Breaking the Cycle: New Ideas to Solve Old Problems in Colorado River Tribal Water Access

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The Colorado River Basin faces an unprecedented crisis of over-allocation and climate-induced scarcity, yet tribal communities—despite holding some of the most senior water rights in the system—continue to face significant barriers in accessing and utilizing their water allocations. This article examines the complex legal, practical, and cultural challenges confronting tribal water rights in the lower basin.

The analysis begins with an examination of the foundational legal framework governing tribal water rights, tracing the evolution from the Winters doctrine through contemporary water settlements. While the reserved rights doctrine established tribes' senior priority claims, the practical implementation of these rights remains constrained by systemic barriers, including inadequate infrastructure, limited technical capacity, and chronic underfunding of federal treaty and trust obligations.

Central to this analysis is the fundamental tension between Anglo-American water law's commodification of water resources and Indigenous worldviews that conceptualize water as sacred and interconnected with cultural and spiritual practices. This philosophical disconnect manifests in quantification processes that struggle to accommodate ceremonial and cultural water needs, allocation systems that conflict with traditional seasonal use patterns, and legal and policy frameworks that prioritize economic development and efficiency over ecosystem stewardship and cultural preservation.

The article examines recent tribal water settlements in the lower basin, analyzing both their achievements in providing legal certainty and economic development opportunities, and their limitations in addressing the full scope

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of tribal water needs. Through case studies of collaborative partnerships between tribal, federal, state, and local governments, as well as non-governmental organizations, the piece identifies successful models for multi-jurisdictional cooperation while highlighting persistent governance challenges.

Looking forward, the article explores innovative approaches to tribal water management, focusing on new partnerships and the integration of traditional knowledges into basin-wide planning processes. Meaningful progress in tribal water access requires not only continued legal and policy reforms, but a fundamental reconceptualization of water governance that honors Indigenous relationships with water while addressing the practical needs of tribal communities in an era of increasing scarcity. This research contributes to ongoing scholarship on tribal sovereignty, water law, and environmental justice by providing a comprehensive examination of how colonial legal structures continue to constrain Indigenous water rights, even as tribal communities seek innovative pathways to water security and cultural preservation in the Colorado River system.

INTRODUCTION

The Colorado River Basin stands at a critical juncture, facing unprecedented challenges of over-allocation and climate-induced scarcity that threaten water security throughout the region. Within this crisis, a profound paradox exists: tribal communities, despite holding some of the most senior water rights in the Basin's legal framework, continue to face significant barriers to accessing and utilizing their rightful water allocations. This disconnect between legal entitlement and practical reality reveals the persistent influence of colonial structures on contemporary water governance in the American West.

This article examines the complex interplay of legal, infrastructural, administrative, and cultural factors that prevent tribes from fully realizing their water rights in the Colorado River Basin. It begins with an examination of the historical and legal foundations of tribal water rights, tracing the evolution from the *Winters* doctrine through contemporary water law in the Colorado River Basin. Part II then analyzes the current legal framework governing tribal water rights with particular focus on water settlements, their structure, and their mixed record of addressing tribal needs. While the *Winters* doctrine and subsequent legal developments have established the foundation for tribal water claims, systemic barriers—including inadequate infrastructure, chronic underfunding, limited technical capacity, and bureaucratic hurdles—have perpetuated water insecurity in many tribal communities. Part III highlights persistent challenges to meaningful water access, including the climate change impacts on traditional water sources. However, at the heart of this analysis lies a fundamental tension between two worldviews: Anglo-American water law's commodification of water resources and Indigenous perspectives that understand water as sacred and recognize kinship relationships with water as a living relative deserving of reciprocity and care. This philosophical disconnect manifests in quantification processes that fail to recognize ceremonial uses, allocation systems that conflict with traditional practices, and legal frameworks that prioritize economic gain over ecosystem stewardship and cultural preservation. Looking forward, Part IV turns towards solutions, exploring innovative approaches that may help bridge this divide. By examining creative partnerships and legal reforms that incorporate traditional knowledges and cultural competency, we identify pathways toward more equitable and sustainable water governance. These collaborative models offer promising alternatives to conventional approaches, creating space for meaningful tribal water access while respecting Indigenous kinship with water as a living relation rather than merely a resource to be allocated.

The imperative for action is clear. As climate change intensifies water scarcity throughout the Basin, addressing these longstanding inequities in tribal water access becomes not only a matter of legal obligation but also an opportunity to incorporate Indigenous wisdom into our collective response to growing environmental challenges. This article contributes to ongoing scholarship on tribal sovereignty, water law, and environmental justice by providing a comprehensive examination of both persistent barriers and innovative solutions—ultimately advocating for a fundamental reconceptualization of water governance that can better serve all communities dependent on the Colorado River.

I. HISTORICAL AND LEGAL FOUNDATIONS OF TRIBAL WATER RIGHTS

In the arid American West, water rights are power—determining which communities flourish and which struggle to survive. For tribal nations, the legal battle to secure and access their rightful water allocations represents a century-long struggle against systems designed to privilege non-Indigenous interests. Understanding today's barriers to meaningful tribal water access requires tracing the evolution of the legal doctrines meant to protect Indigenous water rights and examining how these principles have been applied—and often constrained—in practice. This Section establishes the historical and legal context essential for analyzing contemporary challenges in tribal water access in the Colorado River Basin. We begin by examining the seminal *Winters* doctrine and its establishment of federal reserved water rights for tribes, exploring its theoretical foundations, priority date implications, and connection to federal trust responsibilities. Next, we turn to the present legal framework governing tribal water rights, with particular attention on the quantification processes through settlement agreements and a critical analysis of specific tribal water settlements in the lower basin and their implications for tribal communities seeking to secure their water futures. Through this examination, we reveal how the legal foundation for tribal water rights, while theoretically strong, has been systematically undermined by practical barriers and competing interests.

A. The Winters *Doctrine: The Origin of Tribal Water Rights*[1]

In 1908, the United States Supreme Court issued a landmark decision that would fundamentally alter water law in the American West. In *Winters v. United States*, the Court addressed a seemingly straightforward dispute between the Fort Belknap Indian Reservation and upstream non-Indian irrigators who had diverted water from the Milk River, depriving the reservation of water needed for agriculture and sustenance.[2] The Court's ruling established what became known as the *Winters* doctrine—a legal principle that determined that when the federal government creates an Indian reservation, it implicitly reserves sufficient water to fulfill the purposes of that reservation.[3] The Court recognized that without adequate water, the arid reservation lands in the Milk River valley would be "practically valueless" and the federal government's agreements with tribes would be rendered meaningless.[4] The *Winters* Court reasoned that the Fort Belknap tribes could not have intended to cede their ancestral territories only to be left with dry, unusable lands—thus, water rights must have been implicitly reserved when the reservation was established.[5] In subsequent decades, courts clarified that these reserved rights apply to both surface and groundwater and are not limited to agricultural purposes but extend to all purposes contemplated in establishing a reservation, including preserving tribal homelands, economic development, and maintaining traditional lifeways.[6] The doctrine was also extended to other federal reservations in another U.S. Supreme Court case,

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1. There is profound irony in attributing the "origin" of tribal water rights to a 1908 Supreme Court decision. As discussed further in Part III, Indigenous peoples had lived in relationship with the waters of this continent since time immemorial, developing sophisticated systems for sharing, protecting, and honoring water long before European contact. These Indigenous legal traditions did not conceptualize water as property to be owned or allocated, but rather as a relative with whom humans maintain reciprocal responsibilities—a perspective fundamentally at odds with the Anglo-American property framework within which the *Winters* doctrine operates. Nevertheless, within the imposed colonial legal system, *Winters* represents the first significant recognition that tribes retained rights to water necessary to support a permanent homeland, and for their continued existence.

2. Winters v. United States, 207 U.S. 564 (1908).

3. *Id.* at 576–77.

4. *Id.* at 576.

5. *Id.*

6. *See, e.g.*, Agua Caliente Band of Cahuilla Indians v. Coachella Valley Water Dist., 849 F.3d 1262 (9th Cir. 2017) (holding that the *Winters* doctrine extends to groundwater); *In re* the Gen. Adjudication of All Rts. to Use Water in Gila River Sys. & Source (*Gila V*), 35 P.3d 68, 79–80 (Ariz. 2001) (identifying various factors a court may consider when quantifying tribal water rights, including tribal culture); Colville Confederated Tribes v. Walton, 647 F.2d 42, 47–48 (9th Cir. 1981) (noting that reservations may be established for more than merely providing a land-based agrarian society).

Arizona v. California, confirming its applicability throughout the Colorado River Basin.[7]

Central to the *Winters* doctrine is the priority date, which determines the standing of a tribe's water rights in the hierarchy of the prior appropriation system. Typically, for tribes, the priority date is based on their reservation's established date.[8] In this system of prior appropriation law that governs western water allocation, earlier priority dates confer superior rights.[9] For many tribes, these priority dates reach back to the mid-19th century during the federal government's reservation policy era, predating most non-Indian water claims and the major western water development projects.[10] This seniority is particularly consequential in over-allocated river systems like the Colorado, where demand exceeds supply even in non-drought years.[11]

In theory, tribal senior rights should be the first to be accessed and among the last to be curtailed during times of shortage. However, the practical reality often diverges from this legal principle. The experience of the Ute Mountain Ute Tribe starkly illustrates this problem. Despite holding senior water rights dating back to 1868, the tribe faced decades of water insecurity.[12] Desperate to secure reliable water access for their community, the tribe ultimately felt compelled to negotiate away valuable senior rights in exchange for funding to build McPhee Reservoir. Instead of their original 1868 priority date, the tribe now holds 1988 junior water rights that are vulnerable to curtailment

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7. Arizona v. California, 373 U.S. 546 (1963).

8. *See Winters*, 207 U.S. at 577.

9. Heather Tanana & Derrick Beetso, Arizona v. Navajo Nation*: The Fight for a Permanent Homeland*, 85 OHIO ST. L.J. 1189, 1198 (2024) (discussing the doctrine of prior appropriation).

