Written Testimony of Taylor E. C. Hawes
Colorado River Program Director, The Nature Conservancy
Before the
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Hearing on the Colorado River Drought Conditions and Response Measures

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Thank you, Chairman Huffman, Ranking Member Bentz, and members of the Subcommittee for inviting me to testify. I am honored to speak with the subcommittee to explore collaborative solutions for the Colorado River.

My name is Taylor Hawes, and I am the Colorado River Program Director for The Nature Conservancy ("the Conservancy" or "TNC"). I have worked on Colorado River issues for almost 25 years in a variety of roles, including working as a water attorney for the Colorado River Water Conservation District, a regional water agency, and Northwest Colorado Council of Governments, a coalition of local governments. The Conservancy is a global environmental nonprofit working to create a world where both people and nature can thrive. We work in all 50 U.S. states and more than 70 countries across six continents. Our Colorado River work spans all seven Basin states and into Mexico.

I. URGENCY IN THE COLORADO RIVER BASIN

The Colorado River is at a crossroad. For the last two decades, we have witnessed the Basin's major reservoirs trending downward even as consumptive uses declined. The Basin states and stakeholders engaged in the management of the River have tried to stabilize the system. Agreements such as the 2007 Interim Guidelines[1], Minutes 319[2] and 323[3], and the 2019 Drought Contingency Plan[4] did slow the decline, but as we are seeing now, those agreements are inadequate relative to the impacts and changes we are experiencing in the Basin. The change in hydrology is outpacing the change in management.

We have an opportunity to be a model of sustainability. It will not be easy, and it will require a Basin-wide ethic of conservation. It will require trade-offs and it will be expensive, but it is necessary, as the stakes are high for 40 million people, agriculture, 30 federally recognized tribal nations, industry, and nature.

The Conservancy believes the future of people and nature are inextricably intertwined. My testimony focuses on opportunities that benefit both people and nature. Having worked in this Basin for almost two and a half decades, I am optimistic we can expand and accelerate our work

[1] https://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf
[2] https://www.ibwc.gov/Files/Minutes/Min319_Env_Fact_Sheet.pdf
[3] https://www.usbr.gov/lc/region/g4000/4200Rpts/DecreeRpt/2018/43.pdf
[4] https://www.usbr.gov/dcp/

across sectors and borders to choose a future that is one of sustainability and collaboration, not conflict.

A. Impacts of Climate Change-Driven Drought

The story of climate change is being written in water - too much or too little water or at the wrong time or place. We are currently witnessing the uptick of climate disasters, such as deadly flooding in the East and devastating drought and catastrophic wildfires in the West. While droughts are part of the West's normal cycle, climate change has intensified the impacts experienced in every corner of the Colorado River Basin. After two decades of intensifying drought, we must all recognize and prepare for the reality that this is likely the Basin's new "normal."

The average annual flows in the Colorado River have declined by 20% since 2000. More than half of that decline has been attributed to warming temperatures. Scientists predict that this trend will continue, as we expect to lose an additional 3-5% of annual flows with every degree of temperature increase. We are also becoming more aware of the role soil moisture plays in our water supply. For example, this year, we received about 90% of normal snowpack but less than 35% of normal runoff reached our rivers and major reservoirs due to dry soils soaking up the snowmelt. This scenario is becoming more common, which is the reason we are promoting investment in resilience strategies.

The recent headlines related to the Colorado River have focused on record-setting temperatures, declining reservoir storage, impacts to agriculture where ranchers are left with few options as streams run dry in the headwaters, declining hydropower generation at Lake Powell, and cities and farms in Nevada and Arizona facing the first ever Tier 1 shortages from Lake Mead. What you might not hear about as much are the impacts to our rivers, and the wildlife and tourism that depend on them.

Declining flows severely impact the health of the Colorado River and its tributaries, because there are often no alternatives to mitigate effects. Fish and wildlife cannot survive without water. Yet, this summer in Colorado, the Dolores River ran completely dry, resulting in significant fish kills. The Yampa River was closed to fishing and recreation for more than three months due to low flows and high temperatures. Both of these rivers provide important habitat to endangered and sensitive fish species. Many states in the Basin broke records this summer for low precipitation and temperatures, which impact wildlife and fish particularly hard. Low water levels can accelerate the spread of invasive non-native species and have reduced critical habitat for endemic and endangered fish species within the Grand Canyon and for migratory birds along the Pacific flyway[5]. Moreover, opportunities to reconnect the Colorado River to its natural Delta are further complicated as claims to limited water supplies increase.

