, d/b/a/ Xcel Energy (“Xcel”), is located on the mainstem of the Colorado River in Glenwood Canyon. The Shoshone Power Plant produces hydroelectric energy by means of two water rights, the 1902 Shoshone Senior Right in the amount of 1250 cfs and the 1929 Shoshone Junior Right in the amount of 158 cfs (together, “Shoshone Water Rights”).
2. When the Shoshone Power Plant is operating, the Shoshone Water Rights command the flow in the river by exercising the Senior Shoshone Call against upstream junior water rights. When the Senior Shoshone Call is on, upstream reservoirs cannot store water and junior water rights cannot divert unless they provide an equal volume of replacement water to the stream. Over the years, many water users have come to rely on the river flow regime created by the Senior Shoshone Call (“Shoshone Call Flows”).
3. Whenever the Shoshone Power Plant is subject to a shutdown for repair, maintenance, or other reasons (“Shoshone Outage”), the Shoshone Call cannot be exercised, and Shoshone Call Flows may not be present in the river.
4. The Signatories agree that a Shoshone Outage could adversely affect water users and recreation interests on the Colorado River. Accordingly, the Signatories agree to implement the operational procedures described in this section during a Shoshone Outage (the “Shoshone Outage Protocol”) to mitigate such potential adverse effects. The Signatories also agree to cooperate to achieve permanent management of the flows of the Colorado River as described in Article VI.C, whether or not the Shoshone Power Plant remains operational.

B. Shoshone Outage Protocol.

- I. **Outage During Irrigation Season.** If a Shoshone Outage occurs during the period from March 25 through November 10 (Irrigation Season) and results in a flow of the Colorado River at the Dotsero Gauge below 1,250 cfs (not including any water released for endangered fish species purposes), then the River District, Middle Park and Denver Water agree that they will operate their systems as if the Senior Shoshone Call were on the River, resulting in a flow of not more than 1250 cfs at the Dotsero Gauge (not including any water released for endangered fish species purposes). The Shoshone Outage Protocol

will not apply to Shoshone Outages that occur during certain very dry Irrigation Seasons, as described in the following subparagraphs.

- a. The very dry Irrigation Seasons occur when the two conditions for a water shortage, as defined in paragraph 2 of the 2007 Shoshone Agreement, are met. Denver Water will make projections in March prior to March 25, and again in early May and late June to determine whether a water shortage is occurring.
 - b. If a projection made under subparagraph a above in March or May meets the conditions for a water shortage, then the Shoshone Outage Protocol will not apply during the period from that projection to the next projection. If a projection made in March or May does not meet the conditions for a water shortage, then the Shoshone Outage Protocol will apply during the period from that projection to the next projection; provided, however, that the Shoshone Outage Protocol will not apply during any period when the Shoshone Call is relaxed under the 2007 Shoshone Agreement.
 - c. If the projection made in June under subparagraph a above meets the conditions for a water shortage, then the Shoshone Outage Protocol will not apply during the remainder of the Irrigation Season that year. If the projection made in June does not meet the conditions for a water shortage, then the Shoshone Outage Protocol will apply during the remainder of the Irrigation Season that year.
2. **Green Mountain Reservoir.** The Signatories will cooperate with one another and use their best efforts to negotiate a separate agreement with the U. S. Bureau of Reclamation (“Reclamation”) pursuant to which Reclamation would agree that if a Shoshone Outage occurs, it will continue to operate Green Mountain Reservoir as if the Senior Shoshone Call were on the river. Such agreement with Reclamation shall be subject to terms and conditions as to which the Signatories and Reclamation shall agree, including the following
- a. Any water released from storage in Green Mountain Reservoir would be debited to the appropriate account within the reservoir’s 100,000 Acre-Foot Pool to which the releases were attributed, e.g., the historic users pool identified in paragraph 2 of Reclamation’s January 23, 1984 Operating Policy for Green Mountain Reservoir,
 - b. Water that would have been released from the 52,000 Acre-Foot Replacement Pool had the Senior Shoshone Call been on the river shall be debited as discretionary power releases from the 100,000 Acre-Foot

Pool, unless other arrangements are made with Reclamation and the Northern Colorado Water Conservancy District.

- c. Reclamation will not be obligated to make releases from storage pursuant to this provision if water is not available in the 100,000 Acre-Foot Pool or if the total volume of Green Mountain Reservoir storage accounts is less than an amount to be agreed upon by the West Slope Signatories and Reclamation.

- 3. **Outage During Winter Season.** If a Shoshone Outage occurs during the period from November 11 to March 24 (Winter Season): (1) as a result of conditions other than scheduled maintenance on the Shoshone power plant facilities, and (2) if flows at the Dotsero Gauge are at or below 900 cfs, the River District and Denver Water agree that they will operate their systems as if the Senior Shoshone Call were on the river, subject to the following:

The Shoshone Outage Protocol will not apply fully to Shoshone Outages that occur during certain very dry Winter Seasons, when the overall storage in Denver Water's system is less than 79% of capacity on November 1. For purposes of this paragraph, the reservoirs that will be considered in determining overall storage are those reservoirs listed in Exhibit A to the 2007 Shoshone Agreement, but excluding any reservoirs under storage restrictions due to maintenance, repairs or orders from the Colorado State Engineer.

- a. If the storage is less than 79%, but more than 63%, then the Shoshone Outage Protocol will be applied at half the normal effect during that Winter Season. For example, if Denver Water would be required to bypass or replace 60 c.f.s. under the full operation of the Shoshone Outage Protocol, Denver Water would be required to bypass or replace 30 c.f.s. if the Shoshone Outage Protocol is applied at half the normal effect.
- b. If the storage is equal to or less than 63%, but more than 49%, then the Shoshone Outage Protocol will be applied at one-fourth the normal effect during that Winter Season.
- c. If the storage is equal to or less than 49%, then the Shoshone Outage Protocol will not be applied during that Winter Season.

- 4. The Signatories will cooperate with one another and use their best efforts to:
 - a. Obtain the agreement of other diverters to participate in the Shoshone Outage Protocol.
 - b. Obtain the agreement of the State of Colorado water administration officials to shepherd water released from upstream reservoirs or

otherwise bypassed from upstream water rights under the Shoshone Outage Protocol to the Grand Valley under a donated instream flow, a municipal recreation delivery contract or other acceptable arrangement, and to refrain from accounting for releases from storage under the Shoshone Outage Protocol as storable inflow.

C. Permanency of Shoshone Call Flows.

1. It is the goal of the Signatories to achieve permanent management of the flow of the Colorado River so that the flow mimics the Shoshone Call Flows, whether or not the Senior Shoshone Call is on the river and whether or not the Shoshone Power Plant remains operational.
2. Denver Water and the River District agree to operate their systems on a permanent basis under the Shoshone Outage Protocol described in Article VI.B, even if the Shoshone Power Plant ceases operations altogether, and regardless of whether the plant is acquired under Article VI.D, subject to the following conditions:
 - a. The relaxation provisions described in Article VI.E below remain in full force and effect.
 - b. The Shoshone Outage Protocol would not apply for 17 cumulative days during the Winter Season, to duplicate the effect of the current scheduled outages for maintenance.
3. The Signatories agree to use their best efforts to work with Xcel Energy, other diverters, Reclamation and the State of Colorado water administration officials to devise and implement a mechanism or combination of mechanisms that will permanently preserve the Shoshone Call Flows. In addition to the amounts provided in Article VI.E.I.c., Denver Water agrees to pay one-third of the costs, not to exceed \$100,000, incurred by West Slope Signatories to begin the process of implementing a mechanism to preserve the Shoshone Call Flows on a permanent basis. If total costs exceed \$300,000, the Signatories will confer with regard to further actions.

D. West Slope Acquisition of Shoshone Assets

1. West Slope water users believe that one means to ensure the permanent maintenance of the Shoshone Call is the acquisition and operation of the Shoshone Power Plant and Shoshone Water Rights (the "Shoshone Assets") by a West Slope governmental entity that is mutually acceptable to the West Slope Signatories ("West Slope Governmental Entity").
2. Within twenty-four (24) months after the effective date of this Agreement ("Investigation Period"), any of the West Slope Signatories may agree among

themselves and at their own cost, to undertake and complete an investigation of the viability of purchasing the Shoshone Assets and operating the Shoshone Power Plant (the "Initial Investigation"). The Initial Investigation may include direct negotiations with Xcel; the hiring of consultants necessary to evaluate the Plant's physical and financial condition and the value of the Shoshone Assets; an evaluation of the legal and regulatory requirements that must be met in order to transfer the Shoshone Assets to a West Slope Governmental Entity; an evaluation of the appropriate West Slope Governmental Entity to acquire and operate the Shoshone Assets and the steps necessary to create such an entity, if a new entity is to be created; and any other matters that the West Slope Signatories believe are necessary or desirable. Denver Water shall assist the West Slope Signatories upon request in undertaking and completing the investigations during the Investigation Period. The West Slope Signatories may agree among themselves to extend the Investigation Period.

3. If the Initial Investigation determines that it is feasible for a West Slope Governmental Entity to acquire and operate the Shoshone Assets and if Xcel is willing to sell or otherwise transfer the Shoshone Assets to a West Slope Governmental Entity, the West Slope Governmental Entity may pursue the transfer of the Shoshone Assets. Denver Water agrees that it will support such acquisition and will take such reasonable actions as may be necessary to assist the West Slope Governmental Entity in completing the acquisition of the Shoshone Assets. Upon notification by any of the West Slope Governmental Entity of its intent to acquire the Shoshone Assets, Denver Water agrees not to assert its right under paragraph 13 of the 2007 Shoshone Agreement regarding the method of disposition of the Shoshone Water Rights.
4. Denver Water shall not be obligated to pay any of the purchase price for the Shoshone Assets if other mechanisms are reasonably available to preserve the Shoshone Call Flows. If other mechanisms are not reasonably available, and purchase of the Shoshone Assets is determined to be the best viable option to preserve the Shoshone Call Flows, then Denver Water agrees to contribute to the purchase price in a negotiated amount that is proportionate to its share of the overall benefits created by the purchase, and reasonable as compared to the financial contributions to the purchase price by other parties.
5. If a West Slope Governmental Entity acquires the Shoshone Assets, the Shoshone Call relaxation provisions described in Section VI.E below, shall remain permanently in effect.

E. Relaxation of Shoshone Call.

1. Existing Call Relaxation Agreement. Denver Water and Xcel are parties to the 2007 Shoshone Agreement, a copy of which is attached as Attachment S.

The 2007 Shoshone Agreement currently is set to expire on December 31, 2032. The Signatories agree that the Shoshone Call relaxation provisions of the 2007 Shoshone Agreement shall remain in effect during its term and any renewal thereof.

- a. Denver Water agrees that, except as provided in Articles V and VI.E.2, it will not seek any relaxation of the Shoshone Call, other than a renewal of the specific provisions of the 2007 Shoshone Agreement beyond the year 2032.
- b. The West Slope Signatories will not oppose a renewal of the 2007 Shoshone Agreement, provided that the Shoshone Outage Protocol remains in effect.
- c. If the relaxation of the Shoshone Call is made permanent and Denver Water's yield is increased as a result, Denver Water agrees that 500 acre-feet of the increased yield (Relaxation Water) will be made available as potable water for use as blending water in a project using reusable return flows as described in Article I.B.2.e. The water supply created by the Relaxation Water will be added to the list of permissible fixed-amount contracts listed in Article I.B.1. In return for the availability of the Relaxation Water, the recipients must agree to pay the 2010 System Development Charge (SDC) applicable to potable water served outside the Combined Service Area. Denver Water will transmit the SDCs attributable to the Relaxation Water into a Relaxation Water Fund to be used (a) to contribute to the acquisition of the Shoshone Assets under Article VI.D; or (b) to implement a mechanism or combination of mechanisms that will permanently preserve the Shoshone Call Flows. It is anticipated that advance financing may be needed to accomplish the purposes described in this paragraph. The Signatories agree to consult with each other on an appropriate financing mechanism, should one be needed. It is also anticipated that the SDCs for the Relaxation Water may be paid pursuant to a payment schedule. If the Relaxation Water Fund is not fully expended for the purposes described in this paragraph, the money shall be used to contribute to the costs of a future cooperative project, determined by the River District and Denver Water to be beneficial to both the West Slope and the East Slope.

2. Expansion of Call Relaxation Period for Severe Drought Conditions. The 2007 Shoshone Agreement provides that the Shoshone Call may be relaxed during the period from March 14 until May 20, inclusive ("Call Relaxation Period"), under the conditions specified in the 2007 Shoshone Agreement. Denver Water desires to extend the Call Relaxation Period back into the winter months during extreme drought periods. The West Slope Signatories agree to support the amendment of the 2007 Shoshone Agreement to provide

for the relaxation of the Senior Shoshone Call down to 704 cfs (a “one-turbine call”) for an expanded period during the winter months (“Expanded Call Relaxation Period”), subject to the following terms and conditions:

- a. An Expanded Call Relaxation Period may occur under either of the following circumstances:
 - i. The Senior Shoshone Call may be relaxed to a one-turbine call beginning on November 11 if Denver Water has banned outdoor residential lawn watering beginning no later than August 1, and the ban has remained in effect continuously from its inception through November 11.
 - ii. The Senior Shoshone Call may also be relaxed to a one-turbine call beginning three (3) days after the date that the Denver Water Board formally adopts a drought declaration requiring that outdoor residential lawn watering be prohibited during the following irrigation season. The call relaxation under this section only applies to the period from November 11 until March 14 of the following year.
- b. Denver Water will pay for power replacement costs as provided for in the 2007 Shoshone Agreement.
- c. Denver Water will provide ten percent (10%) of the net water savings as defined in the 2007 Shoshone Agreement for use by West Slope Signatories. The West Slope Signatories will allocate the 10% as they may determine pursuant to any future agreement among them.
- d. The Expanded Call Relaxation Period will end the earlier of:
 - i. The date Denver Water rescinds its ban on outdoor residential lawn watering; or
 - ii. The date a Cameo Call is placed on the river; or
 - iii. March 14 of the year following implementation of the Extended Call Relaxation Period if implementation occurs on or prior to December 31; or March 14 of the year in which the Expanded Call Relaxation Period was implemented if implementation occurs on or after January 1.
- e. Any relaxation of the Shoshone Call after March 14 of any given year shall occur only as provided in the 2007 Shoshone Agreement.

3. **Call Relaxation Mitigation.** The \$500,000 to be placed in a special fund by Denver Water pursuant to Article III.G of this Agreement shall be managed and utilized as follows:
 - a. The proceeds of this fund will be used to help offset the impacts of, or prepare for, a call relaxation pursuant to the 2007 Shoshone Agreement or during the Expanded Call Relaxation Period, or a Shoshone Outage during the Winter Season pursuant to Section VI.B.3, above.
 - b. In order for a municipal water provider to access the funds described in this subsection, the provider must either be a signatory to this Agreement or must be located in Garfield County and agree to be bound by the terms and conditions of this Agreement.
 - c. The West Slope Signatories at their discretion may utilize funds available to any of them pursuant to Article III of this Agreement or the West Slope Fund to either replace or increase the funding for this special fund as may be necessary or desirable from time to time.
- F. **Environmental and Recreational Pilot Project.** The Signatories agree to evaluate a pilot project to determine the feasibility of implementing a partial Shoshone Call relaxation in non-critical winter months and dedicating the saved water to environmental and recreation purposes.
- G. **Support for Glenwood Springs RICD.** The City of Glenwood Springs currently has whitewater features located below the confluence of the Colorado River and the Roaring Fork River near Glenwood Springs, Colorado. Glenwood Springs currently does not have an adjudicated water right for these white water features but anticipates filing for one at some point in the future. In addition, Glenwood Springs anticipates creating additional white water features on the reach of the Colorado River between the Shoshone Power Plant and South Canyon on the main stem of the Colorado River. Denver Water will not oppose the filing of a water rights application for a Recreational In-Channel Diversion (“RICD”) for the existing and proposed structures by Glenwood Springs; provided that any such application filed for any proposed structure above the confluence of the Roaring Fork and Colorado Rivers does not: (1) Claim a flow rate that exceeds the amount of water needed to satisfy the senior Shoshone Call for 1,250 cfs at the Dotsero gage; (2) Seek an amount of water in excess of that needed to replicate historic operations under the Senior Shoshone Call; or (3) Impair Denver's ability to divert under Article VI.

As to structures located below the confluence of the Roaring Fork and Colorado Rivers, Denver and Glenwood Springs recognize that the contributing flows of the two rivers make it difficult to predict the exact effect of a RICD on flows above the confluence. Glenwood Springs agrees to consult with Denver regarding such application prior to filing.

SHOSHONE OUTAGE PROTOCOL
AGREEMENT NUMBER 13XX6C0129

INCLUDING THE

UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION,
THE STATE OF COLORADO, DIVISION OF WATER RESOURCES,
THE CITY AND COUNTY OF DENVER, ACTING BY AND THROUGH ITS BOARD OF
WATER COMMISSIONERS,

THE COLORADO RIVER WATER CONSERVATION DISTRICT,
THE MIDDLE PARK WATER CONSERVANCY DISTRICT,
THE NORTHERN COLORADO WATER CONSERVANCY DISTRICT,
THE MUNICIPAL SUBDISTRICT, NORTHERN COLORADO WATER
CONSERVANCY DISTRICT,

THE GRAND VALLEY WATER USERS ASSOCIATION,
THE ORCHARD MESA IRRIGATION DISTRICT, AND
THE GRAND VALLEY IRRIGATION COMPANY

THIS AGREEMENT is made this 27th day of June, 2016, and includes the UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION (Reclamation), the STATE OF COLORADO DIVISION OF WATER RESOURCES (DWR), THE CITY AND COUNTY OF DENVER acting by and through its BOARD OF WATER COMMISSIONERS (Denver Water), the COLORADO RIVER WATER CONSERVATION DISTRICT (River District), the MIDDLE PARK WATER CONSERVANCY DISTRICT (Middle Park), the NORTHERN COLORADO WATER CONSERVANCY DISTRICT (Northern Water), the MUNICIPAL SUBDISTRICT, NORTHERN COLORADO WATER CONSERVANCY DISTRICT (Subdistrict), the GRAND VALLEY WATER USERS ASSOCIATION, the ORCHARD MESA IRRIGATION DISTRICT, and the GRAND VALLEY IRRIGATION COMPANY, hereinafter collectively referred to as the "Parties".

I. EXPLANATORY RECITALS

The following statements are made in explanation:

- A. When the Shoshone Power Plant is operating, the Shoshone Call can command the flow in the Colorado River and its tributaries in certain stream conditions by exercising the Shoshone Water Rights against upstream junior water rights. When the Shoshone Call is being administered, junior water rights cannot store or divert water without providing replacement water to offset their depletions to the river system as necessary to prevent injury.
- B. Whenever the Shoshone Power Plant is subject to a shutdown for repair, maintenance, or other reasons, the Shoshone Call cannot be exercised, and river flows may drop.
- C. Certain Parties desire to keep the flow regime of the Colorado River as it has been historically influenced by the Senior Shoshone Call.

- D. The Parties agree to implement the operational procedures described in this agreement during a Shoshone Outage.
- E. This Agreement will provide greater certainty for the administration of water rights.
- F. As is explicitly provided for in this Agreement, certain Parties to this Agreement are only agreeing to be bound by specifically identified sections of this Agreement.

NOW, THEREFORE, in consideration of the foregoing recitals and mutual covenants hereinafter set forth, the Parties hereto agree as follows:

II. DEFINITIONS

Where used herein, unless specifically expressed otherwise or obviously inconsistent with the intent herein, the following definitions apply to this Agreement. Nothing in these definitions alters or amends any existing or future agreement between all or various Parties to this Agreement:

- A. "15-Mile Reach" is the reach of the Colorado River which extends from the point at which the tailrace common to the Grand Valley Power Plant and the Orchard Mesa Irrigation District pumping plant returns to the Colorado River below the Grand Valley Irrigation Company diversion dam, downstream to the confluence of the Colorado River and Gunnison River (definition verbatim from the Stipulation and Agreement incorporated into the decree entered in Case No. 91CW247, Colorado Water Division 5).
- B. "2007 Shoshone Agreement" is an agreement between Denver Water and Public Service Company of Colorado d/b/a Xcel Energy, effective January 1, 2007, concerning reduction of the Shoshone Call.
- C. "Dotsero Gauge" is Gauge Number 09070500 on the Colorado River, near Dotsero, Colorado, which is operated by the United States Geological Survey, Colorado Water Science Center.
- D. "End of Fill Season" is the end of the Green Mountain Reservoir fill season as defined in the Green Mountain Reservoir Administrative Protocol.
- E. "Grand Valley Entities" are the Grand Valley Water Users Association, the Orchard Mesa Irrigation District, and the Grand Valley Irrigation Company.
- F. "Green Mountain Reservoir 1935 First Fill Storage Right" is the storage right for Green Mountain Reservoir with a priority date of August 1, 1935, from the Blue River and its tributaries in the amount of 154,645 acre-feet (AF).
- G. "Green Mountain Reservoir 1935 Senior Refill Storage Right" is the storage refill right for Green Mountain Reservoir with a priority date of August 1, 1935, from the Blue River and its tributaries in the amount of 6,316 AF.

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- H. “Green Mountain Reservoir 1935 Direct Flow Hydropower Right” is the direct-flow right with a priority date of August 1, 1935, from the Blue River and its tributaries in the amount of 1,726 cubic feet per second (cfs) for the generation of electrical power at the Green Mountain Power Plant.
- I. “Green Mountain Reservoir Administrative Protocol” is the protocol for administration of Green Mountain Reservoir that will result from the procedures that will be specified in the Green Mountain Reservoir Protocol Agreement by and among Reclamation, Denver Water, Northern Water, the Subdistrict, the City of Colorado Springs acting through its Utilities Department, River District, Middle Park, Grand Valley Water Users Association, Orchard Mesa Irrigation District, Grand Valley Irrigation Company, Palisade Irrigation District, Climax Molybdenum Company, Ute Water Conservancy District, and the State Engineer and Division Engineer for Water Division 5, Colorado Division of Water Resources.
- J. Green Mountain Reservoir Historic User Pool Operating Criteria is the operating criteria set forth in Exhibit D of the Orchard Mesa Check Case Stipulation and Agreement.
- K. “Green Mountain Reservoir Marketing Allocation” is a 20,000 AF marketable yield available for contracting from the Power Pool.
- L. “Green Mountain Reservoir Operating Policy” is the Operating Policy for Green Mountain Reservoir, Colorado-Big Thompson Project, Colorado (Volume 48, No. 247 Federal Register December 22, 1983; as amended in Volume 52, No. 176 Federal Register September 11, 1987).
- M. “Historic Users’ Pool” (“HUP”) is water to be released from the Green Mountain Reservoir Power Pool as described in paragraphs 2 and 3 of the Green Mountain Reservoir Operating Policy.
- N. “Non-Winter Season” is the period of any year from March 25 through November 10 of any year.
- O. “Orchard Mesa Check Case Stipulation and Agreement” is the September 4, 1996, agreement incorporated into the decree entered October 1, 1996 in Case No. 91CW247, District Court, Colorado, Water Division 5.
- P. “Power Pool” is 100,000 AF of water stored primarily for power purposes in Green Mountain Reservoir and available for such other uses in western Colorado as provided in Senate Document 80.
- Q. “Senate Document 80” is the “Manner of Operation of Project Facilities and Auxiliary Features” section of the Synopsis of Report document referenced in the Act of August 9, 1937, 50 Stat 564, 75 Congress, 1st Session, which authorized the Colorado-Big Thompson Project.

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- R. “Senior Shoshone Call” is a request to the state water officials to curtail diversions of junior water rights to produce a flow at the Dotsero Gauge sufficient for diversion at the Shoshone Dam of 1,250 cfs for power purposes at the Shoshone Power Plant.
- S. “Shepherded Streamflow Reservoir Releases” are those reservoir releases in rate and volume made for the reservoir owners’ purposes of increasing stream flows either at the Shoshone Power Plant, in the 15-Mile Reach, or at other stream locations at rates and volumes in excess of the stream flows that would exist at these locations in the absence of such reservoir releases (including streamflows that may exist as a result of releases, power diversions, or bypasses made pursuant to this Agreement), provided such releases are made for decreed beneficial uses for instream or in-channel purposes at any such locations including, but not limited to, endangered fish species purposes within the 15-Mile Reach.
- T. “Shoshone Call” is a request to the state water officials to curtail diversions of junior water rights to produce a flow for beneficial use at the Shoshone Power Plant pursuant to the Shoshone Senior Right or the Shoshone Junior Right.
- U. “Shoshone Junior Right” is the water right decreed for and associated with the Shoshone Power Plant adjudicated for 158 cfs on February 7, 1956, with an appropriation date of May 15, 1929.
- V. “Shoshone Outage” is whenever the Senior Shoshone Call cannot be fully exercised because the Shoshone Power Plant is subject to a shutdown for repair, maintenance, or other reasons. For the purposes of this Agreement, a Shoshone Outage does not include a cumulative total of 17 days during January and February of each Winter Season, when the Shoshone Senior Right is not calling for water due to regularly scheduled maintenance at the Shoshone Power Plant.
- W. “Shoshone Outage Protocol” is a combination of the respective described actions to be taken by each of the Parties.
- X. “Shoshone Power Plant” is owned and operated by Public Service Company of Colorado, d/b/a/ Xcel Energy (“Xcel”), and is located on the mainstem of the Colorado River in Glenwood Canyon. The Shoshone Power Plant produces hydroelectric energy by means of the Shoshone Water Rights.
- Y. “Shoshone Senior Right” is the water right decreed for and associated with the Shoshone Power Plant adjudicated for 1,250 cfs on December 9, 1907, with an appropriation date of January 7, 1902.
- Z. “Shoshone Water Rights” are both the Shoshone Senior Right and the Shoshone Junior Right.