10. Timothy Lahmers & Susanna Eden, *Water and Irrigated Agriculture in Arizona*, ARROYO, June 27, 2018, at 1, 9, https://wrrc.arizona.edu/sites/default/files/attachment/Arroyo-2018-Revised-Irrigated-Agriculture.pdf [https://perma.cc/Q42B-T8NB].

11. *Id.* at 9–10; *see also* CHARLES V. STERN & MARIEL J. MURRAY, CONG. RSCH. SERV., R44148, INDIAN WATER RIGHTS SETTLEMENTS 2 (2025), https://www.congress.gov/crs-product/R44148 [https://perma.cc/Z3P2-S8YY]; Jessie Blaeser et al., *Tribes in the Colorado River Basin Are Fighting for Their Water. States Wish They Wouldn't*, GRIST (Nov. 16, 2022), https://grist.org/indigenous/colorado-river-tribal-water-rights-navajo-nation-arizona-nevada-drought-data [https://perma.cc/57HN-ZXRG].

12. Michael Elizabeth Sakas*, Historically Excluded from Colorado River Policy, Southern Ute, Ute Mountain Ute, and Other Tribes Want a Say in How the Dwindling Resource Is Used*, KSUT (Dec. 10, 2021), https://www.ksut.org/environment-climate/2021-12-10/historically-excluded-from-colorado-river-policy-southern-ute-ute-mountain-ute-and-other-tribes-want-a-say-in-how-the-dwindling-resource-is-used [https://perma.cc/B2DP-7FEK]; Sarah Tory, *As Drought in the West Worsens, the Ute Mountain Ute Tribe in Colorado Faces a Dwindling Water Supply*, COLO. SUN, July 28, 2021, https://coloradosun.com/2021/07/28/ute-mountain-ute-drought-dolores-river-four-corners [https://perma.cc/96YS-T589].

during drought conditions.[13] As Tribal Chairman Manuel Heart reflected, "We just got backed into a corner, take it or leave it."[14] This trade-off—surrendering legally superior rights for immediate infrastructure needs—exemplifies how lack of funding and development capacity can undermine the theoretical protections of the *Winters* doctrine, effectively forcing tribes to choose between paper rights they cannot use or infrastructure that comes with less secure water access and less senior rights.

The *Winters* doctrine is inextricably linked to the federal trust responsibility—the fiduciary obligation the United States government owes to tribal nations based on treaties, agreements, statutes, executive orders, and a history of dealings.[15] This responsibility includes protecting tribal resources, including water rights.[16] As a result, the federal government often represents tribal interests in water adjudications and settlements in addition to the tribes themselves.[17] In fulfillment of this responsibility, Congress has authorized and the Executive branch oversees numerous federal programs that provide technical assistance and support tribal water infrastructure.[18] Nevertheless, chronic underfunding and competing federal priorities have often resulted in inadequate fulfillment of these trust obligations, leaving many tribes with paper water rights but insufficient means to convert these into "wet water"—actual, usable water resources.[19]

The U.S. Supreme Court's 2023 decision in *Arizona v. Navajo Nation* further complicates reliance on this trust relationship.[20] In this case, the Navajo Nation sought to establish that the United States had an affirmative duty under both its 1849 and 1868 treaties and the federal trust responsibility

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13. Sakas, *supra* note 12.

14. *Id.*

15. *See* Tanana & Beetso, *supra* note 9, at 1206.

16. *See* STERN & MURRAY, *supra* note 11.

17. *See* Judith V. Royster, *Indian Water and the Federal Trust: Some Proposals for Federal Action,* 46 NAT. RES. J. 375, 378–79 (2006) (discussing federal representation of tribes in water rights adjudications and settlement negotiations as part of the trust responsibility). Indeed, in *Arizona v. California*—the first adjudication of tribal water rights to the Colorado River—the federal government represented five tribes with reservations along the Lower Colorado River (Fort Mojave Indian Tribe, Fort Yuma Quechan Indian Tribe, Chemehuevi Indian Tribe, Colorado River Indian Tribes, and Cocopah Indian Tribe). 373 U.S. 546, 595 & n.97 (1963).

18. HEATHER TANANA ET AL., UNIVERSAL ACCESS TO CLEAN WATER FOR TRIBES IN THE COLORADO RIVER BASIN 28–43 (2021), https://tribalcleanwater.org/wp-content/uploads/2021/09/WTI-Full-Report-4.20.pdf [https://perma.cc/G4MP-F7J5] (identifying the various federal programs available that support tribal water access).

19. U.S. COMM'N ON C.R., BROKEN PROMISES: CONTINUING FEDERAL FUNDING SHORTFALL FOR NATIVE AMERICANS 181–82 (2018).

20. 599 U.S. 555 (2023); *see generally* Tanana & Beetso, *supra* note 9 (discussing the case and its implications in more detail).

to assess and protect the tribe's water needs in the Colorado River.[21] Despite severe water insecurity—with approximately 30 percent of Navajo Nation households lacking running water[22]—the Court ruled that the United States had no affirmative duty to secure water for the tribe based off its treaty interpretation.[23] The Court acknowledged that the treaty included the right to use water as needed but rejected the assertion that the federal government had an obligation to assess tribal water needs, develop plans to secure water, or build water infrastructure.[24] As Justice Gorsuch noted in his dissent, the Navajo "have tried it all" to secure their water rights through various legal avenues to no avail, even though the federal government has admitted it holds some water rights in trust for the tribe.[25]

The *Winters* doctrine represents judicial acknowledgment of the necessity of preserving resources for tribal self-determination and cultural continuity and the affirmation of tribal sovereignty over rights not explicitly ceded. Yet, the core of its promise remains partially unfulfilled as implementation challenges persist more than a century after its establishment, with *Arizona v. Navajo Natio*n highlighting the continuing struggle for tribes to convert theoretical legal rights into practical access to water. Understanding this foundational doctrine and its inherent tensions provides essential context for examining contemporary tribal water challenges in the Colorado River Basin.

B. Settlements: The Current Legal Framework for Tribal Water Rights

While the *Winters* doctrine established the legal foundation for tribal water rights, the practical implementation of these rights remains a challenge for many tribal nations, with quantification of the water right being the first hurdle. Settlement agreements theoretically offer several advantages over protracted litigation: they can provide greater certainty for all parties, avoid the winner-take-all risks of judicial decisions, include provisions for infrastructure funding that courts cannot mandate, and allow for creative solutions tailored to specific tribal needs.[26] The following Section examines

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21. *Navajo Nation*, 599 U.S. at 559–562.

22. *Water as a Trust Resource: Examining Access in Native Communities: Hearing Before the S. Comm. on Indian Affs.*, 118th Cong. 17–19 (2023) (statement of Crystalyne Curley, Speaker, Navajo Nation Council).

23. *Navajo Nation*, 599 U.S. at 558–59.

24. *Id.*

25. *Id.* at 598–99 (Gorsuch, J., dissenting).

26. *See, e.g.*, Heather J. Tanana & Elisabeth Paxton Parker, *The Unfulfilled Promise of Indian Water Rights Settlements*, NAT. RES. & ENV'T, Fall 2022, at 12 (discussing benefits and challenges of water settlement agreements).

the settlement process, through an analysis of Arizona tribes. We review significant past settlements in the Colorado River Basin, with particular focus on the Lower Basin in Arizona. Finally, we conduct a critical analysis of settlement structures, examining the inherent trade-offs between certainty and maximum rights, funding mechanisms, treatment of cultural and ceremonial water needs, quantification methodologies, and environmental protection provisions. Through this examination, we reveal how settlements, while offering practical pathways to water access, often require significant tribal concessions and frequently fail to address the full scope of tribal water relationships.

C. Settlements[27]

Arizona is home to twenty-two federally recognized Indian tribes and home to the majority of the tribes within the Colorado River Basin.[28] Most of these tribes are located within the Lower Basin except for the Navajo Nation, which is a part of both the Upper and Lower Basins, having been bifurcated without prior consultation.[29] Many of these tribes were experiencing the shifts of federal Indian policy while the Territory of Arizona established itself and had an influx of settlers occupying the areas near scarce sources of water throughout the state.[30] While the *Winters* doctrine was law of the land, the ruling had little initial impact on the water rights access of Basin tribes, although major western water laws and policies were being decided within the Basin like the 1922 Colorado River Compact and Upper Colorado River Basin Compact.[31] Similar to the conflicts that led to the *Winters* case, the

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27. This Section of the article is drawn from author Tso's report on water settlements, *Arizona Tribal Water Rights Settlement Guidebook*.

28. *Tribal Water Rights*, CENT. ARIZ. PROJECT, https://www.cap-az.com/about/tribal-water-rights [https://perma.cc/9NU9-7K9L].

29. *See generally Navajo Water Rights Overview*, NAVAJO NATION WATER RIGHT COMM'N, https://nnwrc.navajo-nsn.gov/Public-Education/Navajo-Water-Rights-Overview [https://perma.cc/8E5E-P6BV].

30. For example, the Salt River Pima-Maricopa Indian Community describes their experience: "By the 1870s, however, the population of Americans in our territory dramatically increased, as did the competition for natural resources. When the rivers were diverted and dammed, our traditional lifeways changed dramatically. Without the life-sustaining rivers, the fields dried up, the forests of cottonwood and willow died off, and the grasslands disappeared." *Discover the Rich History of the Salt River Community*, SALT RIVER PIMA MARICOPA INDIAN CMTY., https://srpmic-nsn.gov/about/history [https://perma.cc/WSP8-B584] (click "post contact").

31. Matthew McKinney, Jay Weiner, and Daryl Vigil, *First in Time: The Place of Tribes in Governing the Colorado River System*, *in* CORNERSTONE AT THE CONFLUENCE: NAVIGATING THE COLORADO RIVER COMPACT (Jason Anthony Robison ed. 2022), 176–77. Daniel

federal government failed to comprehensively protect tribal resources (including land and water rights) by encouraging westward expansion and agrarian lifestyles for settlers while also enforcing its removal and assimilation policies on American Indian tribes, which led to increased competition of scarce resources across the west.[32]

By the time the massive Central Arizona Project (CAP) was initiated in the 1970s,[33] the water rights of American Indians could no longer be ignored, ushering in a new era of Indian water rights litigation and settlement discussions with various tribes in the Basin. The first Indian water rights settlement was for the Ak-Chin Indian Community, a central Arizona tribe that relied heavily on groundwater resources until local non-Indian users depleted groundwater resources so badly that the lands began to subside.[34] The Community's own advocates communicated these challenges to its federal trustee seeking prevention of this overuse and protection of their water rights.[35] In 1978, the Community settled their water rights claims with the United States and Congress authorized certain water rights and federal investments only to receive backlash from other Arizona users and the Arizona political leadership at the time.[36] This experience is not unique to the Community and highlights the delicate nature of securing support from both federal and state governments as well as local governments to ensure successful implementation and local cooperation.