B. Urgency and A Call for Action

If we hope to sustain the Colorado River Basin going forward, we must recognize that we no longer have the luxury of time. The longer we wait, the fewer options we will have to adapt to this new reality. We must develop and utilize a suite of tools that fit the varying needs of the

[5] https://www.pressreader.com/usa/yuma-sun/20210816/281492164388290

Basin to build resilience, or we risk increasingly difficult challenges for our communities, our agricultural producers, the $1.4 trillion economy of the region, and the iconic landscapes of the West.

This urgent need for action is coupled with the equally important need to work together. What happens in the Upper Basin impacts the Lower Basin and vice versa. Our agricultural, tribal, recreational and urban economies are intertwined. We all benefit from a healthy river system and a resilient watershed. We must not sacrifice one sector or interest for the sake of the others and no interest group, sector, region or state can solve this alone. We are fundamentally tied together by the very nature of this river system. The federal government, acting through its agencies and Congress, has a vital role in fostering collaboration, funding multi-benefit solutions and ensuring transparent and inclusive decision-making processes.

C. HOPE FOR THE COLORADO RIVER BASIN

Despite the dire situation, there is also hope for the Colorado River Basin. This Basin has a track record of developing collaborative solutions. Our greatest success stories resulted from collaborations of "unusual bedfellows", such as collaboration between agricultural and conservation interests. These successes include effective Recovery Programs for endangered fish, multiple agreements between Mexico and the United States that provide for shortage sharing caused by climate change driven drought while also providing water for the environment in the Colorado River Delta, pilot programs to explore the utility of system conservation activities, and the 2019 Drought Contingency Plan that included measures to slow the reservoir system's decline between 2019 and 2026. The federal government played an important role in all of these successes whether through funding, diplomacy, science or just "getting everyone in a room to work it out". Most of these examples had the potential to be extremely controversial but instead resulted in better solutions through collaboration and inclusion. More is needed and there is increasing urgency to accelerate these and other types of efforts to prepare for our new reality.

II. NEEDED ACTIONS FOR THE BASIN AND THE FEDERAL ROLE

In addition to work at the local, state and regional level, there are actions the federal government can take to facilitate adaptation in the region. In addition to serving as a convener, Congress and federal agencies can (1) allocate needed funding to programs and activities that support reducing water use and promote water resilience and adaptation in the Colorado River Basin; (2) work with stakeholders to improve and expand legislation and policies to support resilience and adaptation; and (3) support efficient and effective implementation of new policies and funding to ensure mitigation and adaptation measures are put into place as quickly as possible.

Congress is considering major initiatives to address the root causes of climate change, build a clean energy future, enhance community resilience, utilize our natural infrastructure, and improve forest health. Federal investments in the Infrastructure Investment and Jobs Act (IIJA) and Build Back Better Act are the best chance we have to respond at the scale needed to address climate change and move the country toward a more resilient, prosperous future. They also include investments responding directly to the crisis we are experiencing in the Colorado River Basin. TNC urges Congress to support these pieces of legislation.

The IIJA and Build Back Better Act include billions of dollars to help the West manage the current drought crisis while investing in long-term water supply solutions to help us prepare for droughts in the future and conserve healthy rivers and the fish and wildlife that depend on them. Specifically, the legislation supports needed upgrades to existing water infrastructure, new surface and groundwater storage projects, water recycling, reuse, and desalination, water conservation, ecosystem restoration, tribal water rights settlements and water supply needs, science and data monitoring to support decision making, and emergency drought response. In particular, I want to commend Congress for its attention to nature-based solutions throughout the legislation. Nature-based solutions provide multiple benefits across water use sectors, including for the environment.

A. Support Tools and Programs to Reduce Water Demands

We cannot ignore the reality that there will be less water in the Colorado River than in the past. Unfortunately, this means we must reduce our water use throughout Basin. This will not be easy, and it will include difficult conversations about how we make reductions. There are, however, water sectors and stakeholders who are actively exploring ways to reduce water use.

Support Municipal Water Conservation and Re-use

Many cities in the Basin are leaders in implementing conservation and re-use programs. Investments in the IIJA and Build Back Better Act —both in traditional water recycling and reuse (such as the Bureau of Reclamation's Title XVI program) and new large-scale water recycling—are prime examples of innovative and forward-looking solutions to municipal water supply challenges that will support locally led efforts. However, more can be done in cities and towns that might not have the resources to reduce their water use or to develop and implement meaningful conservation programs. The WaterNOW Alliance, for example, has provided Reclamation with a set of detailed recommendations for making its WaterSMART Water and Energy Efficiency Grant (WEEG) program easier to access for small and mid-sized towns and cities. We support these recommendations to facilitate access to WaterSMART funds.