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- AA. “Start of Fill Date” is the date between April 1 and May 15 fixed annually by the Secretary of the Interior as the start of fill of Green Mountain Reservoir.
- BB. “Windy Gap Project” and “Windy Gap Firming Project” shall have the meanings defined in the Windy Gap Firming Project Intergovernmental Agreement (“WGFP IGA”).
- CC. “Winter Season” is the period from November 11 of any calendar year through March 24 of the next calendar year.

III. TERM OF AGREEMENT

- A. This Agreement will remain in effect for 40 years unless terminated sooner pursuant to paragraph III.B, below. Any of the Parties have the right to request renewal of this agreement for an additional 40-year term upon written request to all other Parties on or before two years prior to the expiration of this agreement. The Parties agree to negotiate any requests for renewal in good faith.
- B. This Agreement may be terminated upon written mutual agreement of all Parties.
- C. This Agreement may be amended at any time by written consent of all Parties hereto.
- D. Notwithstanding paragraph III.B, Reclamation may, at any time, terminate its participation in this Agreement for just cause upon providing written notice to all other Parties.

**IV. DESCRIPTION OF SHOSHONE OUTAGE PROTOCOL
ACTION BY PARTIES**

- A. Actions by the River District, Middle Park and Denver Water.
 - 1. This Section IV.A is an Agreement between the River District, Middle Park and Denver Water. Other parties are not bound by this Section IV.A.
 - 2. Outage During the Non-Winter Season. If a Shoshone Outage occurs during the Non-Winter Season and results in a flow of the Colorado River at the Dotsero Gauge below 1,250 cfs (not including Shepherded Streamflow Reservoir Releases), then the River District, Middle Park and Denver Water agree that they will operate their water resources as if the Senior Shoshone Call was being administered in order to result in a flow of not more than 1,250 cfs at the Dotsero Gauge (not including Shepherded Streamflow Reservoir Releases).
 - 3. Denver Water, the River District, and Middle Park will not participate in the Shoshone Outage Protocol during periods of certain very dry Non-Winter Seasons that meet the definition of a Water Shortage in accordance with this paragraph IV.A.3. For the purposes of this paragraph IV.A, a Water Shortage exists when the following two conditions exist:

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- a. Using the procedures described in Exhibit A of the 2007 Shoshone Agreement (copy attached hereto for reference) and based on the "normal" scenario, Denver Water predicts that reservoir storage in its system on July 1 will be at or below 80% full; and
 - b. The "most probable" forecast of streamflow prepared by the Natural Resources Conservation Service (NRCS) or jointly by NRCS and the Colorado Basin River Forecast Center (or such other forecast that the River District, Denver Water and Middle Park agree to use) indicates that the April – July undepleted flow of the Colorado River at the Kremmling gage will be less than or equal to 85% of average. If no forecast for the Kremmling gage is available, then the Dotsero gage will be used.
4. Denver Water will make projections prior to March 25th, and again in early May and late June to determine whether a Water Shortage exists.
- a. If a projection made under paragraph IV.A.3 above meets the conditions for a Water Shortage, then the Shoshone Outage Protocol will not apply during the period from that projection to the next projection. If a projection does not meet the conditions for a Water Shortage, then the Shoshone Outage Protocol will apply during the period from that projection to the next projection; provided, however, that the Shoshone Outage Protocol will not apply during any period when the Shoshone Call is relaxed under the 2007 Shoshone Agreement.
 - b. If the projection made in June under paragraph IV.A.3 above meets the conditions for a Water Shortage, then the Shoshone Outage Protocol will not apply during the remainder of the Non-Winter Season that year. If the projection made in June does not meet the conditions for a Water Shortage, then the Shoshone Outage Protocol will apply during the remainder of the Non-Winter Season that year.
5. Outage During Winter Season. If a Shoshone Outage occurs during the Winter Season and flows at the Dotsero Gauge are at or below 900 cfs, the River District, Denver Water, and Middle Park agree that they will operate their water resources as if the Senior Shoshone Call were on the Colorado River in the amount of 900 cfs, subject to the following:

The Shoshone Outage Protocol will not apply fully to Shoshone Outages that occur during certain very dry Winter Seasons, when the overall storage in Denver Water's system is less than 79% of capacity on November 1. For purposes of this Agreement, the reservoirs that will be considered in determining overall storage for Denver Water are those reservoirs listed in Exhibit A to the 2007 Shoshone Agreement (Antero, Eleven Mile, Cheesman, Marston, Chatfield, Gross, Ralston,

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Dillon, Williams Fork, and Wolford Mountain), but excluding any reservoirs under storage restrictions due to maintenance, repairs or orders from the Colorado State Engineer.

- a. If the storage is less than 79%, but more than 63% of capacity, then the Shoshone Outage Protocol will be applied at half the normal effect during that Winter Season. For example, if Denver Water would be required to bypass or replace 60 cfs under the full operation of the Shoshone Outage Protocol, Denver Water would be required to bypass or replace 30 cfs if the Shoshone Outage Protocol is applied at half the normal effect.
 - b. If the storage is equal to or less than 63%, but more than 49% of capacity, then the Shoshone Outage Protocol will be applied at one-fourth the normal effect during that Winter Season.
 - c. If the storage is equal to or less than 49% of capacity, then the Shoshone Outage Protocol will not be applied during that Winter Season.
6. As between the River District, Denver Water, and Middle Park, releases from Wolford Mountain Reservoir shall be accounted to the various accounts at Wolford Mountain Reservoir in the same manner that would have occurred if the Shoshone Senior Right had been exercised.
 7. Prior to any final decree that is entered to amend the Windy Gap Project water rights to implement the Windy Gap Firming Project, Middle Park's water resources in this Shoshone Outage Protocol will be limited to water released on Middle Park's behalf from Wolford Mountain Reservoir. Subsequent to any final decree that is entered to amend the Windy Gap Project water rights to implement the Windy Gap Firming Project, Middle Park's water resources in this Shoshone Outage Protocol may include water released on its behalf from Wolford Mountain Reservoir, and Windy Gap Project water released from Granby Reservoir. Any such release of Middle Park's Windy Gap Project water resources will be consistent with the water court decrees for such resources and with any final Windy Gap Firming Project Intergovernmental Agreement by and between the Municipal Subdistrict, its Windy Gap Firming Project Water Activity Enterprise, Board of County Commissioners of Grand County, Middle Park, River District, and Northwest Colorado Council of Governments.

B. Actions by the Subdistrict.

1. The Municipal Subdistrict agrees to the operation by Reclamation of Green Mountain Reservoir as contemplated by this Agreement and will not object to the operation of Green Mountain Reservoir in the manner described in this Agreement, unless any person or entity (other than the Municipal Subdistrict or Northern Water):

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- a. Objects, in any judicial or administrative forum, to the operation of the Windy Gap Project or Windy Gap Firming Project in the manner described in this Agreement;
 - b. Asserts, in any judicial or administrative forum, that an historic or a future operation of the Windy Gap Project or Windy Gap Firming Project including, without limitation, the performance of this Shoshone Outage Protocol in accordance with this Agreement, is in violation of Senate Document No. 80, the Blue River Decree, or the decrees for the Windy Gap Project or Windy Gap Firming Project; or
 - c. Asserts, in any judicial or administrative forum, that bypasses of water otherwise divertible by the Windy Gap Project count toward Windy Gap Project diversions.
2. Operation of Windy Gap Project.
- a. Nothing in this Agreement shall alter or amend the Intergovernmental Agreement between the Subdistrict, Grand County, Middle Park, the Northwest Colorado Council of Governments (NWCCOG) and the River District fully executed in 2016 (“WGFP IGA”), including, without limitation, Paragraph IV.K. of the WGFP IGA, which remains in full force and effect and provides, with respect to the subject of the Shoshone Outage Protocol, that [abbreviations and short-forms in the quoted text below rely on definitions set forth in the WGFP IGA]:

K. Shoshone Outage Protocol.

- 1) For purposes of this WGFP IGA, the Shoshone Outage Protocol means that the Windy Gap Project and WGFP will operate as described in this paragraph IV.K.1), IV.K.2), and IV.K.3) during periods when the Shoshone Power Plant is shutdown or otherwise not able to divert the full amount of its 1,250 cfs senior water right due to repair, maintenance, or other reasons (“Shoshone Outage”). When the Windy Gap Project’s participation in the Shoshone Outage Protocol is in effect pursuant to this WGFP IGA, the Windy Gap Project and WGFP will bypass the amount of water that the Windy Gap Project and WGFP would have been required to bypass if the Senior Shoshone Call had been in effect in order to result in a flow of not more than 1,250 cfs at the Dotsero gage on the Colorado River (not including any water released for endangered fish species purposes). For purposes of this WGFP IGA, a Shoshone Outage does not include a shutdown of the Shoshone Power Plant for regularly scheduled maintenance for a cumulative period of 17-days during the period of November 1 through March 15.

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- 2) The Windy Gap Project and WGFP will operate in accordance with the Shoshone Outage Protocol from July 16-April 14 of each year. Prior to WGFP Completion, the Windy Gap Project and WGFP may operate in accordance with the Shoshone Outage Protocol during the period of April 15-July 15 on a voluntary cooperative basis. Following WGFP Completion, the Windy Gap Project and WGFP will operate in accordance with the Shoshone Outage Protocol during the period April 15 – July 15 at any time during this period when the combined amount of Windy Gap Project Water stored in Chimney Hollow Reservoir and Windy Gap Project Water stored on behalf of WGFP Participants in Granby Reservoir is greater than 50% of the Active Capacity of Chimney Hollow Reservoir.
 - 3) Participation in the Shoshone Outage Protocol by the Windy Gap Project and WGFP during the period of April 15-July 15 will be limited to a total maximum volume of foregone pumping equal to 10,000 acre feet (30 days with one pump running) in one year, a total of 20,000 acre feet (60 days with one pump running) in any 3 consecutive year period, and a total of 30,000 acre feet (90 days with one pump running) in any 5 consecutive year period.
 - 4) The Subdistrict agrees that it will participate in good faith in negotiations to achieve permanent management of the flow of the Colorado River to address certain flow changes that result during a Shoshone Outage.
3. Nothing in this Agreement shall create, modify, alter or amend the contractual relationships between Reclamation and the Municipal Subdistrict.
 4. No Waiver.
 - a. Except as expressly provided herein, this Agreement shall never give rise to any claim, defense, or theory of acquiescence, bar, merger, issue or claim preclusion, promissory estoppel, equitable estoppel, waiver, laches, unclean hands or any other similar position or defense concerning any factual or legal position regarding the parties respective positions regarding the operation of the Windy Gap Project and Windy Gap Firming Project. This Agreement shall not have the effect of precedent or preclusion on any factual or legal issue in any other matter. The Subdistrict expressly reserves its rights to assert any legal or factual position or challenge the legal or factual position taken by any other party on any other matter

C. Actions by Northern Water.

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1. Northern Water agrees to the operation by Reclamation of Green Mountain Reservoir, as contemplated by this Agreement and will not object to the operation of Green Mountain Reservoir in the manner described in this Agreement, unless any person or entity (other than the Municipal Subdistrict or Northern Water):
 - a. Objects, in any judicial or administrative forum, to the operation of Green Mountain Reservoir in the manner described in the Shoshone Protocol Agreement; or
 - b. Asserts, in any judicial or administrative forum, that an historic or a future operation of Green Mountain Reservoir or the Colorado-Big Thompson Project including, without limitation, the performance of this Shoshone Outage Protocol in accordance with this Agreement, is in violation of Senate Document No. 80 or the Blue River Decree.
2. This Agreement meets the requirements of the first sentence of Paragraph 3 of the Intergovernmental Agreement between Northern Water, Grand County, Middle Park, and the River District fully executed in 2016.
3. Nothing in this Agreement shall create, modify, alter or amend the contractual relationships between Reclamation and Northern Water.

D. Actions by Reclamation.

1. Subject to the provisions of paragraph IV.G.4 of this Agreement, Reclamation will participate in the Shoshone Outage Protocol when either of the following conditions are met:
 - a. The Shoshone Outage occurs between the Start of Fill Date and the End of Fill Season and Reclamation projects with 90% probability that a total of 154,645 AF will be accounted toward the volumes of water calculated in accordance with paragraphs II.A.3.b.i through II.A.3.b.v of the Green Mountain Reservoir Administrative Protocol prior to the Green Mountain Reservoir End of Fill Season, and that Reclamation projects with a 90% probability that after the End of Fill Season any volume of Bypassed Storage Water Owed To Green Mountain Reservoir by the Cities will be available to Reclamation pursuant to the Green Mountain Reservoir Administrative Protocol.or;
 - b. The Shoshone Outage occurs after the End of Fill Season and a total of 154,645 acre feet have been accounted toward the volumes of water identified in paragraphs II.A.3.b.i through II.A.3.b.v of the Green Mountain Reservoir Administrative Protocol and that any Bypassed Storage Water

AGREEMENT NUMBER 13XX6C0129

Owed to Green Mountain Reservoir by the Cities will be available to Reclamation.

- c. Capitalized terms in paragraphs IV.D.1.a and b have the same meaning as set forth in the Green Mountain Reservoir Administrative Protocol.
2. Green Mountain Releases Under Shoshone Outage Protocol: Reclamation will bypass storable inflow, exercise the Green Mountain Reservoir 1935 Direct Flow Hydropower Right, and/or make releases from previously stored water in its Power Pool as follows:
- a. The daily total reservoir release will be equivalent to the amount that would have been required had the Senior Shoshone Call been in place on that day in the amount of 1,250 cfs during the Non-Winter Season and 900 cfs during the Winter Season, subject to the following conditions:
 - i. The daily total release will not exceed the release that would have been made had the Senior Shoshone Call been in place on that day and all junior water rights had been curtailed or the appropriate amount of replacement or augmentation water made available.
 - ii. In order to prevent any unintended impact to the HUP by this Agreement, during a Shoshone Outage, the Grand Valley Entities will not request any direct delivery of HUP water without first placing a call with the Division 5 Engineer's Office, unless Reclamation and the Grand Valley Entities agree that such a call is not necessary to prevent impacts to the HUP.
 - b. Except as provided in paragraph IV.D.2.c, below, the total volume of storage water released from the Power Pool for Shoshone Outage Protocol purposes from the Start of Fill Date will not exceed the sum of the following:
 - i. 2,000 AFplus;
 - ii. The amount of uncontracted water in the Green Mountain Reservoir Marketing Allocation.plus;
 - iii. The amount of water that would have been released for HUP beneficiary purposes had the Senior Shoshone Call been in place during the Shoshone Outage period.

AGREEMENT NUMBER 13XX6C0129

- c. Reclamation may, at its own discretion, bypass storable inflow, exercise the Green Mountain Reservoir 1935 Direct Flow Power Right, or release additional water from the Power Pool to assist in meeting the purposes of Shoshone Outage Protocol if it deems that conditions make additional water available.
 - 3. Accounting: The Green Mountain Reservoir releases, bypasses, and power diversions shall be accounted for as follows:
 - a. Bypass of Inflow and Power Diversions: Reclamation will bypass storable inflow or exercise the Green Mountain Reservoir 1935 Direct Flow Hydropower Right to the extent that a bypass of inflow would have been required by a Senior Shoshone Call. The accounting of discretionary power releases and bypassed storable inflow will be consistent with the Green Mountain Reservoir Administrative Protocol.
 - b. Release of Stored Water: All releases of stored water shall be charged to the aggregate Power Pool rather than individual allocations in the Power Pool. However, the HUP allocation will be reduced by the amount of water that was released from Green Mountain Reservoir in accordance with paragraph IV.D.2.b.iii, above.
- E. Actions by the Grand Valley Entities and Reclamation.
 - 1. This Section IV.E is an Agreement between the Grand Valley Entities and Reclamation. Other parties are not bound by this Section IV.E.
 - 2. Subject to the provisions of Paragraph IV.E.3, below, the Grand Valley Entities and Reclamation agree, solely for purposes of paragraph 3.b.(3) of the Orchard Mesa Check Case Stipulation and Agreement, that the Shoshone Water Rights continue to be exercised in a manner substantially consistent with their historical operation for hydropower production at their currently decreed point of diversion.
 - 3. Paragraph IV.E.2, above, shall not be effective:
 - a. During any period of time in which any Party is not in compliance with their obligations described in this Agreement; or
 - b. During any period of time in which storage releases or bypasses of water made pursuant to this Agreement are being diverted or exchanged in a manner that results in flow at the Dotsero Gauge that is materially lower than the flow that otherwise would have been produced by the Shoshone Senior Call; or

- c. If the United States terminates its participation in this Agreement pursuant to Paragraph III.D., above.

F. Actions by DWR.

The DWR shall administer water released, bypassed, or diverted for power purposes pursuant to this Agreement as follows:

1. Reservoir releases from Wolford Mountain Reservoir shall be administered as Shepherded Streamflow Reservoir Releases for in-channel recreation and fishery purposes and, as directed by the River District for subsequent consumptive uses, within the boundaries of the River District pursuant to the decree entered in Case No. 87CW283, Water Division 5. The River District will provide information to the Division Engineer for Water Division 5 to support the intended in-channel recreation and fishery purposes. Bypasses of storable inflow at Wolford Mountain Reservoir will be accounted toward the fill of the Wolford Mountain Reservoir storage decree for the then-current storage season on an instantaneous store and release accounting basis. Any bypasses made pursuant to this Agreement shall not be accounted toward the next fill season's storage volume for Wolford Mountain Reservoir. If a hydroelectric power facility is constructed to use inflow to Wolford Mountain Reservoir, then any diversions used to generate power may be accounted toward the exercise of the direct flow power right decreed in Case No. 87CW283 and will not count toward the fill of the then-current fill season's storage account for Wolford Mountain Reservoir provided the direct flow power right is operated and administered under the same priority as the storage right.
2. Reservoir releases and direct diversions at Williams Fork Reservoir to generate power will be accounted as releases or diversions made for power purposes and will not be accounted toward the decreed storage volume for Williams Fork Reservoir. Bypasses of storable inflow at Williams Fork Reservoir that are not used to generate power will be accounted toward the fill of the Williams Fork Reservoir storage decree for the then-current storage season on an instantaneous store and release accounting basis. Any such bypasses made pursuant to this Agreement shall not be accounted toward the next fill season's storage volume for Williams Fork Reservoir.
3. Reservoir releases, diversions for power purposes, and the bypass of storable inflow from Green Mountain Reservoir without power generation will be accounted for in accordance with the Green Mountain Reservoir Administration Protocol. Releases and the bypass of storable inflow shall be administered as Shepherded Streamflow Reservoir Releases to the Shoshone Power Plant or to and through the 15-Mile Reach as directed by Reclamation.
4. Bypasses of water otherwise divertible by the Windy Gap Project will not count toward the diversion amount for the Windy Gap Project. Releases of Windy Gap Project water from storage will be accounted in accordance with the then current

Windy Gap Project water right decrees, and subject to paragraph IV.A.7 of this Agreement.

Shepherded Streamflow Reservoir Releases shall be shepherded and protected by DWR under C.R.S. §§ 37-87-102(4) and 37-87-103 or as otherwise provided by law to accomplish the reservoir owners' purposes for making such releases as is consistent with the reservoir owners' legal use of such stored or storable waters. The intent is to continue the historical practice of administering such releases to produce increased flows in the 15-Mile Reach above the flows that would otherwise occur in the 15-Mile Reach, and to accommodate any new releases to be made for such or similar purposes.

G. Notice and Cooperation.

1. Notification to DWR. The Parties will work cooperatively to timely notify DWR, through the Division Engineer for Water Division 5, of operations pursuant to the Shoshone Outage Protocol.
2. The Parties will not divert or exchange any of the water released, diverted for power purposes, or bypassed by any of the Parties pursuant to this Agreement at any location upstream of the current location of the Shoshone Power Plant, or otherwise operate their systems or water rights in a manner that will diminish the benefit to the stream system at any location upstream of the current location of the Shoshone Power Plant of the releases, diversions for power purposes, and bypasses of water made pursuant to this Agreement.
3. Subject to the express conditions and limitations of this Agreement, the Parties will cooperate in good faith to achieve the goals of this Agreement of managing the flow of the Colorado River to maintain the historical flow regime of the Colorado River influenced by the exercise of the Shoshone Senior Right and to mitigate the impacts of any Shoshone Outage. If any party believes that the goals of this Agreement are not being met, including but limited to circumstances where water released or bypassed pursuant to this Agreement during a Shoshone Outage is diverted or exchanged by persons or entities who are not parties to this Agreement at locations upstream of the Dotsero Gauge, then any Party may, in its discretion and in good faith, issue a written notice to the other Parties of such circumstances. Upon such notice, the Parties will meet promptly and work together in good faith to identify such actions as may be necessary to alleviate the conditions that led to the written notice and to implement such actions to which the Parties may agree or any such actions that can be implemented by a subset of the Parties to which that subset may agree.
4. Notwithstanding any provision in this Agreement to the contrary, none of the Parties are obligated by this Agreement to participate in the Shoshone Outage Protocol

during such periods that a Shoshone call reduction is in effect pursuant to the terms of the 2007 Shoshone Agreement (copy attached for reference).

V. SEVERABILITY AND REFORM

Wherever possible each provision of this Agreement shall be interpreted and implemented in such manner as to be effective and valid under applicable law. If any provision or portion of this Agreement is determined to be invalid or unenforceable, the remaining provisions shall remain in full force and effect unless the remaining provision's effectiveness is explicitly dependent upon the invalid or unenforceable provision. The Parties agree to reform this Agreement to replace any such invalid or unenforceable provision with a valid and enforceable provision that comes as close as possible to the intention of the stricken provision. The provisions of this Agreement shall be reasonably and liberally construed to achieve the intent of the Parties.

VI. COMPENSATION

Consideration for the actions pursuant to this Agreement is in providing greater certainty in the administration of water rights, and in the resolution among some of the Parties of certain unresolved issues. There will be no charge for water released under this agreement.

VII. GREEN MOUNTAIN RESERVOIR

Subject only to the express exceptions provided herein, the Parties agree not to challenge Reclamation's operation of Green Mountain Reservoir under this Agreement as inconsistent with Senate Document 80 or the Green Mountain Reservoir Operating Policy. The Parties will work in good faith to address any conflicts that may arise between the operations contemplated by this Agreement and the Green Mountain Reservoir Administrative Protocol. Any conflict that may arise shall be resolved in a manner that is consistent with Senate Document 80, the Blue River Decree, the Green Mountain Reservoir Operating Policy, and the Green Mountain Reservoir Administrative Protocol.

VIII. COLORADO RIVER COOPERATIVE AGREEMENT

Nothing in this Agreement shall be interpreted to constitute compliance with, or satisfaction of, the obligations of Article VI.C of the Colorado River Cooperative Agreement between Denver Water and seventeen West Slope entities.

IX. NO WAIVER

The Parties agree that nothing contained in this Agreement including, but not limited to, any Party's forbearance in the exercise of any Party's right to divert, store, and beneficially use water pursuant to its decrees, is intended nor shall it be construed to give rise to any claim, defense, or theory of acquiescence, bar, merger, issue or claim preclusion, promissory estoppel, equitable estoppel, waiver, laches, unclean hands or any other similar position or defense concerning the operation of such Parties' water rights.

The Parties agree that except as expressly provided herein, this Agreement shall never give rise to any claim, defense, or theory of acquiescence, bar, merger, issue or claim preclusion, promissory estoppel, equitable estoppel, waiver, laches, unclean hands or any other similar position or defense concerning any factual or legal position regarding the Parties respective positions regarding the operation of the Colorado-Big Thompson Project. The Parties further agree that they do not intend this Agreement to have the effect of precedent or preclusion on any factual or legal issue in any other matter. The Parties expressly reserve their rights to assert any legal or factual position or challenge the legal or factual position taken by any other Party or third-party on any other matter.