McCool, *Searching for Equity, Sovereignty, and Homeland*, *in* CORNERSTONE AT THE CONFLUENCE: NAVIGATING THE COLORADO RIVER COMPACT (Jason Anthony Robison ed., 2022), 149–50. "Given the legal holding of the *Winters* case, one might have expected that Indian reservations would have received plentiful amounts of water in the decades immediately after Winters was decided. In fact, precisely the opposite occurred." Reid Peyton Chambers, *Protection and Implementation of Indian Reserved Water Rights as a Necessary Condition for Tribal Economic Development*, 2022 WIS. L. REV. 383, 386 (discussing federal investment in water systems serving non-Native communities while tribal water rights were largely ignored for the majority of the 20th century).

32. *See* Chambers, *supra* note 31, at 386–89.

33. T.R. Witcher, *The Storied History of the Central Arizona Project*, AM. SOC'Y CIV. ENG'RS (Mar. 1, 2022), https://www.asce.org/publications-and-news/civil-engineering-source/civil-engineering-magazine/issues/magazine-issue/article/2022/03/the-storied-history-of-the-central-arizona-project [https://perma.cc/K73E-TBPV].

34. *See* Susanna Eden, Negotiation and the Resolution of Water Allocation Disputes, 26–28 (1988) (M.S. thesis, University of Arizona), https://repository.arizona.edu/bitstream/handle/10150/191993/azu_td_hy_e9791_1988_564_sip1_w.pdf?sequence=1&isAllowed=y [https://perma.cc/2S62-PUDL].

35. *Id.* at 28.

36. *See Enacted Indian Water Rights Settlements*, U.S. DEP'T INTERIOR (June 2024), https://www.doi.gov/siwro/enacted-indian-water-rights-settlements [https://perma.cc/A5VX-GXJ6].

Since 1990, the Department of the Interior has maintained a policy favoring negotiated settlements over litigation for resolving Indian water rights issues.[37] "These agreements allow tribes to quantify their water rights on paper, while also procuring access to water through infrastructure and other related expenses."[38] To date, thirty-nine settlements have been enacted by Congress.[39] Thirty-five of these settlements have been authorized through Congressional legislation and four have been administratively approved.[40] Many of these resolved settlements come from the western U.S.[41] and have provided different models of agreements to resolve the specific needs and challenges of the respective tribes despite provisions within such agreements that explicitly state no precedent or standard shall be created.[42]

In Arizona, fourteen of the twenty-two tribes have either fully or partially resolved their water rights claims.[43] Five tribes have adjudicated their water rights in *Arizona v. California* and the remaining tribes have negotiated settlements with the United States, the State of Arizona, and other local parties.[44] During the 119th Congress, a dozen Indian water rights settlements were introduced for approval, including the Northeastern Arizona Indian Water Rights settlement which involved three Arizona tribes—the Navajo Nation, Hopi Tribe, and San Juan Southern Paiute Tribe.[45] Together these settlements mark a "historically high number" of pending settlements, illustrating a mounting backlog before Congress and the sustained preference for negotiation over litigation in resolving tribal water claims.[46]

The central challenge in resolving water rights lies in quantifying them—determining how much water each tribe is entitled to within the existing allocation systems across the West.[47] The process begins with the Tribe and progresses as the federal government and other parties are brought together. Generally, there are four phases associated with Indian water rights

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37. *See* STERN & MURRAY, *supra* note 11, at 3–4.Tribal governments also have increasingly embraced negotiated settlements as their preferred approach. Max Clayton, *Indian Water Rights Settlements*, 64 NAT. RES. J. 35 (2024).

38. *See* STERN & MURRAY, *supra* note 11, at 3–4.

39. *Id.* at 7.

40. *Id.*

41. *See id.* at 8–10 for a list of water settlements.

42. *See id.* at 8–9.

43. *Tribal Water Rights*, *supra* note 28.

44. *Id.*

45. Alice Walker, *Water Rights Settlements Update*, NATIVE AM. RTS. FUND (July 21, 2025), https://narf.org/2025-water-settlements-update [https://perma.cc/H8P3-XK4S]; STERN & MURRAY, *supra* note 11, at 19–22.

46. Walker, *supra* note 45.

47. STERN & MURRAY, *supra* note 11, at 4.

settlements: prenegotiation, negotiation, settlement, and implementation.[48] While seemingly straightforward, the time between these steps can take several years and requires considerable financial and human resources to consistently advocate for.[49]

The prenegotiation phase may include litigation or other forms of advocacy before the formal settlement negotiations are started and the formal federal negotiation team is launched.[50] When the negotiation phase begins, attorneys and other legal and political representatives engage in direct dialogue with oppositional parties to find compromise to create a proposed agreement.[51] This proposed agreement includes the negotiated water rights claims, water sources, priority dates, location of use, usage provisions, administrative protocols, waivers and releases of claims, appropriations from federal, state and local parties and other substantive provisions meaningful to the parties involved. Once a settlement agreement is reached, parties collectively work to receive federal authorization of the proposed settlement agreement most commonly through Congressional legislation, although some have worked through the Executive Branch for administrative approval.[52] The federal authorization process usually provides a list of requirements of the parties and local court to be completed before a certain deadline for the settlement agreement or legislation to become effective and enforceable.[53] This aspect of the process is generally referred to as the implementation phase where parties are tasked with different responsibilities in order for the settlement to be enforced and ultimately decreed as law through the local court system.[54] For example, in Arizona, settlement agreements are decreed through either one of the state's two active adjudications—the Little Colorado River or the Gila River Adjudication.[55]

Each stage of the settlement process has its challenges yet offer opportunities for collaboration and partnership among the parties involved that would not necessarily be achieved in active litigation due to the adversarial nature of litigation in general. Over the decades, the shift in federal support for settlements has shifted into a cost-benefit analysis type of

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48. *Id.* at 5.
49. *Id.*
50. *See* STERN & MURRAY, *supra* note 11, at 5.
51. *Id.* at 6.
52. *Id.*
53. *See id.* at 7.
54. *Id*.
55. *Adjudications*, ARIZ. DEP'T WATER RES., https://www.azwater.gov/adjudications [https://perma.cc/7UET-QKUB].

approach given the financial constraints on recent Congresses.[56] Interestingly, the support of states and local parties has fluctuated whether the settlement provides more benefits rather than perceived challenges for the state and local governments.[57] Progress has been made overall in general understanding of tribal sovereignty, tribal seniority rights and the impending challenges of climate change and drought in the Colorado River Basin causing actors to consider the opportunity of settling tribal water rights claims within their respective states.[58]

II. THE PERSISTENCE OF OLD PROBLEMS

Despite the legal recognition of tribal water rights and the development of settlement structures aimed at resolving water claims, tribal communities throughout the Colorado River Basin continue to face significant barriers to accessing and utilizing their water resources.[59] These longstanding challenges reveal a fundamental disconnect between theoretical water entitlements and practical water security. While tribes hold some of the most senior water rights in the Basin's legal framework, a complex interplay of infrastructure deficits, cultural divides, administrative hurdles, and climate change impacts perpetuates water insecurity in many tribal communities.[60] This Section examines four key obstacles to meaningful tribal water access. First, we analyze the critical infrastructure deficits and capital constraints that prevent tribes from converting "paper water" into "wet water," including chronic federal funding shortfalls and technical capacity limitations. Second, we examine the fundamental conflict between Anglo-American water law's commodity framework and Indigenous worldviews that understand water as a living relative with whom humans maintain relationships of reciprocity and care. Finally, we assess how climate change is exacerbating water scarcity and threatening traditional water sources that have sustained tribal communities for generations. Through this analysis, we demonstrate how colonial structures continue to shape contemporary water governance, even

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56. *See* DEMOCRATIC STAFF OF H. COMM. ON NAT. RES., 114TH CONG., WATER DELAYED IS WATER DENIED: HOW CONGRESS HAS BLOCKED ACCESS TO WATER FOR NATIVE FAMILIES 15–16, (Oct. 10, 2016), https://democrats-naturalresources.house.gov/imo/media/doc/House%20Water%20Report_FINAL.pdf [https://perma.cc/3DMD-S79M].

57. *See* STERN & MURRAY, *supra* note 11, at 16–17; *see also* Robert T. Anderson, *Indian Water Rights: Litigation and Settlements*, 42 TULSA L. REV. 23, 30–31 (2006) (discussing the Snake River settlement as an example where a state found favorable conditions for settlement).

58. *See* Blaeser et al., *supra* note 11.

59. *See id.*

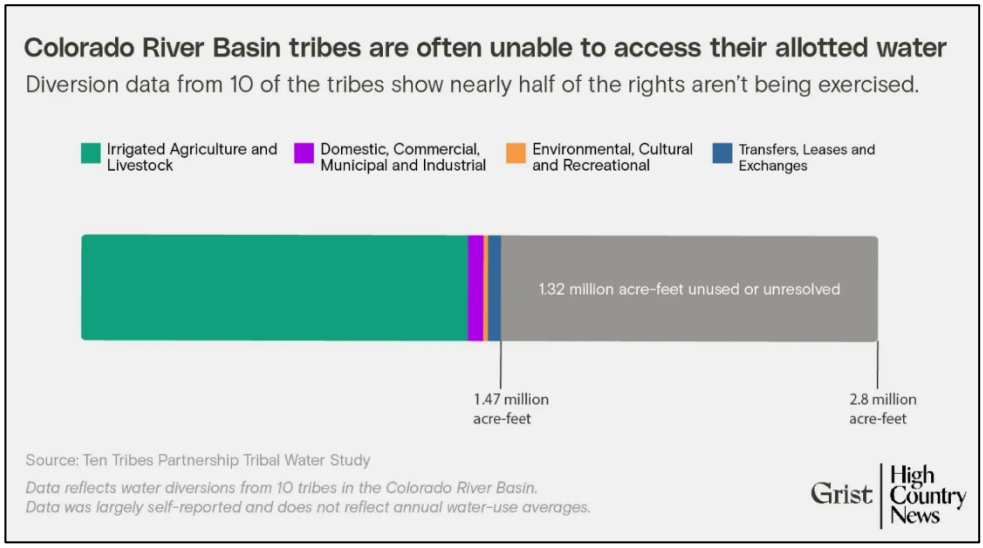
60. *Id.*

as tribal communities work to exercise their sovereign rights and secure their water futures in an increasingly arid landscape.

