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Minute by Minute: An Assessment of the Environmental Flows Program for Restoration of the Colorado River Delta

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COMMENT

Minute by Minute: An Assessment of the Environmental Flows Program for Restoration of the Colorado River Delta

*Madeleine J. Lewis**

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I. INTRODUCTION

For the last word in procrastination, go travel with a river reluctant to lose his freedom in the sea.¹

The Colorado River rambles approximately 1,400 miles from its headwaters in the Colorado Rocky Mountains to Mexico, providing water to forty million

* J.D./M.A. Environment and Natural Resources Candidate 2019. I would like to thank Professor Jason Robison for his mentorship and for inspiring my interest in water law. Thanks also to Catherine Di Santo Rust, Kaylee Harmon, Emily Madden, David Roberts, and Allison Strube Learned for their thoughtful contributions to this Comment.

¹ ALDO LEOPOLD, A SAND COUNTY ALMANAC 150–51 (Oxford U. Press ed., 1949).

people along its course.² Its journey ends where the river meets the sea in Mexico—or, at least, it once did.³ In the last fifty years, the Colorado River has rarely reached its terminus in the Gulf of California.⁴ The two-million-acre Colorado River Delta once consisted of riparian and tidal wetlands that supported diverse plant, bird, and marine life, which Aldo Leopold once famously described as comprising “a hundred green lagoons.”⁵ Today, upstream demands for water have reduced the river to only 1% of its pre-development flows at the delta, which now forms a salted mudflat across its historical acreage.⁶ At one-tenth of the size that Leopold once observed it, the delta now struggles to support the hundreds of thousands of birds and various endangered species that still depend on its shrunken wetlands.⁷

This Comment explores the historical, environmental, and legal contexts that gave rise to Minute 323, the latest international effort to bring life back to the delta.⁸ Adopted in September 2017, Minute 323 enters commitments from the United States, Mexico, and a binational, non-governmental partnership, to provide flows and funding to the delta over the next decade.⁹ Part II of this Comment briefly considers the existing legal framework for international relations on the river.¹⁰ Part III evaluates the Minute’s environmental flows program.¹¹ This Comment offers a critical analysis of the program in Part IV,

² Lawrence J. MacDonnell, *Colorado River Basin*, in *WATERS AND WATER RIGHTS* 6 (R. Beck, ed., 2005).

³ See EVAN R. WARD, *BORDER OASIS: WATER AND THE POLITICAL ECOLOGY OF THE COLORADO RIVER DELTA, 1940–1975* xvii–xxx (U. Ariz. Press, ed., 2003).

⁴ IBWC, SONORAN INSTITUTE, *COLORADO RIVER LIMITROPHE AND DELTA ENVIRONMENTAL FLOWS MONITORING INTERIM REPORT* 18 (2016) [hereinafter *IBWC INTERIM REPORT*].

⁵ LEOPOLD, *supra* note 1, at 150.

⁶ Jennifer Pitt et al., *Two Nations, One River: Managing Ecosystem Conservation in the Colorado River Delta*, 40 *NAT. RESOURCES J.* 819, 819 (2000).

⁷ NAT. RES. LAW CTR., UNIV. COLO. L. SCH., *RETHINKING THE FUTURE OF THE COLORADO RIVER: DRAFT INTERIM REPORT OF THE COLORADO RIVER GOVERNANCE INITIATIVE* 3 n.4 (2010). In addition to the environmental devastation caused by the overconsumption of river resources, it is also necessary to acknowledge the impacts of shortages on certain human populations in the delta region. See Anita Alvarez Williams, *People and the River*, 39 *J. SW.* 331 (1997). In particular, the Cocopah (also Cucapá), have historically depended upon delta waters and have faced hardship from delta shortages. *Id.* Understanding that the law of the river is subject to a complex history and hardened criticisms with respect to indigenous populations, and that a responsible analysis of that history deserves more space than this Comment can offer, this Comment focuses solely upon efforts to restore the natural riparian environment of the Colorado River Delta.

⁸ IBWC, *MINUTE NO. 323, EXTENSION OF COOPERATIVE MEASURES AND ADOPTION OF A BINATIONAL WATER SCARCITY CONTINGENCY PLAN IN THE COLORADO RIVER BASIN* (Sept. 21, 2017), <https://www.ibwc.gov/Files/Minutes/Min323.pdf> [hereinafter *MINUTE 323*].

⁹ *Id.*

¹⁰ See *infra* notes 15–82 and accompanying text.

¹¹ See *infra* notes 83–104 and accompanying text

describing its failure to contrive an equitable or lasting solution between the countries.¹² Finally, Part V identifies a need for permanent change in the delta that extends beyond the transient and modest obligations imposed by Minute 323.¹³ Ultimately, while Minute 323 deserves recognition as the most substantial effort to date toward achieving delta restoration, the Minute also illuminates both substantive and procedural defects underlying the existing process toward restoration.¹⁴

II. LEGAL AND HISTORICAL BACKGROUND

The Colorado River is the subject of an international legal overlay dating back to World War II.¹⁵ In the decades of development and growth since the nation's first formalized relations on the river, demands on its resources have increased exponentially, prompting the need to adapt the Treaty to current contexts.¹⁶ The following section briefly synthesizes major episodes of international cooperation on the river, highlighting several monumental, but ultimately short-lived, attempts to send water back to the sea.

A. *U.S.-Mexico Treaty of 1944*

The United States and Mexico formalized their respective obligations and rights with regard to the Colorado River in 1944, when the two nations signed a treaty on the "Utilization of the Waters of the Colorado and Tijuana Rivers and of the Rio Grande" (Treaty).¹⁷ The Treaty followed decades of dispute over the river's future in the wake of planned development.¹⁸ A push from stakeholders, aimed to dissipate their anxieties over the security of massive anticipated water infrastructure projects, ultimately led to the Treaty's inception.¹⁹ Mexico, in particular, had good reason to urge a negotiation of the Treaty, in the shadows of the many American dams and diversions that would be authorized over the next decades.²⁰ Moreover, Mexico feared that the western American doctrine of prior

¹² See *infra* notes 105–61 and accompanying text.

¹³ See *infra* notes 162–211 and accompanying text.

¹⁴ See *infra* notes 105–61 and accompanying text.

¹⁵ Treaty between the United States of America and Mexico Respecting Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, U.S.-Mex., Feb. 3, 1944, 59 Stat. 1219, T.S. No. 994 [hereinafter U.S.-Mexico Treaty].

¹⁶ See *infra* notes 51–110 and accompanying text.

¹⁷ U.S.-Mexico Treaty, *supra* note 15.

¹⁸ See Allie A. Umoff, *An Analysis of the 1944 U.S.-Mexico Water Treaty: Its Past, Present, and Future*, 32 ENVIRONS ENVTL. L. & POL'Y J. 69, 72 (Fall 2008).

¹⁹ *Id.*

²⁰ Prevailing mementos of pro-development sentiments during this period include Hoover Dam (authorized in 1928), Glen Canyon and Flaming Gorge dams (both authorized in 1956), and the Central Arizona Project (authorized in 1968). See 43 U.S.C. §§ 617–617v (2012); 43 U.S.C. §§ 620–620o (2012); 43 U.S.C. §§ 1501–1556 (2012).

appropriation would incentivize and enable water users to exhaust water supplies, thereby depleting the amount of water that Mexico had historically received downstream.²¹ Compounding further the likely realization of Mexico's fears, the United States espoused in the late-eighteenth century a doctrine that a nation has absolute sovereignty over the water within its territory, permitting nations to act without regard for neighboring riparian nations.²² Absent a treaty, the likelihood of contriving an equitable and sustainable water-sharing arrangement between the nations was improbable.²³

By establishing an allocational and administrative framework for equitable sharing of Colorado River water, the Treaty in 1944 purported to settle the foregoing uncertainties over ownership of the river's flows, as well as generate a plan for the construction of infrastructure to facilitate those flows.²⁴ Article 10 of the Treaty addresses specific allocations of Colorado River water.²⁵ Specifically, Article 10 guarantees to Mexico an annual quantity of 1,500,000 acre-feet.²⁶ In the event that the United States determines that a surplus exists in a given year, Mexico shall receive an additional quantity not in excess of 200,000 acre-feet.²⁷ Article 10 also contains a provision for proportionate sharing of consumptive use reductions between the two nations in the event that "extraordinary drought or serious accident to the irrigation system in the United States" renders it "difficult for the United States to deliver the guaranteed quantity of 1,500,000

²¹ See Umoff, *supra* note 18, at 71–73. The doctrine of prior appropriation provides that a user of water establishes a quantified water right for herself simply by diverting a quantity of water to a beneficial and consumptive use. Lawrence J. MacDonnell, *Prior Appropriation: A Reassessment*, 18 U. DENV. WATER L. REV. 228, 242 (2015). Because the doctrine requires that water actually be diverted from the water source and consumed to establish a right, it disfavors environmental uses, or "flows," which remain instream for the maintenance and protection of ecosystems. *Id.* at 278–80. Further, the doctrine affords priority to senior water users (usually agricultural users with the oldest claims), meaning that holders of senior water rights are entitled to their full water right before junior users may receive any water. *Id.* Many western states have codified the common law doctrine of prior appropriation. See, e.g., WYO. STAT. ANN. § 41-3-101 (2018) ("A water right is a right to use the water of the state, when such use has been acquired by the beneficial application of water Beneficial use shall be the basis, the measure and limit of the right to use water at all times . . .").