X. REGULATION AND DISTRIBUTION OF WATER

Nothing in this Agreement abridges the obligations of the DWR established by Section 37-92-304(8), Colorado Revised Statutes (2011), or other applicable law.

XI. PRIOR VERSIONS.

This Agreement replaces and supersedes the 2013 Shoshone Outage Protocol Agreement that was executed by some, but not all, of the Parties to this Agreement.

XII. SIGNATURES of PARTIES

UNITED STATES DEPARTMENT OF THE INTERIOR

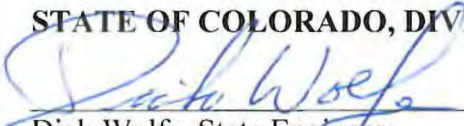
By:



Michael J. Ryan, Regional Director
Great Plains Regional Office
Bureau of Reclamation
P.O. Box 36900
Billings, MT 59107-6900
(406) 247-7600

STATE OF COLORADO, DIVISION OF WATER RESOURCES

By:

 7-12-16

Dick Wolfe, State Engineer
1313 Sherman Street, Suite 821
Denver, CO 80203
(303) 866-3581

AGREEMENT NUMBER 13XX6C0129

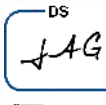
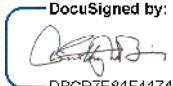
DENVER WATER

By: 
James S. Lochhead, CEO/Manager
1600 W. 12th Avenue
Denver, CO 80204-3412
(303) 628-6000


APPROVED AS TO FORM


LEGAL DIVISION

**REGISTERED AND COUNTERSIGNED:
CITY AND COUNTY OF DENVER**

By:  
Timothy M. O'Brien, CPA
Auditor

COLORADO RIVER WATER CONSERVATION DISTRICT

By: 


Eric Kuhn, General Manager
P.O. Box 1120
Glenwood Springs, CO 81602
(970) 945-8522

MIDDLE PARK WATER CONSERVANCY DISTRICT


By: *Duane Scholl*

Duane Scholl, President
P.O. Box 145
Granby, CO 80446
(970) 887-3376

NORTHERN COLORADO WATER CONSERVANCY DISTRICT

By: 
Eric Wilkinson, General Manager
220 Water Avenue
Berthoud, CO 80513
(800) 369-7246

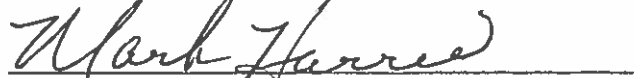
**MUNICIPAL SUBDISTRICT,
NORTHERN COLORADO WATER CONSERVANCY DISTRICT**

By: 
Eric Wilkinson, General Manager
220 Water Avenue
Berthoud, CO 80513
(800) 369-7246

AGREEMENT NUMBER 13XX6C0129


GRAND VALLEY WATER USERS ASSOCIATION

By:



Mark Harris, Manager
1147 24 Road
Grand Junction, CO 81505-9639
(970) 242-5065

ORCHARD MESA IRRIGATION DISTRICT

By: 

Max Schmidt, Manager
668 38 Road
Palisade, CO 81526
(970) 464-7885

GRAND VALLEY IRRIGATION COMPANY

By:

Phil Bertrand

Phil Bertrand, Superintendent

668 26 Road

Grand Junction, CO 81506

(970) 242-2762

2007 SHOSHONE AGREEMENT
(as referenced in
Agreement Number 13XX6C0129)

Please reference the following
number on all billings or payments.
Contract # 10766A

AGREEMENT CONCERNING
REDUCTION OF SHOSHONE CALL

This Agreement is between the City and County of Denver, acting by and through its Board of Water Commissioners (Board), and Public Service Company of Colorado d/b/a Xcel Energy (Company).

Recital

The Board's ability to store water in its reservoirs for beneficial use by its customers is adversely impacted, especially in dry years, by the Company's Shoshone Call. Following the drought year of 2002, a brief relaxation of the Shoshone Call during the spring of 2003 provided some benefit to storage reservoirs operated by both west slope and east slope entities, including the Board. Although a more comprehensive and long-term agreement on relaxation achieved through multi-party negotiations may be desirable, the Company and the Board agree to a relaxation of the Call under the provisions in this Agreement. The Company agrees to participate in developing a long-term program of relaxation, including a relaxation of the junior Shoshone Call, with the Board, other water users on the Colorado River and appropriate west slope entities.

Agreement

1. Agreement to Relax Call. When a water shortage occurs, as defined in Paragraph 2, the Company agrees to reduce the Shoshone Call to a one-turbine call of 704 cfs. If the Call is relaxed and the flow of the Colorado River at the Shoshone Power Plant, together with flows contributed by intervening tributaries, is not sufficient to meet the then-current demand of the major Grand Valley water rights, up to 1950 cfs (commonly referred to as the "Cameo Call"), then the level of the Shoshone Call will be adjusted to an amount greater than 704 cfs so as to avoid the initiation of a Cameo Call.

2. Water Shortage Defined. For purposes of this Agreement, a water shortage occurs when the following two conditions are met:

- a. Using its regular methodology and based on the "normal" scenario, the Board predicts that reservoir storage in its system on July 1 will be at or below 80% full; and
- b. The Most Probable forecast of streamflow prepared by the Natural Resources Conservation Service (NCRS) or jointly by NCRS and the Colorado Basin River Forecast Center indicates that the April – July flow of the Colorado River at the Kremmling gage will be less than or equal to 85% of average. If no forecast for the Kremmling gage is available, then the Dotsero gage will be used.

3. Timing of Relaxation of Call. If the two forecasts described in paragraph 2 occur in March, then the call will be relaxed beginning March 14 until May 20, inclusive, in accordance with this Agreement. If the two conditions described in paragraph 2 occur in April or May forecasts, then the Call will be relaxed in accordance with this Agreement until May 20, inclusive. The methodology that the Board uses to predict system storage shall be substantially the same as that described in the attached Exhibit A.

4. Power Interference. The Board agrees to pay power interference to compensate the Company for its incremental cost of replacement power and energy as a result of relaxing the Shoshone Call, regardless of which entity ultimately stores the water not called. The procedure for determining power interference is shown in Exhibit B.

5. Potential for Longer Call Relaxation. The Company agrees to consider a longer period of relaxation when water supplies are more severely impacted than described in paragraph 1, if such longer period is defined cooperatively between the Board, the Company and appropriate west slope entities.

6. Water for the Company's Facilities. The Board agrees to deliver water as described in this paragraph to the Company's Cherokee, Arapahoe, or Zuni Power Plants or a future Company power plant located within the Board's Combined Service Area. The Company will select the plant or plants to which the water will be delivered. Deliveries to the Arapahoe, Zuni or a future plant will be made to the South Platte River. Deliveries to the Cherokee plant will be made, at the Board's choice, to the South Platte River or through the Board's Recycled Water Plant. The Board may choose in its discretion the type of water delivered to these facilities, so long as the water is suitable for their use. The Board will not deliver water under this paragraph to the South Platte River downstream of the Cherokee plant's diversion structures. Any water delivered by the Board to the Company under this paragraph shall be used by the Company only at the plants listed in this paragraph 6 and only for purposes for which the Board's water rights have been decreed.

6.1 Amount of Water. The Board shall deliver under this paragraph 6 an amount of water equivalent to 15% of the "net water" it is able to store or divert as a direct result of the reduction of the Shoshone Call. "Net water" is defined as the total amount of water the Board is able to store or divert as a direct result of the reduction of the Shoshone Call at the following facilities, less any deductions described below:

- a. Water stored or diverted at the Board's Dillon Reservoir, less any water spilled from Dillon after filling and any water bypassed from Dillon for flood management purposes; and

- b. Water stored or diverted at the Board's Williams Fork Reservoir, less any water spilled from Williams Fork after filling and any water bypassed from Williams Fork for flood management purposes; and
- c. Water stored in the Board's account in Wolford Reservoir, less any water spilled from the Board's account after filling; and
- d. Water diverted through the Board's Moffat Tunnel, less any water spilled from the Fraser Collection System in excess of the Forest Service minimum bypass flow requirements; and
- e. Water stored or diverted at any western slope reservoir or storage account acquired or constructed by the Board after the date of this agreement, less any water spilled after filling and any water bypassed for flood management purposes.

6.2 Schedule for 15% Water Delivery. The Board shall make deliveries under this paragraph 6 between June 1 in the same calendar year as the Shoshone Call is reduced and March 31 of the following calendar year. The delivery schedule will be subject to approval by the Company.

6.3 Cost of Water Delivered. For each acre foot of water delivered to the Company under this paragraph 6, the Company shall reimburse the Board for the Board's power interference payments at the same rate per acre foot as the Board paid to the Company under paragraph 4.

7. Water for West Slope Entities. The Board agrees to make available to entities on the west slope, at no charge to the recipients, an amount of water equivalent to 10% of the "net water" it is able to store or divert as a direct result of the reduction of the Shoshone Call. "Net water" is defined in paragraph 6.1. The Board may choose in its discretion the method of delivery that is consistent with its water right decrees, so long as the delivery method is suitable for each recipient's desired use. The Board shall deliver the water in the same calendar year as the Shoshone Call is reduced. The Board agrees to cooperate with the Colorado River Water Conservation District to determine the particular west slope entities and the proportionate share of the water to be made available to each entity.

8. Additional East Slope Participants. The Board and the Company agree to make a good faith effort to secure commitments from the Municipal Subdistrict of the Northern Colorado Water Conservancy District, the City of Aurora and Colorado Springs Utilities to deliver to the Company, at no charge, 15% of their additional water diversions that result from a relaxation of the Shoshone Call, in accordance with paragraph 6, and to deliver 10% of the water diverted or stored to west slope entities in accordance with paragraph 7.

9. Priority System. Water made available by the relaxation of the Shoshone Call will be allocated in accordance with the priority system.

10. No Warranties. The Company is not warranting or representing that the diversion and use by the Board of additional water as a result of the relaxation of the Shoshone Call is administrable or lawful. To the extent that the State Engineer or a court with jurisdiction determines that the diversion and use by the Board of additional water as a result of the relaxation of the Shoshone Call is not administrable or lawful, the Company can continue to place the Shoshone Call notwithstanding this Agreement.

11. Increased Call for Company Operations. If the Company in its sole discretion determines that additional river flow is required for safe operation of the Shoshone Hydroelectric Station or the Company's electrical system, then the Company may increase the Call, notwithstanding this Agreement.

12. Operational Meeting. The Company agrees to meet with the Board each October to discuss operation of the Shoshone Call and any planned outages of the Shoshone Plant for repair or maintenance during the following twelve months so that the parties may better coordinate their activities.

13. Sale of Shoshone Water Rights. In the event the Company should determine that it is in its best interest to sell the Shoshone water rights, it agrees to do so only on an open bidding basis in which the Board shall have an equal opportunity to purchase the water rights as all others. If the Company sells the Shoshone water rights to an entity other than the Board, the new owner shall have the right to terminate this Agreement two years after closing of the sale.

14. Term. This Agreement shall be effective as of January 1, 2007 and will terminate on February 28, 2032.

15. Prior Agreement. The previous Letter Agreement between the Company and the Board dated April 14, 1986, is hereby terminated in its entirety.

IN WITNESS WHEREOF, the Board and the Company have executed this Agreement.

ATTEST:

**PUBLIC SERVICE COMPANY OF
COLORADO d/b/a XCEL ENERGY**

Carol J. Peterson
Carol J. Peterson
Asst. Secretary

By: *Paul V. White*
President and CEO
Public Service Company of Colorado

Reviewed
Legal

03/13/2006

3/31/06 PML

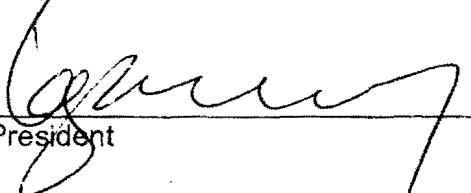
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CITY AND COUNTY OF DENVER,
acting by and through its
BOARD OF WATER COMMISSIONERS

ATTEST:

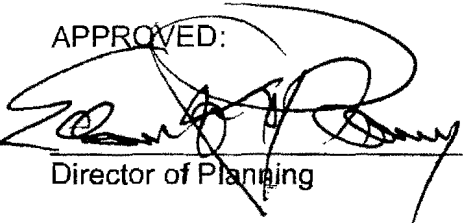


Secretary

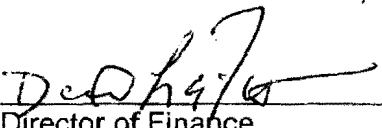


President

APPROVED:

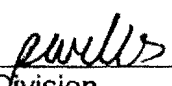


Director of Planning



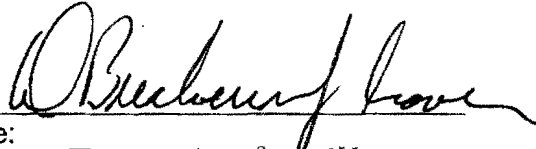
Director of Finance

APPROVED AS TO FORM:



Legal Division

REGISTERED AND COUNTERSIGNED
Dennis J. Gallagher, Auditor

By: 

Title: Deputy Auditor

Exhibit A

DESCRIPTION OF PROCEDURES USED BY THE BOARD FOR RESERVOIR PROJECTIONS

Denver Water projects future reservoir levels monthly in the springtime and less frequently throughout the rest of the year. Active storage levels (excluding the dead storage pools) for the 10 largest reservoirs in Denver's system (Antero, Eleven Mile, Cheesman, Marston, Chatfield, Gross, Ralston, Dillon, Williams Fork, and Wolford Mountain) are forecasted. Calculations of gross and net aggregate reservoir contents are made. The calculation of net reservoir contents excludes any water in Denver's system owed to others (primarily Green Mountain Reservoir). The net active storage of the 10 reservoirs will be used in the forecast for the Shoshone call reduction.

The reservoir projections are based on natural streamflow forecasts produced primarily by the Natural Resources Conservation Service (NRCS). However, streamflow forecasts produced by other organizations including the Colorado Basin River Forecast Center, the Bureau of Reclamation, the Northern Colorado Water Conservancy District and Denver Water are also used.

The reservoir projections utilize correlations between natural streamflow and divertible streamflow to estimate how much of the natural streamflow can be diverted under Denver's water rights. Other factors incorporated in the reservoir projections include projections of treated water use, raw water deliveries, evaporation (based on rates approved by the State Engineer's Office), minimum bypass and release requirements, carriage losses assessed by the State Engineer's Office, existing capacities of diversion and conveyance facilities, system outages and river calls. The assumed treated water use considers any water use restrictions approved by the Denver Water Board at the time of the forecast.

Usually, three levels of reservoir projections are produced. These projections are based on three scenarios after the forecast date: "dry", "normal" and "wet" conditions. The "dry" scenario is based on the "reasonable minimum" streamflow forecasts, which have a 90% chance of being exceeded. The "normal" scenario is based on the "most probable" streamflow forecasts, which have a 50% chance of being exceeded. The "wet" scenario is based on the "reasonable maximum" streamflow forecasts, which have a 10% chance of being exceeded. The "normal" scenario will be used for the Shoshone call reduction.

Exhibit B

COMPENSATION FOR POWER INTERFERENCE

The Board agrees to pay power interference to compensate the Company for its incremental cost of replacement power and energy as a result of relaxing the Shoshone Call. The procedure for determining power interference is shown below.

Depletions to Shoshone Power Plant

The Board will compensate the Company for each acre-foot of net turbine flow depletion caused to the Shoshone Power Plant through the relaxation of the Shoshone Call. Net depletions are defined as gross depletions caused by the Board and all other water users upstream of the Shoshone power plant, less any water subsequently released from Green Mountain and Wolford Reservoirs utilized to generate power at the Shoshone plant. Some of the water stored in Green Mountain and Wolford as a result of relaxation of the Call will later be released, run through the Shoshone Plant for power generation, and delivered for use below the plant; such amounts of water do not constitute a net depletion for purposes of calculating power interference. Similarly, amounts of water spilled from Dillon Reservoir, Williams Fork Reservoir, the Board's account in Wolford Reservoir, or a new west slope reservoir or storage account described in Paragraph 6.1(e), and run through the Shoshone Plant for power generation, do not constitute a net depletion for purposes of calculating power interference. Depletions will be calculated at the Shoshone plant and will be adjusted for stream carriage losses assessed by the State Engineer in water rights administration.

Reimbursement to Xcel

The Board will reimburse the Company for power interference at the rate of at least \$5.00 per acre-foot of the net depletion described above. The \$5.00 per acre-foot minimum will be adjusted on a monthly basis (but not below \$5.00 per acre-foot) by the change in the Price of Spot Gas Delivered to Pipelines for Colorado Interstate Gas, Rocky Mountain (Index) as published in "Platts Inside FERC Gas Market Report," compared to a baseline representing the average Index for the first three months of 2006.

Accounting and Payment.

After the Call relaxation has ended, the Board will prepare an accounting of the power interference and provide it to the Company for review. Once final accounting as been determined, the Board will make payment to the Company within 60 days. Upon mutual agreement and the development of mutually agreeable terms, the Board may substitute a delivery of energy to the Company for the payment of power interference.

MEMORANDUM



To: Brendon Langenhuizen, Peter Fleming, Jason Turner and Andy Mueller
From: Kristina Wynne, P.H. and Krystle Ervin, P.E.
Subject: Shoshone Impact on Cameo Call and Roaring Fork Basin Analysis
Job: 0808.06
Date: October 12, 2023 – FINAL DRAFT

The Colorado River Water Conservation District (the “River District”) continues to explore the potential change of the Shoshone Power Plant (“Shoshone”) water rights by adding instream flow purposes as an alternate use. The goal of the River District’s Shoshone Permanency effort is to maintain the historical streamflow and water rights call regime created by exercise of the Shoshone water rights.

This analysis addresses the question of what would happen to the historical streamflow and water rights calls if the Shoshone water rights were no longer exercised (e.g., if the power plant ceased operations). The analysis therefore is quite different from a normal change of water right review because, instead of the usual focus on the impact to other rights resulting from the proposed change of a water right, this analysis compares historical conditions to a theoretical future situation where the Shoshone water rights are no longer exercised. In a normal change of water rights analysis, the primary issue is whether the proposed change would create a legal injury to other water rights. This analysis therefore does not address questions of injury to water rights (because there can be no legal injury to other water rights if a water right simply stops being exercised).

As expected, the results demonstrate that, in the absence of the Shoshone water rights, the Cameo suite of water rights likely would place an administrative call more frequently. The impact of the increased Cameo call would be felt primarily by junior water rights in the Roaring Fork River basin. The reason is that the confluence of the Colorado and Roaring Fork Rivers is downstream of Shoshone and, therefore, junior water rights in the Roaring Fork basin are not curtailed by the Shoshone call but are subject to a Cameo call. In contrast, junior water rights located upstream of Shoshone have always been subject to the Shoshone Call and thus would be called out less frequently if Shoshone went away, even if the result is more frequent calls from the Cameo rights than have occurred historically.

We note that the work summarized here has been limited to an initial, preliminary analysis based on readily available information. This analysis is not a point flow model nor a projection of what will happen based on assumed future basin-wide demands or hydrologic and climatic conditions. Rather, this analysis utilizes existing historical data to estimate, in a broad-brush way, what would have happened historically in the absence of a Shoshone call.

1. Shoshone Power Plant History, Water Rights and Administration

The Shoshone Power Plant is located on the Colorado River approximately six miles upstream of the confluence with the Roaring Fork River and the City of Glenwood Springs, CO. Shoshone Power Plant is currently owned and operated by Xcel Energy (“Xcel”), which is the parent company of and also known as the Public Service Company of Colorado (“PSCo”). The decree in Eagle County Court Case No. CA-0466 granted a 1,250 cfs conditional water right for the

Shoshone Power Plant which began operating in 1909¹. The entire 1,250 cfs was later made absolute in Eagle County Court Case No. CA-0553. In 1929, plant operators increased the tunnel capacity by 158 cfs by forcing air into the supply tunnel and subsequently decreed the enlargement in Case No. CA-1123. We note that although Case No. CA-1123 was not decreed until February 7, 1956 and has a May 15, 1929 appropriation date (equivalent to an administration number of 28989.00000), the junior Shoshone water right is administered as a 1940 water right (administration number 33023.28989). The senior and junior water rights are both decreed only for power production which is understood to be a non-consumptive use of the diverted water. The table below summarizes the Shoshone water rights.

Adjudication Date	Appropriation Date	Admin. Number	Rate (all absolute)
1907-12-09	1902-01-07	20427.18999	1,250 cfs
1956-02-07	1929-05-15	33023.28989	158 cfs

While the power plant may divert water up to its capacity at any time, the ability for the Shoshone water rights to place a call has historically been based upon the available “administrative flow” at the Colorado River near the Dotsero stream gage² (the “Dotsero gage”). The administrative flow is determined by the Division 5 Engineer’s Office (“DEO”) to account for native water in the Colorado River system and excludes upstream water released from reservoirs that must be shepherded to users below Shoshone. Excluded water at the Dotsero gage (water that is shepherded past the gage) includes, but is not limited to, water released from the Historic Users Pool (“HUP”), direct delivery water from Green Mountain Reservoir, releases for the Upper Colorado River Endangered Fish Recovery Program (Endangered Fish Recovery Program) from Lake Granby or Wolford Mountain Reservoir, and contract releases from Wolford Mountain Reservoir to users located downstream of Shoshone. The administrative flow is therefore equal to the measured streamflow at the Dotsero gage less the excluded “shepherded” water. Administrative flow is typically equal to the measured flow at the Dotsero gage except during times in April and July through October when HUP, Endangered Fish Recovery Program and other releases are generally made.

The administrative flow has been considered in the DEO’s administration of the Colorado River since approximately 1998 (following the 1997 start of the Endangered Fish Recovery Program releases on the Upper Colorado River) but has historically not been formally reported by the DEO nor is it available on the State Engineer’s Office (“SEO”) website. This analysis utilizes administrative flow data that was obtained from the DEO or calculated based on known releases that were administratively bypassed around Shoshone.

¹ https://www.xcelenergy.com/energy_portfolio/electricity/power_plants/shoshone

² USGS 09070500 COLORADO RIVER NEAR DOTSERO, CO.

Table 1A summarizes the number of days of Shoshone call (either under the senior 1,250 cfs water right or the junior 1,408 cfs right) for the period 1987 through 2015. This study period was used for this analysis because it represents the years in which reliable call data is available before the Shoshone Outage Protocol (“ShOP”) was put in place in 2016. As shown in Table 1A, the Shoshone water rights have called frequently and for extended periods in nearly every year of the study period, averaging 154 days of call per year. The maximum days of call occurred in the very dry year of 2002 and totaled 311 days. This period included many extended outages at Shoshone which prohibited the water rights from placing a call. Notably, there were zero days of call in the wet year of 2011 or in the dry year of 2012 when we understand a penstock was breached which prohibited the plant from operating for an extended period of time. These periods and other periods of prolonged outage are shaded in Table 1A.

Shoshone calls, due to their seniority, impact the operation of upstream water rights and call out many significant water rights on the West Slope including, but not limited to Colorado-Big Thompson Project (Adams Tunnel, Granby Reservoir, Green Mountain Reservoir), Windy Gap Project, Moffat Collection System (Moffat Tunnel, Williams Fork Reservoir), Blue River Collection System (Roberts Tunnel, Dillon Reservoir), Continental-Hoosier Collection System, Homestake Reservoir, and Wolford Mountain Reservoir.

2. Cameo Call Background

The “Cameo call” is comprised of several water rights on the Colorado River owned by the Grand Valley Irrigation Company, Orchard Mesa Irrigation District, Grand Valley Water Users Association, Palisade Irrigation District, and the Mesa County Irrigation District. The priorities of these water rights range from 1912 through 1934 and total 2,260 cfs during the irrigation season and 800 cfs during the non-irrigation season. However, pursuant to the terms of the decree and stipulation in Case No. 91CW247 (the “Orchard Mesa Check Case”), the Cameo call is generally reduced to 1,950 cfs. Similar to the Shoshone water rights, the typical seniority of the Cameo call results in many of the upstream water rights, including transmountain diversions being called out, particularly during the irrigation season.

Table 1B summarizes the days of Cameo call (either under the junior or senior water rights) during the 1987 through 2015 study period. Calls typically occur during the latter part of the irrigation season in dry and average years, and to a lesser extent in some wet years. The maximum number of days of call in the subject study period was 124 days in the dry year of 2012. While the Cameo water rights include an 800 cfs water right during the non-irrigation season for hydroelectric power generation, this water right has not historically placed a call during the winter as streamflow at Cameo is more than adequate to satisfy the 800 cfs demand.