A. Infrastructure Deficits and Capital Constraints

The stark reality of tribal water access in the Colorado River Basin presents a paradox that illustrates the gap between legal rights and practical reality. Tribes collectively hold rights to approximately 25% of the Basin's water—a significant portion that constitutes the majority of water allocations in states like New Mexico (77%) and Arizona (68%).[61] Yet, despite these substantial legal entitlements, tribes often cannot access their allocated water. Nearly half of quantified tribal water rights are unused or unresolved, with 1.32 million acre-feet remaining inaccessible to the tribes that hold legal rights to them.[62]

Figure 1. Water Usage Among Tribes



This disconnect between "paper water" (i.e., legal entitlements) and "wet water" (i.e., actual, accessible water) stems primarily from massive infrastructure deficits on tribal lands. "Over a half million people—nearly 48% of tribal homes—in Native communities across the United States do not have access to reliable water sources, clean drinking water, or basic

61. *Id.*
62. *Id.*

sanitation."[63] This disparity does not reflect the rural location of tribal communities or socio-economic status.[64] Instead, "[r]ace is the strongest predictor of water and sanitation access."[65] And, Native Americans experience the greatest water insecurity, with Native homes being nineteen times more likely than white households to lack indoor plumbing.[66] Tribes within the Basin are no exception. On the Navajo Nation, households are sixty-seven times more likely to lack piped water delivery.[67] These families must rely on hauling water from distant sources for basic needs, with some traveling up to forty miles to obtain water.[68]

The scale of unmet infrastructure needs is staggering. The Indian Health Service Sanitation Facilities Construction Program, one of the primary federal programs supporting tribal drinking water and sanitation infrastructure, documented water and sanitation infrastructure needs exceeding $5.8 billion for all federally recognized tribes as of 2019.[69] For the Colorado River Basin tribes alone, infrastructure needs are estimated to be billions of dollars, including water treatment facilities, distribution systems, and storage infrastructure.[70] These needs have accumulated over generations of systematic underinvestment in tribal water systems while federal resources were directed toward developing water infrastructure that primarily benefited non-Indian communities.[71] Federal funding mechanisms intended to address these needs suffer from chronic shortfalls and structural limitations. According to the U.S. Commission on Civil Rights, federal funding for

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63. *See* DEMOCRATIC STAFF OF H. COMM. ON NAT. RES., *supra* note 56.

64. *See* Shiloh Deitz & Katie Meehan, *Plumbing Poverty: Mapping Hot Spots of Racial and Geographic Inequality in U.S. Household Water Insecurity*, 109 ANNALS AM. ASS'N GEOGRAPHERS 1092, 1100 (2019).

65. DIGDEEP & U.S. WATER ALL., CLOSING THE WATER ACCESS GAP IN THE UNITED STATES: A NATIONAL ACTION PLAN 22 (2019), https://uswateralliance.org/wp-content/uploads/2023/09/Closing-the-Water-Access-Gap-in-the-United-States_DIGITAL.pdf [https://perma.cc/EB63-26UC].

66. *Id.*

67. *About the Project*, NAVAJO WATER PROJECT, https://www.navajowaterproject.org/project-specifics [https://perma.cc/2Q3K-CV54].

68. DIGDEEP & U.S. WATER ALL., *supra* note 65, at 38.

69. U.S. DEP'T HEALTH & HUM. SERVS., INDIAN HEALTH SERV., FY 2024 ANNUAL REPORT OF SANITATION DEFICIENCY LEVELS, (Nov. 19, 2024), https://www.ihs.gov/sites/dsfc/themes/responsive2017/display_objects/documents/FY_2024_Appendix_Project_Listing.pdf [https://perma.cc/QV2A-KMY8]. IHS identifies deficiencies within each of its 12 agency areas: Alaska ($2,374,131,787); Albuquerque ($295,288,894); Bemidji ($93,420,684); Billings ($50,628,874); California ($234,658,619); Great Plains ($365,746,324); Navajo ($1,780,545,340); Nashville ($77,112,737); Oklahoma City ($157,912,608); Phoenix ($318,580,492); Portland ($113,870,323); Tucson ($17,842,496). *Id.*

70. *See id.*

71. TANANA ET AL., *supra* note 18, at 24.

Native American programs, including water infrastructure, has been "grossly inadequate" and has failed to meet the basic needs of tribal communities.[72]

Even when water settlements include provisions for infrastructure development, implementation delays and partial funding undermine their effectiveness.[73] The negotiation process itself often operates within a zero-sum funding mentality, where tribal infrastructure needs are positioned as competing with other federal priorities, creating structural opposition to adequate funding. Current efforts to address water insecurity are inadequate because they focus "on short-term solutions to remedy the most pressing concerns," instead of "an overall strategy where coordinated projects provide long-term, secure clean water access in an equitable manner."[74]

These infrastructure challenges are compounded by limitations in technical capacity and operation and maintenance ("O&M") support. Many tribal water systems lack sufficient resources for ongoing O&M, creating a cycle where new infrastructure deteriorates prematurely due to inadequate support for long-term sustainability.[75] Finishing construction is not a complete solution, as "minimal water quality standards must be maintained and support given to Tribes to develop the necessary O&M capacity for long-term success."[76] The experience of the Colorado River Indian Tribes exemplifies this challenge, where "deteriorating infrastructure has hindered their water delivery system and negatively impacted their economic development" despite holding substantial water rights.[77]

The technical capacity limitations extend beyond physical infrastructure to include administrative and personnel constraints. Many tribes face challenges in developing, operating, and maintaining complex water systems due to insufficient technical training, limited funding for professional staff positions, and barriers to accessing technical assistance programs designed for state and local governments.[78] These capacity limitations create additional obstacles for tribes seeking to fully utilize their water rights, even after those rights have been quantified through adjudication or settlement.

The impacts of these infrastructure and capacity deficits are profound. Water insecurity undermines economic development opportunities, impacts public health, and perpetuates historical inequities.[79] The COVID-19

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72. U.S. COMM'N ON C.R., *supra* note 19, at 4.
73. *See* TANANA ET AL., *supra* note 18, at 5.
74. *Id.* at 44.
75. *Id.* at 3, 41.
76. *Id.*
77. *Id.* at 2.
78. *See id.* at 46.
79. *See id.* at 2, 18.

pandemic highlighted these consequences, as tribal communities without reliable water access faced heightened challenges to implementing basic disease-prevention measures like handwashing.[80]

B. The Commodification-Culture Divide

At the heart of water conflicts in the Colorado River Basin lies a fundamental ontological divide between Anglo-American water law's treatment of water as a commodity and Indigenous perspectives that understand water as a sacred living relative. This divide is not merely philosophical but shapes every aspect of how water is conceptualized, valued, managed, and allocated. The Western legal framework of prior appropriation treats water primarily as a resource to be owned, measured, diverted, and put to "beneficial use"—a concept historically defined through economic productivity rather than ecological or cultural significance.[81] Not to mention, an entire legal regime that promotes a "use it or lose it" mentality burdens users who may identify areas for reduced use or conservation but are unwilling to implement these strategies because the law does not protect their nonuse and in fact punishes them for these strategies.[82]

Indigenous Peoples throughout the Basin have maintained fundamentally different relationships with water since time immemorial. *Tó éí iiná até* (Navajo). *Paatuwaqatsi* (Hopi). *Xa 'iipayk* (Quechan). Water is life (English). Indigenous scholars describe this concept as expressing "not only the sacred essentiality of Water, but that Water itself is a living relation, our connection to the Lands we call home, our first medicine, and our connection to all living beings."[83] These relationships with water extend beyond consumption or irrigation to encompass spiritual practices, cultural continuity, and reciprocal responsibilities of stewardship.[84] Traditional water sources for Basin tribes include springs, seeps, rivers, snow, and groundwater—each carrying distinct cultural significance and associated responsibilities. The Navajo Nation and other tribes in the higher-elevated regions have historically collected snow water for drinking in winter

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80. *See id.* at 8, 24.

81. Terese (T.C.) Richmond et al., *The Purposeful Tension Within the Doctrine of Beneficial Use*, 58 ROCKY MOUNTAIN MIN. L. FOUND. J. 33, 35–36 (2021).

82. *See id.* at 36–37.

83. Kelsey Leonard et al., *Water Back: A Review Centering Rematriation and Indigenous Water Research Sovereignty*, 16 WATER ALTS. 374, 376 (2023).

84. *See id.*

months.[85] However, recent climate changes have drastically reduced snowpack in parts of the Colorado River Basin.[86] Springs hold particular importance in many tribes. For the Hopi, the Sipapuni (also called Sipáapu)—a sacred spring at the confluence of the Colorado and Little Colorado Rivers—represents the umbilical cord to the Colorado Plateau and is central to their creation stories.[87] These water sources are not merely resources but places of emergence, migration, and return for many Native peoples who maintain ongoing spiritual and cultural relationships with specific waters.[88]

The commodification-culture divide manifests acutely in water rights quantification processes, which struggle to accommodate Indigenous water relationships. Litigation-based approaches to water rights determination are particularly ill-suited to quantifying cultural water values. The dominant practicably irrigable acreage standard established in *Arizona v. California* measures tribal water entitlement based on agricultural potential—a framework that inherently privileges agrarian economic development over other water relationships.[89] While this standard provided a quantifiable measure for tribal water rights, it failed to account for ceremonial uses, habitat maintenance, or spiritual practices that may not fit within Western beneficial use definitions. This divide extends to environmental protection strategies. Where Western approaches might focus on minimum instream flows measured in cubic feet per second, Indigenous perspectives might emphasize maintaining the health and spirit of waterways as living relatives deserving of care and respect. For instance, the Colorado River's confluence with the Little Colorado River holds sacred significance for several tribes, including Hopi, Zuni, Navajo, Havasupai, Southern Paiute, Apache, and Hualapai.[90] Protecting such sites requires recognizing cultural and spiritual values that transcend utilitarian measurements.