²² *Id.* The Harmon Doctrine originated in an opinion by then-United States Attorney General Judson Harmon, who in 1895 espoused the theory that nations possess absolute sovereignty over water within their territory. See 21 Op. Att'y Gen. 274 (1895). An application of this doctrine would preclude any liability on behalf of the United States for draining a shared river entirely before it could reach Mexico. *Id.* at 19. But see Stephen C. McCaffrey, *The Harmon Doctrine One Hundred Years Later: Buried, Not Praised*, 36 NAT. RESOURCES J. 549, 549 (1996) (alleging that the United States never actually acknowledged the doctrine in practice).

²³ *Id.*

²⁴ See U.S.-Mexico Treaty, *supra* note 15.

²⁵ *Id.* art. 10(a).

²⁶ *Id.*

²⁷ See *id.* art. 10(b).

acre-feet. . . .”²⁸ However, the Treaty does not further clarify what circumstances might constitute an “extraordinary drought,” “serious accident,” or what would cause water to be “difficult . . . to deliver.”²⁹ Thus, while the Treaty settles the countries’ allocational arrangement, it leaves unresolved the meaning and administration of these ambiguous yet operative terms.³⁰ By allowing the United States to unilaterally determine the existence of a drought under this provision, Mexico may be denied equitable protections in the event of water scarcity.³¹

The Treaty also created the International Boundary and Water Commission (IBWC), a binational administrative body responsible for the interpretation and execution of Treaty provisions.³² The IBWC consists of both American and Mexican Sections.³³ Article 24 of the Treaty grants rulemaking authority to the IBWC Sections to carry out studies, construct works and projects, and negotiate agreements pertaining to the river and its limitrophe parts.³⁴ The IBWC records its decisions in the form of “Minutes,” which each government then has the option to ratify through a simple process.³⁵ Since the passage of the Treaty, the IBWC has recorded 324 Treaty Minutes.³⁶

²⁸ *Id.*

²⁹ *See id.*

³⁰ *Id.* The “extraordinary drought” clause is a potential source of immense conflict between the United States and Mexico, though such controversy has yet to erupt in a legal setting. Jason Robison, *The Colorado River Revisited*, 88 U. COLO. L. REV. 475, 504 (2017). As explained by one scholar, “[a]t least two longstanding issues thus plague Article 10(b). One concerns the spatial and temporal characteristics for deeming a drought ‘extraordinary.’ The other is procedural: By whom, and through what processes, is this determination to be made?” *Id.*

³¹ *Id.*

³² U.S.-Mexico Treaty, *supra* note 15, art. 2.

³³ *Id.* The Mexican counterpart to the IBWC, the Comisión Internacional de Límites y Aguas, is commonly abbreviated as “CILA.” *See generally* *Comisión Internacional de Límites y Aguas*, SECRETARÍA DE RELACIONES EXTERIORES (last visited Dec. 7, 2018), <https://cila.sre.gob.mx/cilanorte/>.

³⁴ U.S.-Mexico Treaty, *supra* note 15, art. 24.

³⁵ *Id.* art. 25. The IBWC publishes Minutes in both English and Spanish. *Id.* The Minutes must also be “signed by each Commissioner and attested by the Secretaries, and copies thereof forwarded to each Government within three days after being signed.” *Id.* Excepting situations where the specific approval of the two Governments is required by another provision of the Treaty, “if one of the Governments fails to communicate to the Commission its approval or disapproval of a decision of the Commission within thirty days . . . the Minute in question and the decisions which it contains shall be considered to be approved by that Government.” *Id.* The Commission is *charged with* executing approved decisions; however the Commission has relied heavily on the assistance of a private binational organization to carry out recent Minutes. *See infra* notes 59–83 and accompanying text. For more information on Commission proceedings and rules, see *The International Boundary and Water Commission - Its Mission, Organization and Procedures for Solution of Boundary and Water Problems*, IBWC, https://www.ibwc.gov/About_Us/About_Us.html (last visited Dec. 7, 2018).

³⁶ *Minutes Between the United States and Mexican Sections of the IBWC*, IBWC, https://www.ibwc.gov/Treaties_Minutes/Minutes.html (last visited Nov. 24, 2018).

B. Environmental Considerations Within the U.S.-Mexico Treaty

International water law straddles the competing policy goals of promoting the equitable allocation of transboundary waterways among riparian neighbors and maximizing the development of water resources within each state's borders.³⁷ Historically, international water law has not promoted ecosystem-level management, and the U.S.-Mexico Treaty proved no exception.³⁸ The Treaty evolved in an era that contemplated massive domestic water infrastructure projects, while states entered into numerous interstate compacts that dedicated massive funds and flows to states and their planned infrastructure.³⁹ The synthesis of these competing policies resulted in a "channel-based" legal regime that prioritizes the delivery of flows, rather than holistic management of an entire river system.⁴⁰ The resulting scheme organizes the delivery of water for consumptive uses, with little concern for how much water remains in the channel following the fulfillment of delivery obligations.⁴¹ The Morelos Dam, which diverts the United States' flow obligation to the Mexicali Valley for agricultural irrigation, is a perfect example of this traditional dam-and-divert regime.⁴² In classic form, the Treaty arrangement also lacks any kind of comprehensive environmental management plan.⁴³

Similar to the doctrine of prior appropriation—which affords preference to certain types of water usage over others in times of shortage—the Treaty delists how international waters should be allocated in the event the IBWC must make provision of joint waters.⁴⁴ The Treaty does not address environmental flows for the Colorado River within its designation of preferred joint uses of water, which otherwise express an order of priority for domestic and municipal uses, agriculture, industry, navigation, hunting, and "other beneficial uses."⁴⁵ Beginning in 2000, however, the IBWC has harnessed the Treaty minute system to facilitate

³⁷ A. Dan Tarlock, *International Water Law and the Protection of River System Ecosystem Integrity*, 10 *BYU J. PUB. LAW* 181, 199 (1996) [hereinafter Tarlock, *International Water Law*] ("International water law is a channel-based legal regime, as opposed to a watershed or ecosystem-based legal regime and this focus is inherently biased toward development and against ecosystem protection.").

³⁸ See *infra* notes 39–43 and accompanying text.

³⁹ *Id.*

⁴⁰ Tarlock, *International Water Law*, *supra* note 37, at 199.

⁴¹ *Id.*

⁴² See A. Dan Tarlock, *Four Challenges for International Water Law*, 23 *TUL. ENVTL. L.J.* 369, 385, 389 (2009) [hereinafter Tarlock, *Four Challenges*]. See also Jonathan S. King et al., *Getting to the Right Side of the River: Lessons for Binational Cooperation on the Road to Minute 319*, 18 *U. DENV. WATER L. REV.* 36, 52–53 (2014).

⁴³ *Id.*

⁴⁴ U.S.-Mexico Treaty, *supra* note 15, art. 3.

⁴⁵ *Id.*

environmental uses of water.⁴⁶ Several remarkable minutes, the latest of which is Minute 323, document the IBWC's growing, but hesitant, commitment to the Colorado River's environmental health—and to that of the delta in particular.⁴⁷

C. 2000: Minute 306

The IBWC recorded Minute 306 in 2000, which committed it to “establish a framework for cooperation by the United States and Mexico through the development of joint studies that include possible approaches to ensure use of water for ecological purposes in this reach and formulation of recommendations for cooperative projects, based on the principle of an equitable distribution of resources.”⁴⁸ In addition, the IBWC agreed in Minute 306 to define the habitat needs of marine and wildlife species of concern to each country through a binational task force.⁴⁹ Ultimately, Minute 306 represented an important phase of conservation research and planning, tabling for another minute the actual implementation of any conservation projects.⁵⁰

D. 2010: Minutes 316 and 317

The IBWC adopted Minutes 316 and 317 in 2010, each in contemplation of specific opportunities to operationalize the cooperative framework proposed in Minute 306.⁵¹ Minute 316 authorized the temporary conveyance of up to 10,000 acre-feet of water through the Santa Clara Wetland, located in the delta.⁵² The

⁴⁶ See *infra* notes 47–104 and accompanying text. Article 25 of the Treaty affords the IBWC authority to interpret the Treaty and make binding decisions. U.S.-Mexico Treaty, *supra* note 15, art. 25. For a full discussion of how the IBWC has utilized its authority of “adaptive Treaty interpretation,” see Robert J. McCarthy, *Executive Authority, Adaptive Treaty Interpretation, and the International Boundary and Water Commission*, 14 U. DEN. WATER L. REV 197 (2011); William Stanger, *The Colorado River Delta and Minute 319: A Transboundary Water Law Analysis*, 37 ENVIRONS: ENVTL. L. & POL’Y J., 73, 104 (2013).