3. Documents Reviewed and Data Used

Data Relied On and Materials Reviewed

The analysis presented here relies primarily on readily available data acquired from the Colorado Division of Water Resources (DWR) CDSS database and includes, but is not limited to (1) water rights information for the major diversions on the Colorado River, Blue River and the Roaring Fork River; (2) historical call records for the Shoshone water rights and the Cameo water rights; (3) daily streamflow records for the Colorado River at Dotsero and Cameo as well as tributary

streamflow, particularly Plateau Creek and flows upstream and downstream of major reservoirs such as Ruedi Reservoir, Homestake Reservoir, Granby Reservoir, Wolford Mountain Reservoir, Green Mountain Reservoir and Dillon Reservoir; (4) daily administrative flow records obtained from the Division 5 office and calculated; and (5) daily diversion records for water rights that represent the Cameo call, Independence Pass Transmountain Diversion Tunnel, Fryingpan-Arkansas Project, Moffat Collection System, C-BT Project, Windy Gap, Homestake Tunnel, Con-Hoosier Tunnel and the Blue River Diversion Project.

In addition, various documents related to operations on the Colorado River were referenced such as the ShOP and the Operating Principles for the Fryingpan-Arkansas Project.

Study Period

The 29-year study period from 1987 through 2015 was chosen because it represents a period of reliable call records and overlapping data for the various streamflow and diversion records evaluated. It was also necessary to limit the study period to years prior to the signing of ShOP because ShOP results in voluntary modification of river operations by several significant water users above Shoshone.

ShOP was signed in June 2016 by the Bureau of Reclamation, the Division of Water Resources, Denver Water Board (“DWB”), the River District, Middle Park Water Conservancy District (“MPWCD”), Northern Colorado Water Conservation District, the Grand Valley Water Users Association, the Orchard Mesa Irrigation District and the Grand Valley Irrigation Company. The agreement is for 40 years unless terminated earlier by all of the parties. The ShOP Agreement sets forth a manner in which the signatory water users agree under certain circumstances to operate as if the senior Shoshone water right was calling even when the Shoshone power plant is shut down. Currently, the ShOP Agreement is operated in conjunction with the Agreement Concerning the Reduction of Shoshone call (the “Shoshone Call Reduction Agreement”). When ShOP is being implemented, a Shoshone call is not being administered nor recorded as a call in DWR’s records.

The 29-year period of record is sufficiently long and includes periods of wet, dry and typical hydrologic conditions as well as periods during which the Shoshone Plant was shut down for extended periods of time prior to the operation of ShOP. The extended periods of outage are shown as the shaded months in Table 1A. The Shoshone Call Reduction Agreement, which was signed by PSCo and DWB in 2006, took effect on January 1, 2007 and remains in effect until February 28, 2032. The agreement provides that under certain water shortage conditions, PSCo agrees to reduce the Shoshone call. We understand that this agreement was only implemented once between 2007 and 2015, in April of 2013. No adjustments to this analysis during the April 2013 period of call reduction were made or were necessary because no Shoshone calls, regardless of call relaxation, were recorded. It is our understanding that Denver and PSCo did enter into a similar agreement prior to the 2006 agreement and that the ability to reduce the Shoshone call was exercised briefly in the spring of 2003 though that call reduction has not been accounted for in this analysis.

Year Types

Throughout this analysis, we analyzed the potential impacts of the absence of a Shoshone call over wet, dry and average year types. For the period 1987 through 1995, the year types were determined

by summing total annual streamflow (water year) at the Colorado River near Dotsero gage (USGS 09070500) for each year and splitting those annual volumes (in acre-feet) by thirds such that the lowest third of the annual volumes were considered dry years, years that fell in the middle third of the distribution were considered average years and the third of the years with the highest total annual streamflow were considered wet years.

Beginning in 1996, Colorado River Basin Forecast Center (CRBFC) calculations of “Unimpeded Forecasted Flow at Colorado River at Dotsero (April - July)” became available and were used in this analysis to determine year types by splitting the total estimated undepleted flows into thirds, as was done with the earlier years. The undepleted flow values are likely a better representation of the hydrologic year type as they are based on estimated streamflow prior to depletions or diversions to storage.

4. Analysis Approach

The Colorado River system in Colorado is very complex, with calls and streamflow on the mainstem being driven by many factors including delayed impacts by many large reservoirs. Based upon historical call and diversion data, it is possible to estimate what the impact of a reduced Shoshone call may have been historically, though any analysis should be viewed only as an estimate based on imperfect historical data and tools.

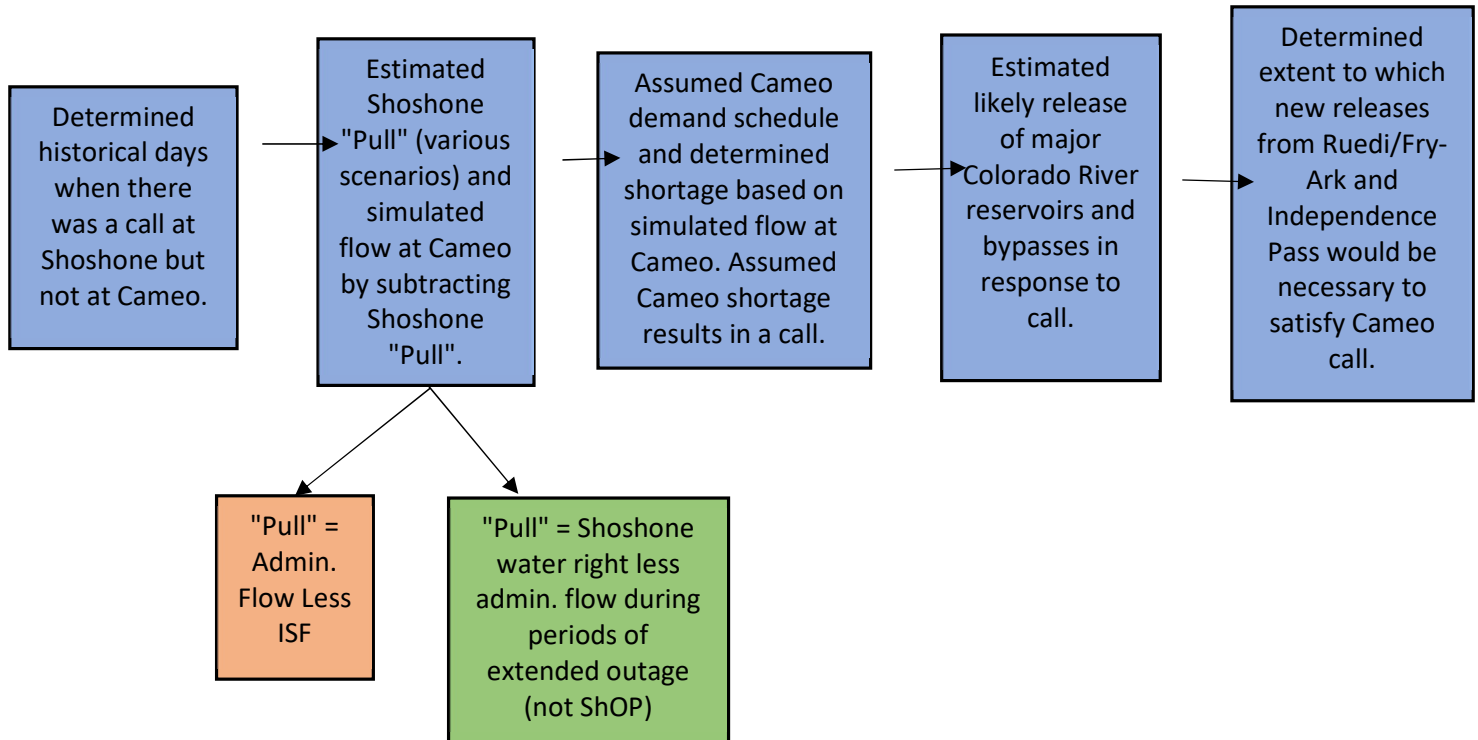
The objective of this analysis is focused on the potential change in the duration and frequency of the Cameo call under a scenario when Shoshone ceases calling allowing upper Colorado River water users to continue diverting until the Cameo call is initiated.

Our analysis can be broken down into five main steps:

1. Determined historical days when there was a call at Shoshone but not at Cameo (under either Cameo priority or any swing right).
2. Estimated the Shoshone “pull” and simulated the streamflow at the Colorado River at Cameo gage without the Shoshone “pull”.
3. Utilized simulated flow at Cameo with an assumed Cameo demand schedule to determine Cameo shortages and subsequent “new” calls.
4. Estimated likely release from major Colorado River reservoirs or bypasses from major diversions in response to historical Cameo and Shoshone calls.
5. Determined the extent to which releases and/or bypasses from Roaring Fork River (Ruedi Reservoir/Fryingpan – Arkansas Project and Independence Pass) would be impacted by the “new” call regime at Cameo.

Each of these steps is described in detail below and summarized in a flow chart in Figure 1 below.

Figure 1
Shoshone Impact on Cameo Call Analysis Flow Chart



5. Analysis and Results

This section describes the extent to which the duration and frequency of a Cameo call might change in response to the absence of the Shoshone water rights pulling down additional water from upstream junior water rights. Each subsection also includes a discussion of any relevant assumptions made for each step of the analysis.

Historical Days When Shoshone was Calling but Cameo was Not

The Shoshone water rights (either the junior or senior priority) called for an average of 154 days per year during the 1987 through 2015 study period, as shown in Table 1A. This analysis focused on understanding the extent to which water rights would have been impacted if the Shoshone call did not occur. The approach of this study was to determine if a Cameo call would increase and if so, what water rights would be impacted by the new calling regime. To analyze these questions, it is important to also understand when the Cameo water rights historically called.

Assuming that future Cameo calls will be at least as frequent and for as long as historical Cameo calls, the maximum number of days when the absence of a Shoshone call would result in a “new” condition for entities below Shoshone is limited to the historical number of days when there was a call at Shoshone but not at Cameo. As shown in Table 2, there were an average of 131 days per year during the study period when there was a call at Shoshone but *not* at Cameo. Approximately

67% of those days occur during the non-irrigation season when Cameo historically has not placed a call (see Table 1B). This is similar across all year types.

The values shown in Table 2 are a simplistic representation of the maximum number of days of call that could be “lost” if Shoshone were to cease calling. In other words, whatever water is pulled down by Shoshone on those days would no longer be pulled down the river. However, it is not necessarily the case that Cameo would always call in the absence of Shoshone. On the days that Shoshone called but Cameo did not, the Cameo demand could have been satisfied or the water rights did not or could not call for some other reason.

In order to refine the initial values presented in Table 2 and to estimate the number of days when Shoshone was calling and Cameo was not calling but might call in the absence of Shoshone, we estimated what the Shoshone call “pulls” down the river. If that amount does not come down the river in the future, it would not be available to satisfy demands at Cameo. It is therefore assumed that if the flow at the Colorado River near Cameo gage (USGS 09095500), plus the flow at the Plateau Creek near Cameo gage (USGS 09105000), minus the assumed Shoshone pull is less than some assumed demand at Cameo, the Cameo water rights would place a call³. This simplified approach did not consider transit loss or travel time.

Estimate of Shoshone “Pull” and Simulated Streamflow at Cameo

To estimate the Shoshone pull, we evaluated only historical days when Shoshone was calling, and Cameo was not (under any priority). There are multiple factors at play in the administration of the Colorado River on any given day. One way to estimate what the resulting streamflow at Dotsero might be under the influence of a Shoshone call would be to evaluate the bypasses or releases made by every, or at least the major, upstream junior water rights was on days of a call. This would be very data intensive and still may not provide a reasonable estimate of the Shoshone pull because water rights operators might have been releasing more water than necessary for a specific operational goal or any number of other reasons.

Rather than tabulating all releases during a Shoshone call as one might try to accomplish in a point flow modeling or similar exercise, we simplified the approach and developed several possible pull scenarios. In theory, the total amount of water available for the Shoshone water rights to call for would be equal to the lesser of the Shoshone water rights or the administrative flow⁴. We know however, that the amount of water that a Shoshone call pulls down the river is not equal to the entire administrative flow. This is because the administrative flow also includes water originating from tributary inflows, irrigation return flows, and other sources that would flow into the river and past the Dotsero gage regardless of a call and in addition to any shepherded water. In other words, some portion of what flows past the Dotsero gage is not the result of a Shoshone call and would

³ According to discussions with Division 5 Engineer James Heath, the Cameo call is administered based upon the sum of the flow at the Colorado River near Cameo gage and the Plateau Creek near Cameo gage.

⁴ The administrative flow is equal to the physical flow at Dotsero less any water that is being bypassed for other purposes, such as the 10,825 fish water destined for the 15-mile Reach further downstream on the Colorado River or the HUP water delivered to the Grand Valley and other direct deliveries below Shoshone.

be in the river no matter the call conditions. Therefore, assuming the Shoshone pull is equal to the administrative flow would overestimate the amount of water that would be lost to the river at Cameo in the absence of a Shoshone call.

Scenario A

One scenario for a reasonable Shoshone “pull” estimate could be equal to the administrative flow (on historical days when Shoshone was calling but Cameo was not) less the Colorado River Water Conservation Board (“CWCB”) Instream Flow (“ISF”) water right in the reach encompassing Dotsero⁵. If it is assumed that at least a minimum streamflow equal to the CWCB ISF is available, then the maximum amount of water that the Shoshone water rights could pull down would be the lesser of the administrative flow minus the ISF and the Shoshone water right. This estimated pull amount was evaluated in this analysis as “Scenario A.”

Available flow for the Shoshone water rights to call on each day of the study period was assumed to be the lesser of the administrative flow and the water right (only when Shoshone was calling but Cameo was not)⁶. The pull was then calculated, on a daily basis, as the difference between the daily available flow and the CWCB ISF rate. Because the analysis only represents a broad estimate of how conditions at Cameo may change and uses monthly Cameo demands, a standard monthly pull was then calculated for each scenario by averaging the daily pulls for each month of the study period. As shown in Table 3, the resulting pull ranges from 131 cfs in February to 612 cfs in May.

Scenario B

Another method to estimate the Shoshone “pull” is to identify what the Shoshone water rights might have called for during periods when a call was not placed due to extended outages (prior to the implementation of ShOP⁷). During these periods, it is assumed that upstream junior water rights were diverting as much as they had demand for because they were not called out by Shoshone. If during those times, the administrative flow was also less than the Shoshone water rights, the difference between the two is the amount of water that the Shoshone water rights might have pulled down had the plant been operational. For each day during an extended outage period (those months highlighted in Table 1A), the pull was calculated as the difference between 1,250 cfs or 1,408 cfs (depending on the administrative flow available) and the administrative flow. As with Scenario A, a standard monthly pull was calculated for Scenario B by averaging the daily

⁵ CWCB ISF water right on the Colorado River from Burns to the confluence of the Colorado River and the Eagle River decreed in Case No. 11CW161, Division 5 which is 650 cfs (9/16-5/14), 900 cfs (5/15-6/15), 800 cfs (6/16-9/15). These flow rates were negotiated as part of the development of Upper Colorado River Wild & Scenic Alternative Management Plan.

⁶ If the administrative flow was greater than 1,408 cfs, it was assumed that the water available was limited to 1,408 cfs. If less than 1,250 cfs was available, the available flow was limited to 1,250 cfs.

⁷ While this analysis looks at streamflow and administration prior to the implementation of ShOP, ShOP operations are continually monitored to better understand the Shoshone “pull” under this scenario.

pulls for each month of the study period. Table 3 shows the average monthly pull rates which vary from 92 cfs in August to 353 cfs in December.

We note that several other scenarios in addition to Scenarios A and B were evaluated in our analysis including looking at maximum differences between administrative flows and the ISF rates and the Shoshone water rights, among others. However, it was determined not only that Scenarios A and B were the most reasonable scenarios based on our knowledge of the Colorado River hydrology and administration, but also that the results presented below were not especially sensitive (at least within a range and on average) to the pull amount.

Cameo Demand and Estimate of Shortage Based on Simulated Flow at Cameo Stream Gage

As shown in the Figure 1 flow chart and as described above, we estimated the potential number of “new” days of Cameo call by subtracting the standard monthly Shoshone pull under different scenarios from the sum of the historical daily streamflow at the Colorado River near Cameo gage (USGS 09095500) and the streamflow at the Plateau Creek near Cameo gage (USGS 09105000) and then comparing that simulated streamflow to an assumed Cameo demand (assumed to be constant by month). That assumed demand is shown in Table 4 and is limited to the 800 cfs decreed Cameo water right during the non-irrigation season from November through March.

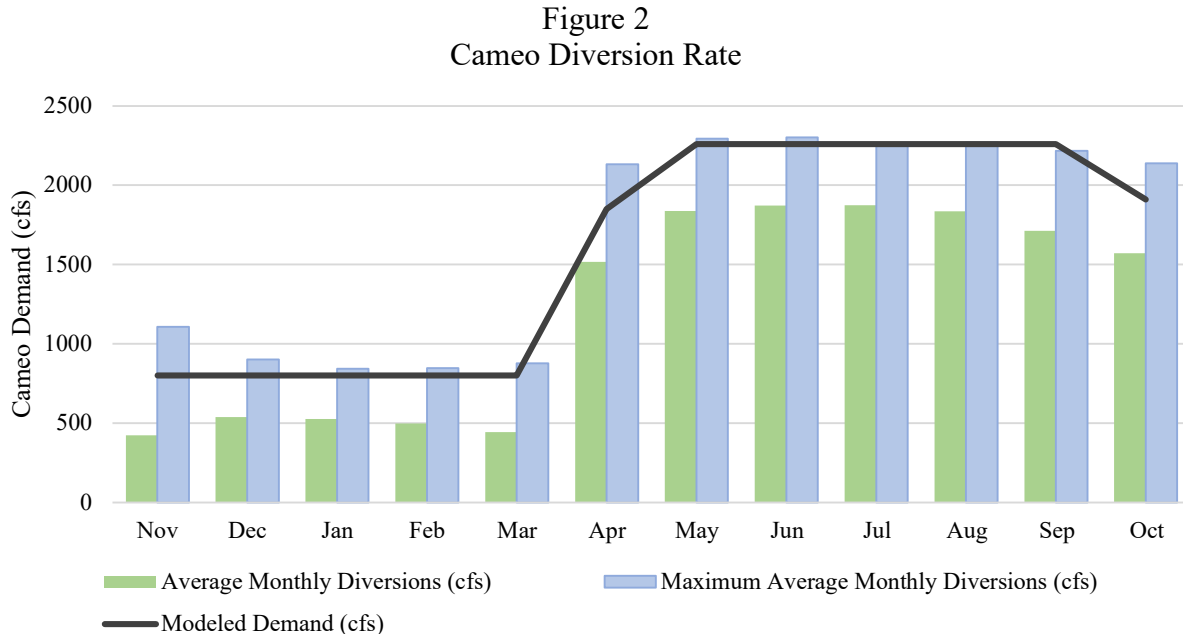
The demand in the primary irrigation season from May through September is assumed to be equal to the total of the decreed water rights, or 2,260 cfs. The Cameo call is currently administered at a rate of 1,950 cfs pursuant to the Orchard Mesa Check case. However, pursuant to the decree in Case No. 91CW247, the requirement to limit the call to 1,950 cfs is contingent on various conditions including one in which “the Shoshone Rights continue to be exercised in a manner substantially consistent with their historical operations for hydropower production at their currently decreed point of diversion.”⁸ Because this analysis seeks to understand the impact on Cameo in the absence of a Shoshone call, utilizing the full decreed water right will result in an increased demand by the Cameo rights and a corresponding increase in the number of days the Cameo call would impact upstream junior water rights. Whether the Cameo call actually would be increased to 2,260 cfs if the Shoshone call goes off is not a certainty. However, for purposes of this analysis, we assume that the Cameo call would be increased. If the call were to remain at 1,950 cfs, the impacts to the Roaring Fork River would be reduced in this analysis.

The Cameo demand in April and October was assumed to be equal to 122% of the average historical diversion for each month. This value is equal to the average difference between the average monthly diversion and the decreed rate in May through August. This value was used rather than the decreed rate because it is unlikely that irrigation demand during April and October will be as great as the demand during the height of the irrigation season. As shown in Table 4, the demand in August through October is also assumed to include 60 cfs of fish water which is equal to roughly 10,825 acre-feet. This water is typically released from Granby Reservoir and/or Ruedi Reservoir for the Upper Colorado River Endangered Fish Recovery Program. It is not available

⁸ Division 5 Case No. 91CW247 at Paragraph 3.b.(3).

for diversion at Cameo but is included in the total amount of flow that must be physically available at Cameo.

Figure 2 summarizes the average monthly and monthly maximum diversions at Cameo during the study period as well as the modeled Cameo demand (excluding fish flows). We note that the Cameo demand was assumed to be the same in both Scenario A and Scenario B.



The simulated flow at Cameo was then calculated on days when Shoshone was historically placing a call, but Cameo was not (see Table 2). This was done by subtracting the standard monthly pull in each scenario, or the amount of water assumed to be delivered down the Colorado River, past Dotsero and ultimately to Cameo, from the sum of the daily historical streamflow at the Colorado River near Cameo gage and the Plateau Creek near Cameo gage. For the purposes of this analysis, and for the sake of simplicity, no transit losses have been assumed and no adjustment has been made for travel times.

The simulated flow was then compared to the assumed Cameo demand (held equal by month) on each day. If the demand was greater than the simulated flow, it was assumed that Cameo would not have been satisfied in the absence of a Shoshone call and would place a call on that day. The results of this portion of the analysis are summarized in Table 5 and shown by month in Tables 5A and 5B for Scenarios A and B, respectively. As shown in Tables 5 and 5A, under Scenario A, it is estimated that, on average, there would be an average of 11 additional days of Cameo call in wet years and up to 37 additional days on average during average years. During dry years, an additional 30 days of call would be anticipated. The analysis also indicates that on average across all year types most “new” days of call are calculated to occur in the months of April, September and October, with fewer additional days during the main part of the irrigation season (May through August).

While a similar pattern of increased days of call was determined under Scenario B, the average number of days of increased calls was lower due to the lower pull amount. In other words, because the pull is lower, less water gets subtracted from the Cameo flow and the synthesized flow is therefore higher and can more frequently satisfy the Cameo demands. As shown in Table 5B, Scenario B indicates 13 additional days of call on average across all year types. The additional days of call range from only 4 days on average during wet years and up to 21 days on average during average years. Similar to Scenario A, on average across all year types, the majority of new days of call occur in April, September and October.

Additionally, as shown in Tables 5A and 5B, increases in the Cameo call during the winter are generally limited because the flow at Cameo is typically more than adequate to satisfy the demand. A decrease in winter Shoshone calls could result in increased diversions by upstream reservoirs, including transmountain diverters. While this would potentially have an impact to the system, the supply physically available for diversion in the winter is typically relatively low and the absence of that water being sent to the lower part of the river in the absence of a Shoshone call may not be enough to reduce the Cameo streamflow below the demand.

For the days during which our analysis estimates that the simulated flow at Cameo would not be sufficient to meet the Cameo demand (and a new call is assumed), we also calculated the amount (in cfs) by which the assumed demand was not satisfied. As shown in Table 6 as well in Figures 3 and 4, the highest average shortage amount in Scenario A occurs in May of dry years and is equal to 788 cfs. The highest average shortage in Scenario B occurs in August of dry years and is equal to 423 cfs. Figures 3 and 4 illustrate the distribution of shortages across months in each scenario. Under Scenario A, shortages are generally higher than in Scenario B but are concentrated in the irrigation season. The Scenario B shortages are generally lower than in Scenario A but occur in more months throughout the year. Interestingly, shortages estimated in April of wet years are not significantly lower than the April shortages in either dry or average year types in Scenario A. Relatively high rates of shortage also occur in September and October in both scenarios. In general, the results indicate that on “new” days of call, Cameo would be unsatisfied by about 200-400 cfs on average. Tables 6A and 6B summarize the average rate by which the Cameo demand is unsatisfied on a monthly basis. The highest monthly average shortage under Scenarios A and B occurs in April of 2003 and is equal to 1,055 cfs and 787 cfs, respectively.

Shortages that are greater than the Shoshone pull amount occur primarily due to the higher than historical Cameo demand assumed for every month in the analysis. Additionally, neither the assumed Cameo demand, nor the Shoshone pull are adjusted by year type which may impact shortages relative to the assumed pull amount, particularly during the shoulder months.