Support Agricultural Producers

More than 70% of water supplies in the Basin are used for agriculture. Along with providing an important food supply, agriculture is an essential part of the West's economy and culture. While cities may have more resources to implement conservation programs, farmers and ranchers often lack the resources to try new conservation measures. The federal government can support agricultural producers in finding ways to reduce water use and adapt to our new reality in a way that supports agricultural production and the long-term viability of the West's agricultural economy. Agriculture is not uniform in the Basin, and we will need financial resources and technical support to create locally adapted solutions as different opportunities will be available in different parts of the Basin. The U.S. Department of Agriculture (USDA) has done a good job increasing the flow of funds to the Basin; however, we strongly encourage increased coordination between Reclamation and USDA to ensure funds are spent efficiently and at the appropriate scales. For example, coordination between the two agencies can help individual producers and entire irrigation districts at the same time.

In the Lower Basin, where there are large irrigation districts and longer growing seasons, programs could be created to reduce summer water use when crops use the greatest amounts of

water. Supporting "system conservation" programs with willing producers can help stabilize the system in the short term. In the Upper Basin, we can invest in modernizing infrastructure, improving measurement of water use and continuing to explore ways to reduce water use, such as split-season fallowing and reducing irrigation on less productive lands.

Across the Basin, we can do a better job of focusing federal investments on building long-term resilience. Over WaterSMART's 12 years, for example, among irrigation modernization projects within the Colorado River basin, over half of the water "conserved" (58.7%) and of the project dollars awarded (58.4%), went to projects that actually increased consumptive water use. Changes could be made to Reclamation's Drought Response Program under the WaterSMART umbrella to better encourage real reductions in water use. The criteria for selecting projects to fund under the Drought Response Program could be changed to prioritize those projects that will reduce water consumption on irrigated lands. Prioritizing support for voluntary, innovative demonstration projects of split-season fallowing, rotational fallowing, conversion of marginal lands to wildlife habitat, and changes to less water-intensive crops are all examples of ways to incorporate a reduction in water consumption while supporting irrigated agriculture.

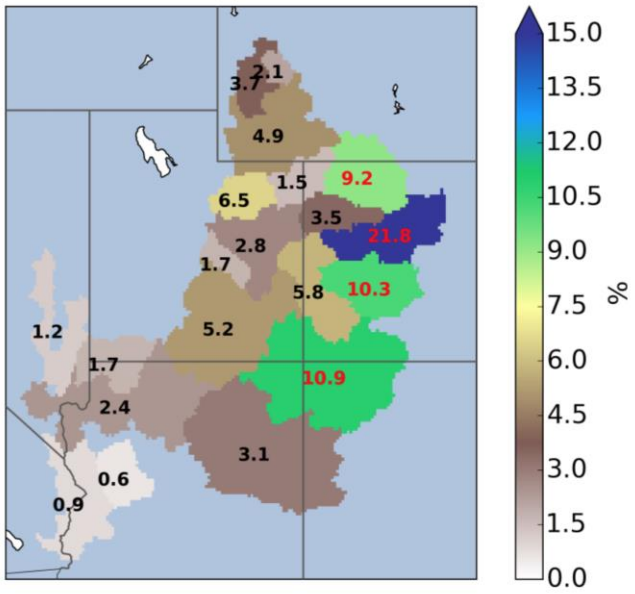
Because of our work on the ground, the Conservancy believes the farmers and ranchers are the best judge of what is possible. We have invested in partnerships with agricultural producers to test innovative ways to reduce water use, while following their lead to ensure it will work for their operations. Several of these efforts have been made possible through federal funding, including Farm Bill conservation programs, Reclamation's WaterSMART program, and the federal contributions to the System Conservation Pilot Program. Others have been assisted by federal agency input on how to achieve water management flexibility. In the Upper Basin, this has included pilot and demonstration projects in the Grand Valley, Uncompahgre Valley, the headwaters of the Colorado River near Kremmling, the Gunnison River, and the rivers in the Southwest corner of Colorado; the Virgin and the Price rivers in Utah; and the Upper Green River in Wyoming. We have supported scientific research to evaluate how crops are affected by different management strategies, and economic work to understand what it means for the producer's bottom line. We have also provided legal support to ensure that water rights are protected, that farmers and ranchers get answers to their legal questions, and to assure that their most valuable asset – their water right - is not diminished. In the Lower Basin, we have worked in the Verde River to test new crop types, such as barley, that use less water and are irrigated in the winter, when the river is less stressed. Our projects in the Verde River also included supply chain investments, like the creation of a malt house to process the barley to ensure the farmers had a market for their new crop. Funding to support these kinds of projects—both through environmental non-profits and farmers directly—can help farmers adapt while also benefitting river health.