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85. Lucille Mescale Hunt, *Navajo Calendar Rooted in Tradition & Necessities*, NAVAJO-HOPI OBSERVER (Apr. 13, 2006), https://www.nhonews.com/opinion/navajo-calendar-rooted-in-tradition-necessities/article_85760f18-002e-5512-a30f-bf8de8609ceb.html [https://perma.cc/VY7Y-GERY].

86. Benjamin Bass et al., *Aridification of Colorado River Basin's Snowpack Regions Has Driven Water Losses Despite Ameliorating Effects of Vegetation*, 59 WATER RES. RSCH., July 2023, at 7.

87. Rachel Ellis & Denielle Perry, *A Confluence of Anticolonial Pathways for Indigenous Sacred Site Protection*, 169 J. CONTEMP. WATER RSCH. & EDUC. 8, 8–9 (2020).

88. Karletta Chief, *Water in the Native World*, 169 J. CONTEMP. WATER RSCH. & EDUC. 1, 3–4 (2020).

89. *See* 373 U.S. 546, 595–601 (1962).

90. Heather Tanana, *Voices of the River: The Rise of Indigenous Women Leaders in the Colorado River Basin*, 34 COLO. ENV'T L.J. 265, 283 (2023).

Bridging this commodification-culture divide requires more than incremental reforms to existing water allocation frameworks. It demands a fundamental reconceptualization of water governance that can accommodate multiple ways of knowing and valuing water. The shared vision statement issued by Upper Basin tribes reflects this perspective, affirming that "water is sacred and essential to Tribal prayer ceremonies since time immemorial" and recognizing that "Tribes have been stewards of their natural resources since time immemorial and developed effective indigenous management techniques to support the health of the rivers, creeks, and springs."[91] As the American West faces increasing water scarcity due to climate change and overallocation, incorporating Indigenous water relationships may offer crucial wisdom for sustainable management. However, meaningful progress will require moving beyond tokenistic inclusion of tribal "stakeholders" toward genuine recognition of Indigenous peoples as sovereign nations with distinctive legal traditions and sacred responsibilities to water that predate contemporary management approaches. At the very least, legal and policy reforms should be made for these communities to tailor Western water law to the communities they serve and allow for flexibility for tribal uses.

C. Climate Change

The Colorado River Basin stands at the epicenter of what scientists have identified as the most severe megadrought in the Southwestern United States in at least 1,200 years.[92] Recent research suggests this megadrought could persist longer than initially projected, creating unprecedented challenges for water management across the Basin.[93] This climate crisis is not merely a future projection but a present reality reshaping water availability throughout the region.

While climate change affects all Basin communities, tribes are perhaps the most vulnerable communities in the Colorado River Basin. Changes in climate, hydrology, and ecosystem directly impact socioeconomic and political factors, ecosystem services and land use, infrastructure, and spiritual and cultural components.[94] As previously noted, tribes hold deep cultural and

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91. Tanana & Beetso, *supra* note 9, at 1219.

92. *See* A. Park Williams et al., *Rapid Intensification of the Emerging Southwestern North American Megadrought in 2020–2021*, 12 NATURE CLIMATE CHANGE 232, 232 (2022).

93. Victoria L. Todd et al., *North Pacific Ocean–Atmosphere Responses to Holocene and Future Warming Drive Southwest US Drought*, 18 NATURE GEOSCIENCE 646, 646 (2025).

94. Karen Cozzetto et al., *Climate Change Impacts on the Water Resources of American Indians and Alaska Natives in the U.S.*, 120 CLIMATIC CHANGE 569, 569–70 (2013), https://doi.org/10.1007/s10584-013-0852-y [https://perma.cc/D4L3-W6RC].

spiritual connections to traditional water sources, which are now being threatened. The Navajo Nation has documented decreased snowpack, earlier snowmelt runoff, declines in more than thirty surface water features, and worsening water quality in multiple locations.[95] These changes directly impact not only water availability but also ecosystem health, medicinal plant availability, and cultural practices tied to specific water sources and seasonal patterns.[96] For tribes in higher elevated regions who have traditionally collected snow water for drinking during winter months, recent winters have yielded very little snow in parts of the Colorado River Basin.[97] The loss of this seasonal water source creates further challenges for water management and water security. Climate projections suggest continued warming will further reduce snowpack throughout the Basin, with one study estimating a potential 20–30% decrease in upper basin streamflow by mid-century.[98]

Springs, which hold spiritual and cultural significance for many Basin tribes,[99] are especially vulnerable to climate change. Some springs that have provided water for centuries now run intermittently or have ceased flowing altogether.[100] Natural lakes, ponds, and ephemeral water bodies that have sustained tribal communities and provided habitat for culturally significant plants and animals are increasingly unreliable due to prolonged drought conditions.[101] These water bodies often fall outside formal water rights allocations yet play crucial roles in tribal subsistence, medicine, and ceremonial practices.[102] Their loss represents not only decreased water access

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95. JULIE NANIA ET AL., CONSIDERATIONS FOR CLIMATE CHANGE AND VARIABILITY ADAPTATION ON THE NAVAJO NATION 44 (Getches-Wilkinson Ctr. for Natural Res., Energy, & the Env't, Univ. of Colo. L. Sch. ed., 2014). https://scholar.law.colorado.edu/books_reports_studies/3 [https://perma.cc/28XC-4E6A].

96. *See id.* at 4, 41–45, 114.

97. *See* Russ Schumacher, *No Good News in the Snowpack and Water Supply Numbers*, COLO. CLIMATE BLOG. (Apr. 14, 2025), https://climate.colostate.edu/blog/index.php/2025/04/14/no-good-news-in-the-snowpack-and-water-supply-numbers [https://perma.cc/8VHX-P8ES].

98. *See* David Woodson et al., *Stochastic Decadal Projections of Colorado River Streamflow and Reservoir Pool Elevations Conditioned on Temperature Projections*, 57 WATER RES. RSCH, Dec. 2021, at 18; Tanana, *supra* note 90, at 278.

99. *See* Ojibwa for Native American Netroots, *Indians 101: Sacred Places in the Great Basin*, DAILY KOS (Mar. 29, 2012), https://www.dailykos.com/stories/2012/3/29/1078844/-Indians-101-Sacred-Places-in-the-Great-Basin [https://perma.cc/E7KT-QZUZ].

100. Christian Schwägerl, *As World's Springs Vanish, Ripple Effects Alter Ecosystems*, YALEENVIROMENT360 (July 10, 2024), https://e360.yale.edu/features/endangered-water-springs? [https://perma.cc/4V3B-ZL9H] (discussing springs disappearing globally as victims of development and drought).

101. Cozzetto et al., *supra* note 94, at 576–582.

102. *Id.* at 575–76.

but erasure of specific places where cultural knowledge is transmitted and relationships with water are maintained.[103]

Climate change also compounds existing infrastructure challenges facing tribal communities. Generally speaking, water systems across the United States were designed based on historical climate conditions that no longer exist, creating operational challenges as temperatures rise, precipitation patterns shift, and extreme weather events increase in frequency and intensity.[104] For tribes that rely on surface water diversions, decreased river flows and increased sedimentation affect water quality and reliability.[105] Intake structures designed for specific flow regimes may become less effective or inoperable during prolonged low-flow periods.[106] Treatment systems face new challenges as warmer temperatures alter water chemistry, potentially increasing treatment costs and operational complexity.[107]

Groundwater-dependent communities face their own climate vulnerabilities. Reduced recharge due to changing precipitation patterns and increased evapotranspiration rates threatens aquifer sustainability.[108] Some tribal communities have already experienced declining well yields and deteriorating water quality as aquifers deplete.[109] Limited technical capacity

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103. *Id.*

104. *See generally* Joanne Vinke-De Kruijf et al., *Climate-Resilient Water Infrastructure: A Call to Action*, 5 J. CRITICAL INFRASTRUCTURE POL'Y 17, 17–18 (2024) ("All of these infrastructures were designed and built for the weather and hydrologic patterns as they existed at the time . . . [h]owever, climate change begets instability. In turn, the water infrastructure in place now faces unexpected threats to its capacity, operability, and usefulness."), https://onlinelibrary.wiley.com/doi/10.1002/jci3.12017 [https://perma.cc/B6U4-4A49].

105. *See* NANIA ET AL., *supra* note 95, at 48.

106. *See id.* at 115 n.1 (discussing an example of the Standing Rock Sioux Tribe that depends on a sole intake pipe from the Missouri River at Fort yates for its water supply. A 2003 drought caused water levels to drop so low that silt and sludge clogged the pipe. The tribe did not have water for several days).

107. *See* Cozzetto et al., *supra* note 94, at 574. ("Changing climate, hydrologic, and ecologic regimes are creating conditions that tribal infrastructure may not be designed to accommodate, resulting, in cases, in the deterioration of physical structures and decreasing effectiveness (e.g., ability to treat water to a specified standard).").

108. *See* Water Science School, *Groundwater Decline and Depletion*, U.S. GEOLOGICAL SURV. (June 6, 2018), https://www.usgs.gov/water-science-school/science/groundwater-decline-and-depletion [https://perma.cc/EM5U-BK2E]; Elizabeth A. Payton, Ariane O. Pinson, Tirusew Asefa, Laura E. Condon, Lesley-Ann L. Dupigny-Giroux, Benjamin L. Harding, Julie Kiang, Deborah H. Lee, Stephanie A. McAfee, Justin M. Pflug, Imtiaz Rangwala, Heather J. Tanana & Daniel B. Wright, *Chapter 4. Water*, *in* FIFTH NATIONAL CLIMATE ASSESSMENT 4–10, 4–18 (A.R Crimmins, C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock eds., 2023).