⁴⁷ See *infra* notes 48–104 and accompanying text.

⁴⁸ IBWC, MINUTE NO. 306, CONCEPTUAL FRAMEWORK FOR UNITED STATES-MEXICO STUDIES FOR FUTURE RECOMMENDATIONS CONCERNING THE RIPARIAN AND ESTUARINE ECOLOGY OF THE LIMITROPHE SECTION OF THE COLORADO RIVER AND ITS ASSOCIATED DELTA 1 (2000), <http://www.ibwc.gov/Files/Minutes/Min306.pdf> [hereinafter MINUTE 306].

⁴⁹ *Id.*

⁵⁰ See *id.*

⁵¹ Chandler Clay, *Bringing the River Back to the Sea*, ENVTL. DEF. FUND, <http://www.edf.org/sites/default/files/pulseflow/index.html> (last visited Nov. 24, 2018).

⁵² IBWC, MINUTE NO. 316, UTILIZATION OF THE WELLTON-MOHAWK BYPASS DRAIN AND NECESSARY INFRASTRUCTURE IN THE UNITED STATES FOR THE CONVEYANCE OF WATER BY MEXICO AND NON-GOVERNMENTAL ORGANIZATIONS OF BOTH COUNTRIES TO THE SANTA CLARA WETLAND DURING THE YUMA DESALTING PLANT PILOT RUN 2 (2010), https://www.ibwc.gov/Files/Minutes/Minute_316_w_JR.pdf [hereinafter MINUTE 316]. The Santa Clara Wetland (or the Cienega de Santa Clara) is located in Sonora, Mexico, within the Colorado River Delta. Yamilett K. Carrillo-Guerrero et al., *From Accident to Management: The Cienega de Santa Clara Ecosystem*, 59

United States, Mexico, several environmental organizations from both countries, and a number of American water agencies, furnished flows for the agreement.⁵³ Participating entities also pledged approximately \$350,000 USD for general monitoring and canal repairs.⁵⁴ Instead of creating lasting effects in the delta region, Minute 316 facilitated the monitoring and inventory of opportunities for active management of the delta wetlands in the future.⁵⁵ Minute 317 expanded on the planning effects of Minute 316, requiring the IBWC to explore the potential for binational conservation projects.⁵⁶ The greatest impact of Minutes 316 and 317 was to orient the United States and Mexico toward increased collaborative capacity for an eventual environmental flows program.⁵⁷ Even the temporary allocation of flows through the Wetland marked the IBWC's first attempt to bring back the delta ecosystem.⁵⁸

E. 2012–2017: Minute 319

In 2012, the IBWC met in Coronado, California, and recorded Minute 319, which contained substantive measures for ecological protections in the delta.⁵⁹ In the creation of Minute 319, “[t]he Commissioners referred to Minute 306, which provided a conceptual framework for United States–Mexico studies related to the riparian and estuarine ecology of the Colorado River limitrophe and delta.”⁶⁰

ECOLOGICAL ENGINEERING 84, 85–86 (2013). Beginning in the late 1970s, diversions of brackish water from Arizona agricultural fields inundated the then-dormant Santa Clara Wetland, resulting in the inadvertent reinvigoration of the ecosystem. Adriana Zuniga-Teran et al., *Resilience in an Uncertain Future: Part 1*, INT'L WATER SECURITY NETWORK (2016), <http://www.watersecuritynetwork.org/resilience-in-an-uncertain-future/>. The wetland now provides habitat for protected species, including the Desert Pupfish and Yuma Clapper Rail, as well as thousands of migratory waterbirds. Guerrero et al., *supra*, at 86.

⁵³ Stanger, *supra* note 46, at 90. Participating American agencies included the Metropolitan Water District, the Central Arizona Water Conservation District, and the Southern Nevada Water Authority. *Id.* It is unclear why these water agencies have not undertaken further participation in procuring flows for Delta wetlands. *Id.*

⁵⁴ *See id.*

⁵⁵ MINUTE 316, *supra* note 52.

⁵⁶ IBWC, MINUTE NO. 317, CONCEPTUAL FRAMEWORK FOR U.S. MEXICO DISCUSSIONS ON COLORADO RIVER COOPERATIVE ACTIONS (2010), https://www.ibwc.gov/Files/Minutes/Minute_317.pdf [hereinafter MINUTE 317].

⁵⁷ *See id.*; Edward P. Glenna et al., *Restoration Potential of the Aquatic Ecosystems of the Colorado River Delta, Mexico: Introduction to Special Issue on “Wetlands of the Colorado River Delta,”* 59 ECOLOGICAL ENGINEERING 1, 3 (2013).

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ IBWC, MINUTE NO. 319, INTERIM INTERNATIONAL COOPERATIVE MEASURES IN THE COLORADO RIVER BASIN THROUGH 2017 AND EXTENSION OF MINUTE 318 COOPERATIVE MEASURES TO ADDRESS THE CONTINUED EFFECTS OF THE APRIL 2010 EARTHQUAKE IN THE MEXICALI VALLEY, BAJA CALIFORNIA 11–12 (2012), https://www.ibwc.gov/Files/Minutes/Minute_319.pdf [hereinafter MINUTE 319].

The Minute noted, “to the extent additional water supplies can be identified, it is desirable to have water for environmental purposes flow to the Colorado River limitrophe and delta ecosystem.”⁶¹ Upon the recommendations of the Minute 306 task force, Minute 319 introduced a pilot environmental flows program to expire with the Minute on December 31, 2017.⁶²

Binational collaboration, bolstered by the heavy advocacy by non-governmental organizations (NGOs) from both countries, was a necessary force in negotiating commitments to delta flows.⁶³ Minutes 306, 316, and 317 each involved some level of non-governmental collaboration, which increased under Minute 319.⁶⁴ Preceding minutes established a Binational Environmental Work Group composed of representatives from both governments, NGOs, and water users, who together researched and proposed the substantive recommendations for an environmental flows program.⁶⁵ A separate Binational Coalition of NGOs also helped facilitate negotiations and implement the flows program, chartered toward goals of benefitting multiple restoration areas along the delta that Binational Coalition members already actively managed.⁶⁶

Flows under the Minute 319 pilot program consisted of both base flows (small periodic releases of water) and pulse flows (large releases of water simulating natural flooding) to emulate, on a small scale, the pre-development conditions of the river.⁶⁷ During the term of Minute 319, the Binational Coalition provided base flows in the amount of 52,696 acre-feet for delivery to two river restoration areas from Morelos Dam, located at the international border.⁶⁸ The United States and Mexico provided water for an additional pulse flow in the amount of 105,392 acre-feet.⁶⁹ On January 31, 2014, United States Secretary of the Interior Sally Jewell and Mexican Secretary of Environment and Natural Resources Juan José Guerra Abud announced the release of the pulse flow from Morelos Dam, simulating the natural springtime flooding that invigorated the river for millennia.⁷⁰ The IBWC delivered water over an eight-week period, beginning on

⁶¹ *Id.*

⁶² *Id.* at 18.

⁶³ Phone Interview with Jennifer Pitt, United States Co-Chair of Binational Coalition (Apr. 30, 2018).

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ IBWC INTERIM REPORT, *supra* note 4, at 10.

⁶⁸ MINUTE 319, *supra* note 60, at 14.

⁶⁹ *Id.*

⁷⁰ See *Our Work*, RAISE THE RIVER (Apr. 1, 2018), <https://raisetheriver.org/our-work/> [hereinafter RAISE THE RIVER].

March 23, 2014, and ending on May 18, 2014.⁷¹ On May 14, 2014—for the first time since 1997—the Colorado River flowed into the Gulf of California.⁷²

Those involved with implementing the environmental flows program of Minute 319 approached the pulse flow release with hesitant optimism, uncertain whether the flow would simply disintegrate into the sand and mudflats, or reach all the way to the sea.⁷³ In achieving the latter, the pulse flow inundated approximately 4,000 acres of the main channel, mobilized sedimentary deposits, and recharged regional aquifers to a maximum extent of nine meters.⁷⁴ One goal of the pulse flow was to restore riparian vegetation, accomplished by timing the pulse flow with natural seeding cycles.⁷⁵ While the flow had no discernible effect on fish or fauna, the abundance and diversity of migratory waterbirds increased drastically—up to 49% in some areas.⁷⁶

Environmentalists' joy at observing the success of the pulse flow matched only the verve of community members throughout the delta region, including children who had known the river only through anecdote, as well as older residents who could remember a time when the delta's waters fortified community livelihood.⁷⁷ Among these observers were members of the indigenous Cocopah community in particular, who rejoiced at the sight of water permeating the delta's mudflats.⁷⁸

In the midst of celebrating the flow of delta waters once more, stakeholders acknowledged that the effects of the pulse flow were only temporary.⁷⁹ While the pulse flow stimulated new growth of some riparian vegetation, the program in its entirety emulated only 1% of the delta's traditional base flow and natural flooding.⁸⁰ Even Minute 319's unprecedented allocation of flows constituted only an additional experiment in a long line of minutes designed to study the potential for restoration, without effecting lasting restorative change.⁸¹ In recognition of its

⁷¹ IBWC INTERIM REPORT, *supra* note 4, at 10.

