

# Sink or Swim? Assessing Flow Maintenance Mechanisms for the 15-Mile Reach in the Upper Colorado River Endangered Fish Recovery Program

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## ABSTRACT

*Demand for water exceeds supply in the Colorado River, and allocating among various uses is a complex and delicate process. For nearly one hundred years, the legal regime incentivized the development of water resources for economic growth. Those decades of development damaged important fish habitat in the Upper Colorado River in Utah and Colorado. It was not until 1973 that Congress recognized the ongoing harm to important natural resources and enacted the Endangered Species Act. Pursuant to that act, the U.S. Fish and Wildlife Service formally listed several fish species in the Colorado River as endangered or threatened and created the Upper Colorado River Endangered Fish Recovery Program to protect these species and facilitate their recovery. Since then, fish populations have partially recovered, but the Program faces challenges acquiring water for habitat in times of short water supply.*

*This Note investigates the past, present, and future of the Upper Colorado River Endangered Fish Recovery Program. Specifically, this Note examines the legal and ecological context of water supply and demand in the Colorado River Basin, analyzes key elements of the Endangered Species Act, and explores the origins of the Upper Colorado River Endangered Fish Recovery Program. Next, it describes how the Program acquires water rights to provide water for fish habitat, examines the 2018 irrigation season in a detailed case study, and discusses challenges with the current model for acquiring water. The Note concludes by discussing opportunities to improve the Program's future operations through incorporation of additional long-term water sources.*

## TABLE OF CONTENTS

Introduction . . . . .	814
I. History of Upper Colorado River Management and Program Origins. . . . .	816

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A.	The Colorado River Basin: Overview and Conditions in Colorado . . .	816
B.	Water Law in Colorado . . . . .	819
C.	Endangered Species Act. . . . .	820
D.	Program Origins . . . . .	822
II.	Program Mechanics and Current State. . . . .	823
A.	Program Mechanics . . . . .	823
B.	Current State of the Program . . . . .	825
1.	Existing Water Sources. . . . .	826
2.	The 2018 Season . . . . .	828
III.	Future of the Program . . . . .	829
A.	Key Considerations . . . . .	829
B.	Potential Long-Term Water Sources . . . . .	831
1.	Conversion of Consumptive Rights to Instream Flow Rights. . .	831
2.	Additional Storage Capacity or Long-term Contracts . . . . .	831
3.	Contract for Green Mountain Reservoir Surplus . . . . .	832
4.	Improved Conservation. . . . .	832
Conclusion . . . . .		833

## INTRODUCTION

Dip your toes into the Green Mountain Reservoir north of Silverthorne, Colorado and you will touch drinking water, water for growing peaches and grapes, water for livestock, water for hydroelectric generation, and water for fish habitat. Kick your feet around and you may splash a few more pools of water tagged for even more uses. The Green Mountain Reservoir is located in the over-allocated Colorado River Basin, where every water molecule is tagged for a specific use, or more likely several different uses, as it flows downstream. This Note focuses on one particular water use in the Upper Colorado River Basin: an effort to recover several species of endangered fish who call the Colorado River home. To you, the Green Mountain Reservoir may seem like just a refreshing and scenic lake, but to plants, animals, and people living and working in the West, “[t]he Colorado River is a lifeline.”<sup>1</sup>

The Colorado River supplies more than one in ten Americans with some, if not all, of their water for municipal use, including drinking water; provides irrigation water to more than 5.5 million acres of land; is an essential physical, economic and cultural resource to at least twenty-two federally recognized Tribes; supports 4,200 megawatts of electrical generating capacity; is directly linked to nine National Park Service units and seven National Wildlife Refuges; and provides habitat for a wide range of species.<sup>2</sup> Given the many demands on water in the

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1. *Drought in the Colorado River Basin*, U.S. DEP’T OF THE INTERIOR, <https://perma.cc/7ALY-M5B9> (last visited Nov. 3, 2018).

2. *Id.*

Colorado River Basin, it is no wonder that it is also “the most legislated, most debated, and most litigated river in the entire world.”<sup>3</sup>

Demand for water exceeds supply in the Colorado River, and allocating among these various uses is a complex and delicate process. For nearly one hundred years, the legal regime incentivized developing water resources for economic growth. Those decades of development damaged important fish habitat in the Upper Colorado River in Utah and Colorado (see Figure 1 and Figure 2).<sup>4</sup> It was not until 1973 that Congress recognized the ongoing harm to important natural resources and enacted the Endangered Species Act (“ESA”). Pursuant to the ESA, the U.S. Fish and Wildlife Service (“FWS”) formally listed several fish species in the Colorado River as endangered or threatened and created the Upper Colorado River Endangered Fish Recovery Program (“Program”) to protect these species and facilitate their recovery.<sup>5</sup> Since then, fish populations have recovered somewhat, but the Program continues to face challenges acquiring water for habitat in times of short water supply.<sup>6</sup>

This Note analyzes how the Program maintains water flow in a critical segment of the Upper Colorado River that provides habitat for endangered and threatened fish. Part I outlines the hydrologic, economic, and legal context of the Upper Colorado River Basin in general and describes a particular segment of the river in western Colorado called the 15-Mile Reach. It then outlines the legal framework of the ESA and examines how the Program complies with these legal requirements. Part II analyzes how the Program currently functions, focusing on how the Program acquires water to maintain flow for habitat in the 15-Mile Reach. Finally, Part III considers the ability of the Program to ensure long-term recovery for fish while facing increasing scarcity and pressures from consumptive users. This Note suggests that the Program acquire additional long-term water sources to provide security for fish habitat and water users in Colorado. The current reliance on short-term, ad hoc agreements in times of shortage, although flexible and relatively successful to this point, is burdensome and inadequately protects both consumptive and non-consumptive users.

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3. MARC REISNER, *CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER* 120 (Viking Penguin 2017).

4. U.S. FISH & WILDLIFE SERV., *FINAL RECOVERY IMPLEMENTATION PROGRAM FOR ENDANGERED FISH SPECIES IN THE UPPER COLORADO RIVER BASIN* 4-1, 4-11 (1987) [hereinafter 1987 FINAL RECOVERY IMPLEMENTATION PROGRAM] (noting that the humpback chub was listed as endangered by U.S. Fish and Wildlife Service in 1967 and given full protection under the Endangered Species Act in 1973).

5. *See* Endangered Species Act of 1973, Pub. L. No. 93-205, § 2(A), 87 Stat. 884 (codified as amended at 16 U.S.C. §§ 1531–1544) [hereinafter ESA]; 1987 FINAL RECOVERY IMPLEMENTATION PROGRAM, *supra* note 4, at 1-1.

6. Telephone Interview with Don Anderson, Hydrologist/Instream Flow Coordinator, Upper Colo. River Recovery Program (Oct. 17, 2018) [hereinafter Interview with Don Anderson].