109. Indeed, concern over depleted aquifers and the need to operate deeper wells was the basis of the Agua Caliente Band of Cahuilla Indians' suit in 2013. First Amended Complaint at 11, Agua Caliente Band of Cahuilla Indians v. Coachella Valley Water Dist., No. 13-883 (C.D.

and chronic underfunding for operations and maintenance exacerbate these vulnerabilities.[110] When extreme weather events damage infrastructure, tribes often lack immediate access to repair funds or alternative water sources, creating extended service disruptions.[111] The lack of redundant systems leaves many tribal communities with no backup water supply during climate-related emergencies.

In response to these challenges, tribes throughout the Basin are developing tribal adaptation strategies that blend traditional knowledge with contemporary approaches.[112] Many tribes also are engaged in tribal water rights settlements to develop a more secure and sustainable water future for their people and permanent homelands, and in the case of the San Juan Southern Paiute Tribe, ratifying a treaty to establish their reservation.[113] The Navajo Nation, Hopi Tribe, San Juan Southern Paiute Tribe introduced into the 119th U.S. Congress the Northeastern Arizona Indian Water Rights Settlement legislation.[114] If approved, this legislation would include water rights to Upper Basin Colorado River water, Lower Basin Colorado River water, Little Colorado River water, and ground water and funding for water infrastructure for the three tribes.[115] This comprehensive approach represents an effort to develop more secure and reliable water systems in the face of climate uncertainty. Other tribes are diversifying their water portfolios and interconnecting water systems to reduce vulnerability to any single source.[116] Tribes are also asserting their perspectives in larger Basin-wide climate adaptation discussions.[117] Tribal engagement in water management decisions is essential to advancing sustainable and equitable responses to climate

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Cal. July 17, 2020), 2013 WL 12651274; *see also* Alexandra Fay, *Toward a Tribal Role in Groundwater Management*, 11 AM. INDIAN L.J. 1 (2023) (discussing the tribe's groundwater challenges and lawsuit in more detail).

110. *See* Paul J. Schramm et al., *How Indigenous Communities Are Adapting to Climate Change: Insights from the Climate-Ready Tribes Initiative*, 39 HEALTH AFFS. 2153, 2154 (2020).

111. *See* Cozzetto et al., *supra* note 94, at 574.

112. *See, e.g.*, Navajo Nation Dep't of Fish & Wildlife, *Adaptation Plan*, NAVAJO NATION CLIMATE CHANGE PROGRAM, https://www.navajoclimatechange.org/adaptation-plan [https://perma.cc/C64B-QB6A] (describing the Navajo Nation's adaptation plan); *see also* Morgan Hepler & Elizabeth Ann Kronk Warner, *Learning from Tribal Innovations: Lessons in Climate Change Adaptation*, 49 ENV'T. L. REP. 11130 (2019) (discussing tribal responses to climate change generally).

113. *See About the Tribe*, SAN JUAN S. PAIUTE TRIBE, https://www.sanjuanpaiute-nsn.gov/about [https://perma.cc/27T3-BQFW].

114. H.R. 2025, S. 953, 119th Cong. (2025).

115. *Id.* § 2.

116. *See* NANIA ET AL., *supra* note 95, at 32–33.

117. *See id.* at 5–7.

change impacts on the Basin's water supplies.[118] This engagement includes not only protecting tribal water rights but also incorporating Indigenous perspectives on water stewardship that may offer crucial wisdom for managing shared water resources during climate crisis.

As climate change intensifies water scarcity throughout the Basin, addressing tribal water security becomes not only a matter of legal obligation and social justice, but also an opportunity to incorporate diverse knowledge systems into our collective response to unprecedented environmental challenges. The future of water in the Colorado River Basin will depend in part on how effectively tribal perspectives and needs are centered in climate adaptation strategies moving forward.

III. NEW IDEAS: INNOVATIVE PARTNERSHIPS

The persistent challenges facing tribal water access in the Colorado River Basin call for innovative approaches that move beyond the limitations of existing frameworks. As federal funding for tribal water infrastructure faces increasing uncertainty and a continued rescission under the current administration, reliance solely on federal programs has become an increasingly precarious strategy for tribal water needs. This Section explores emerging alternatives that offer insightful pathways toward more flexible and proactive water governance. We begin by examining innovative partnership models that transcend traditional federal-tribal relationships, including multi-sovereign collaborations between tribes, states, and private entities that leverage diverse resources and expertise. These partnerships represent a significant departure from conventional approaches by creating new avenues for infrastructure development, technical assistance, and water management that do not depend exclusively on federal commitment. Next, we assess the tangible benefits these emerging collaborative frameworks provide, including increased tribal sovereignty in water decision-making, enhanced resilience to political fluctuations, and more culturally appropriate solutions that honor Indigenous relationships with water. While these partnerships cannot and should not replace the federal government's trust obligations, they demonstrate how creative collaboration can help bridge the gap between theoretical water rights and practical water access even in the face of federal funding constraints. Through these new ideas, we identify concrete strategies for reform that can help break the cycle of water insecurity that has persisted

118. *See* TANANA ET AL., *supra* note 18, at 44–45.

in tribal communities despite decades of legal recognition of their water rights.

A. Cross-Jurisdictional Water Alliances: The New Frontier of Tribal Water Security

In an era of unprecedented water challenges, historical adversaries are forging unlikely partnerships to overcome barriers to tribal water access. States and tribes—entities that once battled fiercely in courtrooms over water rights—are now finding opportunities to collaborate to develop innovative solutions that federal programs alone have failed to deliver. These cross-jurisdictional alliances represent a paradigm shift in tribal water governance and management, creating new pathways for infrastructure development and technical assistance that transcend traditional jurisdictional boundaries and funding constraints.

1. The Westwater Success Story

The story of Westwater, Utah stands as a powerful example of what is possible when conventional approaches give way to creative collaboration. For over 40 years, approximately 100 Navajo residents living on 120 acres owned by the Navajo Nation in southeastern Utah endured conditions nearly unimaginable in modern America—no running water or electricity.[119] Despite the land's short proximity to Blanding, Utah, the community remained disconnected from basic infrastructure, requiring residents to haul water for drinking, cooking, bathing, and other essential needs.[120] Years of attempting to secure water access through conventional means yielded no results.[121] The community's unique jurisdictional position—Navajo-owned fee simple land within Utah but outside reservation boundaries and not in trust status—created unique bureaucratic complications that no single entity seemed able to resolve alone.[122]

However, breakthrough came with the formation of the Westwater Technical Advisory Group, a multi-sovereign partnership that brought together entities that had rarely collaborated previously. Led by the Navajo

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119. Elliott Bochstein, *After 40 Years Without Water, a Utah Navajo Community Finally Turns On the Tap*, ENV'T INFRASTRUCTURE (June 26, 2025), https://www.rcac.org/westwater-ut [https://perma.cc/QFR3-LS9F].

120. *See id.*

121. *Id.*

122. *Id.*

Nation Department of Water Resources, this coalition included the Navajo Tribal Utility Authority ("NTUA"), State of Utah, San Juan County, City of Blanding, Church of Jesus Christ of Latter-day Saints, DigDeep, Rural Community Assistance Corporation ("RCAC"), and other organizations.[123] The partnership leveraged diverse resources and expertise: Utah committed an initial $500,000 and ultimately contributed $3.5 million in American Rescue Plan funds, while the Church of Jesus Christ of Latter-day Saints provided a financial match of $500,000 as well as heavy equipment and volunteer labor.[124] The water access non-profit DigDeep brought additional funds ($350,000 total[125]), while RCAC provided technical assistance and capacity building.[126] Local government partners helped navigate regulatory processes and provided essential coordination.[127] Meanwhile, the Navajo Nation put forth the bulk of the financial costs ($5.5 million) and NTUA contributed technical expertise and operational capacity to ensure the system's long-term sustainability.[128]

The results have been transformative. In 2025, after decades without running water, Westwater residents celebrated as taps flowed in their homes for the first time.[129] Ryan Barton, a Diné hydrologist who was extensively involved in the project, reflected on the intergenerational nature of the work: "Their children and their grandchildren—they will have the same opportunities as other people across the United States . . . . That's what access to these basic utilities gives people."[130]

Ultimately, this achievement required overcoming significant jurisdictional obstacles. Rather than becoming bogged down in debates over responsibility, the partners focused on creative solutions that respected each entity's authorities while addressing the community's urgent needs. The partnership allowed for pooling of diverse funding sources, from state appropriations to federal grants to private donations—none of which would have been sufficient alone.

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123. *See id.*

124. *Id.*

125. *Id.* (The $350,000 includes $250,000 contributed to the reservation and $100,000 contributed to the city for a deep water well.).

126. *Id.*

127. *See id.*

128. *See id.*

129. *See id.*

130. Shannon Mullane, *A Navajo Nation Community Has Running Water After Waiting Nearly 25 Years*, COLORADO SUN (Mar. 23, 2025), https://coloradosun.com/2025/03/23/westwater-utah-navajo-nation-community-running-water [https://perma.cc/P4DV-UH5A].

2. Water Access Coordination Group

The Water Access Coordination Group ("WAGC") represents another successful partnership model, but on a larger scale. Unlike Westwater's focus on a single community, the WACG represents a comprehensive strategy for addressing water access challenges across the Navajo Nation by bringing together diverse expertise and resources.[131] WAGC was established in 2020 in response to the COVID-19 pandemic's highlighting of water access inequities.[132] The group includes representatives from Navajo Nation agencies (including the Department of Water Resources and NTUA), federal entities (Indian Health Service), academic institutions (University of Arizona, Arizona State University, University of New Mexico, and Johns Hopkins University), and non-governmental organizations (including RCAC and DigDeep).[133]

WACG's integrated approach focuses on multiple dimensions of water security. The partnership has developed comprehensive water access maps that identify gaps in infrastructure and prioritize communities with the greatest needs.[134] These data-driven tools enable more efficient targeting of resources and help justify funding requests for infrastructure projects. The group also facilitates knowledge sharing between technical experts and community members, ensuring that solutions are both technically sound and culturally appropriate. Through regular coordination meetings, shared data platforms, and collaborative project development, WACG has helped streamline efforts that were previously fragmented across dozens of entities. This approach has improved resource allocation, reduced duplication of efforts, and accelerated project implementation.