⁷² *Id.* at 16.

⁷³ Clay, *supra* note 51.

⁷⁴ IBWC INTERIM REPORT, *supra* note 4, at 18, 25, 34.

⁷⁵ *Id.* at 10, 16.

⁷⁶ *Id.* at 17.

⁷⁷ Clay, *supra* note 51.

⁷⁸ *Id.*

⁷⁹ *Id.* (quoting a Mexicali Valley farmer, stating “[t]he pulse flow is a good idea, but it will hardly restore a river that has spent years suffering from a lack of water”).

⁸⁰ *Id.*

⁸¹ See King et al., *supra* note 42, at 106; DAVID OWEN, WHERE THE WATER GOES 218 (Riverhead Books, Penguin eds., 2017) (citing conversation with Hinojosa Huerta (Water and Wetlands Program Director, Pronatura, Noroeste) and noting “[t]he pulse flow didn't last very

own limitations, Minute 319 called for the formation of a successor minute to carry on the mission of the pilot program, though stopping short of recommending a permanent framework for delta flows.⁸²

III. 2017–2026: MINUTE 323

A. *Minute Goals*

On September 21, 2017, the IBWC met in Ciudad Juarez, Chihuahua, and recorded Minute 323.⁸³ This Minute contains sturdier and more permanent provisions for environmental flows, which Minute 319 merely contemplated.⁸⁴ Minute 323 took effect upon its signing, preempting Minute 319's sunset date of December 31, 2017.⁸⁵ Among its many other provisions, Minute 323 registered the commitment of the United States, Mexico, and the Binational Coalition to deliver limited flows for the express benefit of the delta from 2017 to 2026.⁸⁶ In creating Minute 323, the IBWC:

referred to the results achieved in the Minute 319 pilot program for water for the environment, including enhancing the ecosystem's vegetation and wildlife, generating social and recreational benefits, improving conditions in the estuary, and recharging the aquifer. They also reflected on how to maintain the benefits of the pilot program while continuing joint cooperative efforts to provide water for the environment.⁸⁷

Citing these hefty aspirations, Minute 323 has been widely commended as an example of successful international collaboration for environmental improvement.⁸⁸

long. . . much of the new plant growth that occurred immediately following it had died. . . [but] some existing vegetation had been given a boost by it. Nevertheless, many of the big plants we saw near the river were [invasive species]").

⁸² MINUTE 319, *supra* note 60, at 17–18.

⁸³ MINUTE 323, *supra* note 8, at 1.

⁸⁴ *See id.*

⁸⁵ *Id.*

⁸⁶ *Id.* at 15–16.

⁸⁷ *Id.*

⁸⁸ *See, e.g., Minute 323: A U.S.-Mexico Agreement on Water that Benefits All*, NATURE CONSERVANCY, <https://www.nature.org/en-us/about-us/where-we-work/priority-landscapes/colorado-river/minute-323/> (last visited Dec. 7, 2018); Stephanie Sklar, *Doubling Our Efforts in Delta Thanks to Minute 323*, SONORAN INSTITUTE: NEWS (Oct. 7, 2017), <https://sonoraninstitute.org/2017/m323/>.

B. *Minute Terms*

Minute 323 expanded on the successes of Minute 319 by dedicating more substantial flows to the delta over a considerably longer period of time.⁸⁹ The Binational Coalition again played an instrumental role in negotiating and procuring flows for the program.⁹⁰ Minute 323 sets forth the following program for environmental flows, with obligations for funding and water to be split evenly among the United States, Mexico, and the Binational Coalition:

- 210,000 acre-feet of water for environmental purposes within Mexico over the nine-year duration of the Minute;
- \$9 million USD of funding for scientific research and monitoring; and
- \$9 million USD of funding for restoration projects.⁹¹

Although the Minute seemingly purports to split flows and funding obligations jointly among the three participating entities, the United States' flow commitment technically derives from Mexico's share of water.⁹² Under Minute 323, the United States will invest \$31.5 million USD of additional funding for the improvement and development of Mexican conservation projects, including canal lining, on-farm conservation, reservoir regulation, fallowing, technical operation of irrigation districts, system operations, and wastewater effluent reuse systems.⁹³ The Minute's negotiators expect the conservation projects to conserve significant quantities of water in an amount sufficient to satisfy the Minute 323 environmental flows obligations of both the United States and Mexico.⁹⁴ For its part, the Binational Coalition collaboratively raised its share of funds and secured flows in the amount of 70,000 acre-feet, although it expects to far exceed this obligation before 2026.⁹⁵ The Minute also contemplates that the

⁸⁹ MINUTE 323, *supra* note 8, at 1.

⁹⁰ Interview with Jennifer Pitt, *supra* note 63. NGOs, including Pronatura Noroeste, The Sonoran Institute, The Redford Center, The Audubon Society, and The Nature Conservancy comprise the Binational Coalition. *Id.*

⁹¹ MINUTE 323, *supra* note 8, at 16.

⁹² *See id.* at 18.

⁹³ *Id.*

⁹⁴ *Id.* Under Minute 323, with reference to those waters generated or conserved from the United States' investments in Mexican conservation projects, "[a]ll of the waters generated or conserved . . . will be allocated to Mexico except for the following volumes: 70,000 acre-feet (86 mcm) of water to satisfy the U.S. commitment noted in Section VIII . . . to provide water for the environment, especially the Colorado River Limitrophe and Delta . . ." *Id.* at 18.

⁹⁵ RAISE THE RIVER, *supra* note 70.

Binational Coalition will raise \$1 million toward a project of wastewater effluent reuse in partial fulfillment of its water delivery obligations.⁹⁶

Timing of the Minute's delivery obligations differs slightly among the participating entities.⁹⁷ The Minute expects parties to fulfill their funding and flow commitments within three years of the Minute's effective date.⁹⁸ The United States receives an exception, however, and is not required to fulfill its flow commitment within the three-year period.⁹⁹ Rather, the Minute provides that the United States' share of 70,000 acre-feet of water must be provided within the first five years of the Minute's adoption.¹⁰⁰

Minute 323 does not specifically designate base or pulse flows, in contrast to Minute 319.¹⁰¹ It is unclear to what type of flow or upon what schedule the IBWC will allocate the cumulative 210,000 acre-feet of water.¹⁰² However, the Binational Coalition suggests that water provided under the terms of Minute 323 will benefit existing restoration areas, as well as expand restoration efforts to wetlands beyond the delta's main channel.¹⁰³ In Minute 323 the IBWC does not expressly contemplate a successor Minute; that is, although Minute 323 will expire in 2026, the Minute does not create an obligation for the IBWC to supplant the substantive provisions of Minute 323 with any kind of similar program in the future.¹⁰⁴

IV. ANALYSIS AND CRITIQUE OF MINUTE 323'S DELTA FLOWS PROGRAM

Even as the benefits of Minute 323 continue to unfold, it already boasts notable victories for the delta.¹⁰⁵ Minute 323 currently represents the most robust effort ever undertaken to promote restoration of the delta in terms of dedicated flows and funding.¹⁰⁶ The Minute also emerged as an example of binational cooperation

⁹⁶ MINUTE 323, *supra* note 8, at 18–19.

⁹⁷ *See id.* at 16.

⁹⁸ *Id.*

⁹⁹ *Id.*

¹⁰⁰ *Id.*

¹⁰¹ MINUTE 319, *supra* note 60, at 17–18.

¹⁰² *Id.*

¹⁰³ RAISE THE RIVER, *supra* note 70.

¹⁰⁴ MINUTE 323, *supra* note 8, at 18–19. Comparatively, Minute 319 noted “the intention of the Governments of the United States and Mexico to seek agreement on the development of additional bilateral collaborative projects.” MINUTE 319, *supra* note 60, at 17–18. This would be achieved through the negotiation of an additional minute between 2013 and 2017. *Id.* Such a minute would have “the same implementation horizon until 2026 that has been indicated for a comprehensive Minute that would extend or replace the substantive provisions of this Minute.” *Id.*

¹⁰⁵ *See* RAISE THE RIVER, *supra* note 70.