## I. HISTORY OF UPPER COLORADO RIVER MANAGEMENT AND PROGRAM ORIGINS

This Part describes the hydrologic, economic, and legal context of the Colorado River, with a particular focus on the Upper Colorado River and an area of sensitive habitat in western Colorado known as the 15-Mile Reach. It then outlines the obligations of the federal government under the ESA and explains how those obligations drove the creation of the Program.

### A. THE COLORADO RIVER BASIN: OVERVIEW AND CONDITIONS IN COLORADO

The Colorado River originates in the Rocky Mountains of Colorado and winds its way roughly 1,400 miles through seven states in the Southwest and Mexico before terminating near the Sea of Cortez.<sup>7</sup> The Colorado River Basin (“Basin”) is divided into two parts (see [Figure 1](#)).<sup>8</sup> The Upper Basin spans portions of Wyoming, Colorado, New Mexico, Utah, and northern Arizona.<sup>9</sup> The Lower Basin covers parts of Nevada, Arizona, California, southwestern Utah, and western New Mexico.<sup>10</sup> The Upper Basin supplies approximately ninety percent of the water for the entire Basin.<sup>11</sup>

This Note focuses on the Colorado River in the state of Colorado, where seventy to seventy-five percent of the river’s flow originates.<sup>12</sup> The river flows west from the Rocky Mountains and the Continental Divide through the sparsely-populated western slope of Colorado and into Utah. Although approximately eighty percent of the state’s annual precipitation falls to the west of the Continental Divide (on the “west slope”), approximately ninety percent of the state’s population resides in the arid regions east of the divide (the “east slope,” or “Front Range”).<sup>13</sup> To address this imbalance, several transbasin diversions transport an average of 500,000 acre-feet of Colorado River water annually from the west slope to the east slope to supply eastern Colorado agriculture and the cities of Denver, Boulder, and others.<sup>14</sup> The transbasin diversions are marked with arrows on [Figure 2](#).

Within Colorado, agriculture is the primary use of water, accounting for approximately eighty-eight percent of water consumed in the state.<sup>15</sup> Municipalities account for approximately five percent of the state’s water consumption, and the

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7. *Drought in the Colorado River Basin*, *supra* note 1. The river only rarely reaches the Sea of Cortez, its natural terminus, as all of its flow is diverted and put to consumptive use.

8. *Id.*

9. *Id.*

10. *Id.*

11. *Id.*

12. *Colorado Member State Page*, COLO. RIVER WATER USERS Ass’n, <https://perma.cc/V53S-Q384> (last visited Nov. 3, 2018).

13. *Id.*

14. *Id.* These “diversions” pump water from one basin to another through a series of pipes through the Rocky Mountains.

15. *Id.*



FIGURE 1: Map of the Colorado River Basin, Source: <https://www.doi.gov/water/owdi.cr.drought/en/>

remaining seven percent is used for business, industry, and recreation.<sup>16</sup> Demand for water is expected to increase in the rapidly growing state—experts predict

16. *Id.*

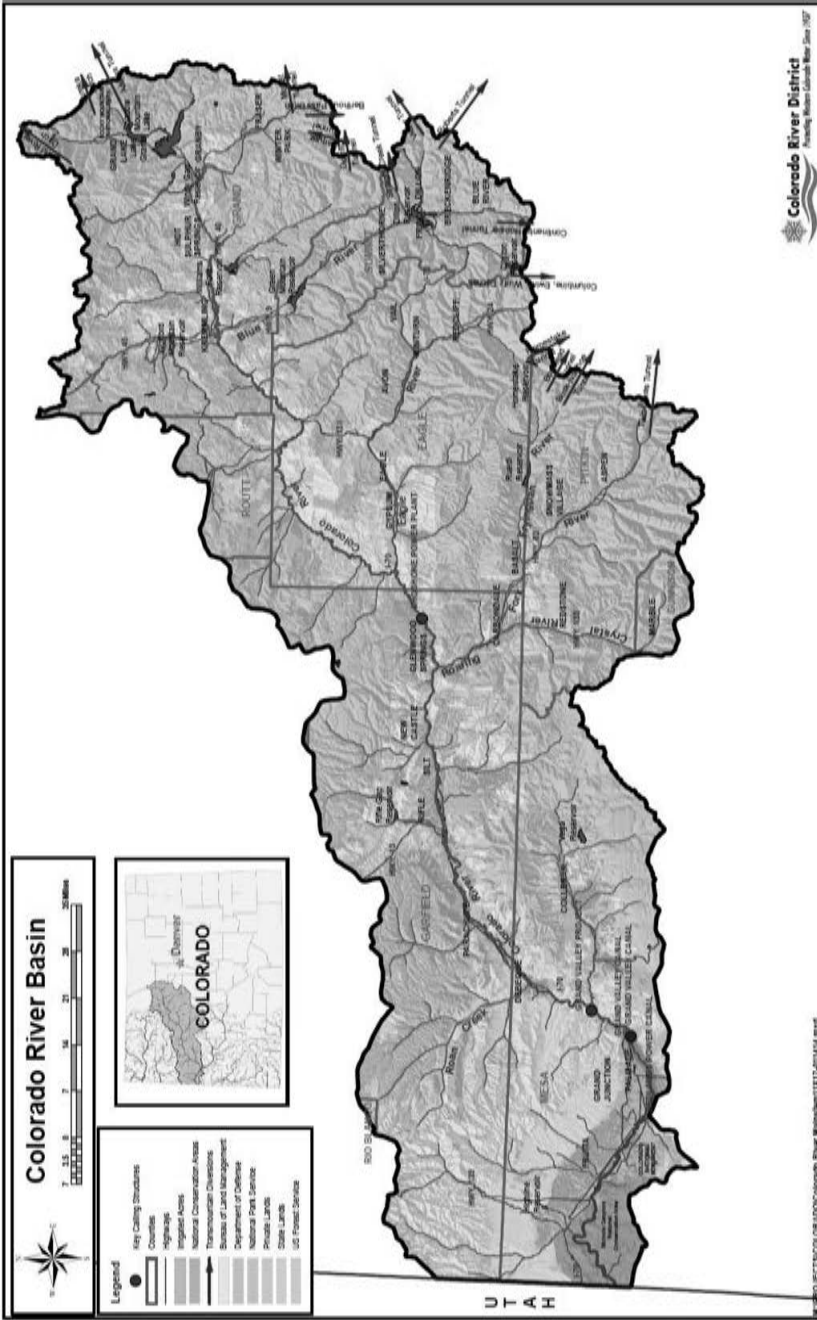


FIGURE 2: Colorado River Basin within Colorado, Source: [https://www.coloradoriverdistrict.org/wp-content/uploads/2016/01/ColoradoRiverMainstem\\_by\\_ColoradoRiverDistrict.pdf](https://www.coloradoriverdistrict.org/wp-content/uploads/2016/01/ColoradoRiverMainstem_by_ColoradoRiverDistrict.pdf)

that the population could nearly double by 2050.<sup>17</sup> Rising temperatures resulting from climate change could decrease precipitation while simultaneously creating conditions that cause increases in residential water use (such as lawn watering).<sup>18</sup>

The Colorado River also supports numerous non-consumptive uses in the state. The Colorado River and its tributaries provide habitat for a wide variety of fish, wildlife, and plants. In particular, the 15-Mile Reach (a portion of the river in western Colorado between the towns of Palisade and Grand Junction) provides critical habitat for several endangered and threatened fish species.<sup>19</sup> It is located downstream of several reservoirs but upstream of the confluence point with the Gunnison River, a principal tributary.<sup>20</sup> Large quantities of water from this portion are used for agricultural irrigation.