Figure 3
 Scenario A
 Unsatisfied Cameo Demand (cfs)

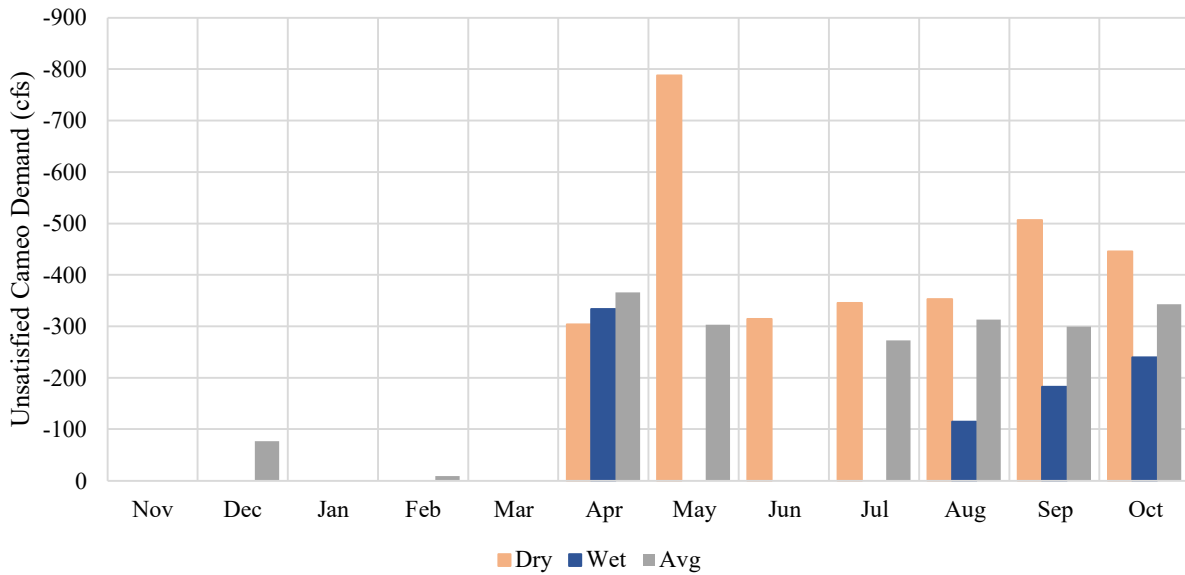
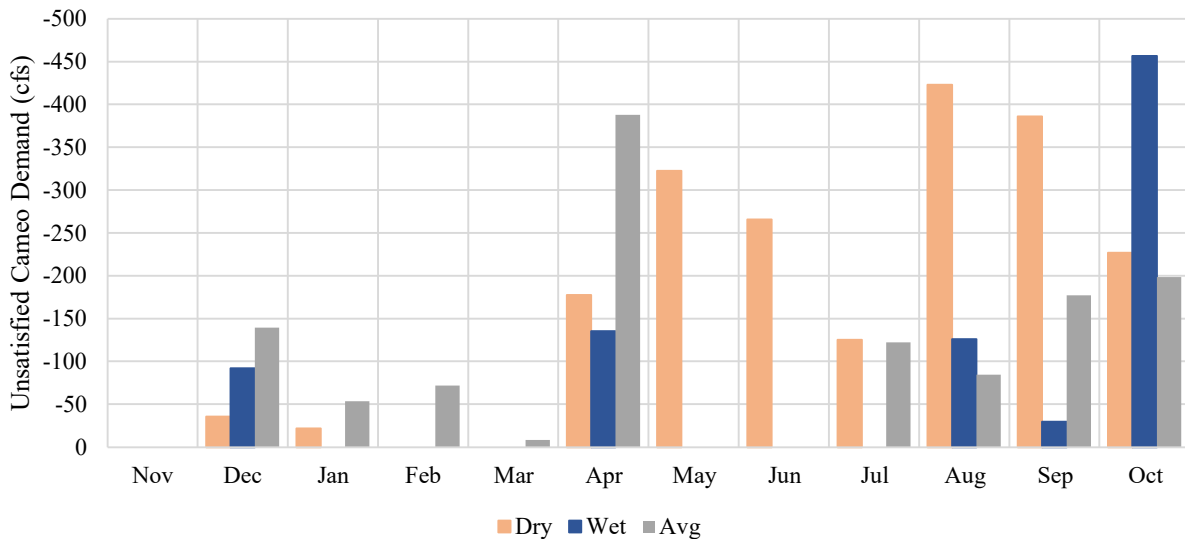


Figure 4
 Scenario B
 Unsatisfied Cameo Demand (cfs)



It is important to recall that the estimates of additional days of call and rates of unsatisfied demand are based upon the historical days when Shoshone was calling but Cameo was not. This analysis indicates that in the future, we can expect that additional Cameo calls may “make up for” a lack of Shoshone calls by pulling more water down the river that otherwise would be available for diversion upstream.

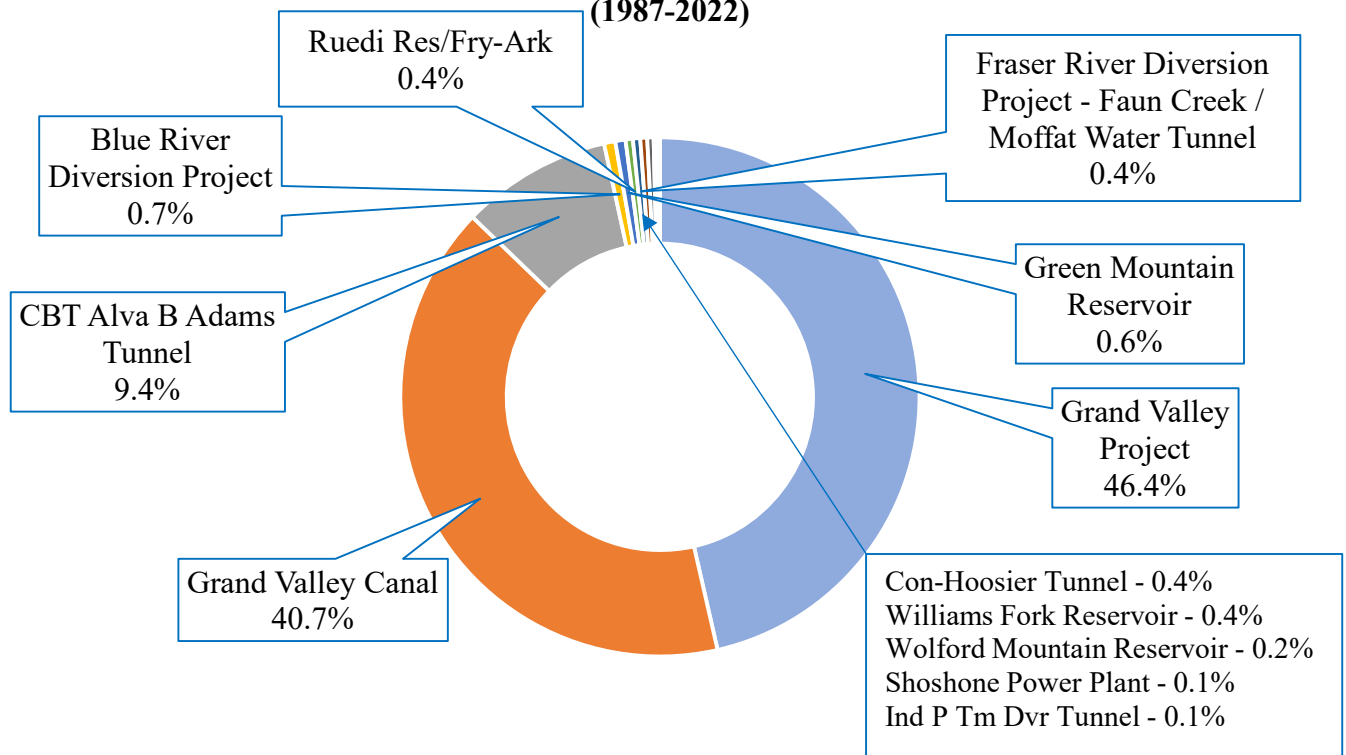
Estimated Release of Typical Swing Rights in Response to Call

Assuming the Colorado River is administered in the same general way as it has been in the past, it would be expected that the most senior Cameo water rights may not call at all times but rather a bypass or “swing” call would be placed which calls out only a portion of the upstream water rights necessary to satisfy the demand. The depth of a Cameo call, or the seniority of the swing right for a Cameo call, would be dependent on the amount of unsatisfied demand as well as the amount of water that the various upstream water rights are diverting at any given time.

In order to estimate the depth of the potential new Cameo calls presented in Tables 5A and 5B we first reviewed the historical call records to understand the rights that typically called out by Cameo before the Cameo calls under its own water rights (the swing rights). In our observation, the river has been administered more closely, with more changes to the swing rights in the last few years (after 2015). As such, swing calls through 2022 were reviewed to better identify the number and character of swing rights that might occur in the future. For example, the Con-Hoosier Tunnel was not a swing right until after 2015. We note that this call review was conducted simply to identify potential Cameo swing rights and therefore the additional years of call data reviewed do not impact the 1987-2015 study period of the analysis.

As shown in Figure 5, most of the time, historical Cameo calls came from the Cameo rights themselves (either the Grand Valley Canal or the Grand Valley Project). Approximately 9% of all days of historical Cameo calls were from the CBT Project (via Green Mountain Reservoir). Denver Water’s Blue River Diversion Project, Moffat Collection System, Ruedi Reservoir and Green Mountain Reservoir were the swing rights for lesser amounts of time. Additional water rights that have occasionally been the swing right for less than 0.5% of the time include the Con-Hoosier Tunnel, Williams Fork Reservoir, Wolford Mountain Reservoir and the Independence Pass Transmountain Diversion.

Figure 5
Percentage of Historical Calls from Various Water Rights at Cameo



If we assume that these same water rights, which make up the bulk of major diversions in the Upper Colorado River system, will be the same water rights that are called out in order of priority under a new Cameo call regime, it is necessary to estimate the amount of water that the water rights might release or bypass in the event of a Cameo call. As summarized in Table 7, the amount of water that could be expected to be released or bypassed was determined based upon the average monthly historical releases, bypasses, or diversions that occurred during a Shoshone or Cameo call, by year type, less any required bypass amounts. For potential swing rights located below the Shoshone Power Plant, the historical releases during a Cameo call are limited because Cameo has not historically called for the entire year.

To estimate what might be released in the event of a new Cameo call, expected releases from the Independence Pass diversions were assumed to equal historical diversions, measured at the Twin Lakes Tunnel (TWINTUNCO) gage. Expected releases or bypasses from Ruedi Reservoir resulting from out-of-priority Fryingpan Arkansas Project diversions from November through July (were set equal to Bureau of Reclamation reported inflow to Ruedi Reservoir plus the Boustead Tunnel diversions less the minimum releases from Ruedi Reservoir mandated by the Fryingpan-Arkansas Operating Principles as summarized at the top of Table 7. August through October releases were set equal to approximate current contract releases from Ruedi Reservoir, based upon 2022 release rate data.

While historical amounts released in response to a call or historical records of diversions which would have to be bypassed in the event of a call are reasonable estimates for what would be released in response to a new Cameo call, it is important to note that there is a presumption that the water to be released or bypassed is physically available and that the releases or bypasses were conducted in response to a call, not for some other purpose.

Impact of Anticipated “New” Cameo Calls

The depth of impact of a new Cameo call was determined under Scenarios A and B by comparing the daily calculated shortage (demand unmet by the simulated Cameo flow) to the average monthly expected release of junior rights shown in Table 7, by year type. For instance, if the unmet demand on a given September day in an average year was equal to 60 cfs, the shortage would first be satisfied by the expected release from the most junior swing right listed in Table 7. Therefore, the 60 cfs need would call out the 50 cfs expected release from Wolford Mountain Reservoir as well as a portion of the 20 cfs expected release from Ruedi Reservoir. In this example, the new Cameo call day would only impact those two relatively junior water rights. On a day where the shortage was estimated to be relatively large, more water rights would need to be called out to satisfy the call, at least initially. It is important to note that the Shoshone pull in each scenario is assumed to include releases from water rights above Shoshone that occurred during a historical Shoshone call. In the absence of that call, the pull gets subtracted from the flow at Cameo. For the more junior water rights located above Shoshone, the days of new Cameo call may not result in a change of operation compared to historical operations because the new Cameo call would simply be taking the place of the historical Shoshone call, depending on the swing right. Junior water rights downstream of Shoshone could experience a completely new call on days when the absence of the Shoshone pull results in a “new” Cameo call.

Tables 8A and 8B summarize the average depth of impact of increased Cameo calls in the absence of historical Shoshone calls pulling water down the mainstem of the Colorado River and with the increased Cameo demand. Generally, days of new Cameo calls occurred in periods of several days in a row. To determine the depth of the call, we averaged the shortage during these periods, or groupings, of new days of call and determined the junior rights that would need to release or bypass water to satisfy the calculated shortage. This was done to simplify the calculation and avoid single day rebound calls that would be difficult to document. Because transit losses and transit time are not accounted for in this analysis, accounting for these daily changes in call based on which upstream right releases or bypasses water is not feasible.

The depth of call presented in Tables 8A and 8B was then determined by averaging the depth of call by month for each year type. As is expected, the months during which the largest shortage was calculated or when there is relatively low volumes of water that can be released in response to a shortage (December, for instance) result in the “deepest” call. In other words, the swing right becomes more senior. For instance, in Scenario A, the most senior swing right that we anticipate would be called out is the CBT System, in October of dry and wet years. In general, the swing rights impacted are relatively junior. It is important to note that the depth of the calls shown in Tables 8A and 8B represent the swing rights that would be called out only during the new days of Cameo call. For instance, even though the swing right may go all the way to the Independence Pass Transmountain Diversion in December of average years in Scenario B, only approximately 3 days of a new call, on average, is calculated.

Anticipated Impacts on Fryingpan –Arkansas Project (Boustead Tunnel and Ruedi Reservoir)

Additional or extended calls from Cameo on days that historically experienced a Shoshone call are of particular interest to water rights on the Roaring Fork River because the days during which Cameo would need to place a call in the absence of water being pulled down the river by the Shoshone water rights would truly be a new call scenario. This includes impacts to the Fryingpan-Arkansas Project, which consists of “co-equal” priorities between the Boustead Tunnel diversions to the east slope and Ruedi Reservoir uses on the west slope. Specifically, the Bureau of Reclamation is to operate the full project such that the total end of year diversions between the Boustead Tunnel and Ruedi Reservoir are equal, or until Ruedi Reservoir is filled. As part of that operation, a 28,000 acre-feet Ruedi Reservoir Replacement Pool (“Replacement Pool”) may be utilized, and water is released to the Fryingpan River if Boustead Tunnel diversions are called out-of-priority. Additional days of a Cameo call would impact the Fryingpan-Arkansas Project due to the fact that diversions at the Boustead Tunnel or Ruedi Reservoir would need to be bypassed and/or releases from the Replacement Pool would need to occur at times other than have occurred historically.

In order to estimate the impacts of an increase in the frequency and duration of Cameo calls on the Fryingpan-Arkansas Project, we used the daily calculation of Cameo shortage described above to analyze the number of days during which the Fryingpan-Arkansas Project would be called out in order to satisfy a new Cameo call under Scenarios A and B. As summarized in Table 9, the anticipated days of impact range from 10 days on average in wet years to an average of 32 days in average years in Scenario A and between 2 days on average in wet years and 17 days on average in average years in Scenario B. Tables 9A and 9B show the days of impact per month over the study period. Similar to the overall trends for the number of days of new Cameo call, the days during which the Fryingpan-Arkansas Project would be called out occur primarily during the irrigation season in Scenario A while the distribution of calls throughout the year varies by year type in Scenario B.

While the number of days of increased call on the Fryingpan-Arkansas Project may be relatively large in some months and year types, the magnitude of that call varies depending upon the estimated demand shortage at Cameo. In other words, it is assumed that only the minimum amount needed to satisfy the call would be released from or bypassed at Ruedi Reservoir if it is impacted by the new Cameo call. It is important to note that some releases from Ruedi Reservoir in response to a call could occur from the Fryingpan-Arkansas Project Replacement Pool which at times may augment out-of-priority diversions at the Boustead Tunnel. Depending on conditions in a given month or year, water being released from Ruedi Reservoir may be comprised of a combination of bypasses of storable inflow and releases from the Replacement Pool.

Tables 10A and 10B show the estimated volume of impact to Ruedi Reservoir by month under Scenarios A and B, respectively. While the highest annual days of impact occurs in average years of both scenarios, as summarized in Table 9, the largest impact by volume occurs in dry years of both scenarios as shown in Tables 10A and 10B. It is anticipated that in average years under Scenario A, an additional 3,260 acre-feet per year would need to be released from the Ruedi Reservoir Replacement Pool (for out-of-priority Boustead Tunnel diversions) or bypassed at Ruedi Reservoir to avoid any out-of-priority diversions. Under Scenario B, the anticipated volume of additional required release during average years is estimated to total 890 acre-feet per year. While

between approximately 900 acre-feet and 3,300 acre-feet per year is a large amount of water, it is likely that these volumes are conservatively high estimates of the impact due to the fact that the relatively high Boustead Tunnel diversions in May, June and July increase the annual totals that would need to be released or bypassed in the very dry years in which a new call is calculated to be experienced in those months.

It is also likely that any reduction in storage in Ruedi Reservoir that results from releases from the Replacement Pool could be made up during the November through March period following the increased Cameo call period. The average volume of impact across all year types in Scenarios A and B is 2,437 acre-feet and 844 acre-feet, respectively. Under very dry winter conditions following years of large impact due to increased Cameo calls, the estimated impact to Ruedi Reservoir from increased Cameo calls could potentially prevent the reservoir from filling to its historical levels.

Anticipated Impacts on Upper Roaring Fork River

Increases in the frequency and duration of Cameo calls will also impact any junior water rights on or tributary to the Roaring Fork River above the confluence of with Fryingpan River. The Independence Pass Transmountain Diversion System ("IPTDS"), which diverts water from the headwaters of the Roaring Fork River via a tunnel through the Continental Divide to the Arkansas River Basin, is of particular interest given that it diverts approximately 40,000 acre-feet per year on average. Average diversion rates range from approximately 300 cfs in June to less than 5 cfs in the winter months. As shown in Table 7, the IPTDS has a 1934 water right (priority administration number 30941.29454) which is just junior to the Grand Valley Canal water right (the junior Cameo calling water right with priority administration number 30895.23) and junior to the more senior Cameo 1912 water right (Grand Valley Project). To the extent that the IPTDS is called out by Cameo water rights, diversions must cease and all water that was being diverted through the tunnel is bypassed to flow down the Roaring Fork to satisfy the Cameo call.

Despite the IPTDS water right being junior to the Cameo call, this analysis found that on average, when taking the groups of days of shortage into account as shown summarized in Tables 8A and 8B, it will be minimally impacted by potential new days of call because of its seniority relative to other major rights upstream on the Colorado River. This is consistent with the current call regime in which the Independence Pass Transmountain Diversion Tunnel is rarely the swing right and is not typically called out until Cameo calls under its own water rights.

Tables 8A and 8B rely on grouping of days when the average shortage would require a certain amount to be released, which is likely how the system would be administered. However, even when the shortages are summarized on a more granular level, at the number of days during which the daily Cameo shortage is less than what can be replaced by the swing rights junior to the IPTDS, the potential days of impact to the IPTDS is relatively small. As shown in Table 11A, under Scenario A, there are only 4 days per year of potential impact on average across all year types although this is largely due to an increase of over 10 days of call in October of 1988, 1990, 2001 and 2002. As stated above, this analysis evaluates days in which there was historically a Shoshone call but not a Cameo call. This was the case in the dry years of 1990, 2001 and 2002 though it is unclear why Cameo did not place a call during October of those years, particularly in 2002 which

was exceptionally dry and during which time there was likely unsatisfied demand at Cameo. As such, the days of impact shown may be conservatively high.

The increase in potential days of call for the average of dry, wet and average year types is 6, 2, and 3 days per year, respectively. Under Scenario B, the average impact over all year types is also equal to only 4 days. The average increase in dry year types is equal to 3 days per year and is equal to 7 days per year in average year types. Only 1 additional day of call impacting the IPTDS is anticipated in wet year types under Scenario B.

Tables 12A and 12B show the estimated volume of impact to the IPTDS by month under Scenarios A and B, respectively. On average across all year types, the impact is equal to only 63 acre-feet per year under Scenario A and 43 acre-feet per year under Scenario B. This represents between 0.11% and 0.16% of the approximately 40,000 acre-feet per year that the IPTDS diverts on average. Even maximum annual impacts of 566 acre-feet in 2002 of both scenarios are quite small. Periods of potential new calls on the IPTDS are modeled to occur primarily in April and October. Increases to the flow in the Roaring Fork River as a result of bypassing IPTDS diversions in response to a new call in the early and late irrigation season would likely be minimal (less than 10 cfs) because the physical supply of water at the diversion points is minimal.

6. Summary and Conclusion

This analysis evaluated potential impacts to Colorado River administration and to water rights in the Roaring Fork River basin from an increase in the Cameo call if the Shoshone call no longer “pulled” water downstream to satisfy its call as well as demands at Cameo. The River District is specifically interested in understanding the effect on water rights and administration of the Colorado River and Roaring Fork River if the Shoshone rights are not preserved. The analysis presented here is a simplified approach to evaluating potential calls utilizing daily historical call, diversion and streamflow data.

We evaluated the potential for changes to the Cameo call under two primary scenarios. Scenario A assumed the Shoshone pull is equal to the administrative flow less the CWCB ISF water right during days in the past when Shoshone called but Cameo did not. Scenario B assumes that the pull of the Shoshone water rights is equal to the difference between the administrative flow and the Shoshone water right on days that Shoshone was historically unable to place a call. Under both scenarios it was determined that there will be more days of Cameo call in the absence of a Shoshone call. In other words, in the absence of the Shoshone water rights pulling water down the river, Cameo demands are at times unsatisfied, and the assumption was made that a call would be placed on those days in order to satisfy demand. These days represent “new” calls compared to historical call conditions and indicates that in the absence of a Shoshone call, a new Cameo call may pull water down the Colorado River instead.

While the number of days of a Cameo call does increase, particularly in the shoulder months of April and October, the average increase is by between about 2 to 4 weeks total and the amount by which the Cameo demands are unsatisfied is on average not greater than approximately 200 to 400 cfs. Increases in Cameo call during the winter are generally limited because the historical physical flow at Cameo has typically been more than enough to satisfy the winter season demand of the Cameo rights. A decrease in winter Shoshone calls could result in increased diversions by upstream

reservoirs, including transmountain diverters. While this would potentially have an impact on the system, the supply physically available for diversion by those upstream junior rights in the winter is typically relatively low.

The Fryingpan-Arkansas Project (Ruedi Reservoir and Boustead Tunnel) is one of the most junior potential swing rights in the system that would be first impacted by additional new Cameo calls. The Fryingpan-Arkansas Project was determined to be administered on almost every “new” Cameo call day in both scenario runs. The average annual volume of impact to the Fry-Ark Project is estimated to equal between approximately 844 acre-feet per year and 2,437 acre-feet per year on average, depending on the modeled scenario. The Fryingpan-Arkansas Project is a split project between Front Range water users (Boustead Tunnel Diversion) and the West Slope water users who benefit from Ruedi Reservoir, thus both entities would theoretically share in the impacts to the yield of the project. The estimated “new” releases from Ruedi are not considered substantial enough to impact the filling of Ruedi Reservoir.

Similarly, increased duration and frequency of Cameo calls is likely to have a very minimal impact on water rights in the upper Roaring Fork River. For example, the IPTDS is a relatively senior transmountain water right. Under the scenarios analyzed the “new” Cameo call would almost always be satisfied by the curtailment of more junior water rights – including the Fry-Ark Project system or other major junior rights in the upper mainstem Colorado River (e.g., Blue River, Fraser River, Muddy Creek). The average volume of impact across all year types is estimated to be equal to only between 43 acre-feet per year and 63 acre-feet per year, depending on the Shoshone pull scenario.