¹⁰⁶ *Id.*

at a time when the United States and Mexico have otherwise been unable to find common ground on sundry policy matters.¹⁰⁷ At the same time, the Minute's modest flow and funding provisions, its temporary duration, and its failure to impose commensurate flow obligations on each sovereign together diminish the Minute's effectiveness.¹⁰⁸ The following analysis suggests several imperatives for a future environmental flows program, emphasizing the need for a more aggressive flows regime and for increased equity between the participating parties.¹⁰⁹ The environmental flows program for the delta, as it currently stands under Minute 323, fails to institute transformative change, instead reflecting a persisting reluctance to commit to permanent, substantial, and equitable reservations to the delta ecosystem.¹¹⁰

A. Funding and Flows Recommendations Not Adopted

The most significant shortcoming of Minute 323 is its failure to provide funding or flows sufficient to restore a larger portion of the delta.¹¹¹ While the Binational Coalition and its partners have accurately praised Minute 323 as an unprecedented commitment of environmental flows and funding toward restoration of the delta,¹¹² the Minute's actual commitments are weak in comparison to the terms that the technical Binational Environmental Work Group (Work Group) recommended.¹¹³ Prior to the enactment of Minute 323, the Work Group prepared a proposal recommending quantities of water and funding adequate for the restoration of over 3,000 additional acres of the delta—a modest goal in comparison to the delta's historical reach.¹¹⁴ As stated in preface to the environmental flows provisions of Minute 323:

[T]he Binational Environmental Work Group has analyzed environmental benefits that could be generated under this Minute and, after considering various amounts of environmental water, recommended as a target an average annual volume of

¹⁰⁷ See, e.g., Tom McCarthy, *Trump's Border Wall: US Military Is as Unlikely to Pay for It as Mexico*, GUARDIAN (Mar. 31, 2018), <https://www.theguardian.com/us-news/2018/mar/30/trump-border-wall-military-budget>; Tracy Wilkinson & Brian Bennett, *Trump Has First Meeting with Mexico's Peña Nieto Amid Tense Relations*, LA TIMES (July 7, 2017), <http://www.latimes.com/politics/washington/la-na-essential-washington-updates-trump-has-1st-meeting-with-mexico-s-1499425322-htmlstory.html>.

¹⁰⁸ See *infra* notes 111–60 and accompanying text.

¹⁰⁹ *Id.*

¹¹⁰ See *infra* notes 116–49.

¹¹¹ For a comparison of flows and funding recommended versus those adopted, see IBWC INTERIM REPORT, *supra* note 4.

¹¹² See, e.g., Lynn Bairstowe, *Collaboration for the Colorado River Delta*, RAISE THE RIVER (Sept. 27, 2018), <https://raisetheriver.org/collaboration-colorado-river-delta-2/>.

¹¹³ See MINUTE 323, *supra* note 8, at 15–16.

¹¹⁴ *Id.*

45,000 acre-feet (55 mcm) and restoration funding of up to \$40 million dollars over the term of the Minute would be desirable to maintain existing environmental restoration sites and to benefit other sites in the Colorado River Delta riparian corridor and estuary. The group has also identified opportunities to expand the existing 1,076 acres (435 hectares) of restored native habitat to 4,300 acres (1,700 hectares).¹¹⁵

The actual funding and flow provisions of Minute 323 fall drastically short, amounting to about half of the levels recommended by the Binational Environmental Work Group.¹¹⁶ Under the terms of Minute 323, the funding dedicated to research, monitoring, and restoration totals only \$18 million over the course of nine years, less than half of that which the Work Group recommended.¹¹⁷ Actual dedicated flows fared similarly, measuring slightly over 23,000 acre-feet of water per annum over the nine-year term.¹¹⁸

According to the Binational Coalition's co-chair for the United States, Jennifer Pitt, the IBWC did not commit to the funding and flow levels that the Work Group proposed due to the unavailability of water in that amount.¹¹⁹ The IBWC reduced funding to match the proportion of water available.¹²⁰ In fulfillment of its Minute 323 obligations, the Binational Coalition has purchased water rights from the Mexicali Valley for reallocation to the delta.¹²¹ In fact, the Binational Coalition expects to far exceed its Minute 323 commitments.¹²² Conversely, the United States and Mexico have each dedicated flows to the Delta that do not yet exist, as they will result only from pending conservation projects operationalized under Minute 323.¹²³

By adopting even a modest quantity of environmental flows, if not in the full amount recommended by the Work Group, Minute 323 represents at the very least a modicum of progress against the paucity of water in the delta.¹²⁴ The success of the Binational Coalition is also an impressive example of productive and committed collaboration among international stakeholders.¹²⁵

¹¹⁵ MINUTE 323, *supra* note 8, at 16.

¹¹⁶ *See id.* at 16–17.

¹¹⁷ *See id.*

¹¹⁸ *Id.*

¹¹⁹ Interview with Jennifer Pitt, *supra* note 63.

¹²⁰ *Id.*

¹²¹ RAISE THE RIVER, *supra* note 70.

¹²² Interview with Jennifer Pitt, *supra* note 63.

¹²³ *See* MINUTE 323, *supra* note 8, at 18–19.

¹²⁴ Bairstowe, *supra* note 112.

¹²⁵ *See infra* note 135 and accompanying text.

Yet, the disparity between the recommended and adopted conservation regimes indicates the need to procure more substantial commitments to the delta from the two sovereigns.¹²⁶

B. Policy Obstacles to an Effective Flows Program

1. Reluctant Sovereigns

Neither Mexico nor the United States has historically prioritized delta conservation or restoration, which is now clearly evidenced by the area's desiccation.¹²⁷ The collaborative process undertaken over the course of Minutes 306, 316, 317, 318, 319, and 323 would not have been possible absent the pains and toils of the Binational Coalition, which took on a facilitating role for conservation where the governments failed to act.¹²⁸ As Pitt notes, the inability to procure sufficient flows and funds for the delta is symptomatic of the reluctance of either Mexico or the United States to take responsibility for the delta.¹²⁹ While Mexico points to the United States as the upstream source of flow scarcity causing dryness in the delta, the United States has made clear its disinterest in mitigating environmental degradation of the river, the effects of which are most strongly visible in Mexico.¹³⁰

The unwillingness of either Mexico or the United States to acknowledge its liability for the delta's decline poses a formidable policy obstacle.¹³¹ Although both countries have come together in collaboration over various minutes, the relatively inadequate level of flows committed to the delta, as compared to the recommended levels, reflects the countries' residual hesitancy.¹³² This hesitancy has created space for the Binational Coalition to step into the role of conservation mediator and caretaker for delta resources.¹³³ Traditionally, only states have rights or obligations under public international law, providing few answers regarding the Binational Coalition's liability and legal duties in fulfillment of its commitments.¹³⁴ The

¹²⁶ See *infra* notes 130–61 and accompanying text.

¹²⁷ Interview with Jennifer Pitt, *supra* note 63.

¹²⁸ *Id.* According to Pitt, “[t]he NGOs started talking about restoring the Colorado River and its delta in the late 90’s and it took many years of advocacy and many different attempts to get committed flows in the Delta. *Id.* (“There was litigation from Defenders [of Wildlife], there were all sorts of attempts for them to get surplus defined for the Delta. Many different approaches did not work over the years. Big picture, neither country was taking responsibility for the Delta.”).

¹²⁹ *Id.*

¹³⁰ *Id.*

¹³¹ *Id.*

¹³² *Id.*

¹³³ See generally MINUTE 323, *supra* note 8.

¹³⁴ Stanger, *supra* note 46, at 93.

Binational Coalition credits its more ample involvement in restoration to having fewer political and legal obstacles to navigate than the governments, allowing it to seek out private donors, for instance.¹³⁵ At the same time, the participation of a private coalition does not excuse the governments' failure to proactively pursue adequate conservation solutions.¹³⁶

Although the Binational Coalition believes its role in the delta can and should expand in the future, its water marketing approach involving the purchase of private water rights will become less sustainable as climate change diminishes remaining flexible water sources.¹³⁷ Scientists project that climate change will reduce Colorado River's flows by over nine percent by 2060, under conservative estimates.¹³⁸ The intensely agricultural Mexicali Valley, from which the Coalition purchased water rights to fulfill their Minute 323 obligations, already experiences shortages and declining water tables.¹³⁹ As the region's water becomes increasingly unaffordable under the influences of climate change and regional growth, the Coalition may be unable to match the demands of the delta.¹⁴⁰ This is particularly likely absent a joint commitment from the United States and Mexico to fairly contribute water and funding in the future.¹⁴¹

¹³⁵ *Id.*

¹³⁶ For one articulation of the international mandate against actions which harm the environment of a downstream riparian, see United Nations, Stockholm Declaration of the United Nations Conference on the Human Environment, U.N. Doc. A/CONF.48/Rev. 1, at 3 (1973). In particular, the Stockholm Convention provides authority for the principle that states are responsible for the cross-boundary effects of their water usage. *Id.* (stating that under the Charter of the United Nations and principles of international water law, states are entitled to "exploit their own resources pursuant to their own environmental policies," while at the same time being charged with "the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of States or areas beyond the limits of their national jurisdiction"). For a deeper discussion regarding the theoretical and legal obligations of sovereigns under international water law, see Tarlock, *International Water Law*, *supra* note 37.

¹³⁷ See, e.g., LANCE GUNDERSON & BARBARA COSENS, *Case Studies in Adaptation and Transformation of Ecosystems, Legal Systems, and Governance Systems*, in PRACTICAL PANARCHY FOR ADAPTIVE WATER GOVERNANCE 24 (eds. Lance Gunderson & Barbara Cosens eds., 2018); Eloise Kendy et al., *Water Transactions for Streamflow Restoration, Water Supply Reliability, and Rural Economic Vitality in the Western United States*, 54 J. AM. WATER RESOURCES ASS'N 487, 487 (2018).