Demands on Colorado River water within Colorado are diverse and intense. Other states have similar demands, and allocations between the states are yet another challenge. The fish in the 15-Mile Reach compete for water with this multitude of other users. As discussed below, the law governing water use in Colorado hinders their success, but the ESA provides significant support.

#### B. WATER LAW IN COLORADO

To accommodate the numerous competing interests discussed in the previous section, the waters of the Colorado River are allocated according to a complex “Law of the River” drawn from interstate compacts, international treaties, state water law, and other regulations.<sup>21</sup> These various legal requirements govern water usage and create obligations for upstream users to provide water to downstream users. As a headwater state, Colorado is subject to numerous interstate agreements, equitable apportionment decrees, and international treaties.<sup>22</sup>

A combination of federal, Tribal, state, and local agencies manage water within Colorado.<sup>23</sup> Water use is governed by state statute, which adopts the prior

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17. COLORADO’S WATER PLAN xvii, 5-3 (2015), <https://perma.cc/B9CY-A2ZT> [hereinafter COLORADO’S WATER PLAN].

18. *Id.* at 5-5.

19. The 15-Mile Reach is a portion of the Colorado River that “extends from the confluence of the Gunnison River upstream 15 miles to the Grand Valley Irrigation Company Diversion Dam near Palisade, Colorado.” U.S. FISH & WILDLIFE SERV., FINAL PROGRAMMATIC BIOLOGICAL OPINION FOR BUREAU OF RECLAMATION’S OPERATIONS AND DEPLETIONS, OTHER DEPLETIONS, AND FUNDING AND IMPLEMENTATION OF RECOVERY PROGRAM ACTIONS IN THE UPPER COLORADO RIVER ABOVE THE CONFLUENCE WITH THE GUNNISON RIVER 2 (1999), <https://perma.cc/SKA6-GRGS> [hereinafter 1999 BiOp]. *See id.* at 20, 29, 33–35 (describing how critical habitat for the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail was designated in 1994 within the 100-year floodplain of the species’ historical ranges in this area of the Upper Colorado River, including the 15-Mile Reach).

20. *Gunnison River*, AM. RIVERS, <https://perma.cc/FBR4-FGUJ> (last visited June 26, 2019).

21. Lawrence J. McDonnell et al., *The Law of the Colorado River: Coping with Severe Sustained Drought*, 31 WATER RES. BULL. 825, 825 (1995).

22. COLORADO’S WATER PLAN, *supra* note 17, at 2-1, 2-11.

23. *Id.* at 2-27.

appropriation doctrine.<sup>24</sup> Colorado's Constitution captures the essence of the prior appropriation doctrine: "The right to divert the unappropriated waters of any natural stream to beneficial uses shall never be denied. Priority of appropriation shall give the better right as between those using the water for the same purpose."<sup>25</sup> Therefore, any user who diverts water and puts it to beneficial use acquires a right to use that water that is superior to any subsequent users. Beneficial uses under the prior appropriation doctrine are often consumptive, meaning that the quantity of water removed from the source is not returned, such as irrigation. The prior appropriation doctrine forcefully protects existing water users and incentivizes beneficial uses.

Colorado law does, however, "recogniz[e] the need to correlate the activities of mankind with some reasonable preservation of the natural environment," and grants exclusive authority to the Colorado Water Conservation Board ("CWCB") to hold water rights to maintain minimum stream flows "to preserve the natural environment to a reasonable degree."<sup>26</sup> In other words, CWCB can hold "instream flow rights." These rights, like consumptive use rights under the prior appropriation doctrine, give CWCB a legal right to use a certain amount of water at a certain time of the year. However, instead of diverting the water for irrigation or another consumptive use, CWCB keeps the water flowing in the river. Colorado statute also allows a water right owner to make a short-term loan of water to CWCB for instream flows.<sup>27</sup>

This legal framework heavily favors senior consumptive water rights and development of water resources (and thus subsequent economic development) over non-consumptive uses (uses that leave the water in place, such as recreation). As will be discussed below, this can create a challenge for entities trying to use water for relatively new, non-consumptive uses like providing fish habitat.

### C. ENDANGERED SPECIES ACT

The ESA adds yet another layer of legal complexity to the management of water in the Colorado River. As mentioned above, Congress passed the ESA in 1973 for the purpose of protecting fish, wildlife, and plant species from extinction.<sup>28</sup> In the ESA, Congress acknowledged the consequences of "economic growth and development untempered by adequate concern and conservation" and announced a policy to protect species of fish, wildlife, and plants from extinction.<sup>29</sup> The ESA protects species "listed" by FWS as endangered or threatened

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24. COLO. REV. STAT. ANN. § 37-92-102 (West 2018).

25. COLO. CONST. art. XVI, § 6.

26. COLO. REV. STAT. ANN. § 37-92-102(3) (West 2018).

27. COLO. REV. STAT. ANN. § 37-83-105(2)(a) (West 2012).

28. ESA § 2(A), 16 U.S.C. § 1531(a).

29. *Id.*



from various types of harm.<sup>30</sup> Section 4 of the ESA governs the process through which FWS assesses the status of a species and determines whether it should be listed.<sup>31</sup> Section 4 also directs FWS to designate critical habitat for the listed species.<sup>32</sup> The ESA's key requirement is outlined in Section 7: federal agencies must consult with FWS to ensure that federal actions are not "likely" to "jeopardize the continued existence" of a listed species or "result in the destruction or adverse modification of [the critical] habitat of such species."<sup>33</sup> This consultation process requires the federal agency to analyze the potential impacts of the action on listed species in coordination with FWS.