Table 1A - October 2023 Final Draft
Days of Call at Shoshone (either priority)
values in days

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Annual
1987	Average	-	-	-	-	22	16	0	0	14	22	30	29	133
1988	Wet	30	31	31	29	31	4	0	0	0	2	30	31	219
1989	Average	30	31	31	28	9	0	0	0	14	0	25	31	199
1990	Dry	30	31	31	28	31	23	8	0	5	31	30	31	279
1991	Average	30	31	31	28	10	30	7	0	0	23	29	21	240
1992	Dry	30	31	5	0	0	12	0	0	15	0	0	11	104
1993	Wet	30	31	3	10	31	20	0	0	0	10	30	30	195
1994	Dry	26	30	0	0	0	17	0	2	31	31	30	31	198
1995	Wet	30	31	2	1	31	30	11	0	0	0	0	0	136
1996	Wet	0	21	1	0	0	0	0	0	0	0	13	27	62
1997	Wet	25	29	0	0	0	0	0	0	0	0	0	0	54
1998	Average	0	0	0	0	0	0	0	0	0	6	30	31	67
1999	Average	30	31	3	0	10	20	0	0	0	0	0	0	94
2000	Average	0	0	0	0	0	7	0	0	12	31	26	31	107
2001	Dry	30	31	31	28	31	29	0	2	31	31	30	31	305
2002	Dry	23	27	31	28	31	28	2	18	31	31	30	31	311
2003	Average	30	31	31	28	31	9	4	0	21	31	30	26	272
2004	Dry	30	31	31	29	19	0	0	0	15	21	18	18	212
2005	Dry	30	31	31	28	31	10	0	0	8	16	30	31	246
2006	Average	25	31	2	0	0	0	0	0	8	31	30	31	158
2007	Dry	30	31	19	8	0	0	0	0	0	0	0	0	88
2008	Wet	0	0	0	0	0	0	0	0	0	0	0	14	14
2009	Wet	30	31	31	28	17	0	0	0	0	15	30	22	204
2010	Dry	14	0	20	25	0	0	0	0	0	0	0	0	59
2011	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	Average	0	13	31	28	28	0	0	0	16	1	14	2	133
2014	Wet	6	31	31	28	31	6	0	0	0	19	30	0	182
2015	Wet	0	31	31	28	18	0	0	0	0	25	7	31	171
	Min	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max	30	31	31	29	31	30	11	18	31	31	30	31	311
	Avg	19	23	16	15	14	9	1	1	8	13	18	19	154
	Average of Dry Years	24	24	20	17	14	12	1	2	14	16	17	18	180
	Average of Wet Years	15	24	13	12	16	6	1	0	0	7	14	16	124
	Average of Average Years	18	21	16	14	12	9	1	0	9	16	24	22	159

Notes: Shoshone water rights days of calls from Colorado Division of Water Resources call records. Shaded months represent periods of prolonged Shoshone Power Plant outages or prolonged periods of no call.

Table 1B - October 2023 Final Draft
Days of Cameo Call
values in days

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Annual
1987	Average	-	-	-	-		0	0	0	0	2	20	22	44
1988	Wet	0	0	0	0	0	0	0	0	13	31	30	20	94
1989	Average	0	0	0	0	0	0	0	0	13	31	30	30	104
1990	Dry	0	0	0	0	0	0	0	0	2	31	30	21	84
1991	Average	0	0	0	0	0	0	0	0	0	0	12	24	36
1992	Dry	0	0	0	0	0	0	0	0	2	31	30	25	88
1993	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	Dry	0	0	0	0	0	0	0	0	17	31	29	0	77
1995	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	Wet	0	0	0	0	0	0	0	0	0	19	17	0	36
1997	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	Average	0	0	0	0	0	0	0	0	3	28	15	13	59
2001	Dry	0	0	0	0	0	2	0	0	0	4	22	15	43
2002	Dry	0	0	0	0	0	5	6	7	31	31	30	4	114
2003	Average	0	0	0	0	0	0	0	0	1	18	14	31	64
2004	Dry	3	0	0	0	0	3	0	0	5	30	28	14	83
2005	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	Dry	0	0	0	0	0	0	0	0	0	13	25	5	43
2008	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	Dry	0	0	0	0	0	0	0	0	0	0	7	0	7
2011	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	Dry	0	0	0	0	0	0	0	10	31	31	30	22	124
2013	Average	0	0	0	0	0	3	0	0	10	31	13	0	57
2014	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	Wet	0	0	0	0	0	0	0	0	0	6	11	25	42
	Min	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max	3	0	0	0	0	5	6	10	31	31	30	31	124
	Avg	0	0	0	0	0	0	0	1	4	13	14	9	41
	Average of Dry Years	0	0	0	0	0	1	1	2	9	20	23	11	66
	Average of Wet Years	0	0	0	0	0	0	0	0	1	6	6	5	17
	Average of Average Years	0	0	0	0	0	0	0	0	3	12	12	13	40

Notes: Cameo Call days from Colorado Division of Water Resources call records.

**Table 2 - October 2023 Final Draft Days of
Call at Shoshone and Not At Cameo**
values in days

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Annual
1987	Average	-	-	-	-	22	16	0	0	14	20	10	7	89
1988	Wet	30	31	31	29	31	4	0	0	0	0	0	11	167
1989	Average	30	31	31	28	9	0	0	0	10	0	0	1	140
1990	Dry	30	31	31	28	31	23	8	0	3	0	0	10	195
1991	Average	30	31	31	28	10	30	7	0	0	23	18	7	215
1992	Dry	30	31	5	0	0	12	0	0	15	0	0	6	99
1993	Wet	30	31	3	10	31	20	0	0	0	10	30	30	195
1994	Dry	26	30	0	0	0	17	0	2	14	0	1	31	121
1995	Wet	30	31	2	1	31	30	11	0	0	0	0	0	136
1996	Wet	0	21	1	0	0	0	0	0	0	0	13	27	62
1997	Wet	25	29	0	0	0	0	0	0	0	0	0	0	54
1998	Average	0	0	0	0	0	0	0	0	0	6	30	31	67
1999	Average	30	31	3	0	10	20	0	0	0	0	0	0	94
2000	Average	0	0	0	0	0	7	0	0	9	4	11	18	49
2001	Dry	30	31	31	28	31	27	0	2	31	27	8	16	262
2002	Dry	23	27	31	28	31	24	2	11	0	0	0	28	205
2003	Average	30	31	31	28	31	9	4	0	20	13	16	0	213
2004	Dry	27	31	31	29	19	0	0	0	15	1	2	18	173
2005	Dry	30	31	31	28	31	10	0	0	8	16	30	31	246
2006	Average	25	31	2	0	0	0	0	0	8	31	30	31	158
2007	Dry	30	31	19	8	0	0	0	0	0	0	0	0	88
2008	Wet	0	0	0	0	0	0	0	0	0	0	0	14	14
2009	Wet	30	31	31	28	17	0	0	0	0	15	30	22	204
2010	Dry	14	0	20	25	0	0	0	0	0	0	0	0	59
2011	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	Average	0	13	31	28	28	0	0	0	16	0	14	2	132
2014	Wet	6	31	31	28	31	6	0	0	0	19	30	0	182
2015	Wet	0	31	31	28	18	0	0	0	0	19	6	6	139
	Min	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max	30	31	31	29	31	30	11	11	31	31	30	31	262
	Avg	19	23	16	15	14	9	1	1	6	7	10	12	131
	Average of Dry Years	24	24	20	17	14	11	1	2	9	4	4	14	145
	Average of Wet Years	15	24	13	12	16	6	1	0	0	6	11	11	115
	Average of Average Years	18	21	16	14	12	9	1	0	9	11	14	11	134

Notes: Reflects days of call at Shoshone under any priority and not a call at Cameo.

**Table 3 - October 2023 Final Draft
Shoshone "Pull" Scenario Summary**
(values in cfs)

Scenario		Shoshone "Pull" Basis	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
A	<i>Based on historical days when Shoshone was calling and Cameo was not</i>	Difference between Administrative Flow and ISF Flow Rate	326	240	158	131	222	509	612	241	513	490	450	445
B	<i>Based on historical days during periods of extended Shoshone outage when Shoshone was not calling (and Cameo not calling)</i>	Difference between 1250 cfs or 1408 cfs and the average daily Administrative Flow during periods of extended Shoshone outage (not ShOP)	256	353	324	305	241	240	112	95	132	92	191	178

Notes:

Scenario A uses the CWCB ISF water right on the Colorado River from Burns to the confluence of the Colorado River and the Eagle River decreed in Case No. 11CW161, Division 5 which is 650 cfs (9/16-5/14), 900 cfs (5/15-6/15), 800 cfs (6/16-9/15).

Scenario B assumes that the "pull" would have been physically available for release in response to a Shoshone call.

Table 4 - October 2023 Final Draft
Assumed Cameo Demand
(all values in cfs)

	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Target Cameo Delivery (cfs):	800	800	800	800	800	1,850	2,260	2,260	2,260	2,260	2,260	1,910
Fish Water (cfs)	0	0	0	0	0	0	0	0	0	60	60	60
Total Cameo Target Flow (cfs):	800	800	800	800	800	1,850	2,260	2,260	2,260	2,320	2,320	1,970

Notes: Assumed Cameo demand is equal to total decreed water right in November through March and May through September. April and October demand is equal to 122% of the average historical diversions in those months. Fish water totals 5,412 AF over August through October, assumed to be released from Reudi representing half of the 10,825 AF releases pursuant to the Upper Colorado River Endangered Fish Program. Total Cameo target flow is equal to the target Cameo delivery plus fish water.

Table 5 - October 2023 Final Draft
Anticipated of Estimated Increased Days of Cameo Call by Shoshone "Pull" Scenario

Scenario		Shoshone "Pull" Basis	Average Winter (Nov-Apr) Shoshone "Pull" (cfs)	Average Irrigation Season (May-Oct) Shoshone "Pull" (cfs)	Anticipated Average Days of Increased Cameo Call Frequency (days)		
					Dry	Wet	Avg
A	<i>Based on historical days when Shoshone was calling and Cameo was not</i>	Difference between Administrative Flow and ISF Flow Rate	264	459	30	11	37
B	<i>Based on historical days during periods of extended Shoshone outage when Shoshone was not calling (and Cameo not calling)</i>	Difference between 1250 cfs or 1408 cfs and the average daily Administrative Flow during periods of extended Shoshone outage (not ShOP)	287	133	17	4	21

Table 5A - October 2023 Final Draft
Scenario A - Days of Historical Shoshone Call and No Cameo Call and Synthesized Flow at Cameo Less Than Target Flow
values in days

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Annual
1987	Average	-	-	-	-	0	1	0	0	7	16	10	7	41
1988	Wet	0	0	0	0	0	4	0	0	0	0	0	11	15
1989	Average	0	0	0	0	0	0	0	0	4	0	0	1	5
1990	Dry	0	0	0	0	0	23	8	0	3	0	0	10	44
1991	Average	0	3	0	0	0	19	7	0	0	23	18	5	75
1992	Dry	0	0	0	0	0	8	0	0	8	0	0	5	21
1993	Wet	0	0	0	0	0	0	0	0	0	1	14	5	20
1994	Dry	0	0	0	0	0	16	0	0	9	0	1	31	57
1995	Wet	0	0	0	0	0	11	0	0	0	0	0	0	11
1996	Wet	0	0	0	0	0	0	0	0	0	0	13	0	13
1997	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	Average	0	0	0	0	0	0	0	0	0	0	19	0	19
1999	Average	0	0	0	0	0	20	0	0	0	0	0	0	20
2000	Average	0	0	0	0	0	3	0	0	8	0	10	18	39
2001	Dry	0	0	0	0	0	17	0	0	14	16	8	16	71
2002	Dry	0	0	0	0	0	11	2	9	0	0	0	28	50
2003	Average	0	4	0	2	0	9	4	0	18	12	12	0	61
2004	Dry	0	0	0	0	0	0	0	0	14	1	2	13	30
2005	Dry	0	0	0	0	0	7	0	0	0	4	19	0	30
2006	Average	0	0	0	0	0	0	0	0	6	24	16	0	46
2007	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	Wet	0	0	0	0	0	0	0	0	0	0	0	1	1
2009	Wet	0	0	0	0	0	0	0	0	0	1	26	0	27
2010	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	Average	0	5	0	0	0	0	0	0	15	0	10	0	30
2014	Wet	0	0	0	0	0	0	0	0	0	1	0	0	1
2015	Wet	0	0	0	0	0	0	0	0	0	19	3	1	23
	Min	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max	0	5	0	2	0	23	8	9	18	24	26	31	75
	Avg	0	0	0	0	0	5	1	0	4	4	6	5	25
	Average of Dry Years	0	0	0	0	0	8	1	1	5	2	3	10	30
	Average of Wet Years	0	0	0	0	0	2	0	0	0	2	6	2	11
	Average of Average Years	0	2	0	0	0	6	1	0	6	8	11	3	37

Notes:

- Analysis limited to days when Shoshone was historically a calling water right structure and Cameo was not historically a calling water right structure.
- Synthesized flow calculated as physical streamflow at Colorado River at Cameo less the assumed Shoshone pull rate.
- Administrative flow data available November 1997 through October 2015. Otherwise, Administrative flow is assumed to equal historical measured flow at Dotsero.

Table 5B - October 2023 Final Draft
Scenario B - Days of Historical Shoshone Call and No Cameo Call and Synthesized Flow at Cameo Less Than Target Flow
values in days

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Annual
1987	Average	-	-	-	-	0	0	0	0	0	7	10	6	23
1988	Wet	0	0	0	0	0	2	0	0	0	0	0	11	13
1989	Average	0	0	0	0	0	0	0	0	2	0	0	1	3
1990	Dry	0	0	1	0	0	15	8	0	2	0	0	9	35
1991	Average	0	5	0	0	0	11	0	0	0	12	11	0	39
1992	Dry	0	0	0	0	0	5	0	0	0	0	0	5	10
1993	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	Dry	0	0	0	0	0	3	0	0	4	0	1	19	27
1995	Wet	0	0	0	0	0	8	0	0	0	0	0	0	8
1996	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	Average	0	0	0	0	0	0	0	0	0	0	4	0	4
1999	Average	0	0	0	0	0	8	0	0	0	0	0	0	8
2000	Average	0	0	0	0	0	0	0	0	2	0	4	2	8
2001	Dry	0	0	0	0	0	12	0	0	5	0	7	12	36
2002	Dry	0	2	1	0	0	2	1	6	0	0	0	28	40
2003	Average	0	17	13	14	0	9	0	0	4	4	10	0	71
2004	Dry	0	0	1	0	0	0	0	0	9	1	2	3	16
2005	Dry	0	2	0	0	0	5	0	0	0	0	0	0	7
2006	Average	0	0	0	0	0	0	0	0	0	0	1	0	1
2007	Dry	0	0	2	0	0	0	0	0	0	0	0	0	2
2008	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	Wet	0	0	0	0	0	0	0	0	0	0	11	0	11
2010	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	Average	0	6	12	0	1	0	0	0	8	0	3	0	30
2014	Wet	0	1	0	0	0	0	0	0	0	0	0	0	1
2015	Wet	0	0	0	0	0	0	0	0	0	6	1	0	7
	Min	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max	0	17	13	14	1	15	8	6	9	12	11	28	71
	Avg	0	1	1	1	0	3	0	0	1	1	2	3	13
	Average of Dry Years	0	0	1	0	0	4	1	1	2	0	1	8	17
	Average of Wet Years	0	0	0	0	0	1	0	0	0	1	1	1	4
	Average of Average Years	0	4	3	2	0	3	0	0	2	3	5	1	21

Notes:

- Analysis limited to days when Shoshone was historically a calling water right structure and Cameo was not historically a calling water right structure.
- Synthesized flow calculated as physical streamflow at Colorado River at Cameo less the assumed Shoshone pull rate.
- Administrative flow data available November 1997 through October 2015. Otherwise, Administrative flow is assumed to equal historical measured flow at Dotsero.

Table 6 - October 2023 Final Draft
Summary of Estimated Unsatisfied Cameo Demands by Scenario

Scenario		Shoshone "Pull" Basis	Year Type	Unsatisfied Cameo Demand (cfs)											
				Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
A	<i>Based on historical days when Shoshone was calling and Cameo was not</i>	Difference between Administrative Flow and ISF Flow Rate	Dry	-	-	-	-	-	-304	-788	-314	-346	-353	-507	-445
			Wet	-	-	-	-	-	-333	-	-	-	-114	-183	-239
			Avg	-	-77	-	-9	-	-366	-303	-	-273	-313	-299	-343
B	<i>Based on historical days during periods of extended Shoshone outage when Shoshone was not calling (and Cameo not calling)</i>	Difference between 1250 cfs or 1408 cfs and the average daily Administrative Flow during periods of extended Shoshone outage (not ShOP)	Dry	-	-36	-22	-	-	-178	-322	-266	-125	-423	-386	-227
			Wet	-	-92	-	-	-	-135	-	-	-	-126	-30	-457
			Avg	-	-139	-54	-72	-8	-388	-	-	-122	-85	-177	-198

Table 6A - October 2023 Final Draft
Scenario A- Average of Rate by Which Cameo Demand is Unsatisfied On Days in Table 5A
values in cfs

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
1987	Average	-	-	-	-		-64			-193	-353	-375	-301
1988	Wet						-281						-723
1989	Average									-265			-724
1990	Dry						-446	-1,040		-424			-412
1991	Average		-8				-395	-298			-408	-395	-154
1992	Dry						-252			-192			-474
1993	Wet										-46	-139	-84
1994	Dry						-162			-331		-723	-263
1995	Wet						-386						
1996	Wet											-139	
1997	Wet												
1998	Average											-178	
1999	Average						-235						
2000	Average						-82			-329		-339	-192
2001	Dry						-353			-344	-149	-414	-321
2002	Dry						-209	-536	-314				-1,040
2003	Average		-30		-9		-1,055	-309		-328	-365	-381	
2004	Dry									-438	-821	-775	-162
2005	Dry						-399				-89	-115	
2006	Average									-135	-126	-171	
2007	Dry												
2008	Wet												-87
2009	Wet										-20	-227	
2010	Dry												
2011	Wet												
2012	Dry												
2013	Average		-192							-387		-257	
2014	Wet										-18		
2015	Wet										-373	-224	-64
	Min	0	-8	0	-9	0	-64	-298	-314	-135	-18	-115	-64
	Max	0	-192	0	-9	0	-1,055	-1,040	-314	-438	-821	-775	-1,040
	Avg	-	-77	-	-9	-	-332	-545	-314	-306	-252	-324	-357
	Average of Dry Years	-	-	-	-	-	-304	-788	-314	-346	-353	-507	-445
	Average of Wet Years	-	-	-	-	-	-333	-	-	-	-114	-183	-239
	Average of Average Years	-	-77	-	-9	-	-366	-303	-	-273	-313	-299	-343

Notes:

- Equal to the average of the daily difference between the assumed Cameo demand the synthesized Cameo streamflow on historical days when Shoshone was calling, Cameo was not calling, and synthesized Cameo flow was less than the target demand.

Table 6B- October 2023 Final Draft
Scenario B-Average of Rate by Which Cameo Demand is Unsatisfied On Days in Table 5B
values in cfs

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
1987	Average	-	-	-	-						-82	-116	-47
1988	Wet						-47						-457
1989	Average									-80			-457
1990	Dry			-10			-320	-539		-135			-164
1991	Average		-78				-324				-102	-308	
1992	Dry						-75						-207
1993	Wet												
1994	Dry						-105			-38		-464	-74
1995	Wet						-224						
1996	Wet												
1997	Wet												
1998	Average											-15	
1999	Average						-53						
2000	Average									-32		-364	-90
2001	Dry						-148			-129		-178	-106
2002	Dry		-28	-8			-185	-106	-266				-774
2003	Average		-70	-50	-72		-787			-237	-70	-169	
2004	Dry			-31						-199	-423	-515	-35
2005	Dry		-43				-232						
2006	Average											-22	
2007	Dry			-37									
2008	Wet												
2009	Wet											-58	
2010	Dry												
2011	Wet												
2012	Dry												
2013	Average		-270	-57		-8				-141		-247	
2014	Wet		-92										
2015	Wet										-126	-1	
	Min	0	-28	-8	-72	-8	-47	-106	-266	-32	-70	-1	-35
	Max	0	-270	-57	-72	-8	-787	-539	-266	-237	-423	-515	-774
	Avg	-	-97	-32	-72	-8	-227	-322	-266	-124	-161	-205	-241
	Average of Dry Years	-	-36	-22	-	-	-178	-322	-266	-125	-423	-386	-227
	Average of Wet Years	-	-92	-	-	-	-135	-	-	-	-126	-30	-457
	Average of Average Years	-	-139	-54	-72	-8	-388	-	-	-122	-85	-177	-198

Notes:

- Equal to the average of the daily difference between the assumed Cameo demand the synthesized Cameo streamflow on historical days when Shoshone was calling, Cameo was not calling, and synthesized Cameo flow was less than the target demand.

**Table 7 - October 2023 Final Draft
Estimated Reservoir Releases or Bypasses During Historical Calls**

Minimum Releases (cfs)														
Structure	Priority Admin No.	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Ruedi Reservoir (1957)	39291	All	39	39	39	39	39	39	110	110	110	110	110	110
Williams Fork Reservoir (1935) ⁷	31359	All	15	15	15	15	15	15	15	15	15	15	15	15
Green Mountain Reservoir (1955)	38635	All	85	85	85	85	85	85	60	60	60	60	60	60
Granby Reservoir	31258	All	20	20	20	20	20	20	75	75	75	40	20	20

Expected Release or Bypass During Call (cfs)														
Structure	Priority Admin No.	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Wolford Mountain Reservoir (1987) ¹	50386	Dry	8	9	9	7	4	92	220	53	189	121	72	49
		Wet	9	6	5	5	3	115	476	282	130	124	48	30
		Average	10	6	5	4	3	113	398	126	130	81	50	16
Fry-Ark Project/Ruedi Reservoir (1957) ²	39291	Dry	16	3	0	0	12	101	492	590	84	20	20	15
		Wet	22	17	11	9	23	112	558	1,424	585	20	20	15
		Average	25	8	3	3	17	103	481	969	185	20	20	15
Homestake Project (1956) ³	38753.37520	Dry	1	0	0	1	0	4	114	154	24	3	1	2
		Wet	1	1	0	0	0	1	99	249	65	8	3	2
		Average	2	1	1	0	0	4	107	158	29	4	2	2
Green Mountain Reservoir (1955) ⁴	38635	Dry	0	0	0	0	0	0	355	615	284	431	354	138
		Wet	2	26	22	3	13	0	461	883	135	344	418	271
		Average	0	8	0	0	0	0	475	784	74	441	537	442
Con-Hoosier Tunnel (1948) ⁵	35927	Dry	0	0	0	0	0	1	21	48	11	7	0	1
		Wet	0	0	0	0	0	1	17	58	26	11	1	2
		Average	0	0	0	0	0	2	18	59	21	3	4	2
Blue River Diversion Project (1946) ⁶	35238	Dry	32	17	9	10	16	54	96	151	133	65	37	23
		Wet	23	4	19	18	21	45	70	96	102	68	66	53
		Average	7	6	8	9	19	47	77	162	197	52	27	10
Williams Fork Reservoir (1935) ⁷	31359	Dry	82	18	9	6	10	73	221	274	114	162	134	59
		Wet	34	19	14	7	15	112	415	758	177	138	101	61
		Average	40	40	37	24	12	111	386	661	86	145	100	67
Colorado-Big Thompson (1935) ⁸	31258	Dry	0	0	0	0	0	163	839	957	0	0	0	0
		Wet	0	0	0	0	0	115	980	1,692	0	0	0	0
		Average	0	0	0	0	0	122	912	1,222	0	0	0	0
Independence Pass Transmountain Diversion Tunnel (1934) ⁹	30941.29454	Dry	9	6	4	3	3	14	188	298	73	21	5	10
		Wet	11	6	4	4	3	8	172	381	137	34	14	14
		Average	10	5	4	3	3	10	153	252	87	22	13	13

Notes:

- Equal to Wolford Mountain Reservoir releases during call from July through March (source: CDSS, WDID 5003668). April through June equal to inflows measured at Muddy Creek above Antelope Creek near Kremmling gage (source: USGS 09041090).
- Equal to streamflow into Ruedi Reservoir (source: Bureau of Reclamation) plus Boustead Tunnel diversions (source: Bureau of Reclamation) less required bypass flow downstream of Ruedi Reservoir for November through July. August through October values are equal to approximate current contract releases from Ruedi Reservoir, based upon 2022 release rate data provided by the Colorado River Water Conservation District.
- Equal to diversions (inflow to Homestake Reservoir) in all months (source: CDSS WDID 3704516).
- Equal to diversion less minimum release from April through June (source: CDSS WDID 3603543) . Equal to releases during call less minimum release from July through March (source: CDSS WDID 3603543). All releases from Green Mountain Reservoir are included here, not just releases associated with 1955 fill priority. Per discussion with Victor Lee of the BOR, no bypass from Green Mountain Reservoir is required, however, the BOR typically bypasses 60 cfs during the irrigation season and 85 cfs during the non-irrigation season to satisfy the CWCB ISF water right. Those voluntary bypasses have been subtracted from total diversions.
- Equal to diversion from source I (natural streamflow) in all months (source: CDSS, WDID 3604699).
- Equal to diversion in all months (source: CDSS WDID 3604684).
- Equal to inflow measured at Williams Fork near Parshall, CO gage (USGS 090357500) less minimum release from April through June. Equal to releases during call less minimum required release in July through March.
- Equal to the sum of the diversion to Willow Creek Reservoir and Granby Reservoir, less minimum Granby Reservoir releases from April through June. CBT diversions during other times of the year and through the Adams Tunnel not used in calculation of water released to satisfy call because out-of-priority CBT diversions are replaced out of Green Mountain Reservoir.
- Equal to diversion in all months.

**Priority administration number for junior Cameo call (Grand Valley Canal) is 30895.23 (8/3/1934). The senior Cameo call (Grand Valley Project) has priority administration number 22729.21 (3/25/1912).