B. INVEST IN RESILIENCE STRATEGIES

The scale and pace of climate-related changes in the Colorado River Basin pose an increasing risk to the reliability of water supplies that support humans and nature. Water conservation efforts have often focused on addressing the "water budget" problem (i.e., balancing supply and demand). While these efforts are necessary and important, they are not enough to deal with the risks our communities face from changing climate dynamics. New approaches are needed to help

our communities adapt and respond to the compounding and extreme risks of climate change to economies, communities, landscapes, and the water resources that support them.

A new report called the *Ten Strategies for Climate Resilience in the Colorado River Basin*[6] (developed by a coalition of conservation organizations, including TNC) highlights potential strategies that could help the region adapt to climate change-driven drought and aridification while reducing pressure on existing water supplies. Currently, the Conservancy is testing some of these strategies through on-the-ground projects and research. Examples include forest management to improve water retention, agricultural practices to enhance soil health, natural infrastructure to enhance water retention and groundwater recharge, and exploring opportunities with energy companies to help communities transition in a way that also considers water security. Funding scientific research and demonstration projects is essential in the short term to determine which strategies can best increase resilience.



There are a few key sub-basins that produce more than 55% of the water in the Basin. As we test these strategies mentioned above, we can prioritize the more productive sub-basins to ensure we have the greatest return on investment for the entire Basin.

Natural water retention and release projects are another example of projects that can foster resilience. These projects mimic beaver dams and can slow and spread water onto areas that previously supported riparian and wetland ecosystems by allowing water to soak into the landscape.[7] Such projects aim to reduce extreme flood risk and mitigate drought.[8] These projects help foster adaptive capacity in ecosystems and help ranching operations to cope with ongoing climate shifts.

[6] https://www.tenstrategies.net

[7] Pollock, M. M. *et al.* Using Beaver Dams to Restore Incised Stream Ecosystems. *BioScience* **64**, (2014): 279–290; Pilliod, D. S. *et al.* Survey of Beaver-related Restoration Practices in Rangeland Streams of the Western USA. *Environ. Manage* **61**, (2018): 58–68.

[8] Caroline S Nash et al., "Great Expectations: Deconstructing the Process Pathways Underlying Beaver-Related Restoration," *Bioscience* 71, (2021): 249–267.

Water retention projects can mimic beaver dam activity in streams: retaining sediment, reconnecting streams with floodplains, elevating groundwater levels, and increasing habitat for wildlife. Wet meadows and beaver ponds provided refuge for wildlife and served as a fire break during the East Troublesome fire seen above. Photo credit: Jason Houston.

The *Ten Strategies* Report provides tangible examples of projects that can increase resilience in the Basin. Funding in the IIJA and Build Back Better Act will support these types of projects. For example, the IIJA includes $100 million for natural infrastructure projects through the WaterSMART program, $2.1 billion for forest ecosystem restoration and $100 million for multi-benefit watershed health projects. If this legislation is passed, the federal agencies need to be prepared to get funding to projects quickly and efficiently. To maximize the benefits for communities and the environment, agencies should involve local, state, tribal governments, and key stakeholders in decisions about how to allocate these and other funds.

C. Support Inclusive Engagement

Two voices that have often been left out of Basin negotiations in the past are environmental non-profits and sovereign Tribal Nations. In the Colorado River Basin, we are fortunate that both parties have proven their willingness to provide constructive input and be part of developing solutions. While engagement has improved over the last ten years, we can do a better job including these voices and perspectives from the beginning, which will improve the outcomes and long-term solutions for water management and operations.

The federal government can and should support broader engagement in the various processes and negotiations over management of the Colorado River. Inclusive and meaningful stakeholder engagement is not only critical to avoid conflict and litigation, but it will also increase buy-in and result in more durable solutions. Leadership by the federal government is important, as a convener, as a guardian of a process that is transparent and inclusive, as a science provider, and as a funder. Federal leadership, especially in carrying out its federal trust responsibility with tribes, must continue to emphasize inclusivity and promote collaboration.

Specifically, consultations on the Upper Basin's Drought Response Operations Agreement (DROA), the Lower Basin Drought Operations Plans, and the Basin-wide 2026 Interim

Guidelines have begun or are ramping up. We strongly encourage Congress and Reclamation to include Tribal Nations and environmental non-profits in these negotiations in a meaningful way.