¹³⁸ Mark Squillace, *Water Transfers for A Changing Climate*, 53 NAT. RESOURCES J. 55, 57 (2013).

¹³⁹ Senador Marco Antonio Blásquez Salinas, *Proposiciones*, GACETA DEL SENADO [SENATE-GAZETTE] (Sept. 26, 2017), <http://www.senado.gob.mx/index.php?ver=sp&mn=2&sm=2&id=75489>.

¹⁴⁰ O.W. Bussey, *Leave Some for the Fishes: Water for the Environment in the U.S.–Mexico Agreement on the Colorado River*, GEO. ENVTL. L. REV. (2018), <https://gelr.org/2018/03/16/leave-some-for-the-fishes-water-for-the-environment-in-the-us-mexico-agreement-on-the-colorado-river/>.

¹⁴¹ See *infra* notes 169–86 and accompanying text.

2. Principles of Equity

Critics have also disparaged Minute 323 for failing to contrive an equitable agreement between the two countries, even as private organizations step in to remediate the resource shortcomings.¹⁴² Equity and fairness are important not only to maintain the collaborative capacity between the United States and Mexico for the future, but also because they are guiding principles of international water law.¹⁴³ Experts generally agree that “each riparian state is entitled to a reasonable and equitable share in the beneficial uses of an international water resource . . . [the principle] balance[s] the possible detrimental consequences of an upstream nation’s use of a shared resource against the beneficial results of the use.”¹⁴⁴ This principle enjoins upstream nations from unilaterally consuming or damming a shared river to the detriment of downstream riparians.¹⁴⁵

The U.S.-Mexico Treaty itself has long been the subject of criticism for allocating a disproportionately large share of flows to the United States, as well as affording the United States extraordinary discretion in determining its drought obligations to Mexico.¹⁴⁶ Minute 323 similarly fails to mandate equitable commitments between the United States and Mexico in terms of the water resources each country must supply.¹⁴⁷ As previously noted, the United States will invest \$31.5 million USD in Mexican water infrastructure under the Minute’s terms to fund improvements and modernizations for canal and farm infrastructure.¹⁴⁸ The United States will receive credit for water generated through these conservation projects to satisfy its expected contribution of 70,000 acre-feet for the delta.¹⁴⁹

Members of the Mexican public and government officials of the Mexicali Valley have voiced resounding dissatisfaction with this arrangement, alleging it effectively permits the United States to purchase water from Mexico in violation

¹⁴² *Id.*

¹⁴³ Melissa Lopez, *Border Tensions and the Need for Water: An Application of Equitable Principles to Determine Water Allocation from the Rio Grande to the United States and Mexico*, 9 GEO. INT’L ENVTL. L. REV. 489, 499 (1997).

¹⁴⁴ Gabriel Eckstein, *Application of International Water Law to Transboundary Resources, and the Slovak-Hungarian Dispute over Gabčíkovo-Nagymaros*, 19 SUFFOLK TRANSNAT’L L. REV. 67, 72–84 (1995). For a comprehensive summary of the history of equity in international water law, see Tarlock, *International Water Law*, *supra* note 37.

¹⁴⁵ Tarlock, *Four Challenges*, *supra* note 42, at 375.

¹⁴⁶ Lopez, *supra* note 143, at 499.

¹⁴⁷ Salinas, *supra* note 139.

¹⁴⁸ MINUTE 323, *supra* note 8, at 16–18.

¹⁴⁹ *Id.*

of Article 10 of the Treaty.¹⁵⁰ The Mexicali Valley, a critical agricultural hub for Mexico and the United States, has experienced water shortages and droughts in the last several years, with climate change and increasing demand projected to worsen these conditions in the future.¹⁵¹ Although the investment arrangement will promote conservation and augment Mexico's available water, critics allege that the exchange generates a dangerous precedent that allows the United States to substitute money for water in fulfillment of its Treaty obligations to Mexico.¹⁵² As Mexican Senator Marco Antonio Blasqu ez Salinas opined:

The sale is disguised as an 'infrastructure replacement program' The delivery of water by infrastructure, that is, the sale of water, is a violation of the Water Treaty of 1944, because it denatures the essence of the agreement that consists in the just distribution of water The sale of water implies, of course, a cut that deteriorates the precarious situation of the producers of the Mexicali Valley.¹⁵³

Though his view is not necessarily universal to Mexican policymakers and his constituents, Senator Blasqu ez Salinas reasonably interprets Minute 323 as imbalanced.¹⁵⁴ Given the backdrop of historically inequitable Treaty-related conduct by the United States, Mexico may find justification in closely scruti-

¹⁵⁰ See *infra* notes 152–53 and accompanying text. This criticism can be directed also to the Binational Water Scarcity Contingency Plan under Minute 323, which permits Mexico to store a portion of its Treaty allotment in Lake Mead. MINUTE 323, *supra* note 8, at 6–7. The measures intend to safeguard against the proclamation of water shortage in relation to the elevation of Lake Mead. *Id.* The plan also affords Mexico more flexibility in drawing from its Treaty allotment. *Id.*

¹⁵¹ *Drought Monitor*, U. NEB., LINCOLN (Apr. 20, 2018), <https://droughtmonitor.unl.edu/nadm/Home/NADMBByArea.aspx>. The value of water to Mexicali agricultural producers cannot be overstated. David Agren, *Mexico Protesters Fear US-Owned Brewery Will Drain Their Land Dry*, GUARDIAN (Feb. 4, 2018), <https://www.theguardian.com/world/2018/feb/04/mexico-water-brewery-mexicali-constellation-brands>. Conagua, Mexico's National Water Commission, declared the Mexicali area's aquifer overexploited and has prohibited the drilling of new wells. *Id.* Yet, Constellation Brands, the third largest brewing company in the United States, recently sited a new plant in the valley which residents fear will consume a large quantity of the area's remaining water. *Id.*; Interview with Jennifer Pitt, *supra* note 63. Thousands of Mexicali residents, organized under the group "Mexicali Resists," oppose the plan due to the existing shortage in the area and for the implication that Mexican water rights are being appropriated to the benefit of American companies. Agren, *supra*. Despite protests, Constellation Brands expect to begin operations at this location in 2019. *Id.*

¹⁵² For an example of widespread public criticism which frames Minute 323 as a water sale, see Ariadna Garc a, *Is Mexico Selling Water to the U.S.?*, EL UNIVERSAL (Jan. 15, 2018), <http://www.eluniversal.com.mx/english/mexico-selling-water-us>. This title has been translated into English from its original publication in Spanish.

¹⁵³ Salinas, *supra* note 139. This excerpt was translated from its original publication in Spanish by the author.

¹⁵⁴ For an elaborated discussion of this perspective, see Garc a, *supra* note 152.

nizing any perceived attempts by the United States to skirt its Treaty obligations.¹⁵⁵ Such incidents include the Colorado River Salinity Crisis, for instance, which manifested in the early 1960s.¹⁵⁶ During that period, the United States denied its obligation under the Treaty to deliver water to Mexico of high enough quality to be put toward beneficial use.¹⁵⁷ The crisis was ultimately resolved under Minute 242, though some in Mexico still believe that the United States effectively violated the Treaty with immunity for decades.¹⁵⁸

In response to concerns that Minute 323 could aggravate underlying inequities in the Treaty, the Binational Coalition has implied that maintaining or achieving equitable apportionment was not an operative function of Minute 323.¹⁵⁹ According to Pitt, “[t]he Minute is not based on a standard of equity in that it is the output of two parties coming together and having a negotiation.”¹⁶⁰ Pitt also noted that capable representatives negotiated on Mexico’s behalf, but even perceived inequities in Minute 323 could jeopardize the political will of Mexican policymakers to collaborate for environmental flows programs with the United States in the future.¹⁶¹

V. MINUTE-BY-MINUTE NO MORE: CALL FOR TRANSFORMATIVE CHANGE IN THE DELTA

Minute 323 represents the most recent development in a long line of attempts to embolden the environmental restoration capacity of the Treaty.¹⁶² As noted, the Minute fails to establish a lasting environmental flow program, rendering uncertain the future of the delta past 2026.¹⁶³ The IBWC may eventually renegotiate another, stronger flows program through a successor minute.¹⁶⁴ However, the flaws of Minute 323 are inherent to the Minute system

¹⁵⁵ See Umoff, *supra* note 18, at 78–81.

¹⁵⁶ *Id.*

¹⁵⁷ *Id.*

¹⁵⁸ *Id.* The full history and outcome of the Colorado River Salinity Crisis is beyond the scope of this Comment, though its context is informative for public and governmental perceptions of American Treaty performance. For more information on the Colorado River Salinity Crisis and Minute 242, see *id.*

¹⁵⁹ Interview with Jennifer Pitt, *supra* note 63.

¹⁶⁰ *Id.*

¹⁶¹ See *supra* note 159 and accompanying text.

¹⁶² Stanger, *supra* note 46, at 74.