As part of the Section 7 consultation process, FWS assesses whether a federal action would jeopardize the continued existence of listed species and presents the results in a document called a Biological Opinion.<sup>34</sup> FWS may issue one of two types of Biological Opinions: a "jeopardy" Biological Opinion is prepared when FWS believes that the federal action will jeopardize the continued existence of a listed species and a "no jeopardy" Biological Opinion is prepared when it will not.<sup>35</sup> If FWS issues a jeopardy opinion, the Biological Opinion includes reasonable and prudent alternatives ("RPAs") that the federal agency must employ to avoid the harmful impacts of its action.<sup>36</sup>

Courts have interpreted the ESA's protections robustly, finding that the Act assigns endangered species "incalculable" value.<sup>37</sup> In *Tennessee Valley Authority v. Hill*, the U.S. Supreme Court halted construction on a nearly-complete \$100 million dam because FWS determined that it would jeopardize the survival of a tiny endangered fish.<sup>38</sup> The court found that "[t]he plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost."<sup>39</sup>

The ESA creates a meaningful obligation for agencies to avoid harming listed species that the courts are willing to enforce. The threat of injunction creates a

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30. ESA § 3(6), 16 U.S.C. § 1532(6) ("The term 'endangered species' means any species which is in danger of extinction throughout all or a significant portion of its range . . ."); ESA § 3(20), 16 U.S.C. § 1532(20) ("The term 'threatened species' means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."); ESA § 9(a)(1)(B), 16 U.S.C. § 1538(a)(1)(B) ("it is unlawful for any person subject to the jurisdiction of the United States to . . . take any [listed] species . . ."); ESA § 3(19), 16 U.S.C. § 1532(19) ("The term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."). Note that FWS is responsible for administering the ESA for land and freshwater species, and the National Marine Fisheries Service is responsible for marine and anadromous species. Because this Note deals with freshwater fish it refers exclusively to FWS.

31. ESA § 4(a)(1), 16 U.S.C. § 1533(a)(1).

32. ESA § 4(a)(3), 16 U.S.C. § 1533(a)(3).

33. ESA § 7(a)(2), 16 U.S.C. § 1536.

34. 50 C.F.R. §§ 402.02, 402.14.

35. 50 C.F.R. §§ 402.02, 402.14(h)(3).

36. 50 C.F.R. § 402.14.

37. *TVA v. Hill*, 437 U.S. 153, 187 (1978).

38. *Id.* at 172–73, 187.

39. *Id.* at 184.

strong incentive for agencies to fulfill their responsibilities and avoid jeopardizing listed species.

#### D. PROGRAM ORIGINS

In the years leading up to passage of the ESA, untempered economic growth and development (including irrigated agriculture, increased demand for municipal water, construction of reservoirs, and other water developments) damaged important fish habitat in the Upper Colorado River in Utah and Colorado.

After Congress enacted the ESA, FWS proceeded to fulfill its statutory obligations. At that time, FWS had identified three endangered fish (the Colorado squawfish [later renamed the pikeminnow], bonytail chub, and humpback chub) and one threatened fish (the razorback sucker) inhabiting the Colorado River. Implementation of the ESA on the Colorado River began with Section 7 consultation on federal Bureau of Reclamation ("Reclamation") projects (including storage and water delivery contracts) in the late 1970s.<sup>40</sup> At that time, FWS issued a Biological Opinion determining that Reclamation's activities would jeopardize the continued existence of these listed fish.<sup>41</sup> This jeopardy opinion threatened to fundamentally change the water use regime throughout the Upper Basin.

Reclamation projects provide critical water supply for all types of users throughout the Upper Basin. Under the ESA, FWS is authorized to impose limitations on these essential storage and dispersal functions as may be necessary to protect the fish.

The protection of endangered fish species of the Upper Colorado River Basin under Section 7 . . . threatened to embroil all interested parties in a confrontation between resource protection and resource development. The parties recognized that such a confrontation was unlikely to result in progress toward recovery of the listed species and could lend a measure of uncertainty to future water resource development in the upper basin.<sup>42</sup>

To address the concerns in FWS's Biological Opinion, in 1984 the Department of the Interior, Colorado, Wyoming, Utah, water users, and environmental groups formed a committee to devise a plan to accommodate the competing demands through discussion and negotiation.<sup>43</sup> The committee sought to identify RPAs that would preserve the species while permitting new water development to proceed in the Upper Basin.<sup>44</sup> The result was the Upper Colorado River Endangered Fish Recovery Program, a comprehensive program implementing a broad range of measures to preserve the species and provide for their recovery.<sup>45</sup>

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40. 1999 BiOp, *supra* note 19, at 3.

41. *Id.*

42. 1987 FINAL RECOVERY IMPLEMENTATION PROGRAM, *supra* note 4, at 1-6.

43. 1999 BiOp, *supra* note 19, at 3.

44. 1987 FINAL RECOVERY IMPLEMENTATION PROGRAM, *supra* note 4, at 1-6.

45. *Id.*

The Program applies to the Upper Basin above the Glen Canyon Dam.<sup>46</sup> The Secretary of the Interior, Governors of Wyoming, Colorado, and Utah, and the Administrator of the Western Area Power Administration cosigned a Cooperative Agreement to implement the Program in 1988.<sup>47</sup> In 1993, FWS further clarified the obligations of parties under the agreement in a Recovery Implementation Program Recovery Action Plan (“RIPRAP”).<sup>48</sup> The RIPRAP, which is updated annually, includes a list of recovery actions and ensures that the Program is functioning.

In essence, the Program itself is an RPA. When it functions properly (that is, when it adequately protects the fish species from jeopardy and facilitates their recovery pursuant to the ESA), water users and developers can rely on it to comply with the ESA in place of individual Section 7 consultation for water-related projects. The Program requires water users in the Upper Basin to participate and cooperate to ensure the successful recovery of the species, but in turn allows them to continue to use and develop water without the risk of bearing ESA-imposed burdens (such as flow requirements or habitat maintenance) individually.<sup>49</sup> The ability of the Program to ensure the long-term protection and recovery of the listed fish species is therefore essential not only to the fish but to the water users. The uncertainty of individual Section 7 consultation that motivated interested parties to create the Program will return if the Program fails to meet its conservation objectives. ESA compliance creates a powerful incentive for interested parties to contribute to the success of the Program.

## II. PROGRAM MECHANICS AND CURRENT STATE

This Part discusses how the Program functions, with a particular focus on maintaining flow in the 15-Mile Reach. It then analyzes the ability of the current program mechanism to meet the water demand of users in the Upper Colorado River watershed, including the endangered fish. It outlines the program’s existing water sources and examines the events of 2018.

### A. PROGRAM MECHANICS

The Program includes seven main elements to facilitate the recovery of the listed species: 1) identifying and protecting instream flows, 2) habitat development and maintenance, 3) reducing impacts of non-native fishes and sportfish management activities, 4) conserving genetic integrity and augmenting or restoring populations, 5) monitoring populations and habitat and conducting research

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46. *Id.* at 1-1 n.1.