Overall, these innovative partnerships represent a fundamental shift in approach to tribal water access—from competition to collaboration, from jurisdictional obstacles to shared solutions. While neither Westwater nor WACG eliminates the federal government's treaty and trust responsibility, they demonstrate how creative partnerships can overcome barriers that conventional federal programs alone have failed to address.

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131. *See Who We Are*, NAVAJO SAFE WATER, https://navajo-safe-water-2-navajosafewater.hub.arcgis.com/pages/4894d5b6079c4bcb906f08ca228e139e [https://perma.cc/D74B-WXHN].

132. *See id.*

133. *Id.*

134. *Improving Water Access*, NAVAJO SAFE WATER, https://navajo-safe-water-2-navajosafewater.hub.arcgis.com/pages/f99e7f8fec5d4358a6866262c229eb31 [https://perma.cc/6SBZ-S7FP].

B. Creative Funding and Technical Assistance Partnerships

Innovative financing mechanisms represent another frontier in overcoming barriers to tribal water access. As federal funding becomes increasingly uncertain and infrastructure needs continue to grow, tribes are exploring diverse financial partnerships that extend beyond traditional federal appropriations. These emerging models including state revolving funds, impact investment vehicles, and strategic philanthropy offer promising alternatives for financing the substantial infrastructure investments needed to convert paper water rights into actual water security. By diversifying funding sources, these approaches can accelerate project development timelines, provide more flexible capital, and potentially increase tribal autonomy in project design and implementation.

1. State Infrastructure Financing: The Water Infrastructure Finance Authority Model

The Water Infrastructure Finance Authority of Arizona ("WIFA") demonstrates how state-level financing mechanisms can be adapted to support tribal water infrastructure. Established to maintain and improve water quality in Arizona by providing financial assistance and technical assistance for basic water infrastructure, WIFA operates as a financial intermediary that leverages diverse funding sources to support water projects throughout the state, including on tribal lands.[135]

WIFA administers several programs that benefit tribal communities. The Clean Water State Revolving Fund ("CWSRF") provides low-interest loans for planning, engineering, constructing, and upgrading wastewater infrastructure, with special provisions for disadvantaged communities that enable hardship grants rather than loans.[136] Similarly, the Drinking Water State Revolving Fund ("DWSRF") offers low-cost financing for drinking water system facilities.[137] Finally, WIFA's Technical Assistance Program, which is a set-aside from their CWSRF and DWSRF programs, helps smaller water systems serving either populations under 10,000 or a disadvantaged community prepare for infrastructure projects through pre-design and design

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135. *See About Us*, WATER INFRASTRUCTURE FIN. AUTH. OF ARIZ., https://www.azwifa.gov/about/wifa [https://perma.cc/4W87-E28G].

136. *Clean Water State Revolving Fund*, WATER INFRASTRUCTURE FIN. AUTH. OF ARIZ., https://www.azwifa.gov/programs/funding-type/cwsrf [https://perma.cc/9BMJ-GZKV] .

137. *Drinking Water State Revolving Fund*, WATER INFRASTRUCTURE FIN. AUTH. OF ARIZ., https://www.azwifa.gov/programs/funding-type/dwsrf [https://perma.cc/97XY-6WZG].

grants[138]—addressing a critical capacity gap that often prevents tribes from accessing other funding sources.

For tribal communities, WIFA offers several advantages. The application process is typically more streamlined than federal programs, with shorter review periods and more accessible technical assistance.[139] WIFA's state-level operation allows for greater familiarity with local conditions and needs, potentially enabling more responsive project design. Additionally, WIFA can coordinate with other state programs to create comprehensive funding packages that address multiple aspects of water infrastructure.[140] Since WIFA is a state agency, the state policies that currently support tribal water access and drought resiliency for Arizona's most at-risk communities result in aligned approaches to addressing water challenges for Arizona tribes.

However, challenges remain in expanding state revolving fund access for tribes. Loan-based financing models can be difficult for tribes with limited revenue streams to utilize, and some tribes may lack the technical capacity to navigate application processes or meet financial requirements.[141] Recent funding constraints underscore the limitations of even innovative state financing mechanisms when faced with growing infrastructure needs and inconsistent resource allocations.[142]

Through its existence alone, WIFA creates a new opportunity to access for tribal governments, which supplements any federal or private funding received by the tribe and recognizes the outstanding need among Arizona's tribal communities. Examples of successful applications include WIFA's Drinking Water State Revolving Fund loan to the White Mountain Apache Housing Authority, which facilitated the extension of drinking water services to these units through construction of sewer lines, water mains, service lines,

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138. *Technical Assistance Program*, WATER INFRASTRUCTURE FIN. AUTH. OF ARIZ., https://www.azwifa.gov/programs/incentives/technical-assistance [https://perma.cc/SR78-EFZM].

139. *See SRF Application Process*, WATER INFRASTRUCTURE FIN. AUTH. OF ARIZ., https://azwifa.gov/programs/application-process [https://perma.cc/3J6W-WNHA].

140. *See, e.g.*, *Water Conservation Grant Fund*, WATER INFRASTRUCTURE FIN. AUTH. OF ARIZ., https://azwifa.gov/programs/funding-type/wcgf [https://perma.cc/UZB5-XCXL]; *Water Supply Development*, WATER INFRASTRUCTURE FIN. AUTH. OF ARIZ., https://azwifa.gov/programs/funding-type/wsdrf [https://perma.cc/659J-NJHJ].

141. U.S. Gov't Accountability Off., GAO-18-309, Drinking Water and Wastewater Infrastructure: Opportunities Exist to Enhance Federal Agency Needs Assessment and Coordination on Tribal Projects 37–38 (May 2018)., https://www.gao.gov/assets/gao-18-309.pdf (discussing tribal challenges accessing funding).

142. *See* Howard Fischer, *With Depleted Funds, WIFA Seeks Ideas to Augment Water Supply*, ARIZ. CAPITOL TIMES (Nov. 23, 2024), https://azcapitoltimes.com/news/2024/11/23/with-depleted-funds-wifa-seeks-ideas-for-water-supply [https://perma.cc/69BA-SNLS].

and meters[143] or the White Mountain Apache Tribe's grant for water conservation, ultimately installing hundreds of water meters on the Fort Apache Reservation to conserve water and fix household leaks faster.[144] In 2024, WIFA approved a $16.3 million water conservation grant to the Yavapai-Apache Nation, which will assist the Yavapai-Apache Nation in building a new wastewater reclamation facility (WRF) to produce Class A+ reclaimed water for Tribal Farm irrigation.[145] This will allow local residents to convert from septic to sewer in the strained Verde Valley while the Nation's water rights settlement awaits congressional approval.[146]

2. The Blue Bank Model

While state financing mechanisms provide one alternative to federal funding, entirely new models are emerging through public-private partnerships designed specifically for tribal water infrastructure. Blue Bank represents a pioneering approach that combines private impact investment with public objectives to finance sustainable water projects in tribal communities.

Developed as a "first-of-its-kind" financial institution focused on water, Blue Bank creates investment vehicles that channel private capital toward tribal water infrastructure while generating both financial returns and social impact.[147] Unlike conventional financing approaches that treat water solely as a commodity, Blue Bank explicitly incorporates Indigenous perspectives on

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143. Chelsea McGuire, *White Mountain Apache Housing Authority Receives Prestigious AQUARIUS Award for Excellence in Community Engagement*, WATER INFRASTRUCTURE FIN. AUTH. OF ARIZ. (Apr. 4, 2024), https://www.azwifa.gov/news/public-meetings/12-public-notices-wifa/news/205-wmaha-aquarius-2024 [https://perma.cc/V78W-5Z9X].

144. 2° Out West Podcast, *Why Water Meters Matter: Water Conservation with the White Mountain Apache Tribe*, W. RES. ADVOCS. (Aug. 23, 2024), https://westernresourceadvocates.org/podcasts/why-water-meters-matter [https://perma.cc/XH3E-375T].

145. Chelsea McGuire, *Yavapai-Apache Nation Receives WIFA Funding for Sustainable Wastewater Treatment*, WATER INFRASTRUCTURE FIN. AUTH. OF ARIZ. (June 19, 2024), https://www.azwifa.gov/component/content/article/25-announcements/208-yavapai-apache-nation-cy2024 [https://perma.cc/P8RY-SDPA]; *see also* Cora Tso, *Yavapai-Apache Nation Water Rights Settlement Agreement*, KYL CTR. FOR WATER POL'Y AT MORRISON INST. (Jan. 2025), https://morrisoninstitute.asu.edu/kyl-water-center/yavapai-apache-nation-water-rights-settlement-agreement-explainer [https://perma.cc/2X9C-5DMM].

146. *See id.* at 7–8 (2025).

147. *See Creating and Incubating a First-of-Its-Kind Blue Bank*, CULP & KELLY, https://jointwork.culpkelly.law/publications/creating-and-incubating-a-first-of-its-kind-blue-bank [https://perma.cc/RE2W-JG3N].

water stewardship into its investment framework, recognizing water's cultural and spiritual significance alongside its economic value.[148]

Blue Bank's model addresses several limitations of traditional funding mechanisms. By tapping private capital markets, it has the potential to mobilize significantly larger pools of funding than typically available through federal appropriations or philanthropic grants. Importantly, Blue Bank's approach emphasizes tribal sovereignty in project development. Rather than imposing external priorities or standardized solutions, investments are structured to support tribal self-determination in water management.[149] This approach recognizes that sustainable infrastructure requires not just physical assets, but governance systems aligned with tribal values and priorities. While still evolving, the Blue Bank model represents a significant innovation in tribal water financing. By demonstrating that tribal water infrastructure can attract conventional investment when properly structured, it helps shift the narrative from viewing tribal water projects solely as public obligations to recognizing them as viable investment opportunities with meaningful economic, social, and environmental returns.