D. PROTECT RIVER HEALTH AND WILDLIFE

The Colorado River is one of the most iconic rivers in the world, and includes the Grand Canyon, which is one of the seven natural wonders of the world. The region is home to a renowned wildlife community, including moose, elk, bighorn and desert sheep, river otters, and iconic bird species, as well 30 native fish species found nowhere else in the world. Biologists have identified more than 150 species that are risk from water management operations. These species are struggling now, and climate change and drought are expected to exacerbate the impacts to these wildlife communities. The health of our environment and the species that depend on the river serve as proverbial "canaries in the coal mine." If the health of the river system crashes, we will very likely experience negative impacts to our communities as well.

We have two important fish recovery programs in the Upper Colorado River Basin. These programs are working to recover four species of endangered Colorado River fish while still allowing water uses in our communities. The Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program (the "Programs") take a balanced approach to recovering four endangered fish species in Wyoming, Utah, Colorado and New Mexico by implementing a range of basin-wide strategies, including improved management of federal dams and irrigation infrastructure, river and floodplain habitat improvement, fish stocking, and management of non-native fish species.

The Nature Conservancy has been an active partner in the Upper Basin Recovery Program since the 1980s and a partner in the San Juan Recovery Program for more than a decade. Since 1988, the two Programs have provided Endangered Species Act (ESA) Section 7 compliance without litigation for over 2,500 federal, tribal, state, and privately managed water projects across the Upper Colorado River basin. Together, these projects are able to divert more than 3.7 million acre-feet of water per year to benefit people while mitigating the impacts for the endangered fish species.

Over the last 30 years, in addition to allowing for ESA compliance to water users, conservation actions have improved conditions in many areas of the Colorado River Basin that supported these species historically. As a result of these actions, the razorback sucker has been proposed for down-listing, and the humpback chub is being down-listed this week. Both steps demonstrate the continued success and progress of these collaborative, partnership-informed approaches to conservation that benefit both people and native species. These two Programs will require reauthorization in 2023 and continuing federal support. The Conservancy strongly supports Representative Neguse's Upper Colorado and San Juan River Basins Recovery Act (H.R. 5001), which allows the Recovery Programs to continue to operate through fiscal year 2023 and provides time for actions that were delayed due to the pandemic. We urge you to pass this legislation as soon as possible.

In addition to these two Upper Basin Programs, the Virgin River Program, the Long Term Experimental and Management Plan focused on the Grand Canyon and the Lower Colorado River Multi-species Conservation Program are also focused on conserving and protecting species

that depend on the river while allowing for water use by people. All of these programs are important to maintaining species and their habitat as conditions become drier, and they all rely on state and federal resources. We hope Congress will continue to support these programs.

E. Invest in Scientific Models and Tools

The future will not look like the past. We need tools and models that will allow us to plan for this uncertainty. Reclamation's model for managing and forecasting conditions in the Colorado River, the Colorado River Simulation System or CRSS, needs to be upgraded to deal with the increasing hydrologic variability. Reclamation has a great team of scientific and technical staff working to update the CRSS, and the agency needs your support to complete this critical effort.

Federal investment in monitoring and science will allow water managers to better forecast, model and track water availability throughout the Basin. For example, replacing and adding new stream gages is a high priority. OpenET is another priority program that can support water conservation and management efforts in the Basin. The main goal of OpenET is to provide reliable access to evapotranspiration data that is accurate, consistent, and scientifically valid. This innovative program is useful for many aspects of water management, whether for an individual agricultural field or an entire river basin. We support and appreciate the investments included in the Build Back Better Act for the U.S. Geological Survey's work in stream measurements, OpenET, forecasting and monitoring.

III. CONCLUSION

The Colorado River Basin is in crisis and the urgency to act has never been greater. Failure to develop a sustainable path is not an option for the 1 in 8 Americans who depend on the Colorado River for their water supply. We need solutions now to support the region's $1.4 trillion regional economy and the health of our rivers. The federal government can foster the political will and provide resources to help stakeholders in the Basin develop and implement effective measures to respond to climate change, build resilience and ensure water availability for our economy and the environment.

As Congress prioritizes funding opportunities, the Conservancy supports partnership and collaboration between the federal government, Sovereign Nations, and stakeholders in the Basin. Federal funding and leadership by key federal agencies are critical pieces of the puzzle to address the challenges we face today and those that we expect in the future. We also support several pending bills before Congress that would provide the Basin's stakeholders with the resources we need to respond to the climate change-driven drought that touches every corner of the West.

Thank you for the opportunity to provide testimony. I look forward to answering any questions you might have.