47. 1999 BiOP, *supra* note 19, at 4.

48. *Id.*

49. If the Program did not exist, Section 7 compliance could be required for federal actions including individual Reclamation actions related to reservoir operations (which could impact many users) or decisions about issuing federal permits to private water users, for example. If FWS issued a jeopardy opinion for one of these individual projects, the federal agency or individual applicant could face a disproportionate burden of implementing RPAs.

to support recovery actions, 6) increasing public awareness and support for the endangered fishes and the Program, and 7) providing program planning and support.<sup>50</sup>

This Note explores the mechanisms for managing flow quantities because maintaining an adequate level of flow is critical for providing habitat for the endangered species. Program officials describe competition and predation from non-native species, not inadequate instream flows, as the greatest threat to the endangered species,<sup>51</sup> but low flow can harm fish by inhibiting passage, trapping fish within smaller river reaches, diminishing the fish forage base, increasing risk of predation and sun damage, and increasing water temperatures.<sup>52</sup> Through the Program, FWS sets a recommended flow level and federal and state agencies “work cooperatively and expeditiously to establish and protect flows.”<sup>53</sup>

The Program identifies instream flow rights as one way to provide effective long-term habitat protection.<sup>54</sup> According to the original formulation of the Program in 1987:

Water rights for instream flows . . . will be appropriated, or acquired, and administered pursuant to State law and will, therefore, be legally protected as any water right under State laws. Where water rights for instream flow cannot be obtained, they will be protected through contracts or administrative agreements with holders of appropriated water rights.<sup>55</sup>

The Program directs FWS to acquire water necessary to maintain flow levels from a variety of sources, including

- release from storage projects,
- refinement in storage reservoir operation,
- purchase or lease of agricultural water during dry years and compensation to irrigators,
- implementation of agricultural water conservation and salinity control projects and conversion of water conserved to instream flows,
- conversion of existing consumptive and conditional rights to instream flow rights,
- changing the point of diversion for senior water rights to downstream locations,

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50. UPPER COLO. RIVER ENDANGERED FISH RECOVERY PROGRAM, RECOVERY IMPLEMENTATION PROGRAM SECTION 7 CONSULTATION, SUFFICIENT PROGRESS, AND HISTORIC PROJECTS AGREEMENT AND RECOVERY IMPLEMENTATION PROGRAM RECOVERY ACTION PLAN (2018), <https://perma.cc/4W3U-5YVU>.

51. *The Path to Fish Recovery in the Upper Colorado River Basin*, UPPER COLO. RIVER ENDANGERED FISH RECOVERY PROGRAM (2018), <https://perma.cc/VS7K-LCQ9>.

52. Interview with Don Anderson, *supra* note 6.

53. 1987 FINAL RECOVERY IMPLEMENTATION PROGRAM, *supra* note 4, at 4-1.

54. *Id.*

55. *Id.* at 4-2.

- federal or state filings on nontributary groundwater that could be pumped and put into the streams, and
- original appropriation of instream flows in surface streams.<sup>56</sup>

In September 1993, FWS entered into a Memorandum of Agreement with CWCB wherein the Board agreed to

take such actions under state law, including requesting administration by the State Engineer and the appropriate division engineer and initiating water court proceedings, as may be necessary to fully exercise its water rights or to obtain delivery of acquired water or interest in water. Such water shall be protected within the entire stream reach for which the appropriation or acquisition is made.<sup>57</sup>

“This agreement (commonly called the Enforcement Agreement) provided a legal mechanism to protect water obtained for the endangered fish under the Recovery Program.”<sup>58</sup> The agreement “could apply to contract deliveries, water leases, and acquired water rights.”<sup>59</sup>

#### B. CURRENT STATE OF THE PROGRAM

On most fronts this Program is a success. Two of the four listed species have recovered to the point where FWS proposes to downlist them from endangered to threatened.<sup>60</sup> The 2017 annual report evaluating the Program concluded that it “is making sufficient progress to continue avoiding the likelihood of jeopardy” resulting from existing and new depletion projects.<sup>61</sup> The uncertainty of individual ESA compliance incentivizes the parties to keep the Program functioning, and continued funding and cooperation is therefore a priority.<sup>62</sup>

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56. *Id.* at 4-5.

57. 1999 BiOP, *supra* note 19, at 8.

58. *Id.*

59. *Id.*

60. The process of changing a species’ status from the less stable “endangered” to more stable “threatened” is called “downlisting.” *After Scientific Review, the U.S. Fish and Wildlife Service to Propose Reclassification of the Humpback Chub from Endangered to Threatened*, U.S. FISH & WILDLIFE SERV. (Mar. 22, 2018), <https://perma.cc/LJ9Q-XHMT> (announcing FWS proposal in March 2018 to downlist the humpback chub); Ashley Bunton, *Innovative Project Underway to Save Endangered Fish*, MOAB SUN NEWS (Nov. 8, 2018), <https://perma.cc/D56G-34QP> (announcing FWS proposal in October 2018 to downlist the razorback sucker).

61. Memorandum from FWS Region 6 Reg’l Dir. to Upper Colo. River Endangered Fish Recovery Program Implementation/Mgmt. Comm., Consultants, and Interested Parties (Dec. 10, 2017), <https://perma.cc/TR4B-8EV2>.

62. *See Water and Power Bills: Hearing on S. 637, S. 789, S. 1080, and S. 1453 Before the Subcomm. on Water and Power of the S. Comm. On Energy and Nat. Res.*, 111th Cong. 1–70 (2009) (recording testimony of more than twenty interested parties supporting reauthorization of funding for the Program); Future Water, Colo. River Dist. (Apr. 2018), <https://perma.cc/LSN5-UCS4> (reauthorization of funding for endangered fish programs is “among the River District’s highest priorities”).

The Program has achieved this success while deviating from the initial plan's methods for maintaining flow. As discussed above, the Program's foundational documents emphasize acquiring long-term water sources to maintain flow and enforcing Program water rights, but in reality the Program has taken a more flexible and ad hoc approach.

The 15-Mile Reach is one portion of habitat protected by the Program. The minimum recommended flow for the 15-Mile Reach in low flow years is 810 cubic feet per second ("cfs").<sup>63</sup> This recommended flow is determined based solely on the biology of the fish and does not consider the water flow patterns of the river or the realities of a prior appropriation regime. The Program aims to meet the recommended flow using water from a variety of sources.