Table 8A - October 2023 Final Draft
Scenario A-Average of Depth of Impact of Increased Cameo Call aka Cameo Additional Pull in Absence of Shoshone
values in affected water rights (priority date) [average days of call]

Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Dry	-	-	-	-	-	Wolford (1987) [8.2], Ruedi (1957) [8.1], Homestake (1956) [5.9], Green Mtn. (1955) [5.9], Hoosier (1948) [5.9], Blue (1946) [5.9]	Wolford (1987) [1], Ruedi (1957) [1], Homestake (1956) [0.8], Green Mtn. (1955) [0.8]	Wolford (1987) [0.9], Ruedi (1957) [0.9]	Wolford (1987) [4.8], Ruedi (1957) [4.7], Homestake (1956) [4], Green Mtn. (1955) [3.9]	Wolford (1987) [2.1], Ruedi (1957) [1.8], Homestake (1956) [1.5]	Wolford (1987) [3], Ruedi (1957) [2.8], Homestake (1956) [2]	Wolford (1987) [10.3], Ruedi (1957) [10.2], Homestake (1956) [10.2], Green Mtn. (1955) [10.2], Hoosier (1948) [9.1], Blue (1946) [9.1], Williams Fork (1935) [9.1], CBT Alva (1935) [6]
Wet	-	-	-	-	-	Wolford (1987) [1.5], Ruedi (1957) [1.5], Homestake (1956) [1], Green Mtn. (1955) [1], Hoosier (1948) [1], Blue (1946) [1], Williams Fork (1935) [1]	-	-	-	Wolford (1987) [2.2], Ruedi (1957) [1.9], Homestake (1956) [1.9], Green Mtn. (1955) [1.9]	Wolford (1987) [5.6], Ruedi (1957) [5.6], Homestake (1956) [5.2], Green Mtn. (1955) [5.2]	Wolford (1987) [1.8], Ruedi (1957) [1.8], Homestake (1956) [1.8], Green Mtn. (1955) [1.8], Hoosier (1948) [1.1], Blue (1946) [1.1], Williams Fork (1935) [1.1], CBT Alva (1935) [1.1]
Average	-	Wolford (1987) [1.3], Ruedi (1957) [1.3], Homestake (1956) [1], Green Mtn. (1955) [1], Hoosier (1948) [0.8], Blue (1946) [0.8]	-	Wolford (1987) [0.2], Ruedi (1957) [0.2], Homestake (1956) [0.2], Green Mtn. (1955) [0.2], Hoosier (1948) [0.2], Blue (1946) [0.2]	-	Wolford (1987) [5.8], Ruedi (1957) [5.3], Homestake (1956) [5.3], Green Mtn. (1955) [5.3], Hoosier (1948) [5.3], Blue (1946) [5.3], Williams Fork (1935) [2.9]	Wolford (1987) [1.2]	-	Wolford (1987) [6.4], Ruedi (1957) [5.9], Homestake (1956) [3.7]	Wolford (1987) [8.3], Ruedi (1957) [8.2], Homestake (1956) [8.2], Green Mtn. (1955) [8.2]	Wolford (1987) [10.6], Ruedi (1957) [10.3], Homestake (1956) [10.3], Green Mtn. (1955) [10.3]	Wolford (1987) [3.4], Ruedi (1957) [3.4], Homestake (1956) [3.4], Green Mtn. (1955) [3.4]

**Ruedi* as used above references instances when the Fryingpan-Arkansas Project would be curtailed and bypasses or releases would occur from Ruedi Reservoir.

Table 8B - October 2023 Final Draft
Scenario B-Average of Depth of Impact of Increased Cameo Call aka Cameo Additional Pull in Absence of Shoshone
values in affected water rights (priority date) [average days of call]

Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Dry	-	Wolford (1987) [0.4], Ruedi (1957) [0.4], Homestake (1956) [0.4], Green Mtn. (1955) [0.4], Hoosier (1948) [0.4], Blue (1946) [0.4], Williams Fork (1935) [0.2]	Wolford (1987) [0.5], Ruedi (1957) [0.4], Homestake (1956) [0.4], Green Mtn. (1955) [0.4], Hoosier (1948) [0.4], Blue (1946) [0.4], Williams Fork (1935) [0.3]	-	-	Wolford (1987) [4.2], Ruedi (1957) [3.4], Homestake (1956) [2], Green Mtn. (1955) [2]	Wolford (1987) [0.9], Ruedi (1957) [0.8]	Wolford (1987) [0.6], Ruedi (1957) [0.6]	Wolford (1987) [2]	Wolford (1987) [0.1], Ruedi (1957) [0.1], Homestake (1956) [0.1], Green Mtn. (1955) [0.1]	Wolford (1987) [1], Ruedi (1957) [0.9], Homestake (1956) [0.9], Green Mtn. (1955) [0.9], Hoosier (1948) [0.3]	Wolford (1987) [7.6], Ruedi (1957) [6.6], Homestake (1956) [6.6], Green Mtn. (1955) [6.6], Hoosier (1948) [3.3], Blue (1946) [3.3]
Wet	-	Wolford (1987) [0.1], Ruedi (1957) [0.1], Homestake (1956) [0.1], Green Mtn. (1955) [0.1], Hoosier (1948) [0.1], Blue (1946) [0.1], Williams Fork (1935) [0.1], CBT Alva (1935) [0.1], Independence Pass (1934) [0.1]	-	-	-	Wolford (1987) [1], Ruedi (1957) [0.5], Homestake (1956) [0.5], Green Mtn. (1955) [0.5]	-	-	-	Wolford (1987) [0.6], Ruedi (1957) [0.4], Homestake (1956) [0.4]	Wolford (1987) [1.2], Ruedi (1957) [0.4]	Wolford (1987) [1.1], Ruedi (1957) [1.1], Homestake (1956) [1.1], Green Mtn. (1955) [1.1], Hoosier (1948) [1.1], Blue (1946) [1.1], Williams Fork (1935) [1.1], CBT Alva (1935) [1.1], Independence Pass (1934) [1.1]
Average	-	Wolford (1987) [3.1], Ruedi (1957) [3.1], Homestake (1956) [2.9], Green Mtn. (1955) [2.8], Hoosier (1948) [2.8], Blue (1946) [2.8], Williams Fork (1935) [2.8], CBT Alva (1935) [2.1], Independence Pass (1934) [2.1]	Wolford (1987) [2.8], Ruedi (1957) [2.8], Homestake (1956) [2.8], Green Mtn. (1955) [2.8], Hoosier (1948) [2.8], Blue (1946) [2.8], Williams Fork (1935) [2.8], CBT Alva (1935) [1.4], Independence Pass (1934) [1.4]	Wolford (1987) [1.6], Ruedi (1957) [1.6], Homestake (1956) [1.6], Green Mtn. (1955) [1.6], Hoosier (1948) [1.6], Blue (1946) [1.6], Williams Fork (1935) [1.6], CBT Alva (1935) [1.6], Independence Pass (1934) [1.6]	Wolford (1987) [0.1], Ruedi (1957) [0.1]	Wolford (1987) [3.1], Ruedi (1957) [2.2], Homestake (1956) [2.2], Green Mtn. (1955) [2.2], Hoosier (1948) [2.2], Blue (1946) [2.2]	-	-	Wolford (1987) [1.8], Ruedi (1957) [1.3]	Wolford (1987) [2.6], Ruedi (1957) [2.2], Homestake (1956) [1.3]	Wolford (1987) [4.8], Ruedi (1957) [4.2], Homestake (1956) [4.2], Green Mtn. (1955) [4.2]	Wolford (1987) [1], Ruedi (1957) [1], Homestake (1956) [0.8], Green Mtn. (1955) [0.8]

*"Ruedi" as used above references instances when the Fryingpan-Arkansas Project would be curtailed and bypasses or releases would occur from Ruedi Reservoir.

Table 9 - October 2023 Final Draft
Anticipated Impacts of Increased Cameo Call Frequency on Fryingspan-Arkansas Project (Boustead Tunnel & Ruedi Reservoir)

Scenario		Shoshone "Pull" Basis	Anticipated Average Days of Increased Cameo Call Frequency (days)			Anticipated Days of Impact to Fry-Ark Project (days)			Anticipated Volume of Additional Bypass/Release Required from Ruedi Reservoir on behalf of Fry-Ark Project (AF/yr)		
			Dry	Wet	Avg	Dry	Wet	Avg	Dry	Wet	Avg
A	<i>Based on historical days when Shoshone was calling and Cameo was not</i>	Difference between Administrative Flow and ISF Flow Rate	30	11	37	26	10	32	3,617	600	3,260
B	<i>Based on historical days during periods of extended Shoshone outage when Shoshone was not calling (and Cameo not calling)</i>	Difference between 1250 cfs or 1408 cfs and the average daily Administrative Flow during periods of extended Shoshone outage (not SHOP)	17	4	21	12	2	17	1,502	150	890

Table 9A - October 2023 Final Draft
Scenario A - Days of Impact To Fryingpan-Arkansas Project (Boustead Tunnel & Ruedi Reservoir)
values in days

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Annual
1987	Average	-	-	-	-	0	0	0	0	5	15	10	7	37
1988	Wet	0	0	0	0	0	4	0	0	0	0	0	11	15
1989	Average	0	0	0	0	0	0	0	0	2	0	0	1	3
1990	Dry	0	0	0	0	0	23	8	0	3	0	0	10	44
1991	Average	0	2	0	0	0	15	0	0	0	23	17	5	62
1992	Dry	0	0	0	0	0	6	0	0	4	0	0	5	15
1993	Wet	0	0	0	0	0	0	0	0	0	0	12	5	17
1994	Dry	0	0	0	0	0	10	0	0	8	0	1	30	49
1995	Wet	0	0	0	0	0	8	0	0	0	0	0	0	8
1996	Wet	0	0	0	0	0	0	0	0	0	0	12	0	12
1997	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	Average	0	0	0	0	0	0	0	0	0	0	18	0	18
1999	Average	0	0	0	0	0	19	0	0	0	0	0	0	19
2000	Average	0	0	0	0	0	0	0	0	8	0	10	18	36
2001	Dry	0	0	0	0	0	17	0	0	12	9	8	16	62
2002	Dry	0	0	0	0	0	8	2	9	0	0	0	28	47
2003	Average	0	4	0	1	0	9	0	0	15	11	12	0	52
2004	Dry	0	0	0	0	0	0	0	0	11	1	2	11	25
2005	Dry	0	0	0	0	0	7	0	0	0	1	12	0	20
2006	Average	0	0	0	0	0	0	0	0	3	18	14	0	35
2007	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	Wet	0	0	0	0	0	0	0	0	0	0	0	1	1
2009	Wet	0	0	0	0	0	0	0	0	0	0	26	0	26
2010	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	Average	0	5	0	0	0	0	0	0	14	0	10	0	29
2014	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	Wet	0	0	0	0	0	0	0	0	0	19	3	1	23
	Min	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max	0	5	0	1	0	23	8	9	15	23	26	30	62
	Avg	0	0	0	0	0	4	0	0	3	3	6	5	22
	Average of Dry Years	0	0	0	0	0	7	1	1	4	1	2	10	26
	Average of Wet Years	0	0	0	0	0	1	0	0	0	2	5	2	10
	Average of Average Years	0	1	0	0	0	5	0	0	5	7	10	3	32

Table 9B -October 2023 Final Draft
Scenario B - Days of Impact To Fryingpan-Arkansas Project (Boustead Tunnel & Ruedi Reservoir)
values in days

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Annual
1987	Average	-	-	-	-	0	0	0	0	0	2	8	5	15
1988	Wet	0	0	0	0	0	0	0	0	0	0	0	11	11
1989	Average	0	0	0	0	0	0	0	0	0	0	0	1	1
1990	Dry	0	0	0	0	0	13	7	0	0	0	0	9	29
1991	Average	0	5	0	0	0	10	0	0	0	7	11	0	33
1992	Dry	0	0	0	0	0	0	0	0	0	0	0	5	5
1993	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	Dry	0	0	0	0	0	2	0	0	0	0	1	9	12
1995	Wet	0	0	0	0	0	5	0	0	0	0	0	0	5
1996	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	Average	0	0	0	0	0	0	0	0	0	0	4	2	6
2001	Dry	0	0	0	0	0	7	0	0	0	0	5	8	20
2002	Dry	0	2	0	0	0	2	0	6	0	0	0	28	38
2003	Average	0	17	13	14	0	9	0	0	3	2	8	0	66
2004	Dry	0	0	0	0	0	0	0	0	4	1	2	0	7
2005	Dry	0	2	0	0	0	4	0	0	0	0	0	0	6
2006	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	Wet	0	0	0	0	0	0	0	0	0	0	4	0	4
2010	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	Average	0	6	12	0	1	0	0	0	4	0	3	0	26
2014	Wet	0	1	0	0	0	0	0	0	0	0	0	0	1
2015	Wet	0	0	0	0	0	0	0	0	0	3	0	0	3
Min		0	0	0	0	0	0	0	0	0	0	0	0	0
Max		0	17	13	14	1	13	7	6	4	7	11	28	66
Avg		0	1	1	1	0	2	0	0	0	1	2	3	10
Average of Dry Years		0	0	0	0	0	3	1	1	0	0	1	6	12
Average of Wet Years		0	0	0	0	0	1	0	0	0	0	0	1	2
Average of Average Years		0	4	3	2	0	2	0	0	1	1	4	1	17

Table 10A - October 2023 Final Draft
Scenario A - Estimated Volume of Impact To Fryingpan-Arkansas Project (Boustead Tunnel & Ruedi Reservoir)
values in acre-feet

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Annual
1987	Average	-	-	-	-	0	0	0	0	1,013	595	397	208	2,213
1988	Wet	0	0	0	0	0	887	0	0	0	0	0	327	1,214
1989	Average	0	0	0	0	0	0	0	0	732	0	0	30	762
1990	Dry	0	0	0	0	0	3,972	7,549	0	434	0	0	298	12,252
1991	Average	0	12	0	0	0	2,669	0	0	0	912	674	149	4,416
1992	Dry	0	0	0	0	0	1,165	0	0	512	0	0	149	1,826
1993	Wet	0	0	0	0	0	0	0	0	0	0	449	149	597
1994	Dry	0	0	0	0	0	1,611	0	0	1,275	0	40	872	3,798
1995	Wet	0	0	0	0	0	1,774	0	0	0	0	0	0	1,774
1996	Wet	0	0	0	0	0	0	0	0	0	0	476	0	476
1997	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	Average	0	0	0	0	0	0	0	0	0	0	706	0	706
1999	Average	0	0	0	0	0	3,089	0	0	0	0	0	0	3,089
2000	Average	0	0	0	0	0	0	0	0	2,659	0	397	536	3,591
2001	Dry	0	0	0	0	0	3,232	0	0	1,738	330	317	476	6,094
2002	Dry	0	0	0	0	0	1,491	1,252	4,670	0	0	0	833	8,246
2003	Average	0	60	0	5	0	1,835	0	0	4,500	436	476	0	7,313
2004	Dry	0	0	0	0	0	0	0	0	1,812	40	79	302	2,233
2005	Dry	0	0	0	0	0	1,207	0	0	0	40	470	0	1,716
2006	Average	0	0	0	0	0	0	0	0	149	675	545	0	1,370
2007	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	Wet	0	0	0	0	0	0	0	0	0	0	0	30	30
2009	Wet	0	0	0	0	0	0	0	0	0	0	1,004	0	1,004
2010	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	Average	0	81	0	0	0	0	0	0	4,392	0	363	0	4,836
2014	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	Wet	0	0	0	0	0	0	0	0	0	754	119	30	902
Min		0	0	0	0	0	0	0	0	0	0	0	0	0
Max		0	81	0	5	0	3,972	7,549	4,670	4,500	912	1,004	872	12,252
Avg		0	5	0	0	0	791	303	161	663	130	225	151	2,437
Average of Dry Years		0	0	0	0	0	1,268	880	467	577	41	91	293	3,617
Average of Wet Years		0	0	0	0	0	266	0	0	0	75	205	54	600
Average of Average Years		0	19	0	1	0	844	0	0	1,494	291	395	102	3,260

Table 10B - October 2023 Final Draft
Scenario B - Estimated Volume of Impact To Fryingspan-Arkansas Project (Boustead Tunnel & Ruedi Reservoir)
values in acre-feet

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Annual
1987	Average	-	-	-	-	0	0	0	0	0	79	314	149	542
1988	Wet	0	0	0	0	0	0	0	0	0	0	0	327	327
1989	Average	0	0	0	0	0	0	0	0	0	0	0	30	30
1990	Dry	0	0	0	0	0	2,273	5,339	0	0	0	0	260	7,871
1991	Average	0	81	0	0	0	1,703	0	0	0	201	436	0	2,422
1992	Dry	0	0	0	0	0	0	0	0	0	0	0	149	149
1993	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	Dry	0	0	0	0	0	115	0	0	0	0	40	265	420
1995	Wet	0	0	0	0	0	902	0	0	0	0	0	0	902
1996	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	Average	0	0	0	0	0	0	0	0	0	0	159	60	218
2001	Dry	0	0	0	0	0	1,061	0	0	0	0	198	238	1,498
2002	Dry	0	13	0	0	0	248	0	2,534	0	0	0	833	3,629
2003	Average	0	251	76	71	0	1,835	0	0	912	79	317	0	3,541
2004	Dry	0	0	0	0	0	0	0	0	549	40	79	0	668
2005	Dry	0	13	0	0	0	770	0	0	0	0	0	0	784
2006	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	Wet	0	0	0	0	0	0	0	0	0	0	128	0	128
2010	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	Average	0	97	70	0	11	0	0	0	612	0	119	0	909
2014	Wet	0	33	0	0	0	0	0	0	0	0	0	0	33
2015	Wet	0	0	0	0	0	0	0	0	0	114	0	0	114
Min		0	0	0	0	0	0	0	0	0	0	0	0	0
Max		0	251	76	71	11	2,273	5,339	2,534	912	201	436	833	7,871
Avg		0	17	5	3	0	307	184	87	71	18	62	80	844
Average of Dry Years		0	3	0	0	0	447	534	253	55	4	32	174	1,502
Average of Wet Years		0	3	0	0	0	90	0	0	0	11	13	33	150
Average of Average Years		0	54	18	9	1	393	0	0	169	40	150	26	890

Table 11A - October 2023 Final Draft
Scenario A - Days of Impact To Independence Pass Transmountain Diversion System
values in days

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Annual
1987	Average	-	-	-	-	0	0	0	0	0	0	0	0	0
1988	Wet	0	0	0	0	0	0	0	0	0	0	0	11	11
1989	Average	0	0	0	0	0	0	0	0	0	0	0	1	1
1990	Dry	0	0	0	0	0	1	0	0	0	0	0	10	11
1991	Average	0	0	0	0	0	7	0	0	0	0	0	0	7
1992	Dry	0	0	0	0	0	0	0	0	0	0	0	5	5
1993	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	Wet	0	0	0	0	0	6	0	0	0	0	0	0	6
1996	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	Dry	0	0	0	0	0	0	0	0	0	0	0	16	16
2002	Dry	0	0	0	0	0	0	0	0	0	0	0	28	28
2003	Average	0	0	0	0	0	9	0	0	0	0	0	0	9
2004	Dry	0	0	0	0	0	0	0	0	0	0	0	1	1
2005	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	Average	0	3	0	0	0	0	0	0	0	0	0	0	3
2014	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
	Min	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max	0	3	0	0	0	9	0	0	0	0	0	28	28
	Avg	0	0	0	0	0	1	0	0	0	0	0	2	4
	Average of Dry Years	0	0	0	0	0	0	0	0	0	0	0	6	6
	Average of Wet Years	0	0	0	0	0	1	0	0	0	0	0	1	2
	Average of Average Years	0	0	0	0	0	2	0	0	0	0	0	0	3

Table 11B - October 2023 Final Draft
Scenario B - Days of Impact To Independence Pass Transmountain Diversion System
values in days

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Annual
1987	Average	-	-	-	-	0	0	0	0	0	0	0	0	0
1988	Wet	0	0	0	0	0	0	0	0	0	0	0	11	11
1989	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	Dry	0	0	0	0	0	1	0	0	0	0	0	0	1
1991	Average	0	4	0	0	0	0	0	0	0	0	0	0	4
1992	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	Dry	0	0	0	0	0	0	0	0	0	0	0	28	28
2003	Average	0	9	6	14	0	9	0	0	0	0	0	0	38
2004	Dry	0	0	1	0	0	0	0	0	0	0	0	0	1
2005	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	Dry	0	0	2	0	0	0	0	0	0	0	0	0	2
2008	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	Average	0	6	7	0	0	0	0	0	0	0	0	0	13
2014	Wet	0	1	0	0	0	0	0	0	0	0	0	0	1
2015	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
	Min	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max	0	9	7	14	0	9	0	0	0	0	0	28	38
	Avg	0	1	1	1	0	0	0	0	0	0	0	1	4
	Average of Dry Years	0	0	0	0	0	0	0	0	0	0	0	3	3
	Average of Wet Years	0	0	0	0	0	0	0	0	0	0	0	1	1
	Average of Average Years	0	2	2	2	0	1	0	0	0	0	0	0	7

Table 12A - October 2023 Final Draft
Scenario A - Estimated Volume of Impact To Independence Pass Transmountain Diversion System
values in acre-feet

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Annual
1987	Average	-	-	-	-	0	0	0	0	0	0	0	0	0
1988	Wet	0	0	0	0	0	0	0	0	0	0	0	223	223
1989	Average	0	0	0	0	0	0	0	0	0	0	0	25	25
1990	Dry	0	0	0	0	0	28	0	0	0	0	0	182	210
1991	Average	0	0	0	0	0	83	0	0	0	0	0	0	83
1992	Dry	0	0	0	0	0	0	0	0	0	0	0	101	101
1993	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	Wet	0	0	0	0	0	111	0	0	0	0	0	0	111
1996	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	Dry	0	0	0	0	0	0	0	0	0	0	0	223	223
2002	Dry	0	0	0	0	0	0	0	0	0	0	0	566	566
2003	Average	0	0	0	0	0	187	0	0	0	0	0	0	187
2004	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	Average	0	29	0	0	0	0	0	0	0	0	0	0	29
2014	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
Min		0	0	0	0	0	0	0	0	0	0	0	0	0
Max		0	29	0	0	0	187	0	0	0	0	0	566	566
Avg		0	1	0	0	0	14	0	0	0	0	0	46	63
Average of Dry Years		0	0	0	0	0	3	0	0	0	0	0	107	110
Average of Wet Years		0	0	0	0	0	11	0	0	0	0	0	22	33
Average of Average Years		0	4	0	0	0	30	0	0	0	0	0	3	41

Table 12B - October 2023 Final Draft
Scenario B - Estimated Volume of Impact To Independence Pass Transmountain Diversion System
values in acre-feet

Water Year	Year Type	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Annual
1987	Average	-	-	-	-	0	0	0	0	0	0	0	0	0
1988	Wet	0	0	0	0	0	0	0	0	0	0	0	182	182
1989	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	Average	0	29	0	0	0	0	0	0	0	0	0	0	29
1992	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2001	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2002	Dry	0	0	0	0	0	0	0	0	0	0	0	566	566
2003	Average	0	59	28	37	0	187	0	0	0	0	0	0	310
2004	Dry	0	0	8	0	0	0	0	0	0	0	0	0	8
2005	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	Average	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	Dry	0	0	16	0	0	0	0	0	0	0	0	0	16
2008	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	Dry	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	Average	0	59	35	0	0	0	0	0	0	0	0	0	94
2014	Wet	0	12	0	0	0	0	0	0	0	0	0	0	12
2015	Wet	0	0	0	0	0	0	0	0	0	0	0	0	0
Min		0	0	0	0	0	0	0	0	0	0	0	0	0
Max		0	59	35	37	0	187	0	0	0	0	0	566	566
Avg		0	6	3	1	0	6	0	0	0	0	0	26	43
Average of Dry Years		0	0	2	0	0	0	0	0	0	0	0	57	59
Average of Wet Years		0	1	0	0	0	0	0	0	0	0	0	18	19
Average of Average Years		0	18	8	5	0	21	0	0	0	0	0	0	54

Project Abstract Summary

This Project Abstract Summary form must be submitted or the application will be considered incomplete. Ensure the Project Abstract field succinctly describes the project in plain language that the public can understand and use without the full proposal. Use 4,000 characters or less. Do not include personally identifiable, sensitive or proprietary information. Refer to Agency instructions for any additional Project Abstract field requirements. If the application is funded, your project abstract information (as submitted) will be made available to public websites and/or databases including USAspending.gov.