¹⁶³ See Bussey, *supra* note 140.

¹⁶⁴ Interview with Jennifer Pitt, *supra* note 63. The Binational Coalition has expressed its willingness to continue negotiating flows for the delta on a periodic timeline, with plans to return to negotiations in 2026 to arrange a successor program under an additional minute. *Id.*

and the Treaty.¹⁶⁵ For example, the Treaty itself still operates upon a gross overestimate of the river's annual flows.¹⁶⁶ Although the ecological minutes have provided much-needed life support to the delta, a more effective program may call for the full innovation of existing assumptions and governance on the river.¹⁶⁷ The following sections explore options for the creation of a permanent program, as well as their challenges.¹⁶⁸

A. *Of Environment and Equity: Options for a Permanent Environmental Flows Program*

Like its predecessor flow programs, Minute 323 is not permanent and will expire in 2026.¹⁶⁹ The Binational Coalition has expressed its willingness to continue negotiating flows for the delta on a periodic timeline, with plans to return to negotiations in 2026 to arrange a successor program under an additional minute.¹⁷⁰ The federal governments are not required to accommodate this plan, as the IBWC is under no legal obligation to adopt a successor minute for environmental flows for the delta upon Minute 323's expiration.¹⁷¹ Similarly, the Binational Coalition participates under no discernible legal obligation to continue furnishing resources or valuable on-the-ground services.¹⁷² Given the considerable—albeit, insufficient—amount of funding and water invested in the delta under the duration of Minute 319, and further dedicated under Minute 323, the IBWC has clear incentive to renegotiate in 2026 to avoid a loss of prior investments.¹⁷³ However, the terms of Minute 323 certainly do not guarantee such action.¹⁷⁴

One obvious, but ultimately indeterminate, option for the delta's future is to continue upon a trajectory of periodic minute negotiations, replicating the pattern to-date of incremental growth toward a more mature flows program.¹⁷⁵ This option is not ideal in light of criticisms already discussed, primarily that neither the United States nor Mexico are under obligation to continue providing even a bottom line of flows.¹⁷⁶ The delta faces competition for water from

¹⁶⁵ See *infra* notes 170–78 and accompanying text.

¹⁶⁶ JOHN FLECK, *WATER IS FOR FIGHTING OVER* 16–17 (Island Press ed., 2016).

¹⁶⁷ See *infra* notes 168–210 and accompanying text.

¹⁶⁸ *Id.*

¹⁶⁹ MINUTE 323, *supra* note 8.

¹⁷⁰ *Id.*

¹⁷¹ *Id.*

¹⁷² See *supra* note 94 and accompanying text.

¹⁷³ See *supra* notes 59–104 and accompanying text.

¹⁷⁴ MINUTE 323, *supra* note 8.

¹⁷⁵ Interview with Jennifer Pitt, *supra* note 63.

¹⁷⁶ See *supra* note 94 and accompanying text.

intensifying municipal and industrial demands, and there is no guarantee that negotiators will find water to spare in 2026.¹⁷⁷

A second option would involve a permanent Minute with permanent commitments, but also with flexible mechanisms to manage the delta adaptively.¹⁷⁸ Treaty minutes are not normally permanent, though Minute 242 is exemplary of the potential of the minute process to craft lasting solutions.¹⁷⁹

A third, idealistic option would involve amending the Treaty to codify a permanent environmental flow allocation deriving from Article 10 apportionments. This revision could timely prompt the amendment of Article 10 entirely, coinciding with efforts in the United States to reform domestic water management to reflect more accurate estimates of the river's annual flows.¹⁸⁰ A permanent environmental flows program under the second and third options would likely operate similarly.¹⁸¹ While functionally identical, however, an amendment to the Treaty would modernize the agreement to make it more serviceable to modern values of environmental protection and social equity.¹⁸²

Adopting a permanent environmental flows program for the delta—which is at the same time adaptive in management—involves the pursuit of conflicting policy goals.¹⁸³ While the minute system is inherently transitory, it is also important to avoid creating a permanent program that prescribes to the delta an overly rigid flows regime that repeats the fallacies of the river's present allocation.¹⁸⁴ An

¹⁷⁷ Bussey, *supra* note 140.

¹⁷⁸ Tarlock, *Four Challenges*, *supra* note 42, at 404–08 (suggesting tools of integrated water resource management and adaptive management to implement shared management of transboundary rivers).

¹⁷⁹ See Umoff, *supra* note 18, at 78–81.

¹⁸⁰ See Dan Elliott, *The Plan to Save the Colorado River*, CASPER STAR TRIB. (Oct. 10, 2018), https://trib.com/news/state-and-regional/the-plan-to-save-the-colorado-river/article_a7cc4d8e-86e6-5f69-a847-47cba72ded81.html. An amendment, or even upheaval, of the Treaty may not strike policymakers as remarkable a feat as it may have in the past, given growing recognition that the Treaty and other governing documents of the river grossly overestimated the river's annual flows. *Id.* At the time of writing, both Upper Basin and Lower Basin States had begun planning for drought contingency, generally involving cuts in water use and increasing reservoir levels in Lakes Powell and Mead. See Luke Runyon, *When in Drought: States Take on Urgent Negotiations to Avoid Colorado River Crisis*, COLO. PUB. RADIO (Oct. 14, 2018), <https://www.npr.org/2018/10/14/656343127/when-in-drought-states-take-on-urgent-negotiations-to-avoid-colorado-river-crisis>.

¹⁸¹ See *infra* notes 187–211 and accompanying text.

¹⁸² Lopez, *supra* note 143, at 490.

¹⁸³ See *infra* note 193 and accompanying text.

¹⁸⁴ Olivia O. Green & Charles Perrings, *Institutionalized Cooperation and Resilience*, in *SOCIAL-ECOLOGICAL RESILIENCE AND THE LAW* 191 (Ahjond Garmestani & Craig R. Allen, eds., 2014). Contemporary environmental policymakers advocate for adaptive measures in water allocation planning, criticizing the diametric rigidity representative of Article 10. *Id.* (“Most commonly, states

effective program would begin by creating a permanent governance framework in which adaptive management could occur.¹⁸⁵ Stated simply, adaptive management operationalizes the idea that management strategies should reflect and respond to new scientific information.¹⁸⁶

B. Recommendations Toward a Permanent Adaptive Management Framework

Though drawing from the network of entities that launched Minute 323—including the IBWC, a Binational Environmental Work Group with technical expertise, and the Binational Coalition—a reformed program could better utilize environmental expertise to establish binding, substantial, and permanent environmental resolutions.¹⁸⁷ A reinvented environmental flows program should rectify traits of the water governance framework that contributed to the weaknesses of Minute 323, while strengthening those components that made it effective.

Among the strengths of the Minute 323 administrative framework is the Binational Environmental Work Group, which was composed of water users, NGOs, and government officials with technical expertise in water management.¹⁸⁸ Along with the Binational Environmental Work Group employed in Minute 323, similar work groups participating in the other ecological minutes facilitated collaborative binational decision-making and empowered stakeholders.¹⁸⁹ A new program should employ a permanent work group with a similar technical, collaborative, and scientific capacity.¹⁹⁰ Such an entity could assure through monitoring, mandatory review periods, and sunset dates on each iteration of

divide water based on fixed volumes, the least adaptive form of allocation. Rigid entitlements leave no flexibility to account for hydrologic variability, and the IPCC predicts such rigidity will lead to increased international tension. . . .”).

¹⁸⁵ Adaptive management, or adaptive law, can be described as management which is “internally adaptive and resilient to a wide range of possible disturbances.” Craig Arnold & Lance Gunderson, *Adaptive Law*, in *SOCIAL-ECOLOGICAL RESILIENCE AND THE LAW*, *supra* note 184, at 318. “Adaptability” means “the capacity of actors in a system to manage resilience in the face of uncertainty and surprise.” Carl Folke et al., *Regime Shifts, Resilience, and Biodiversity in Ecosystem Management*, in *FOUNDATIONS OF ECOSYSTEM MGMT.* 140 (Lance Gunderson et al., eds., 2010).

¹⁸⁶ A. Dan Tarlock, *The Nonequilibrium Paradigm in Ecology and the Partial Unraveling of Environmental Law*, 27 *LOY. L.A. L. REV.* 1121, 1139 (1994).

¹⁸⁷ MINUTE 323, *supra* note 8; *see also* Barbara Cosens & Lance Gunderson, *Adaptive Water Governance: Summary and Synthesis*, in *PRACTICAL PANARCHY FOR ADAPTIVE WATER GOVERNANCE*, *supra* note 137, at 319 (“For government itself to be adaptive, it must have the legal authority to respond to change. . . [and to] adjust water allocations and water quality requirements in response to change.”).

¹⁸⁸ *See supra* note 179 and accompanying text.

¹⁸⁹ King et al., *supra* note 42, at 85.