### 1. Existing Water Sources

The Program has several long-term "fish pools" in the Ruedi, Granby, Wolford, and Green Mountain Reservoirs that are earmarked to provide flow to the 15-Mile Reach.<sup>64</sup> These water sources have a variety of legal forms. For example:

- east slope water users committed to provide 5412.5 acre-feet of water from the Granby Reservoir as a condition of the 1999 Biological Opinion for the Program,
- west slope water users committed to provide another 5412.5 acre-feet of water from the Ruedi Reservoir under the same Biological Opinion condition,
- 6000 acre-feet are provided from the Wolford Reservoir as a condition of the 1998 Wolford Reservoir Biological Opinion, and
- 10,000 acre-feet are provided from the Ruedi Reservoir (5000 available every year, plus 5000 available if Ruedi Reservoir fills, statistically about 4 out of 5 years) pursuant to a long-term contract with CWCB.<sup>65</sup>

Therefore, the Program has long-term legal rights to up to 26,825 acre-feet of stored water. Additionally, although the Program does not have a legal right to water in the Green Mountain Reservoir, water from this source may be available if there is a surplus.<sup>66</sup> CWCB also owns two instream flow rights in the 15-Mile Reach.<sup>67</sup> These rights help ensure that water released from these reservoir sources can be legally protected from diversion all the way to the 15-Mile Reach.

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63. 1999 BiOp, *supra* note 19, at 40–41.

64. Interview with Don Anderson, *supra* note 6.

65. *Id.*

66. Interview with Don Anderson, *supra* note 6. Surplus in the Green Mountain Reservoir is determined by Reclamation in consultation with Grand Valley historic users (senior water rights holders in the Grand Junction area). These users rely on the Historic User Pool (HUP) in the Green Mountain Reservoir to provide their water. Along with these users, Reclamation assesses the evolving hydrologic conditions and water demands over the course of the irrigation season.

67. *Id.*

The Program coordinates releases of the “fish water” from these reservoirs to maintain flow and habitat within the 15-Mile Reach.<sup>68</sup> The quantity and timing of releases are coordinated during the irrigation season on a weekly phone call with multiple Colorado River interests, including historic agricultural water users in the Grand Valley in western Colorado.<sup>69</sup> The water users discuss short-term weather, anticipated irrigation needs, and Program needs, and agree to reservoir releases, flow and storage accounting adjustments, and use quantities.<sup>70</sup>

These weekly phone calls allow users to express their water needs and resolve conflicts directly with other users. Water users respect the Program water needs and cooperate to make water available for the Program in the 15-Mile Reach.<sup>71</sup> Under the prior appropriation doctrine senior consumptive water users have a legal claim to their water but seem to value and respect the collaborative process employed by the Program. They also recognize the need for the Program to succeed.<sup>72</sup>

The Program’s long-term sources help supplement natural flows but are not sufficient on their own to maintain flows under some conditions (as was the case in the 2018 irrigation season, as discussed below). The Program currently depends to a large degree on the voluntary cooperation of senior water users to help ensure sufficient water to maintain habitat in the 15-Mile Reach. The Program’s legal rights to stored water are supported by CWCB’s instream flow rights, but their junior nature (1992 and 1994 priority) limits their value for protecting natural flows in this reach. Although the prior appropriation doctrine prevents senior right holders from changing their use in a way that would harm these junior rights, the junior rights have a limited legal ability to influence water use.

Despite the junior nature of the instream flow rights, the Program and CWCB have developed mechanisms for protecting and delivering water to the 15-Mile Reach that are in accordance with state water law and respect senior appropriators. When a reservoir release is assigned to a designated use, such as instream flow for listed fish habitat, the Division of Water Resources can monitor and shepherd the water released to ensure it makes it all the way to the 15-Mile Reach.<sup>73</sup>

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68. The Program refers to water earmarked to provide habitat for the listed fish as “fish water.” Coordinating releases of stored water is an art that is highly dependent on timing and careful rationing of fish water throughout the irrigation season.

69. Interview with Don Anderson, *supra* note 6. The Grand Valley is an agricultural area adjacent to the 15-Mile Reach.

70. *Id.*

71. *Id.*

72. *Id.*

73. The state “shepherds” water through the river by communicating with water users to make sure they do not divert water tagged for a specific use, monitoring to make sure the quantity released is not diverted, and even closing headgates to prevent diversion if necessary. Telephone interview with Jojo La, Endangered Species Policy Specialist, Colo. Water Conservation Bd. (Nov. 6, 2018) [hereinafter Interview with Jojo La].

## 2. The 2018 Season

The Program was put to the test in 2018—an exceptionally dry year.<sup>74</sup> Below-average snowpack, low precipitation, and high temperatures contributed to the fourth-driest year in more than a century of record-keeping in Colorado.<sup>75</sup> In September 2018, flows in the 15-Mile Reach dropped to between 150 and 200 cfs, less than 20 percent of the recommended flow prescribed by FWS.<sup>76</sup>

At the beginning of the spring, the Program had firm agreements in place for 21,825 acre-feet of water to supplement flow in the 15-Mile Reach.<sup>77</sup> Averaged over a 100-day irrigation season, this amounted to a flow in the 15-Mile Reach of approximately 110 cfs, still well below the recommended flow level. This left a large difference to be made up by natural flow and other sources of water.

As the season progressed, flows in the river were not able to meet the needs of all water users. Senior water users started to put “calls” on the water in June, requiring junior users to let the water flow past their diversions to satisfy the senior rights.<sup>78</sup> Under normal conditions, the Historic User Pool (“HUP”; a quantity of water set aside in the Green Mountain Reservoir for agricultural water users in the Grand Valley) supplements base flow to meet the needs of water users and leave a surplus of fish water for the Program.<sup>79</sup> In 2018, however, the HUP could not sufficiently meet the needs of the historic users, and even most senior rights holders had to make do with less.<sup>80</sup> Despite their legal right to water, it was simply not available. This reality triggered mostly voluntary efforts to cut back use, which were coordinated on the weekly HUP phone calls.<sup>81</sup> Ultimately there was a proportional reduction of direct delivery water from Green Mountain Reservoir, and no surplus left for the fish.<sup>82</sup> Although users cooperated with the Program to leave some water in the river even while they experienced shortages, the Program scrambled to supplement their inadequate long-term sources with alternative sources.

In September 2018, the Program received supplemental water in Ruedi Reservoir via three short-term mechanisms. First, the Ute Water Conservancy District and ExxonMobil subsidiary XTO Energy donated 9,000 acre-feet of water for irrigation and to supplement flows in the 15-Mile Reach.<sup>83</sup> Second,

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74. See Heather Sackett, *Water Year 2018 Closes as One of Driest on Record for Upper Colorado River Basin*, ASPEN JOURNALISM (Oct. 5, 2018), <https://perma.cc/7HHD-9L8L>.

75. *Colo. Farmers Hurt by Drought Worry It Could Get Worse*, E&E NEWS (Sept. 14, 2018).