Funding Opportunity Number

RFA for Upper Basin B2E

CFDA(s)

15.567

Applicant Name

Colorado River Water Conservation District

Descriptive Title of Applicant's Project

Shoshone Water Rights Preservation Project

Project Abstract

For over a century, the Shoshone Hydroelectric Power Plant, located in Glenwood Canyon, Colorado, has harnessed Colorado River water to generate hydroelectric power by means of two of the largest, most senior water rights in the Upper Colorado River Basin (the "Shoshone Water Rights"). The long-standing exercise of the Shoshone Water Rights has led to the creation of a historical flow regime which extends down the Upper Colorado River's mainstem, providing vital ecosystem, habitat, recreational, agricultural, and economic benefits. When the Shoshone Water Rights are administered, nearly 380 miles of the Colorado River system from the headwaters to Lake Powell experience a benefit.

In December 2023, the Colorado River District and Public Service Company of Colorado (PSCO) finalized a historic Purchase & Sale Agreement (PSA) for the water rights tied to hydroelectric power production at the Shoshone Power Plant in Glenwood Canyon. The \$99 million agreement is a fundamental first step toward permanent protection of these water rights on the Upper Colorado River - which command critical flows both upstream and downstream of the hydroelectric plant. The Shoshone Water Rights Preservation Project seeks to ensure permanent protection of the Shoshone flows by changing the water rights to include an alternate beneficial use for instream flow purposes, which is a legally recognized beneficial use in Colorado. Permanently protecting these flows will provide water security to communities and businesses, while preserving drought resiliency flows in key ecosystem and habitats on the Colorado River.

The Colorado River Water Conservation District seeks a federal investment of \$40 million to support the acquisition of the Shoshone Water Rights, which is the culmination of more than a decade of collaboration between the Colorado River District, PSCO, and a coalition of Colorado's local governments, major water entities, and regional partners to secure the permanent protection of these water rights for the benefit of the Colorado River. The Shoshone Water Rights Preservation Project is a durable solution to ensure future generations and riverine habitats thrive in a hotter, drier future.

GO BACK TO CHECKLIST

OMB Number: 4040-0004
Expiration Date: 11/30/2025

Application for Federal Assistance SF-424		
* 1. Type of Submission: <input type="checkbox"/> Preapplication <input checked="" type="checkbox"/> Application <input type="checkbox"/> Changed/Corrected Application	* 2. Type of Application: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision	* If Revision, select appropriate letter(s): <input type="text"/> * Other (Specify): <input type="text"/>
* 3. Date Received: <input type="text" value="11/14/2024"/>	4. Applicant Identifier: <input type="text" value="N/A"/>	
5a. Federal Entity Identifier: <input type="text" value="N/A"/>	5b. Federal Award Identifier: <input type="text"/>	
State Use Only:		
6. Date Received by State: <input type="text"/>	7. State Application Identifier: <input type="text"/>	
8. APPLICANT INFORMATION:		
* a. Legal Name: <input type="text" value="Colorado River Water Conservation District"/>		
* b. Employer/Taxpayer Identification Number (EIN/TIN): <input type="text" value="846000156"/>	* c. UEI: <input type="text" value="JXCRNNKCHPE5"/>	
d. Address:		
* Street1: <input type="text" value="201 Centennial St, Suite 200"/>	Street2: <input type="text"/>	
* City: <input type="text" value="Glenwood Springs"/>	County/Parish: <input type="text" value="Garfield"/>	
* State: <input type="text" value="CO: Colorado"/>	Province: <input type="text"/>	
* Country: <input type="text" value="USA: UNITED STATES"/>	* Zip / Postal Code: <input type="text" value="81601-2868"/>	
e. Organizational Unit:		
Department Name: <input type="text"/>	Division Name: <input type="text"/>	
f. Name and contact information of person to be contacted on matters involving this application:		
Prefix: <input type="text"/>	* First Name: <input type="text" value="Amy"/>	
Middle Name: <input type="text"/>	* Last Name: <input type="text" value="Moyer"/>	
Suffix: <input type="text"/>	Title: <input type="text" value="Director of Strategic Partnerships"/>	
Organizational Affiliation: <input type="text" value="Colorado River Water Conservation District"/>		
* Telephone Number: <input type="text" value="970-930-4186"/>	Fax Number: <input type="text"/>	
* Email: <input type="text" value="amoyer@crwcd.org"/>		

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

D: Special District Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Department of the Interior, Bureau of Reclamation

11. Catalog of Federal Domestic Assistance Number:

15.567

CFDA Title:

Colorado River System Conservation Pilot

*** 12. Funding Opportunity Number:**

15.567

* Title:

RFA for Upper Basin Environmental Drought Mitigation (B2E)

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Question 14, see page 631

Add Attachment

Delete Attachment

View Attachment

*** 15. Descriptive Title of Applicant's Project:**

Shoshone Water Rights Preservation Project

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant

* b. Program/Project

Attach an additional list of Program/Project Congressional Districts if needed.

17. Proposed Project:

* a. Start Date:

* b. End Date:

18. Estimated Funding (\$):

* a. Federal	<input type="text" value="40,000,000.00"/>
* b. Applicant	<input type="text" value="20,000,000.00"/>
* c. State	<input type="text" value="20,000,000.00"/>
* d. Local	<input type="text" value="19,000,000.00"/>
* e. Other	<input type="text" value="0.00"/>
* f. Program Income	<input type="text" value="0.00"/>
* g. TOTAL	<input type="text" value="99,000,000.00"/>

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

a. This application was made available to the State under the Executive Order 12372 Process for review on

b. Program is subject to E.O. 12372 but has not been selected by the State for review.

c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

Yes No

If "Yes", provide explanation and attach

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 18, Section 1001)**

** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: * First Name:

Middle Name:

* Last Name:

Suffix:

* Title:

* Telephone Number: Fax Number:

* Email:

* Signature of Authorized Representative: 

* Date Signed:

Upper Basin Environmental Drought Mitigation, Bucket 2 Ecosystem (“B2E”) Financial Assistance Program

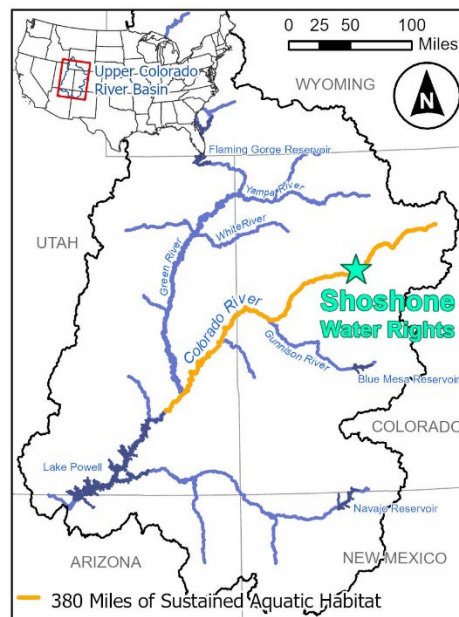
Shoshone Water Rights Protection Project

Application for Federal Assistance SF-424

Question 14. Areas Affected by Project (Cities, Counties, States, etc.):

When the Shoshone Water Rights are being exercised, nearly 380 miles of the Colorado River mainstem from the headwaters in Grand County to Lake Powell experience a benefit, particularly during critical low periods when flows are needed to preserve aquatic habitat. Additionally, the Shoshone Water Rights Preservation Coalition, which has raised \$56 million in formal commitments towards the project, encompasses the most populous regions on Colorado’s West Slope with diverse interests across the environmental, recreational, municipal, and agricultural sectors. While the benefits primarily support five counties on Colorado’s Western Slope (Grand, Summit, Eagle, Garfield, and Mesa), the geographic distribution of benefits from the Project are numerous and far-reaching throughout the Colorado River Basin. Appendix 2 contains letters and statements of support from 19 counties and 8 municipalities across the State of Colorado along with Governor Polis, six members of the Colorado Congressional Delegation, and 16 members of Colorado’s General Assembly.¹

Figure 1: Areas Affected by the Project



¹ Counties include Archuleta, Delta, Dolores, Eagle, Garfield, Grand, Gunnison, Hinsdale, La Plata, Mesa, Moffat, Montezuma, Montrose, Ouray, Rio Blanco, Routt, San Juan, San Miguel and Summit. Municipalities include the Town of Basalt, Town of Breckenridge, City of Glenwood Springs, City of Grand Junction, Town of New Castle, Town of Silt, Town of Silverthorne, and the City of Rifle.

Upper Basin Environmental Drought Mitigation, Bucket 2 Ecosystem (“B2E”) Financial Assistance Program

Shoshone Water Rights Protection Project

Application for Federal Assistance SF-424

Question 16. Congressional Districts of Program/Project

When the Shoshone Water Rights are being exercised, nearly 380 miles of the Colorado River mainstem from the headwaters in Grand County to Lake Powell experience a benefit, particularly during critical low periods when flows are needed to preserve aquatic habitat. While the Shoshone Water Rights Protection Project is primarily located within the **2nd and 3rd Congressional Districts**, the geographic distribution of benefits from the Project are numerous and far-reaching throughout the State of Colorado and Colorado River Basin.

Preservation of the Shoshone water rights supports the recovery of Colorado’s four threatened and endangered fish species, especially in dry years. All Colorado River water users in the State of Colorado, whether located on the eastern or western side of the Continental Divide, rely upon continued Endangered Species Act compliance for streamlined permitting processes for over 1,250 water projects located in Colorado since 1988. **Therefore, the benefits of the Shoshone Water Rights also extends to Colorado’s additional Congressional Districts – namely the 1st, 4th, 5th, 6th, 7th and 8th Congressional Districts** that also include communities that rely on the Colorado River for municipal, industrial, and agricultural water.

Figure 1: Map of Direct Benefits of Shoshone Water Rights

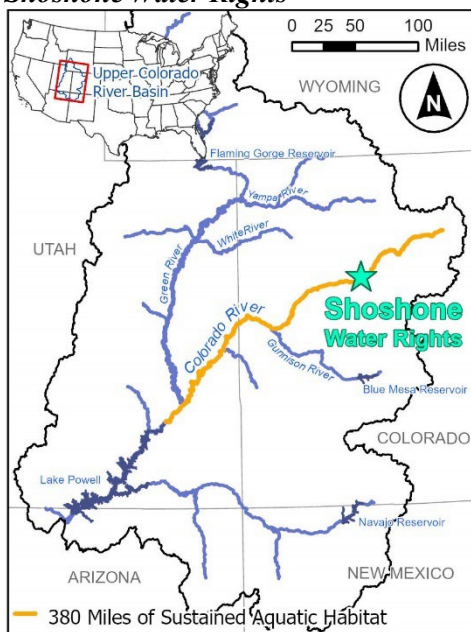
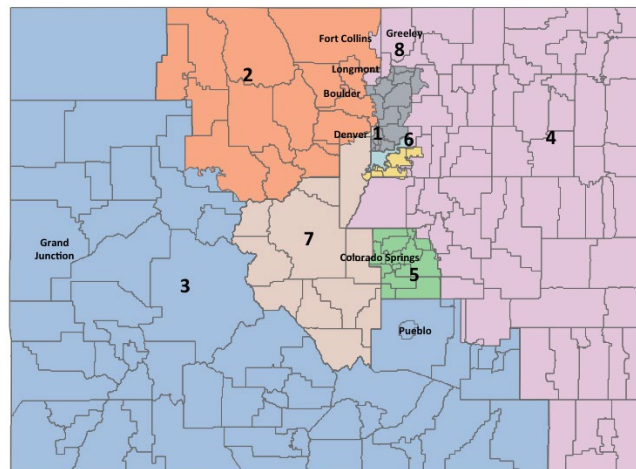


Figure 2: Colorado Congressional Districts



GO BACK TO CHECKLIST

BUDGET INFORMATION - Non-Construction Programs

OMB Number: 4040-0006
Expiration Date: 02/28/2025

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Shoshone Water Rights Acquisition		\$ 40,000,000.00	\$ 59,000,000.00	\$	\$	\$ 99,000,000.00
2.						
3.						
4.						
5. Totals		\$ 40,000,000.00	\$ 59,000,000.00	\$	\$	\$ 99,000,000.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1)	(2)	(3)	(4)	
	Shoshone Water Rights Acquisition				
a. Personnel	\$	\$	\$	\$	\$
b. Fringe Benefits					
c. Travel					
d. Equipment					
e. Supplies					
f. Contractual	99,000,000.00				99,000,000.00
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)	99,000,000.00				\$ 99,000,000.00
j. Indirect Charges					\$
k. TOTALS (sum of 6i and 6j)	\$ 99,000,000.00	\$	\$	\$	\$ 99,000,000.00
7. Program Income	\$ 0.00	\$	\$	\$	\$ 0.00

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SECTION C - NON-FEDERAL RESOURCES

(a) Grant Program		(b) Applicant	(c) State	(d) Other Sources	(e)TOTALS
8.	Shoshone Water Rights Acquisition	\$ 20,000,000.00	\$ 20,000,000.00	\$ 19,000,000.00	\$ 59,000,000.00
9.					
10.					
11.					
12. TOTAL (sum of lines 8-11)		\$ 20,000,000.00	\$ 20,000,000.00	\$ 19,000,000.00	\$ 59,000,000.00

SECTION D - FORECASTED CASH NEEDS

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
14. Non-Federal	\$				
15. TOTAL (sum of lines 13 and 14)	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

(a) Grant Program		FUTURE FUNDING PERIODS (YEARS)			
		(b)First	(c) Second	(d) Third	(e) Fourth
16.	Shoshone Water Rights Acquisition	\$ 0.00	\$ 0.00	\$ 40,000,000.00	\$
17.					
18.					
19.					
20. TOTAL (sum of lines 16 - 19)		\$ 0.00	\$ 0.00	\$ 40,000,000.00	\$

SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges: \$40,000,000.00	22. Indirect Charges: 0
-------------------------------------	-------------------------

23. Remarks: This budget does not reflect a significant amount of cash and in-kind support dedicated by the Colorado River District and local partners to execute the Purchase and Sale Agreement and conduct numerous modeling and other technical efforts.

GO BACK TO CHECKLIST

OMB Number: 4040-0007
Expiration Date: 02/28/2025

ASSURANCES - NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

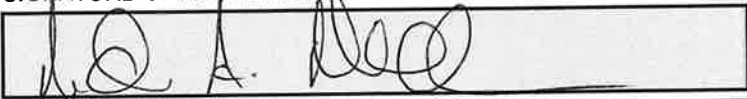
PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee- 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.
10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.
19. Will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 U.S.C. 7104) which prohibits grant award recipients or a sub-recipient from (1) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect (2) Procuring a commercial sex act during the period of time that the award is in effect or (3) Using forced labor in the performance of the award or subawards under the award.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL 	TITLE General Manager
APPLICANT ORGANIZATION Colorado River Water Conservation District	DATE SUBMITTED 11/11/24

Upper Basin Environmental Drought Mitigation, Bucket 2 Ecosystem (“B2E”) Financial Assistance Program

Shoshone Water Rights Protection Project

Budget Proposal and Narrative

On December 19, 2023, Public Service Company of Colorado (PSCo) and the Colorado River District signed a Purchase & Sale Agreement (PSA) to transfer ownership of the historic Shoshone Water Rights to the Colorado River District. As defined in the PSA, the Shoshone Water Rights to be acquired by the Colorado River District include both the senior Shoshone Power Plant water right in the amount of 1,250 cfs with an appropriation date of January 7, 1902, and the junior Shoshone Power Plant water right in the amount of 158 cfs with an appropriation date of May 15, 1929. The PSA defines the purchase price for the Shoshone water rights as \$98,500,000, with an additional \$500,000 payment for PSCo’s transaction costs for a total deal cost of \$99,000,000 (*see* Technical Proposal, Appendix 4). The Colorado River District anticipates executing the payment of the purchase price in calendar year 2026 or 2027 ahead of the current closing date by December 31, 2027.

All budget costs comply with the cost principles of 2 CFR Part 200 and are allowable, allocable, and reasonable.

Table 1: Budget Proposal

Object Class Category	Total
Contractual	\$99,000,000.00
TOTAL	\$99,000,000.00

The budgeted costs for the Shoshone Water Rights Protection Project are solely classified as contractual based on the purchase price and transaction costs defined within PSA (*see* Appendix 4, page 1-2). PSCo and the Colorado River District negotiated the purchase price, which was substantiated by outside appraisals completed between 2016-2023 indicating a value of the water rights at \$99 million. The budgeted costs do not include a significant amount of cash and in-kind support dedicated by the Colorado River District and local partners to execute the PSA and complete the numerous technical reports and studies included to support the funding application and verify the public benefits of the Project.

The purchase price has been further justified by an independent economic analysis reviewing the monetary values to the federal government. The annual benefits of the exercise of the Shoshone Water Rights range from \$15-17 million, depending on current vs future demands. During dry years, these benefits increase in range to between \$21 and \$23 million per year. Further, the present value ranges from \$534 -\$548 million under current conditions growing to \$593-\$609 million with anticipated future growth in water demands. These figures are further explained in Section 2.7 of the Technical Proposal and included as Appendix 9.

The current funding strategy includes a broad coalition of local, state, and federal interest with a shared goal of bolstering drought resilience, preserving ecosystems, and sustaining the economic

and recreational vitality of the Colorado River. Table 2 on the following page includes the proposed budget of federal and non-federal contributions.

Table 2: Proposed Federal and Non-Federal Contributions

Funding Partner	Funding Amount
Federal	
Bureau of Reclamation (Requested Funding)	\$40 Million
Non-Federal	
Colorado River Water Conservation District (applicant) ¹	\$20 Million
State of Colorado ²	\$20 Million
Local Partners ³	\$19 Million
Total Project Cost	\$99 Million

1. In December 2023, the Colorado River Water Conservation District Board of Directors formally committed \$20 million.
2. HB24-1435, signed into law May 29, 2024, appropriated \$20 million.
3. As of the date of this application, 26 water entities, local governments, and regional partners have formally committed \$16 million and the River District anticipates securing the additional commitments soon.

The Technical Proposal, Appendix 3 includes evidence to demonstrate the current financial commitments from non-federal parties such as letters of commitments, resolutions, meetings minutes, and other documentation. Table 3 below summarizes current state and local funding commitments. The Colorado River District is continuing efforts to secure local funding with ongoing conversations from additional local and regional partners.

Table 3: Local Funding Commitments (as of November 11, 2024)

Colorado River District	\$20 million
State of Colorado	\$20 million
Garfield County	\$3 million
Eagle County	\$2 million
City of Glenwood Springs	\$2 million
Ute Water Conservancy District	\$2 million
Eagle River Water and Sanitation District and Upper Eagle Regional Water Authority	\$1 million
Grand County	\$1 million
City of Grand Junction	\$1 million
Mesa County	\$1 million
Summit County	\$1 million
Colorado Mesa University	\$500,000
Clifton Water District	\$250,000

Grand Valley Irrigation Company	\$250,000
Basalt Water Conservancy District	\$100,000
Grand Valley Power	\$100,000
Grand Valley Water Users Association	\$100,000
Middle Park Water Conservancy District	\$100,000
Orchard Mesa Irrigation District	\$100,000
City of Rifle	\$100,000
Snowmass Water & Sanitation District	\$100,000
Town of Silverthorne	\$100,000
Mesa County Irrigation District	\$50,000
Palisade Irrigation District	\$50,000
West Divide Water Conservancy District	\$50,000
Kobe Water Authority	\$25,000
Town of Parachute	\$25,000
Total:	\$56.0 million

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Upper Basin Environmental Drought Mitigation, Bucket 2 Ecosystem (“B2E”) Financial Assistance Program

Shoshone Water Rights Protection Project

Conflict of Interest Disclosure Statement (2 CFR § 1402.112)

At the time of submission, the Colorado River District has no actual or potential conflicts of interest related to the Project. The River District will continue to take all appropriate steps necessary to avoid conflicts of interest with respect to its responsibilities concerning Federal financial assistance agreements and in the procurement of supplies, equipment, construction, and services in accordance with 2 CFR § 200.318.

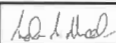
The Colorado River District will monitor the areas of risk for conflict of interest procurement of supplies, equipment, construction, and services) and identify, disclose, and mitigate or eliminate any conflict of interest that may arise. The River District will notify Reclamation in writing if any conflict of interest arises. The River District understands and agrees that no federal grant funds will be utilized for lobbying activities in accordance with 2 CFR § 1402.112.

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DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

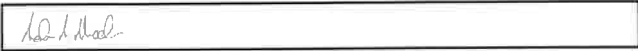
OMB Number: 4040-0013
Expiration Date: 02/28/2025

1. * Type of Federal Action: <input type="checkbox"/> a. contract <input checked="" type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. * Status of Federal Action: <input checked="" type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. * Report Type: <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
4. Name and Address of Reporting Entity: <input checked="" type="checkbox"/> Prime <input type="checkbox"/> SubAwardee * Name: Colorado River Water Conservation District * Street 1: 201 Centennial St. Street 2: Suite 201 * City: Glenwood Springs State: CO: Colorado Zip: 81602 Congressional District, if known: _____		
5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime: 		
6. * Federal Department/Agency: U.S. Department of the Interior	7. * Federal Program Name/Description: Upper Basin Environmental Drought Mitigation (B2E) CFDA Number, if applicable: _____	
8. Federal Action Number, if known: 	9. Award Amount, if known: \$ _____	
10. a. Name and Address of Lobbying Registrant: Prefix: Mr. * First Name: John Middle Name: _____ * Last Name: Bezdek Suffix: _____ * Street 1: 512 C Street NE Street 2: Suite 6 * City: Washington State: DC: District of Columbia Zip: 20002		
b. Individual Performing Services (including address if different from No. 10a) Prefix: Mr. * First Name: John Middle Name: _____ * Last Name: Bezdek Suffix: _____ * Street 1: 512 C Street NE Street 2: Suite 6 * City: Washington State: DC: District of Columbia Zip: 20002		
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure. * Signature:  * Name: Prefix: Mr. * First Name: Andrew Middle Name: A * Last Name: Mueller Suffix: _____ Title: General Manager Telephone No.: 970.945.8522 Date: 11/11/2024		
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DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

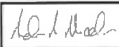
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4. Name and Address of Reporting Entity: <input checked="" type="checkbox"/> Prime <input type="checkbox"/> SubAwardee * Name: Colorado River Water Conservation District * Street 1: 201 Centennial St. Street 2: Suite 201 * City: Glenwood Springs State: CO: Coloradc Zip: 81602 Congressional District, if known: CD 2&3		
5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:		
6. * Federal Department/Agency: U.S. Department of the Interior	7. * Federal Program Name/Description: Upper Basin Environmental Drought Mitigation (B2E) CFDA Number, if applicable:	
8. Federal Action Number, if known:	9. Award Amount, if known: \$	
10. a. Name and Address of Lobbying Registrant: Prefix: Mr. * First Name: Mark Middle Name: * Last Name: Limbaugh Suffix: * Street 1: 1901 Pennsylvania Avenue NW Street 2: Suite 700 * City: Washington State: DC: District of Columbia Zip: 20006		
b. Individual Performing Services (including address if different from No. 10a) Prefix: Mr. * First Name: Mark Middle Name: * Last Name: Limbaugh Suffix: * Street 1: 512 C Street NE Street 2: Suite 700 * City: Washington State: DC: District of Columbia Zip: 20006		
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.		
* Signature: 		
* Name: Prefix: Mr. * First Name: Andrew Middle Name: A * Last Name: Mueller Suffix:		
Title: General Manager	Telephone No.: 970.945.8522	Date: 11/11/2024
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DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

OMB Number: 4040-0013
Expiration Date: 02/28/2025

1. * Type of Federal Action: <input type="checkbox"/> a. contract <input checked="" type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. * Status of Federal Action: <input checked="" type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. * Report Type: <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
4. Name and Address of Reporting Entity: <input checked="" type="checkbox"/> Prime <input type="checkbox"/> SubAwardee * Name Colorado River Water Conservation District * Street 1 201 Centennial St. Street 2 Suite 201 * City Glenwood Springs State CO: Coloradc Zip 81602 Congressional District, if known: CD 2&3		
5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:		
6. * Federal Department/Agency: U.S. Department of the Interior	7. * Federal Program Name/Description: Upper Basin Environmental Drought Mitigation (B2E) CFDA Number, if applicable:	
8. Federal Action Number, if known:	9. Award Amount, if known: \$	
10. a. Name and Address of Lobbying Registrant: Prefix Mr. * First Name Lane Middle Name * Last Name Dickson Suffix * Street 1 1901 Pennsylvania Avenue NW Street 2 Suite 700 * City Washington State DC: District of Columbia Zip 20006		
b. Individual Performing Services (including address if different from No. 10a) Prefix Mr. * First Name Lane Middle Name * Last Name Dickson Suffix * Street 1 512 C Street NE Street 2 Suite 700 * City Washington State DC: District of Columbia Zip 20006		
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure. * Signature:  * Name: Prefix Mr. * First Name Andrew Middle Name A * Last Name Mueller Suffix Title: General Manager Telephone No.: 970.945.8522 Date: 11/11/2024		
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