¹⁹⁰ MINUTE 323, *supra* note 8.

an environmental program that the program is responsive to the ecology of the delta, as well as other environmental concerns.¹⁹¹ Certainly, adaptive ecological and policy solutions at the international scale should also be pursued in light of domestic water challenges or policy innovations occurring in either country.¹⁹²

One glaring weakness of Minute 323, as well as the other ecological minutes, is that the Binational Environmental Work Group served a purely advisory role unable to make binding recommendations to the IBWC, as exemplified in the deficient flow and funding requirements that Minute 323 actually adopts.¹⁹³ Rather than inhabiting a purely advisory role, a reformed program should afford substantial deference to the recommendations of a technical and collaborative work group.¹⁹⁴ The reformed work group should possess the capacity to make binding recommendations as to source, volume, type, and timing of environmental flows, perhaps absorbing a delegation of authority to make these and related environmental decisions from the IBWC.¹⁹⁵

Moreover, a reformed program could take instruction from domestic adaptive management programs that engage a diverse and more representative range of stakeholder input. For example, the American conservation programs on the river, including the Upper Colorado River Endangered Fish Recovery Program,¹⁹⁶ the Glen Canyon Dam Adaptive Management Program,¹⁹⁷ and the Lower Colorado River Multi-Species Conservation Program,¹⁹⁸ each incorporate input

¹⁹¹ See Tarlock, *Four Challenges*, *supra* note 42, at 407–08.

¹⁹² See Gary P. Kofinas, *Adaptive Co-Management in Social-Ecological Governance*, in *PRINCIPLES OF ECOSYSTEM STEWARDSHIP* 89 (F. Stuart Chapin et al. eds., 2009) (describing solutions for governance regimes “misfit” to the spatial and geographic scale of a resource and suggesting multiscale co-management or broadened resource governance jurisdictions).

¹⁹³ See *supra* 111–26 and accompanying text.

¹⁹⁴ See generally Roberto Sanchez, *Public Participation and the IBWC: Challenges and Options*, 33 *NAT. RESOURCES J.* 283 (1993) (discussing limited technical expertise of the IBWC and calling for broadened advisory input, including public participation).

¹⁹⁵ *Id.* (“The truth is that border problems, particularly water issues, have outgrown the jurisdiction of the Commission. Their solution can no longer depend on the limited technical skill of the IBWC engineers. Rather, they require an integrated and interdisciplinary approach.”).

¹⁹⁶ *The Path to Recovery in the Upper Colorado River Basin*, UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM (2018), <http://www.coloradoriverrecovery.org/general-information/general-publications/path-to-recovery/Path-to-Recovery-webx.pdf> (“The Bureau of Reclamation adaptively manages Glen Canyon Dam releases to support the needs of humpback chub and address issues associated with nonnative predators.”).

¹⁹⁷ *Glen Canyon Dam Adaptive Management Program*, U.S. BUREAU OF RECLAMATION (Oct. 23, 2018), <https://www.usbr.gov/uc/rm/amp/>.

¹⁹⁸ *Adaptive Management Program*, LOWER-COLORADO RIVER MULTI-SPECIES CONSERVATION PROGRAM (Dec. 18, 2017), https://www.lcrmscp.gov/adapt_mgt.html.

from between thirteen and fifty-seven discrete stakeholder groups.¹⁹⁹ Among those interests represented are federal and state agencies, numerous Indian tribes, private and public water users, recreation groups, and NGOs.²⁰⁰ Incorporating a wider range of stakeholder input would not only lend social legitimacy to the work group's recommendations, but would also augment the group's available base of knowledge.²⁰¹

With respect to facilitating procedural and social equity, the governments should continue to encourage equal American and Mexican participation, though with the potential accompaniment of a full reform of the IBWC amenable to a work group's increased role.²⁰² The Binational Coalition would also have a vested interest in continuing its involvement, likely through a lessened or modified role.²⁰³ The Binational Coalition has proven its value as a representative of environmental interests among reluctant federal governments.²⁰⁴ While it has exhibited its tremendous utility as a facilitator, implementer, and advocate of these interests, a permanent arrangement must be accompanied by increased governmental responsibility and accountability to the delta, which may necessarily reduce the role that the Binational Coalition has historically filled.²⁰⁵ An administrative entity should also utilize input of the Cocopah Tribe and other delta community stakeholders, who have not received due representation during the negotiations of past environmental flow programs.²⁰⁶ The absence of

¹⁹⁹ The Upper Colorado Fish Recovery Program involves thirteen stakeholders, consisting primarily of states and government agencies. *Program Partners*, UPPER COLO. RIVER ENDANGERED FISH RECOVERY PROGRAM, <http://www.coloradoriverrecovery.org/general-information/program-partners.html> (last visited Dec. 7, 2018). Glen Canyon Dam Adaptive Management Program incorporates the input of twenty-five stakeholders, including Indian tribes, states, conservation groups, and government agencies in its adaptive management work group. *Adaptive Management Work Group Members*, U.S. BUREAU OF RECLAMATION (Mar. 22, 2017), https://www.usbr.gov/uc/rm/amp/amwg/amwg_members.html. Finally, the Lower Colorado River Multi-Species Conservation Program represents interests fifty-seven federal, state, municipal, private, and indigenous groups in its Steering Committee. *Steering Committee*, LOWER-COLORADO RIVER MULTI-SPECIES CONSERVATION PROGRAM (Sept. 13, 2018), https://www.lcrmscp.gov/steer_committee/governance.html.

²⁰⁰ See *supra* note 198 and accompanying text; Robert W. Adler, *An Ecosystem Perspective on Collaboration for the Colorado River*, 8 NEV. L. J. 1031, 1039 (2007).

²⁰¹ See Cosens & Gunderson, *supra* note 186, at 319–20; King et al., *supra* note 81, at 114.

²⁰² See McCarthy, *supra* note 46 (arguing generally for reformation of the US Section of the IBWC on grounds of exclusivity, secrecy, and anachronism).

²⁰³ Interview with Jennifer Pitt, *supra* note 63.

²⁰⁴ For a history of the Binational Coalition's projects to date, see RAISE THE RIVER, *supra* note 70.

²⁰⁵ See *supra* note 184 and accompanying text.

²⁰⁶ The IBWC consists of Mexican and American sections and is not required to consult with affected sovereign tribes. See U.S.-Mexico Treaty, *supra* note 15. For more discussion on this matter and recommendations for increased inclusivity, see Adler, *supra* note 200.

a requirement for Cocopah input on the delta flows program is a major failure of the entire Minute process to date.²⁰⁷

Finally, a program with these provisions must be anchored with an explicit and permanent commitment from the two governments to prioritize delta restoration, which equitably apportions responsibility and liability for the delta's future.²⁰⁸ A permanent flows management program could be facilitated under the IBWC's existing delegation of rulemaking authority, through a permanent designation of environmental flows from the water resources currently allocated to each nation.²⁰⁹ As discussed above, an amendment to Article 10 that allocates flows for the delta, and perhaps other environmental ends, would constitute a more permanent option.²¹⁰ Both options would require ratification by the federal governments.²¹¹

VI. CONCLUSION

The delta may never return to its former state.²¹² Growing population and intensifying municipal and industrial demands on the river will further exacerbate existing shortages.²¹³ Absent a clear and continuing commitment by the nations to furnish flows for the environment in the future, the delta hovers in jeopardy.²¹⁴ Although Treaty minutes enacted over the last twenty years have memorialized a rejuvenated appreciation for the delta ecosystem, they have so far failed to champion a lasting or binding program for its restoration.²¹⁵ This Comment has discussed the urgency for more transformative change, delineating several possible avenues of action.²¹⁶ The Treaty between the United States and Mexico must be amended to reflect modern values of environmental protection and equity, or, at the very least, a permanent Minute must be implemented for

²⁰⁷ Stanger, *supra* note 46, at 103.

²⁰⁸ See *supra* notes 169–211 and accompanying text.

²⁰⁹ U.S.-Mexico Treaty, *supra* note 15, art. 24.

²¹⁰ See *supra* notes 169–86 and accompanying text.

²¹¹ The Treaty itself furnishes only a Minute process, requiring the IBWC's decisions to align with the Treaty provisions. U.S.-Mexico Treaty, *supra* note 15, art. 25. Because an allowance of water for the Delta and environment would require a modification of Article 10 of the Treaty, power to make such an amendment lies within the treaty-making authority of the federal governments. CONST. OF MEX. art.73; U.S. CONST. art. I, §§ 8, 10.

²¹² Pitt et al., *supra* note 6, at 821.

²¹³ *Id.*

²¹⁴ See *supra* notes 111–37 and accompanying text.

²¹⁵ See *supra* notes 105–26 and accompanying text.

²¹⁶ See *supra* notes 162–11 and accompanying text.

the long-term operationalization of these values.²¹⁷ Of course, amending the existing foundational documents governing the Colorado River, or to create new ones, would present a daunting policy task for the governments, the Binational Coalition, and additional stakeholders.²¹⁸ This task is formidable, but increasingly practical as the river's overallocation becomes unfortunately apparent, and as the prioritization of its riparian ecosystems becomes a more desperate cause.

²¹⁷ *Id.*

²¹⁸ Interview with Jennifer Pitt, *supra* note 63.