76. Interview with Don Anderson, *supra* note 6.

77. *Id.*

78. Heather Sackett, *Senior Calls on the Rivers, Fish Water in the ‘Pan*, GLENWOOD SPRINGS POST INDEP. (June 27, 2018), <https://perma.cc/8DS3-5QUP>.

79. Interview with Don Anderson, *supra* note 6.

80. *Id.*

81. *Id.*

82. *Id.*

83. Dennis Webb, *High and Dry Irrigators Getting a Hand*, GRAND JUNCTION DAILY SENTINEL (Sept. 19, 2018), <https://perma.cc/9ZPP-LVG8>.



CWCB leased 6,000 acre-feet of water from the Ute Water Conservancy District for the Program to use.<sup>84</sup> Finally, the Colorado River District released additional water.<sup>85</sup> During late September and early October, there were periods where fish water released from Ruedi Reservoir was the only water in the 15-Mile Reach.<sup>86</sup> To make sure the fish water made it to the critical habitat, the State of Colorado Division of Water Resources shepherded the released water to the 15-Mile Reach.<sup>87</sup> Although 2018 was an exceptionally difficult year for water users and fish in the Upper Basin, it included outstanding examples of cooperation.

### III. FUTURE OF THE PROGRAM

Despite its success, the Program faces challenges. An extended drought has plagued the Colorado River Basin since 2000.<sup>88</sup> The summer of 2018 was a particularly dry year in the Upper Colorado River Basin, with portions of western Colorado reaching “extreme” and “exceptional” levels of drought.<sup>89</sup> The challenging conditions forced water users on the Upper Colorado River to think creatively and cooperatively to ensure adequate flow in the 15-Mile Reach. As demand for water increases throughout the Colorado River Basin and climate change results in increasing temperatures and changing precipitation patterns, the Program will be one of many water users struggling to deal with shortages.<sup>90</sup> This Part explores how the Program could modify the legal structure of its water rights to improve its ability to function in challenging conditions and suggests some possible methods to achieve that goal.

#### A. KEY CONSIDERATIONS

The following considerations inform this discussion about the future of the Program: 1) the Program has successfully recovered two endangered species to eligibility for downlisting, 2) the cooperative approach of all the water users is productive and positive, 3) fear of ESA enforcement motivates the parties to make sure the Program succeeds, and 4) although predatory and nonnative fish are currently the largest threat to endangered fish species, recurring flow

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84. Heather Sackett, *Colorado Water Board OKs Leases for Ruedi Reservoir Water to Help Endangered Fish*, GLENWOOD POST INDEP. (July 19, 2018), <https://perma.cc/VJG4-BNLW>.

85. Interview with Jojo La, *supra* note 73.

86. Interview with Don Anderson, *supra* note 6.

87. Interview with Jojo La, *supra* note 73.

88. *Drought in the Colorado River Basin*, *supra* note 1.

89. Dennis Webb, *High and Dry Irrigators Getting a Hand*, GRAND JUNCTION DAILY SENTINEL (Sept. 19, 2018), <https://perma.cc/926U-6V8Y>.

90. See COLORADO CLIMATE PLAN 8 (2014), <https://perma.cc/3L4K-ACRE> (analyzing anticipated increases in demand from a growing population within the state and the potential for climate change to change water demand and supply); BUREAU OF RECLAMATION, U.S. DEP'T OF THE INTERIOR, SECURE WATER ACT SECTION 9503(C)—RECLAMATION CLIMATE CHANGE AND WATER 1-11 (2016) (analyzing anticipated climate-related changes in the Colorado River Basin including changes to peak runoff timing).

shortages could further inhibit endangered fish recovery. As demands for water continue to increase in Colorado (and throughout the Basin) and climate change impacts the hydrologic conditions, 2018 conditions may become more frequent.<sup>91</sup> Acquiring additional long-term water sources for the 15-Mile Reach would improve the viability of the Program (thereby ensuring ESA compliance) and reduce uncertainty for water users and fish in this reach.

Ensuring that the Program continues to protect listed species from jeopardy benefits all parties. As discussed above, if the Program disappeared, hundreds of federal and non-federal water projects depleting flows, including Reclamation reservoir operations, would need to comply with the ESA individually.<sup>92</sup> Severe restrictions on water use in the Upper Basin imposed by FWS could replace the cooperative and somewhat voluntary process currently in use. Although maintaining flow is only one element of the recovery plan, extremely low flows have several harmful effects on the fish.<sup>93</sup> Long-term success of the Program, and eventual recovery of the fish species, will require water in the 15-Mile Reach. If flows consistently fall below the recommended levels such that the fish are harmed, FWS may determine that the Program no longer adequately protects the fish from jeopardy and therefore cannot serve as an RPA for ESA compliance purposes. Such circumstances may require water users to reinitiate formal consultation.<sup>94</sup>

Just as the Program benefits water users by reducing the uncertainty of individual ESA compliance, additional long-term water sources for the Program would reduce the uncertainty associated with the current process. During the 2018 season, water users experienced a variable water supply and negotiated use reductions on weekly phone calls.<sup>95</sup> This type of short-term management, although laudable for its flexibility and cooperative engagement, does not provide the long-term predictability desired by both water users and Program interests.

Other similar river recovery programs also emphasize the acquisition of water to reduce shortages in critical habitat. For example, the Platte River Recovery Implementation Program includes a goal of acquiring or retiming 130,000 to 150,000 acre-feet of water to supplement natural flows.<sup>96</sup> To date, the Platte

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91. COLORADO'S WATER PLAN, *supra* note 17, at 5-4; U.S. DEP'T OF THE INTERIOR, RECLAMATION MANAGING WATER IN THE WEST: COLORADO RIVER BASIN WATER SUPPLY AND DEMAND STUDY EXECUTIVE SUMMARY 9, 28 (2012), <https://perma.cc/ACH5-J98M>. The purpose of this study was to define current and future imbalances in water supply and demand in the Basin and the adjacent areas that receive Colorado River water through 2060. The study determined that "the longterm projected imbalance in future supply and demand is about 3.2 [million acre-feet] by 2060." *Id.*

92. See 1999 BiOP, *supra* note 19, at 2-3.

93. Interview with Don Anderson, *supra* note 6.

94. See 50 C.F.R. § 402.16 (outlining procedures for reinitiating formal consultation when there is new information or changes that could result in effects that were not considered under the prior consultation).

95. Interview with Don Anderson, *supra* note 6.

96. U.S. BUREAU OF RECLAMATION, DRAFT ENVIRONMENTAL AND BIOLOGICAL ASSESSMENT FOR THE PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM, PROPOSED FIRST INCREMENT EXTENSION 1-4 (2018).