3. Strategic Philanthropy: Beyond Charity to Partnership

The third emerging pathway for tribal water infrastructure financing comes through strategic philanthropy that transcends traditional charitable approaches. Rather than simply providing grants, forward-thinking philanthropic organizations are developing more substantive partnerships with tribal communities that respect sovereignty, build capacity, and leverage additional resources.[150] These new approaches begin with formal tribal consultation and center Indigenous leadership.[151] Unlike conventional philanthropy that often imposes external priorities and metrics, respectful tribal philanthropy allows "Indigenous community members [to] steer the funded project and administer the funds if they choose."[152] This approach recognizes that "Native and community scholars and leaders who are

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148. *See Tribal Infrastructure and Restoration Fund*, BLUECOMMONS, https://bluecommons.org/tribalwater [https://perma.cc/4W4W-2F9F].

149. *See id.*

150. *See* Nancy Petersen et al., *Respectful Tribal Partnership: What Philanthropy Can Learn from the Navajo Nation's Collaborative Response to the COVID-19 Crisis*, 14 THE FOUND. REV. 93, 97 (2022) (explaining the collaborative origins of the Navajo Nation Water Access Coordination Group).

151. *See id.* at 100.

152. *See id.* at 101.

community-conversant and connected are essential" to developing sustainable water solutions.[153]

This approach offers several advantages over both traditional federal funding and conventional philanthropy. By respecting tribal decision-making authority, it ensures solutions align with cultural values and community priorities. Its collaborative structure creates opportunities to leverage diverse expertise while maintaining tribal leadership. And perhaps most importantly, it builds capacity within tribal communities rather than fostering dependency on external support.

Strategic philanthropy can also play a catalytic role in developing larger financing packages. Initial philanthropic investments often help tribes complete preliminary assessments, engineering studies, and capacity development necessary to access larger funding sources from public agencies or private investors.[154] By funding these early-stage activities—which are often difficult to finance through other means—philanthropy can help tribes overcome initial barriers to project development.

These three models—state revolving funds, impact investment vehicles, and strategic philanthropy—represent complementary approaches to diversifying tribal water infrastructure financing beyond traditional federal appropriations. Together, they illustrate a fundamental shift in how tribal water development is conceptualized and funded. Rather than viewing tribal water infrastructure as solely a federal obligation or charitable cause, these approaches recognize tribes as sovereign partners with legitimate authority over water decisions. They acknowledge that sustainable solutions require not just funding but governance structures that respect Indigenous relationships with water. And they demonstrate that creative financing can accelerate progress toward tribal water security even amid federal funding constraints. Importantly, these models do not eliminate the need for federal fulfillment of trust responsibilities. Instead, they supplement federal commitments with additional resources and more flexible approaches. As the Westwater case demonstrated,[155] the most successful projects often blend multiple funding sources—federal, state, private, philanthropic, and tribal—in ways that leverage each partner's unique capabilities and resources.

These emerging financing partnerships also reflect broader changes in tribal economic development and governance. As tribes increasingly exercise

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153. *See id.*

154. *See* Paola Rodriguez, *Arizona Tribes Receive Early $750k for Climate Adaptation Plans*, AZPM (Jan. 8, 2025), https://www.azpm.org/p/headlines/2025/1/8/223189-arizona-tribes-receive-nearly-750k-for-climate-adaptation-plans. [https://perma.cc/LMC9-RX5D].

155. *See supra* Section III.A.1.

sovereignty in economic matters, water infrastructure becomes not just a basic need but a foundation for broader community development. By expanding financing options beyond traditional federal mechanisms, these creative partnerships offer tribes greater agency in determining how, when, and where they develop water infrastructure. This increased self-determination represents perhaps the most significant promise of these emerging models—not just more funding, but more tribally directed funding that respects Indigenous values and priorities in addressing water needs.

As outlined above, the growing challenges of climate change and drought have affected all who depend on the west's scarcest resource—water. Some more than others have experienced this strain for decades, namely tribal communities, and have adapted to living with less and optimizing what little is received. While tribal governments and advocates continue to navigate the behemoth of tribal water rights quantification and resolution, their communities found ways to address pressing needs with timely partnerships and new funding opportunities. With increased exposure to new alliances, project collaborations or funding awards have resulted in the launch of new projects or the bolstering of existing ones. Fundamentally, the relationships built during these endeavors create broader understanding of the needs, challenges, and opportunities within tribal communities across the west and within the Colorado River Basin and may have a larger impact on how to include tribal perspectives in new state policy development like the expansion of rural groundwater management in Arizona or new models for water leasing that personify our water, just as traditional tribal cultures have always seen the water resources as.[156]

These approaches are adapting not only to the shifting climate but also the shift in society as non-tribal communities are open to learning more about how to support tribal communities and vice versa. As these communities are constantly asked to do more with less, they are finding an abundance of support from their neighbors and ultimately creating better environments for all.

The COVID-19 pandemic shed light on the water access disparities in tribal communities.[157] Many entities on and off reservations heard the call and tried to assist during the height of the pandemic.[158] Based upon the authors'

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156. Alex Hager, *The Colorado River Is This Tribe's 'Lifeblood,' Now They Want to Give It the Same Legal Rights as a Person*, KSJD (Aug. 24, 2025), https://www.ksjd.org/2025-08-24/colorado-river-crit-legal-personhood [https://perma.cc/2A28-ZK3G].

157. *See* Desi Rodriguez-Lonebear et al., *American Indian Reservations and COVID-19: Correlates of Early Infection Rates in the Pandemic*, 26 J. PUB. HEALTH MGMT. & PRAC. 371, 372 (2020).

158. *See* TANANA ET AL., *supra* note 18, at 28–43.

personal experiences, the more successful relationships lasted through the ups and downs.[159] Key to these relationships were the understanding and respect of tribal sovereignty and incorporation of traditional knowledge. For Westwater, hearing the concerns, problem solving, and working through the obstacles were beneficial. More beneficial was the opportunity for the Navajo Nation and its enterprise to lead the path forward. Respect of tribal sovereignty partnership between the Navajo Nation and its enterprise Navajo Tribal Utility Authority built the capacity for the project to proceed forward.

IV. CONCLUSION

The Colorado River Basin stands at a watershed moment, both literally and figuratively. The unprecedented megadrought—now confirmed as the driest period in 1,200 years—has forced a fundamental reconsideration of water governance throughout the region. Within this context of growing scarcity, the persistent gap between tribal water rights and water access represents not only a continuing injustice but also a missed opportunity for more sustainable and equitable water management across the Basin. Today, complex barriers remain that prevent tribes from fully utilizing their legally recognized water rights. The *Winters* doctrine, while establishing a strong theoretical foundation for tribal water claims, has been systematically undermined by implementation challenges. The settlement process—now the primary mechanism for resolving tribal water claims—offers potential benefits but frequently requires significant tribal concessions. Even after quantification, tribes face substantial infrastructure deficits that are compounded by chronic federal funding shortfalls, technical capacity limitations, and bureaucratic hurdles that prevent tribes from converting paper water rights into actual water security.

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159. The Johns Hopkins Center for Indigenous Health exemplifies a tribal-academic partnership that has weathered "ups and downs" over decades. Established in 1991, this collaboration has built enduring trust through consistent engagement with tribal communities, particularly with the Navajo Nation. During the COVID-19 pandemic, this pre-existing relationship proved invaluable. When the Pfizer and Moderna vaccine trials struggled to include adequate representation of Native populations, Johns Hopkins researchers worked with tribal leaders to ensure appropriate Native participation in clinical trials. *About Us*, CTR. FOR INDIGENOUS HEALTH, https://cih.jhu.edu/about [https://perma.cc/TA9W-DFQU]. Beyond pandemic response, the partnership has addressed chronic water security challenges on the Navajo Nation. Johns Hopkins collaborated with Navajo researchers to conduct comprehensive household water surveys that documented both water access disparities and community-driven solutions. *Diné Household Water Study*, CTR. FOR INDIGENOUS HEALTH, https://cih.jhu.edu/programs/dine-household-water-survey [https://perma.cc/SG24-7W5F].

Beyond these practical barriers lies a more fundamental ontological divide between Anglo-American water law's commodification framework and Indigenous perspectives that recognize water as a living relative, deserving of reciprocity and care. This divide manifests in quantification processes that struggle to accommodate ceremonial uses, allocation systems that conflict with traditional practices, and legal frameworks that prioritize economic gain over cultural preservation. Climate change further exacerbates these challenges, threatening traditional water sources like springs and snowmelt that hold deep cultural significance for Basin tribes.

In response to these persistent challenges, innovative partnerships are emerging that transcend conventional approaches to tribal water access. The Westwater project demonstrates how cross-jurisdictional collaboration can overcome decades of inaction to deliver water to communities long overlooked by federal programs. The Water Access Coordination Group shows how tribes can leverage academic partnerships, technical assistance providers, and diverse stakeholders to develop more coordinated and effective water access solutions. Meanwhile, creative funding mechanisms—from state revolving funds like the Water Infrastructure Finance Authority of Arizona to impact investment vehicles like Blue Bank to strategic philanthropy—are creating new pathways for financing tribal water infrastructure beyond traditional federal appropriations.

Achieving universal water access for tribes in the Colorado River Basin demands a sustained commitment to water justice that transcends political cycles and jurisdictional boundaries.

Our vision for tribal water security in the Colorado River Basin is not merely about delivering pipes and treatment facilities to tribal communities—though this physical infrastructure is undeniably essential. It encompasses securing water access that supports tribal cultural continuity, economic development, and environmental stewardship. It means water governance that respects tribal sovereignty and incorporates Indigenous perspectives alongside conventional management approaches. And it requires breaking the cycle where tribes must choose between paper rights they cannot use and infrastructure that comes with less secure access. As the Basin faces difficult decisions about water allocation in an era of growing scarcity, tribal water rights cannot continue to be treated as subordinate to other interests despite their legal priority. The innovative partnerships highlighted in this article demonstrate that collaborative approaches can succeed where conventional programs have failed. By building on these emerging models while fulfilling federal trust obligations, we can move toward a water future in the Colorado River Basin that honors both legal commitments and sacred relationships

with water, ensuring that tribes can finally access the water that has been legally theirs for generations.

In closing, we return to the fundamental truth expressed in the authors' native Diné language, "Tó éí iiná até"—water is life. This understanding offers wisdom not just for tribal communities, but for all who depend on the Colorado River. By centering Indigenous relationships with water in our collective response to climate change and water scarcity, we may yet find a path toward more just and sustainable water governance that can sustain all Basin communities for generations to come.