River Program has acquired approximately 90,000 acre-feet.<sup>97</sup>

#### B. POTENTIAL LONG-TERM WATER SOURCES

This section outlines additional long-term water sources that the Program could acquire. However, the Basin is overallocated and finding more water is difficult.<sup>98</sup> The original 1987 Program contemplated these types of sources, as discussed in section II.A, above, and for various reasons they have not been acquired as originally envisioned. Some of these challenges are discussed below. Although there is a wide variety of potential water sources for the Program (such as the creation of an Environmental Water Account, dry year options, other technical improvements and crop changes), the following options would blend most easily with the Program's current operations.

##### 1. Conversion of Consumptive Rights to Instream Flow Rights

The Program, via CWCB, could buy consumptive water rights from willing sellers and convert them to instream flow rights in the 15-Mile Reach. This approach would be the most beneficial for the Program as it could acquire rights with a senior priority. Holding instream flow rights with a senior priority would be the most secure way for the Program to ensure flow. However, this approach would also be expensive and would likely face strong opposition from the agricultural sector and rural landowners. The process is called "buy and dry" because water users, often municipalities, buy water rights from water rights holders, typically irrigators.<sup>99</sup> The irrigators keep their land but can no longer irrigate. This practice has been in use in Colorado for decades and has resulted in significant decreases in the number of farms.<sup>100</sup> Colorado anticipates a decrease in irrigated land from approximately 3.5 million to 2.7 million acres statewide by 2050.<sup>101</sup> Buying and drying could have a substantial negative economic impact in western Colorado. This option would likely be politically disfavored by these agricultural economies and FWS would likely not pursue such a policy.

##### 2. Additional Storage Capacity or Long-term Contracts

The Program (through one of its partners) could build additional water storage capacity. New or expanded reservoirs could store additional fish pools for release to supplement base flows when there are shortages in the Upper Basin. This approach would be expensive and a new reservoir would require substantial

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97. *Id.*

98. Interview with Don Anderson, *supra* note 6.

99. See Megan Verlee, *Thirsty Cities, Dry Farms: Part 1 – Buy and Dry*, COLO. PUB. RADIO (Jul. 27, 2011), <https://perma.cc/Z63G-BJN6>.

100. *Id.*

101. COLORADO'S WATER PLAN, *supra* note 17, at 5-13.

environmental review.<sup>102</sup> Rather than building new storage specifically for the Program, FWS could (and has in the past) arrange for a quantity of storage dedicated to instream flow augmentation via long-term contracts for water in existing reservoirs.<sup>103</sup> For example, as a condition of constructing the Wolford Reservoir the Colorado River District committed to providing 6,000 acre-feet of water per year to benefit endangered fish in the 15-Mile Reach.<sup>104</sup> The Program should also continue its practice of assessing fees for new or modified storage that depletes more than 100 acre-feet per year.<sup>105</sup> Money gathered through these fees should be used to secure long-term leases where possible.

### 3. Contract for Green Mountain Reservoir Surplus

The Program could obtain a contract for available uncontracted water in the Green Mountain Reservoir. Although the exact amount of uncontracted water is unknown, in normal years surplus water in this reservoir provides tens of thousands of acre-feet to benefit fish in the 15-Mile Reach.<sup>106</sup> But in 2018, the Program received no water from this source. Because Reclamation declared there was no surplus, the Program had no right to any water. Although shortage conditions could impact the quantity of water available for release from the Green Mountain Reservoir, a contract for fish water would give the Program a basis for acquiring additional water for the 15-Mile Reach when it becomes available pursuant to the terms of such a contract. The Program is currently pursuing this option cautiously—after the dry 2018 season, consumptive water interests are sensitive about relinquishing potential future water sources.<sup>107</sup>

### 4. Improved Conservation

Water conservation on the east slope could also reduce transbasin diversions and leave more natural flow in the Colorado River, as well as the possibility of more water in the Upper Basin for the Program to acquire. The Program or its west slope partners could obtain long-term agreements from east slope users to reduce consumption. However, the population on the east slope is increasing rapidly and it is unlikely that conservation would be able to significantly offset these growing water needs.<sup>108</sup> Similar agreements could be made with west slope consumptive users, including agricultural users. Irrigation efficiency improvements

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102. Interview with Don Anderson, *supra* note 6.

103. *Id.*

104. 1999 BiOp, *supra* note 19, at 10.

105. Interview with Don Anderson, *supra* note 6. See, e.g., U.S. DEP'T OF INTERIOR, WINDY GAP FIRING PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT 3-293 to 3-294 (2011), <https://perma.cc/HP3L-HEPC>.

106. Interview with Don Anderson, *supra* note 6.

107. *Id.*

108. COLORADO'S WATER PLAN, *supra* note 17, at 5-3 to 5-4, 5-6.

could reduce the quantity of water diverted, and the excess could be assigned to the Program through a long-term lease or sale.

Securing these rights now would likely prompt some challenging conversations and require changes in use patterns. However, all parties would enjoy greater certainty regarding their water use responsibilities and the long-term viability of the Program.

#### CONCLUSION

The Upper Colorado River Endangered Fish Recovery Program is situated within a complex system of hydrologic, legal, economic, and political forces. The legal regimes of the Colorado River, the State of Colorado, and the ESA impose obligations on water users in the Upper Basin that can be in tension. Colorado water law incentivizes the development and consumptive use of water resources, and the ESA and population growth place additional demands on an increasingly volatile supply. Demands for drinking water and water to support instream conservation purposes, for example, continue to increase. The Green Mountain Reservoir used to hold water tagged for a handful of uses—every year the scope and scale of those tagged uses expands.

The Program is an innovative and successful effort at balancing the competing needs of water users and endangered fish within this complex legal, political, and hydrologic system. Its ultimate success is critical for the fish as well as the water users who wish to avoid the uncertainty of individual ESA compliance. Although the Program is successfully protecting the endangered fish, a lack of permanent or long-term water sources imperils its long-term viability. Reduced water supply is difficult for all users to adapt to, but for endangered fish in the 15-Mile Reach, insufficient flow harms their habitat and directly impacts health.

The 2018–2019 winter was wet in the Colorado Rockies and spring snowmelt will likely leave the Green Mountain Reservoir brimming with fish water, drinking water, irrigation water, and water for any use you can imagine.<sup>109</sup> Surplus water from this pool will likely supplement the Program's long-term sources to support endangered fish habitat in the 15-Mile Reach in the 2019 irrigation season. The 2018 and 2019 irrigation seasons could illustrate the extreme variation in watershed conditions amidst a changing climate. In the face of such uncertainty, acquiring legal rights to additional long-term sources would more consistently benefit endangered fish and water users.

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109. As of June 3, 2019, Colorado statewide snowpack was at 539 percent of average. Chris Bianchi, *Why Colorado's Snowpack Numbers Are So Ridiculously Off the Charts*, DENVER POST (June 4, 2019).